Solar-Log™

EN Product Portfolio 2018

At Home in more than 110 Countries

More than 2,300 Integrated Components

More than 10 Years’ PV Experience

Introduction

Shaping the Future Today - Through Innovation

We at Solare Datensysteme GmbH (SDS) are successfully setting new national and international standard when its comes to innovation. We have gone from a small start-up company, founded in 2007, to one of the leading companies in the field of renewable energies. Solar-Log™ hardware and software products are used all over the world in 110 countries for monitoring photovoltaic plants, optimizing consumption of self-produced power and managing energy fed into the power grid. We offer innovative solutions in order to meet the demands posed by the PV market.

We continuously monitor renewable energy market developments and analyze customer needs in order to keep developing solutions to fit these changing needs. Thanks to the wealth of experience we have gained over the years, we are able to provide practical solutions for both individual and legal requirements of the global markets.

Greentech Media Research (GTM) and SoliChamba Consulting (a photovoltaic marketing company) conduct and publish annual global market analysis for PV monitoring software. Dr. Frank Schlichting, CEO Solare Datensysteme GmbH, sees the GTM study as a confirmation of SDS’s corporate strategy, “The GTM Global PV Monitoring 2017-2022 study confirms that we are very successful with our broad portfolio that focuses on the residential, commercial and industrial markets. For the future, it is clear that we not only have to become more globally active, but also have to provide a wider range of services and to bring our know-how to markets that are at the initial stage of the transition to clean energy.”

Success does not result in complacency, it only means we have to do even more to become better. We are ready for whatever the future brings. We are at the forefront of smart solutions with new ideas to ensure more certainty and higher yields.

Yours sincerely, Solare Datensysteme GmbH

Image video

Contents

Welcome to the Market Leader in PV Monitoring and Management

Philosophy

Better Performance, Increased Output, Higher Success

For us, it is important to successfully integrate renewable energy into a smart power grid, and Solar-Log™ products are making a significant contribution to this successful integration.

Quality

Lasting Success Through Quality

We provide our customers around the world with state-of-the-art solar energy system solutions.

International View

Limits only Exist in the Mind

The world is our marketplace. Solar-Log™ is in over 113 countries, with branch offices or partners located in over 40.

Environment

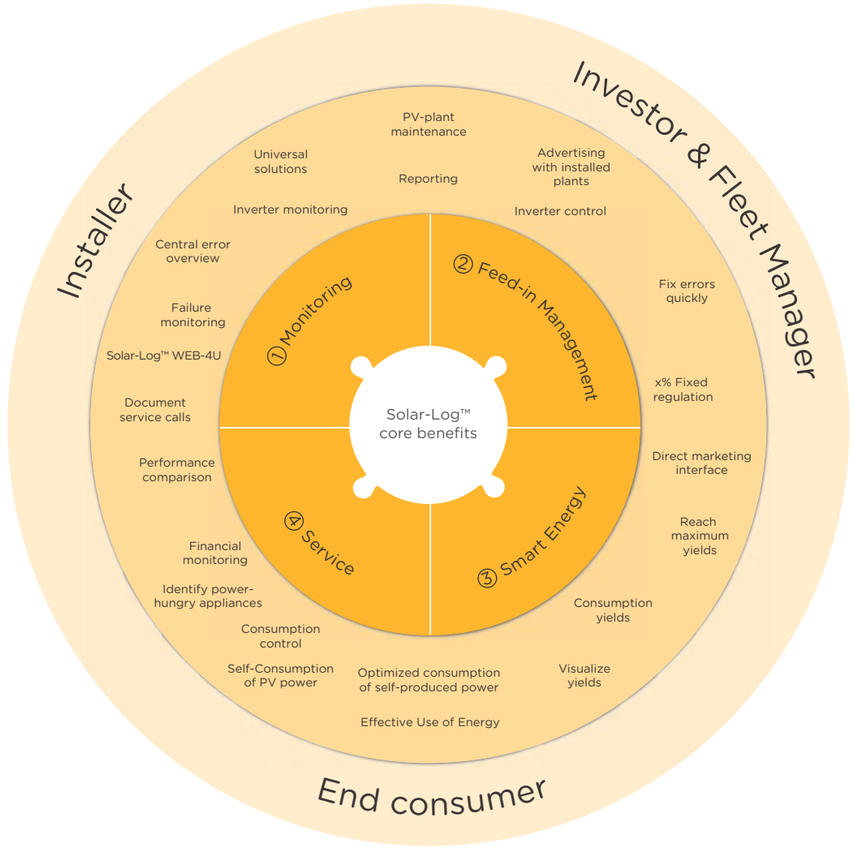
Sustainability as a Matter of Principle

A clean environment is essential and CO_2 emissions can only be reduced with the increased use of renewable energy.

Unmatched Security for Banks and Investors

Banks and investors often require financial guarantees on their PV investments. With Solar-Log™ plant monitoring, we offer a system to reliably monitor the rate of return from the PV plant and to serve as a safeguard for PV investments.

The Core Benefits of the Solar-Log™



01

Solar-Log™ WEB Monitoring Software

More than just PV Monitoring

With Solar-Log WEB Enerest™, installers, plant operator and service providers can provide plant owners with individualized care according to their specific needs and preferences. The function classes and plant sizes make it possible to have a precise classification of three module-based categories: Solar-Log WEB Enerest™ M, L and XL. They provide the option to offer tailored solutions at a competitive price-performance ratio.

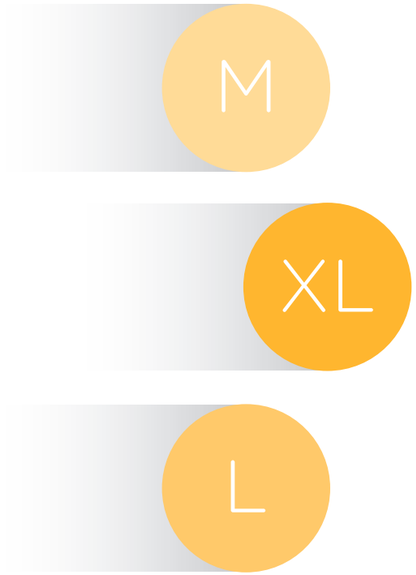
The Solar-Log™ Dashboard provides a quick overview of the photovoltaic plant's performance and is available with Solar-Log WEB Enerest™ L and XL. The display of the PV plant's performance data can be customized with individual image and text modules. In addition, with the Solar-Log WEB Enerest™ app plant owners always have an overview of their PV plants and access to their plant data.

Solar-Log WEB Enerest™

Portal for Professionals and End-Customers

The Solar-Log WEB Enerest™ professional portal for installers, portal operators and investors and the Solar-Log WEB Enerest™ Home end-customer portal for plant owners offer endless possibilities. The Solar-Log WEB Enerest™ provides professional PV monitoring for plants of all sizes – from residential to large-scale PV plants.

Solar-Log WEB Enerest™ M, L and XL are tailored to the user's individual requirements. With the Solar-Log WEB Enerest™ Home version, end-customers can monitor their PV plants themselves directly with their own portal. As an alternative, the installers can set up the plant owner's PV plant on their professional portal according to customer's preference. Solar-Log WEB Enerest™ M, L and XL, installers and service providers always have the perfect service package to offer their customers. The selection of M, L or XL depends on the plant size and the desired monitoring functions.



Online Monitoring for Plant Owners, Installers and Portal Operators

Solar-Log WEB Enerest™ M

This solution is simple to implement, provides the basic requirements for PV plant monitoring and is well-suited for private PV plant owners. The basic PV plant monitoring functions can be used free of charge for a plant up to 30 kWp.

Installers and service providers can offer plant owners the option to monitor their PV plant themselves. Errors can be independently evaluated and yields can be displayed, analyzed and compared over a period of weeks, months or years.

As an alternative, the installer and portal operator can offer plant owners the option to use this solution on their professional portal.

Solar-Log WEB Enerest™ L

Solar-Log WEB Enerest™ L is the perfect solution for service providers and technically adept plant owners. There are no limits to the plant sizes and the basic PV plant monitoring functions are available. This option features reference data comparisons, a yield overview with specific yields, the presentation of fixed percentage reductions (x %) and Solar-Log™ Dashboard. It can be used with the end-customer portal Solar-Log WEB Enerest™ Home or with your installer's or portal operator's professional portal.

Solar-Log WEB Enerest™ XL

Installers and service providers can offer plant operators seamless protection for their PV plants with the professional Solar-Log WEB Enerest™ XL package. This solution provides the option to offer service contracts tailored to individual projects and needs of the plant operators.

In addition to the benefits listed for Solar-Log WEB Enerest™ L, this solution offers advanced functions such as user-defined reports with an unlimited number of automatic reports, special graphics, and presentations.

Demo portal: demo.solarlog-web.com

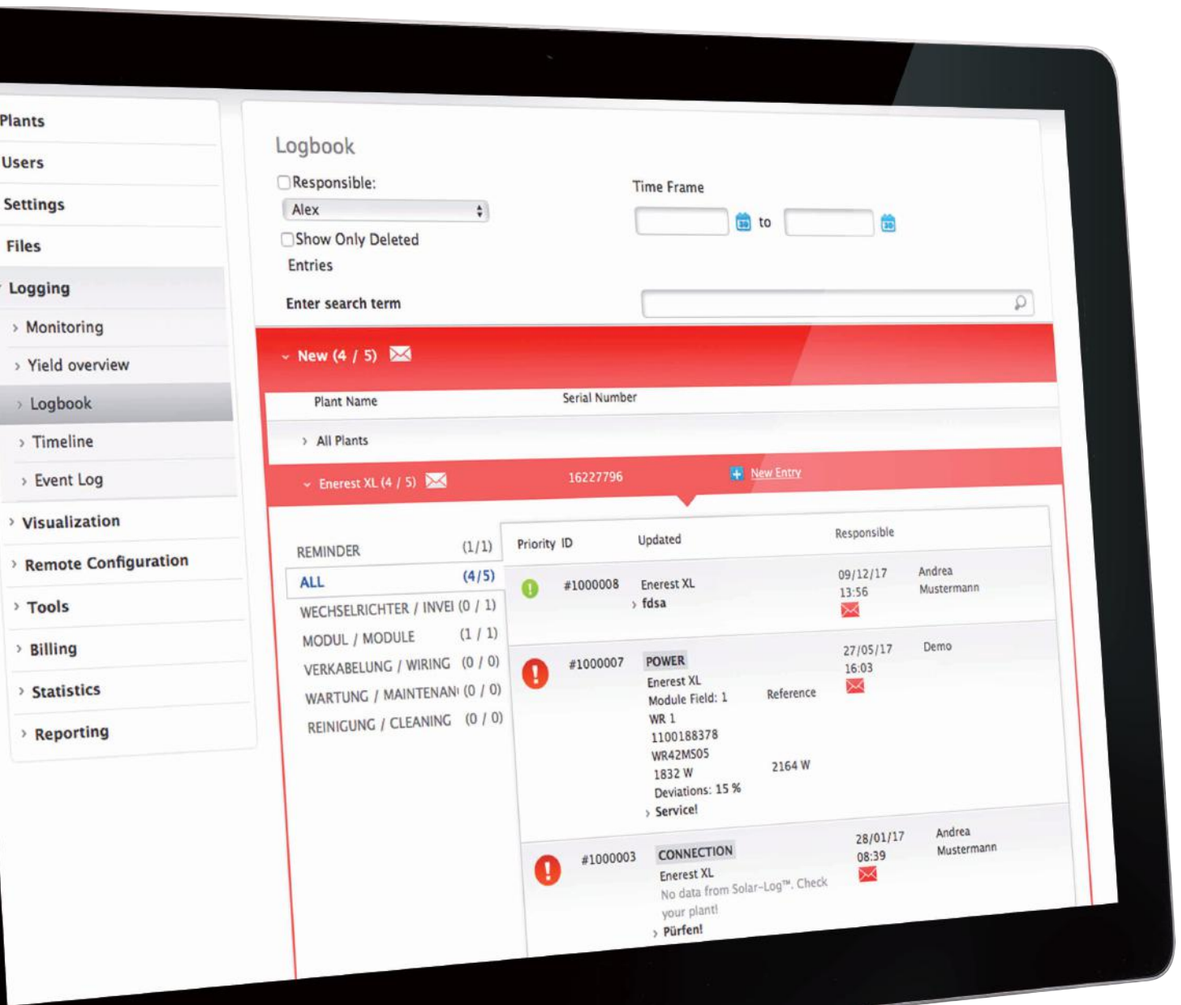
Solar-Log WEB Enerest™ XL

We Make Life Easier for You

This is the perfect solution for installers and service providers to offer plant owners service contracts tailored to their individual needs and project. This all-inclusive package provides plant operator's certainty through comprehensive and professional plant monitoring.

Professional and Time-Saving Remote Access

The online portal allows several plants to be centrally and remotely monitored and managed by installers and service providers. Detailed status messages help with accurate error detection and analysis. If errors occur, users can react quickly and often without having to leave the office, by solving the problem through remote access.



Central and Concise Plant Monitoring

PV plants that are not producing power properly can be easily identified with centralized, clearly arranged and prioritized plant monitoring. The integrated logbook and ticketing system reduce daily inspection of all customers' plants down to a single step. If errors messages occur, the corresponding plant is highlighted with a red warning. Better diagnostics lead to a faster recovery and less downtime.

Easy Installation - Simple Setup and Integration

Solar-Log's easy installation means a new plant can be added to the Solar-Log WEB Enerest™ portal in just a few quick steps. Pages can be automatically generated for the initial set up for every Solar-Log™. Once a plant has been integrated, adjusting plant details such as inverter DC sizes and forecast values can be done remotely, greatly reducing the time needed onsite.

Always Up To Date with Regular Reports

With Solar-Log WEB Enerest™ L and XL, comprehensive yield and forecast reports can be created. Additional detailed reports can also be easily generated and exported as TXT, CSV or PDF files.

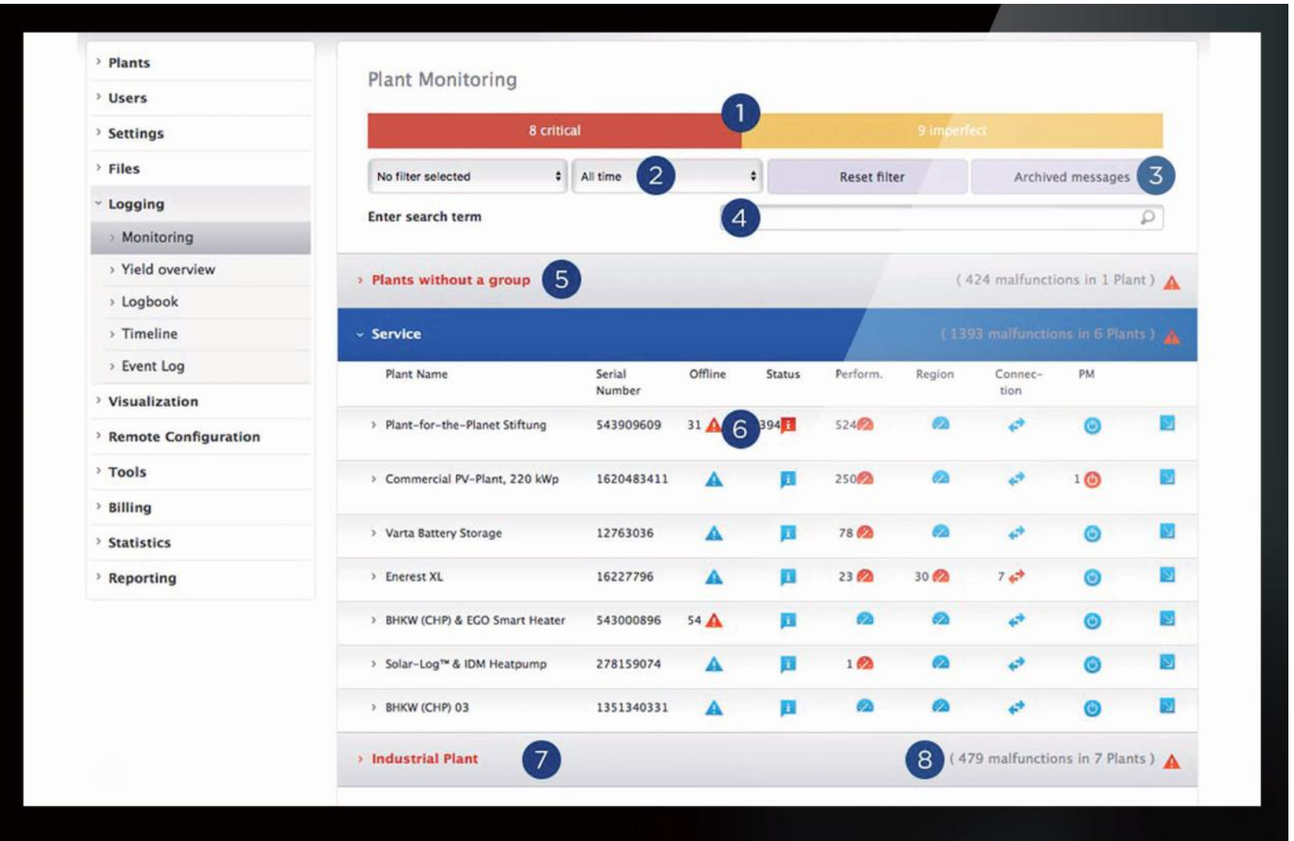
Custom Customer Portal Design

Solar-Log WEB Enerest™ XL users have the ability to fully customize their customer-facing portal around their business design. Multiple templates are available and can be easily integrated to custom design your portal. The plant owner's logo as well as plant images can be added at any time.

Solar-Log WEB Enerest™

PV Plant Monitoring with Solar-Log WEB Enerest™ in Detail

1. Quick overview of plant performance and status results with better diagnostics, faster recovery and less downtime.
2. Save time by selecting a specific time period - yesterday, last week, lifetime or customized.
3. Check and display archived messages.
4. Fast and easy - search for the PV plant by name.
5. For more clarity and faster monitoring, categorize PV plants into specific groups.
6. Detailed performance views show the individual plants – those in blue are performing very well. Consequently, the time needed to check and read daily error, status and yield notifications is significantly reduced.
7. For more clarity and faster monitoring, categorize PV plants into specific groups.
8. At-a-glance summary indicates how many plants in each group are reporting alerts.



Solar-Log WEB Enerest™ L and XL - Advantages and Benefits

Reliable protection

The Solar-Log™ WEB Enerest portal provides installers and service providers with reliable monitoring and protection for PV investments, minimizing yield losses.

Detailed reports

Solar-Log WEB Enerest™ keeps plant operators informed on a regular basis with easy-to-read reports. These reports only need to be configured once and then they will be automatically generated and sent during the defined periods.

Concise presentation

In connection with Solar-Log WEB Enerest™ L & XL, Solar-Log™ Dashboard and Solarfox® can access plant data and offer various options to present the data. The app is compatible with all PV plants that are connected to the Solar-Log WEB Enerest™ portal.

Protection against data loss

Plant yields, error messages and configuration data are stored, secured and backed up on SDS servers to protect against data loss.

Solar-Log WEB Enerest™ XL – Advantages and Benefits

Efficient monitoring

The Weather and Reference Data Comparison module facilitates the detection of deviations from the potential power output of the plant and its current production.

React quickly

Solar-Log WEB Enerest™ makes it possible to get a quick overview of the status from all of the PV plants. Errors are quickly detected, analyzed and remedied with the diagnostic tools.

Simple documenting options

With the help of the Timeline Module, installers and service providers can document events such as configuration modifications or the exchanging of inverters. All of the changes are listed in a log.

Professional maintenance

With a customized service contract, installers and service providers can offer plant owners comprehensive and professional plant monitoring and maintenance – an all-inclusive package that takes care of everything for plant owners.

Solar-Log™ WEB-4U

Overview of Our Services

With the Solar-Log™ WEB-4U, we offer services related to all aspects of the Solar-Log WEB Enerest™ online portal to installers and portal operators. With our years of experience that we have gained around the world with 276,800* installed Solar-Log™ devices, we have the know-how along with proven, reliable technology to meet any challenge.

Valuable Time and Cost Savings

On request of the installer or service provider, our specialists monitor customers‘ PV plants daily. After consultation, we remotely perform any necessary modifications, leaving more time to concentrate on the regular daily work.

*Status 02/2018

Professional and Effective

If desired, we can take care of additional functions, for example the complete configuration of the portal Solar-Log WEB Enerest™ XL as well as the recording and set up of PV plants. Our expertise allows portal operators to devote more time to strategic tasks.

Our technical specialists

- support with years of experience and extensive knowledge
- immediately detect occurring errors
- perform any necessary modifications remotely (after consultation)
- create upon request customized reports for installers, portal operators and their customers
- provide important information for troubleshooting
- allow you to use your precious time more effectively

Specialists

Let us take care of your PV plant monitoring. Our service professionals receive regular training and have extensive practical experience.

Security

Security is our top priority. Our portal is hosted on German servers that are powered completely by renewable energy.

Experience

Use our experience to ensure your success. We have been developing successful solutions for our customers worldwide for over 10 years.

Solar-Log™ WEB-4U

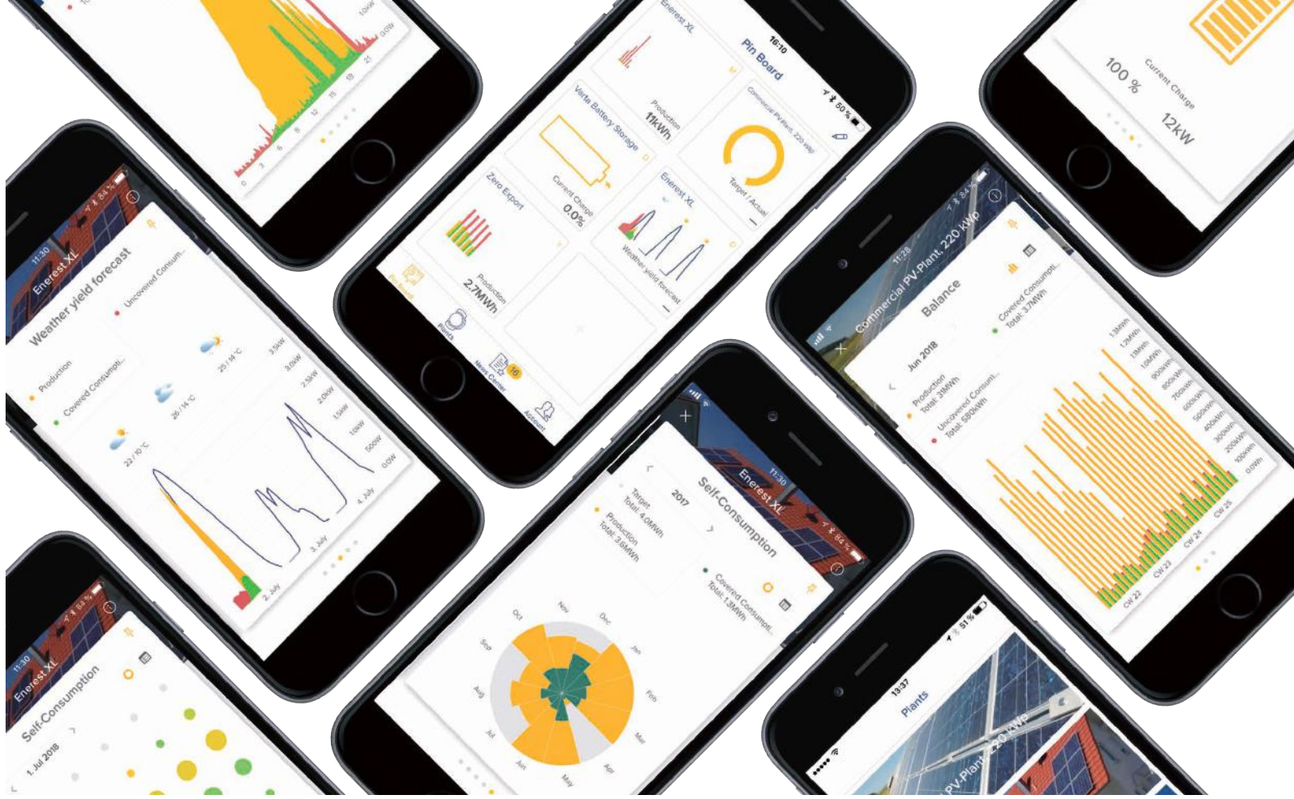
All Information at a Glance

The photovoltaic plant's performance data can be impressively and individually presented. The Dashboard delivers a concise presentation of yields, CO_2 savings and performance. As an alternative, we also recommend large external Solarfox® displays and the app - Solar-Log WEB Enerest™ – for mobile.

Solar-Log™ Dashboard

Solar-Log WEB Enerest™ L and XL users can access a dynamic display of important plant performance information such as yields and CO_2 savings by using the Solar-Log™ Dashboard. The display can be set up by selecting up to any four of the following elements: Current Production, Yield History including self-consumption, Earnings, Weather, Plant Information and Environmental Contribution. The Data Overview module even makes it possible to display the total yield data from several plants in one Dashboard. The Image and Text module allows users to add customized content to the Solar-Log™ Dashboard. Four modules can be displayed in the full-screen mode or as a slideshow.

Solar-Log™ Dashboard – displaying PV plant performance at a glance.



PV Plant Data always Available

With the App for the Solar-Log WEB Enerest™ Portal

The app with its modern design and user-friendly operating concept is available free of charge for smartphones and tablets. It offers many features and interactive graphics, for example, a single PV plant or several plants can be presented on a pinboard with customized views. Current and historical plant data, as well as data from connected components such as heat pumps and heating rods, can be visualized. The feed-in and self-consumption data can be concisely presented and compared. The News Center keeps users informed and up-to-date.

All PV plants that are connected to the Solar-Log WEB Enerest™ portal via the Internet are supported. The data from these plants is automatically available in the app. Solar-Log™ device requirements: Firmware 2.8.4 or higher. Operating system requirements: iOS 10 and higher and Android 5 and higher.

Download on the App Store

ANDROID APP ON Google play

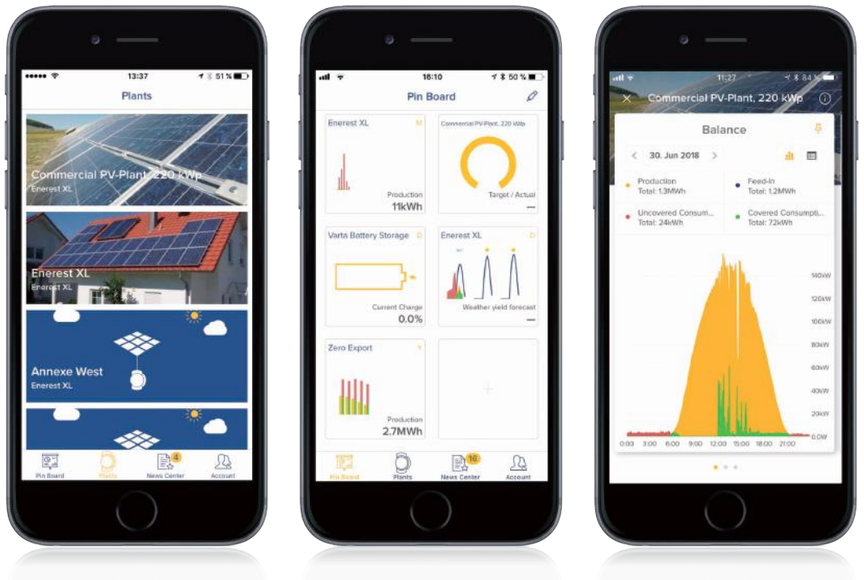


Illustration on the left: Plant Management - Illustration in the middle: Pin Board - Illustration on the right: Balance - Day View

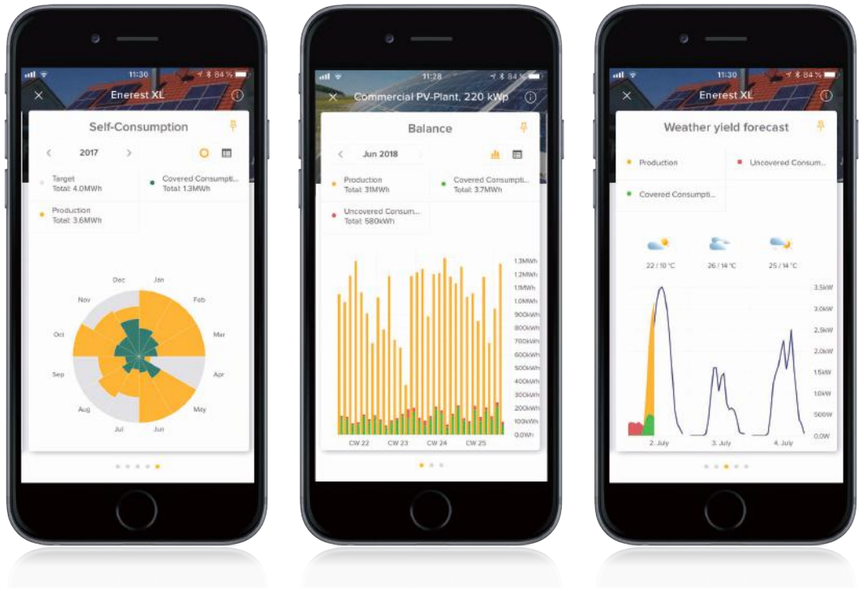
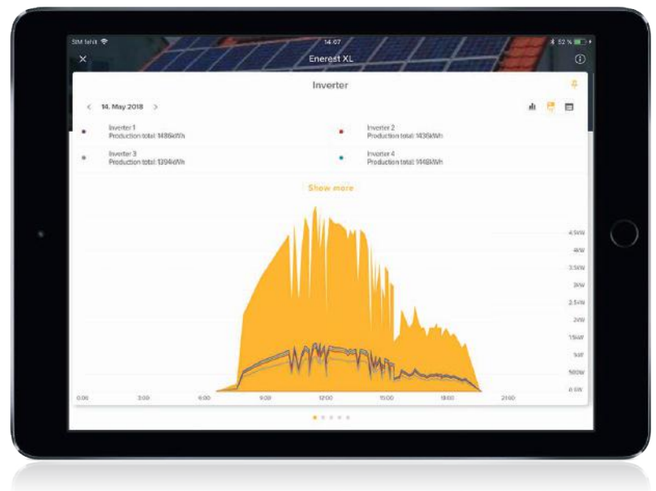
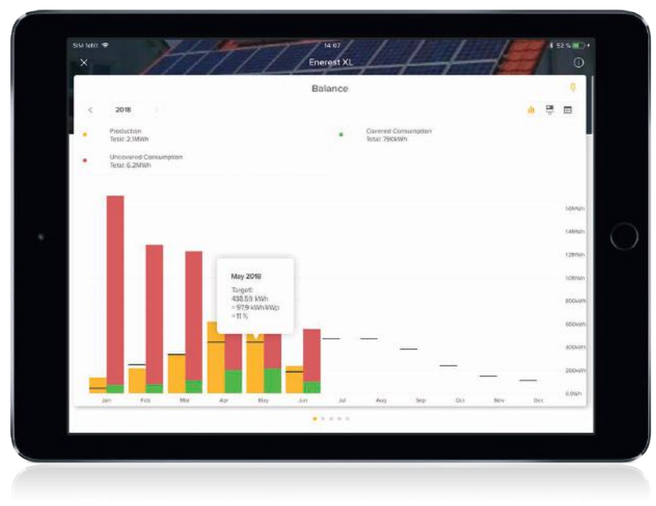


Illustration on the left: Self-Consumption - Illustration in the middle: Balance - Month View - Illustration on the right: Weather yield forecast

Available with Version 1.2.0 in autumn 2018



Up to 10 inverters can be displayed together with production values in the balance chart.



The balance chart is displayed as a bar graph with the target curve.

More News

- With touch screen gestures it is easy to switch the time frame displayed.
- In the new chart Energy flow, the connected appliances are displayed and the energy flows between the components are outlined.

	Product Comparison Solar-Log WEB Enerest™	M	L	XL
Basic functions	Several plants per user	3	3	Unlimited
	Plant size	Up to 30 kWp	Unlimited	Unlimited
	Yields per kWp (specific yields)	●	●	●
	Event log (error and status messages from the inverters)	●	●	●
	Data sheet with the essential information and plant image	●	●	●
	Performance comparison of the individual inverters and tracker	●	●	●
	Yield messages via e-mail	●	●	●
	App Solar-Log WEB Enerest™ for iOS and Android	●	●	●
	Compatible with Solarfox® large external display	●	●	●
	Number of e-mail addresses for performance and fault messages	1	1	4 per category
	Data visualization interval	30 min, 1 h, 2 h, 4 h, 8 h, daily	30 min, 1 h, 2 h, 4 h, 8 h, daily	10 Min, 15 Min, 30 Min, 1 h, 2 h, 4 h, 8 h, daily
	Fault messages via E-Mail	-	-	●
Monitoring & Management	Reference data comparison	-	●	●
	Yield overview with specific yields	-	●	●
	Centralized and concise monitoring of several plants at a glance	-	-	●
	Weather data comparison	-	-	●
	Plant monitoring at the tracker and module field level	-	-	●
	Remote configuration of the Solar-Log™	-	-	●
	Plant logbook with a ticketing system and task assignments	-	-	●
	Timeline (protocol of all configuration changes)	-	-	●
General	Dashboard	-	●	●
	Visualization of a fixed adjustable percentage (x % reduction, variable reduction at x % and fixed regulation to x watt, each with and without taking self-consumption into account)	-	●	●
	Visualization of remote controlled PM profiles / Powermanagement reductions (with and without taking self-consumption into account)	-	●	●
	User-defined, automated reports: self-consumption with balances, sensor values, performance ratios, comparison of several years, yield reports based on the inverter level, power management report with yield loss calculations (only when sensors are connected)	-	Limit of 5 automated reports	Unlimited number of automated reports
	Integration of current data (total yield, total power output, CO_2 emissions and much more) into one's own texts	-	-	●
	Display all plant locations on a map	-	-	●

	Product Comparison Solar-Log WEB Enerest™	M	L	XL
General	Overview of the reference plant with search options	-	-	●
	Graphical arrangement of up to 10 Solar-Logs	-	-	●
	Performance ratio graphic	-	-	●
	Value overview to present current data	-	-	●
	String Connection Box graphic	-	-	●
	Compatible with SMA Sunny WebBox (limited functionality)	-	-	●
	Available languages DE, EN, FR, IT, ES, CN	●	●	●
	Additional Languages available for the Dashboard DK, SE, TR	-	●	●
Portal design	Page layout with precise color selection and customized logo	-	-	●
	Custom page design due to flexible Content Management System (CMS)	-	-	●
	Customized templates	-	-	●
	Configuration wizard to design the web pages	-	-	●
	Easily customized contact form	-	-	●
	Additional language options	-	-	●
	Upon request: Individual corporate design template	-	-	●
	Upon request: domain name of your choice (.de / .eu / .com)	-	-	●
	Central plant data management	-	-	●
	User management with assigned rights	-	-	●
	Plant monitoring at the string level	-	-	●

No High Basic Fees, No Long-term Commitments

The use of Solar-Log WEB Enerest™ with the L & XL functions requires an annual fee based on the plant size. Every plant can be initially monitored for 30 days without obligation before plant specific charges arise. Hence, all Solar-Log™ fees can be correlated to the respective customers. We have personal and online training so that you can benefit as best as possible from the diverse capabilities of Solar-Log WEB Enerest™.

02

Solar-Log™ Hardware Family

Just one System to Master

The Solar-Log™ is setting new international standards when it comes to monitoring and managing photovoltaic plants. Only reliable and professional monitoring of PV plants provides the basis for flawless operation with maximum yields.

The Solar-Log™ hardware product range in combination with the Solar-Log WEB Enerest™ online portal represents outstanding Made-in-Germany quality and professional service. As one of the leading companies on the market, we offer a wide range of solutions: For private households with smaller PV plants that, for example, want to have clever control of self-produced power to large PV plants (solar power stations) and individual requirements. Solar-Log™ adapts to the specific needs of the customer.

For residential segment

Gateway for quick installation

Data transfer to the Solar-Log WEB Enerest™

Small and compact design for DIN rail mounting

Article number

Solar-Log 50	256200

Solar-Log 50

The Gateway

Function

Power reduction to x % and Software Licenses

The basic version of the Gateway comes with the active power reduction to x % option and additional add-on functions can be enabled by purchasing software licenses from the license portal (license.solar-log.com). To enable this, the Solar-Log 50 has to be connected to the Internet.

Display Options

Solar-Log WEB Enerest™

The new Solar-Log 50 acts as a Gateway between the PV plant and the Solar-Log WEB Enerest™ portal.

The App for End-Customers - Solar-Log WEB Enerest™

This app offers users comfort and security with its structured operating concept, intuitive controls, modern features and interactive graphics. The app is available for free from the app store.

Connections

Inverters

The Gateway Solar-Log 50 is compatible with inverters from all the major manufacturers.

2 x RS485 or 1 x RS422

To connect components.

Solar-Log™ USB Connection and Data Export

A USB stick can be connected for safe and quick manual installations of new firmware updates, configurations, and backups. The backup and configuration can be exported as a file via USB.

Ethernet

The Gateway Solar-Log 50 can be connected directly to compatible inverters via Ethernet.

	Technical Data	Solar-Log 50
Basic Functions	Inverter: Monitoring and power reduction to x %	Ethernet RS485 (4 pole) or RS422 [1] (6 pole)
	Battery storage: Monitoring	Ethernet RS485 (4 pole) or RS422 [1] (6 pole)
	Meter	RS485 (2 pole)
	Maximum number of components	5
	Maximum plant size	15 kWp
	Recommended cable length [2]	30 m
Expandable Licenses [3]	Solar-Log 50 Opening License for the expansion up to 10 components	from 5 to maximum 10
	Solar-Log 50 Opening License for the plant expansion up to 30 kWp	from 15 kWp to maximum 30 kWp
Interfaces	RS485/RS422	2 x RS485 or 1 x RS422
	Ethernet	●
	USB connection	●
General Data	Power supply voltage and device voltage	24 V
	Connection to Solar-Log WEB Enerest™ (Internet connection required)	●
	Multi-lingual (DE, EN, ES, FR, IT, CN)	●
	Dimensions (w x h x d) in mm	53.6 x 89.7 x 35.5
	Warranty	2 years

1) No RS485 meter connectable.
2) Depending on the inverter used and the cable type (details can also vary from one type of device to another).
3) With additional costs.

Solar-Log WEB Enerest™ in detail see product comparison page 22

No power supply included

	Components	Article number	Solar-Log 50
Meters	Solar-Log™ PRO380-Mod	255913	●
	Solar-Log™ PRO380-Mod-CT	256059	●
WiFi	Wireless Kit TP-Link	256012	●
	Wireless Kit Netgear	256013	●
Misc.	PowerLine Paket	256133	●
	Special PiggyBack for SMA	220020	●

Article Number

Solar-Log 50	256200
Power supply	256226
Mounting rail power supply	256227
Solar-Log 50 Opening License from 15 up to 30 kWp	256206
Solar-Log 50 Opening License from 5 up to 10 components	256205

Installation on DIN rail mounting

Configuration Assistant

Setup in the Solar-Log WEB Enerest™

Buy and install license

Solar-Log 300, 1200, 1900 and 2000

Common Features

Functions

LCD-Status-Display

Status display for installation and operations.

Smart Energy

Recording and presentation of self-consumption control and visualization of individual appliances for the optimization of self-consumption.

Feed-in Management

Reduction of feed-in power with a dynamic allowance for self-consumption.

Display Options

Solar-Log WEB Enerest™

The Solar-Log WEB Enerest™ online portal expands the presentation and monitoring functions of the Solar-Log™ and offers comprehensive reporting options in the form of graphs and tables.

The App for Solar-Log WEB Enerest™

This app offers users comfort and security with its structured operating concept, intuitive controls, modern features and interactive graphics. The app is available for free from the app store.

Solar-Log™ Dashboard

The Dashboard is a feature of the Solar-Log WEB Enerest™ L and XL that displays all important information for a plant such as yields, CO_2 savings and plant performance.

Solarfox® Large and External Display

A large external display used in combination with the Solar-Log™ can visually present live data from a PV plant. You can also add personalized advertisements. Large external displays can be connected via the RS485 or S_0 interface.

Connections

Inverters

The Solar-Log™ is compatible with inverters from all major manufacturers.

Sensors RS485

The sensors measure solar irradiation, temperature and wind speed. They can even be combined with some inverters on an RS485 bus.

Meter S_0-In or RS485

The meter can record your consumption data or serve as an inverter and measure the power from incompatible inverters. In addition, batteries can be visualized via meters.

RS485 or S_0-Out

Connect a large external display to gain an additional overview of the data.

Solar-Log™ USB Connection and Data Export

A USB stick can be connected for safe and quick manual installations of new firmware updates, configurations, and backups. The backup and configuration can be exported as a file via USB.

Ripple Control Receiver

The signal to reduce active power is generally sent via a Ripple Control Receiver or remote control technology. Up to two Ripple Control Receivers can be connected to the Solar-Log™ PM+, one for power reduction and one for reactive power control.

Ethernet / Speedwire*

The Solar-Log™ models can be connected to compatible inverters with an Ethernet connection. SMA inverters can be connected directly to a regular network infrastructure with SMA's own Speedwire protocol. The SMA inverter only has to be connected to an Ethernet switch or router.

Additional Functions

Protection for the Interfaces and Cables

The cable cover for the Solar-Log™ offers the best possible mechanical protection for interfaces and cables as well as an attractive design.

Data Security

The data volume from the Solar-Log™ can be recorded. The micro SD card is used to protect against any loss of data in the event of a power failure.

*In many countries, the designation "Speedwire" is a registered trademark of SMA Solar Technology AG.

Maximum plant size 10 kWp,
one inverter

Easy Installation

Dynamic LCD-Status-Display

Monitoring of MPP-Trackers

Article number

Solar-Log 250	255869

Solar-Log 250

Entry-Level Model

Functions

Solar-Log™ Easy Installation

The inverter detection and Internet registration are carried out immediately. The installation status is indicated on the LCD-Status-Display. It is possible to configure the Solar-Log™ via the PC Web interface. Easy Installation is compatible with Solar-Log WEB Enerest™ meaning that the Solar-Log™ will automatically connect to the portal.

Smart Energy

Self-consumption can be measured and displayed as a graph with an energy meter.

Connections

Inverters

Maximum plant size 10 kWp with a single inverter.

Inverter Interfaces

The inverter can be connected via RS485/422 or an Ethernet connection. A meter can be set up as an inverter via the S_0 interface and records the output from incompatible inverters.

Maximum plant size 15 kWp*

Optional Powermanagement

Visualize, optimize
and manage the consumption
of self-produced power

Dynamic LCD-Status-Display

Options	Standard	PM+
	●	●
Article number	255574	255579

Solar-Log 300

For Small Domestic Installations

Functions

Solar-Log™ Easy Installation

The inverter detection and Internet registration start immediately. The installation status is shown on the LCD-Status-Display. The manual configuration of the Solar-Log™ can be performed via the WEB interface. Easy Installation is compatible with the Solar-Log WEB Enerest™ meaning that the Solar-Log™ will automatically connect to the portal.

Smart Energy

Self-consumption can be measured and displayed as a graph with an energy meter. Smart Energy logics activate and deactivate individual appliances depending on the amount of available energy.

Connections

Inverters

Just one manufacturer per bus, maximum plant size 15 kWp*.

Inverter Interface

Inverters can be connected via an RS485/422 interface or an Ethernet connection.

Licenses

Detailed information on expansion license to 30 kWp*, FTP license as well as the advanced options of the Solar-Log™ are described on page 95 and 96.

Maximum plant size 100 kWp*

Optional Powermanagement

Color TFT-Touch-Display and LCD-Status-Display for displaying graphics and operation

Visualize, optimize and manage the consumption of self-produced power

Options	Standard	PM+
	●	●
Article number	255591	255587

Solar-Log 1200

For Small Domestic Installations and Medium-Sized Plants

Functions

Solar-Log™ Easy Installation

The installation and initial setup is automatic. The inverter detection and the Internet registration start immediately. The installation status is shown on the LCD-Status-Display. The manual configuration of the Solar-Log™ can be performed via the WEB interface. Easy Installation is compatible with Solar-Log WEB Enerest™ meaning that the Solar-Log™ will automatically connect to the portal.

Smart Energy

Self-consumption can be measured and displayed as a graph with an energy meter. Smart Energy logics activate and deactivate individual appliances depending on the amount available energy.

Display Options

TFT-Touch-Display and access to Solar-Log™

The Solar-Log™ can be operated from a computer with a web browser or directly via the device's TFT-Touch-Display. The graphical reports of yield data are visualized on the color TFT-Touch-Display and via the web browser.

Connections

Inverters

Just one manufacturer per bus, maximum plant size 100 kWp*.

Inverter Interface

Inverters can be connected via an RS485/422 and an RS485 interface or an Ethernet connection.

Licenses

Detailed information on expansion license to 250 kWp*, FTP license as well as the advanced options of the Solar-Log™ are described on page 95 and 96.

Maximum plant size 2000 kWp

Optional Powermanagement
and cos phi control

Dynamic LCD-Status-Display

Monitor central inverters and SCBs

Options	Standard	PM+
	●	●
Article number	256241	256242

Solar-Log 1900

For Large-Scale PV Plants and Solar Power Stations

Functions

Feed-In Management

The Solar-Log 1900 is equipped with all of the functions needed for feed-in management. This includes solutions for active and reactive power control as well as response signals for the grid control center.

Self-Consumption

The Solar-Log 1900 offers the option to measure the amount of self-produced power consumed and to present it graphically via the Solar-Log WEB Enerest™. An additional power meter serves as a consumption meter.

Solar-Log 1900 Alarm Function

The external alarm can be used to provide anti-theft protection to protect the system from burglars.

Direct Marketing

In Germany since 01 January 2016, PV plants with an installed output of more than 100 kWp are required to participate in direct marketing. Solare Datensysteme GmbH offers the Solar-Log 1900 as technical solution for all direct marketers.

Licenses

Detailed information on the direct marketing and feed-in management licenses, FTP and SCB licenses as well as the advanced options of the Solar-Log™ are described on page 95 and 96.

Maximum plant size 2000 kWp

Optional Powermanagement and cos phi control

Color TFT-Touch-Display and LCD-Status-Display for displaying graphics and operation

Monitor central inverters and SCBs

Options	Standard	PM+
	●	●
Article number	255592	255594

Solar-Log 2000

For Large-Scale PV Plants and Solar Power Stations

Functions

Feed-In Management

The Solar-Log 2000 is equipped with all of the functions needed for feed-in management. This includes solutions for active and reactive power control as well as response signals for the grid control center.

Self-Consumption

The Solar-Log 2000 offers the option to measure the amount of self-produced power consumed and to present it graphically via the Solar-Log WEB Enerest™. An additional power meter serves as a consumption meter.

Solar-Log 2000 Alarm Function

The external alarm can be used to provide anti-theft protection to protect the system from burglars.

Direct Marketing

In Germany since 01 January 2016, PV plants with an installed output of more than 100 kWp are required to participate in direct marketing. Solare Datensysteme GmbH offers the Solar-Log 1900 as technical solution for all direct marketers.

Display Option

TFT-Touch-Display and access to Solar-Log™

The Solar-Log™ can be operated from a computer with a web browser or directly via the device's TFT-Touch-Display.

Licenses

Detailed information on the direct marketing and feed-in management licenses, FTP and SCB licenses as well as the advanced options of the Solar-Log™ are described on page 95 and 96.

Solar-Log 1900 and 2000

Solar-Log 1900 PM+, 2000 PM+ and Solar-Log™ Utility Meter

Combining the Solar-Log 1900 PM+ or 2000 PM+ and Utility Meter simplifies implementation of the diverse requirements for powermanagement in Germany. The voltage-dependent reactive power control, Q(U) function, is accomplished by measuring the medium voltage with the Utility Meter. The combination of the Solar-Log 1900 PM+ and 2000 PM+ and Utility Meter is also needed to send a confirmation of the current amount of feed-in power to the grid operator.

Solar-Log 1900 PM+, 2000 PM+ and PM Package

For plants larger than 100 kWp, remote control of the reactive power supply and power limitations are required along with a confirmation of the current amount of feed-in power.
In practice, each grid operator stipulates its own signalization variant in the technical connection requirements (TAB). To fulfill the requirements from a particular grid operator, Solare Datensysteme offers a grid company specific PM Package. This package includes hardware that is adjusted to a company's remote control technology and profile file.

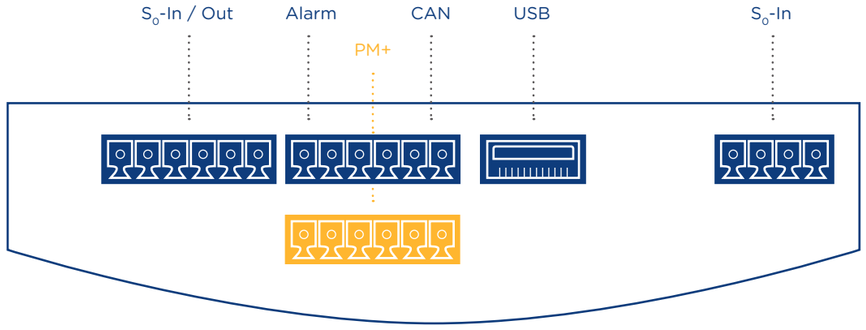
String Connection Box (SCB)

When used with the Solar-Log WEB Enerest™ XL and the SCB, the Solar-Log 1900 and 2000 monitor every single string, ensuring the most complete and secure monitoring for large-scale PV plants with exact error identification and localization.

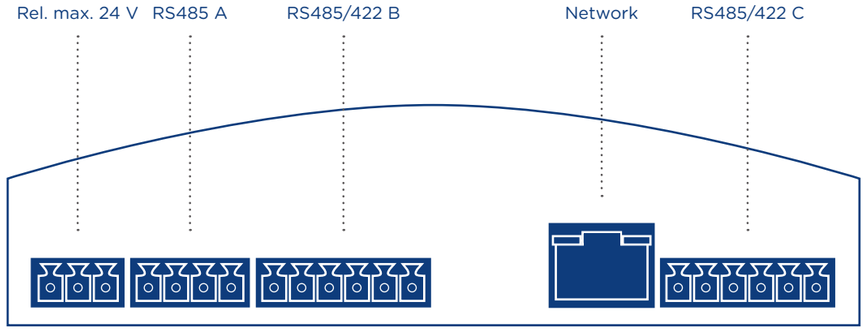
Feed-in Management - feed balance: The times when there was a grid feed and when electricity was purchased from the grid can be seen at a glance in this graph. Negative (red) values indicate that electricity was purchased from the grid and positive (yellow) values that there was grid feed.

Solar-Log 1900 PM+ and 2000 PM+

Interfaces



Top



Bottom

Inverters

A maximum of 100 inverters (just one manufacturer per bus), maximum plant size 2000 kWp.

Interfaces

The interfaces can be used to connect inverters and components such as the Utility Meter, Pyranometer and SCBs. The Solar-Log 1900, 2000 Standard and Solar-Log 1900 PM+, 2000 PM+ have two RS485/RS422 interfaces and one further RS485 interface.

Advantages and Benefits for Installers, Portal Operators and Service Providers

1. **Easily become more efficient**
   With “Easy Installation,” the automatic installation and set up of the device, no PC or internet knowledge is required to install the Solar-Log™.

2. **Operating status on the LCD display**
   An LCD-Status-Display is included with all devices and provides comprehensive information on the installation and operating status.

3. **Only a single monitoring system to learn**
   Solar-Log™ is compatible with over 2,300 inverter models from 130 different manufacturers and with more than 100 component manufacturers.

4. **All information at a glance**
   Monitor all PV plants centrally with a single glance with the Solar-Log WEB Enerest™ online portal.

5. **Time-saving – React with remote access**
   Detailed status messages available through Solar-Log WEB Enerest™ XL provide accurate error detection and analysis as well as quick remote access to PV plants.

Advantages and Benefits for Plant Owners

1. **Unmatched security for banks**
   Banks and investors may require guarantees on their PV investments. Solar-Log™ monitoring helps to ensure a solid rate of return from the PV plant.

2. **Higher efficiency**
   Solar-Log™ immediately transmits error messages online or to mobile devices to guarantee yield certainty.

3. **Effective and quick monitoring**
   The device can be intuitively and conveniently operated directly from the device via the color TFT-Touch-Display (Solar-Log 1200 and 2000) or remotely via the web browser.

4. **No PC expertise required**
   No software needs to be installed to connect the Solar-Log™ to the network.

5. **Flawless and precise monitoring at an attractive price**
   As the market leader, we produce larger quantities at the highest quality and guarantee the best value for money.

6. **Optimize consumption of self-produced power**
   The consumption of self-produced power can be optimized with the Solar-Log™. This optimization protect against rising electricity prices and high time-of-use rates.

7. **Reliability, a reassuring feeling for decades to come**
   Installers and service providers can offer a customized service contract to plant owners. An all-inclusive package provides comprehensive and professional plant monitoring and maintenance, taking care of everything for plant owners.

Product Comparison	Solar-Log 250	Solar-Log 300	Solar-Log 1200	Solar-Log 1900	Solar-Log 2000
Basic functions					
Standard	●	●	●	●	●
PM+ [2]	-	●	●	●	●
Central inverter SCB	-	-	-	●	●
Inverter connection options	Ethernet 1 x RS485/RS422	Ethernet 1 x RS485/RS422 (1 inverter manu-facturer per bus)	Ethernet, 1 x RS485, 1 x RS485/RS422 (1 inveter manu-facturer per bus)	Ethernet, 1 x RS485, 2 x RS485/RS422, 1 x CAN (1 inverter manufacturer per bus, max. total of 100 INV / device)	Ethernet, 1 x RS485, 2 x RS485/RS422, 1 x CAN (1 inverter manufacturer per bus, max. total of 100 INV / device)
Maximum plant size	-	15 kWp	100 kWp	2000 kWp	2000 kWp
Maximum cable length	-	Maximum 1000 m [1]	Maximum 1000 m [1]	Maximum 1000 m [1]	Maximum 1000 m [1]
Opening licence	-	30 kWp	250 kWp	-	-
Plant Monitoring					
MPP-Tracker monitoring / Number of MPP trackers depends on the inverter type	●	●	●	●	●
Monitoring of central inverters	-	-	-	●	●
SCB connection	-	-	-	●	●
Inverter failure, status of fault and power monitoring	●	●	●	●	●
Sensor system connection (irradiation / temp. / wind)	● [3]	● [3]	● [3]	● [3]	● [3]
E-mail and text mes-sage (SMS) alert	●	●	●	●	●
Alarm (local)	-	-	-	●	●
Yield forecast	●	●	●	●	●
Self-produced energy consumption: Digital electricity meter	●	●	●	●	●
Self-produced energy consumption: Managing external appliances	-	●	●	●	●
Feed-in Management					
Reduction to x percent (with and without the calculation of self-consumption)	-	●	●	●	●
Limit of x percent (with adjustable fixed reduction)	●	●	●	●	●
Remote controlled active and reactive power reductions (with the calculation of self-consumption)	-	PM+	PM+	PM+	PM+
Feed-in management with response signals	-	-	-	PM+, Utility Meter, PM Package or Modbus TCP PM	PM+, Utility Meter, PM Package or Modbus TCP PM

Product Comparison	Solar-Log 250	Solar-Log 300	Solar-Log 1200	Solar-Log 1900	Solar-Log 2000
Visualization					
Integrated web servers	●	●	●	●	●
Graphic visualization – PC local and Internet	●	●	●	●	●
LCD-Status-Display	●	●	●	●	●
Display on the unit	-	-	4.3” TFT color display	-	4.3” TFT color display
Controls on the unit	-	-	Via touch display	-	Via touch display
Large external display RS485 / S_0 pulse	-	●	●	●	●
HTTP data transfers to Solar-Log WEB Enerest™ for low data volumes	●	●	●	●	●
FTP data transfer to third-party portals [4]	-	●	●	●	●
Installation					
Easy Installation	●	●	●	-	-
Network detection / DHCP	●	●	●	●	●
Name resolution http://solar-log	●	●	●	●	●
Interfaces					
Ethernet network	●	●	●	●	●
USB connection	●	●	●	●	●
Potential-free contact (relay)	-	-	●	●	●
Alarm contact (anti-theft)	-	-	-	●	●
General data					
Power supply voltage /device voltage / current consumption	115 V – 230 V / 12 V / 3 W				
Ambient temperature	-10 °C to +50 °C				
Housing/dimensions (w x h x d) in cm / mounting / protection level	Plastic / 22.5 x 28.5 x 4 / Wall-mounted / IP 20 (indoor use only)				
Connection to Solar-Log WEB Enerest™ XL	●	●	●	●	●
Weight [5]	710 g	710 g	800 g	710 g	810 g
Multi-lingual (DE, EN, ES, FR, IT, CN)	●	●	●	●	●
Memory, Micro-SD, 2 GB, data logging	●	●	●	●	●
Warranty	2 years	2 years	2 years	2 years	2 years

1) Depending on the inverter used and the cable type (details can also vary from one type of device to another).
2) Other important information about compatibility, powermanagement and self-consumption and SCB inverters can be found on our website www.solar-log.com.
3) Using every inverter on the same bus is not always possible; please see the component database at www.solar-log.com.
4) It is possible to make a data transfer to third-party portals once per day via FTP - an additional license is required for more frequent transfers.
5) Weight of the standard version; deviations possible depending on the particular model.

	Components	Article number	Solar-Log 250	Solar-Log 300	Solar-Log 1200	Solar-Log 1900	Solar-Log 2000
Smart Plugs	AllNet Standard 3.5 kW, measuring function	www.allnet.de	-	●	●	●	●
	Gude 1100 / 1101, measuring function	www.gude.info	-	●	●	●	●
	Gude 1102 / 1103, without measuring function	www.gude.info	-	●	●	●	●
	Belkin WeMo Insight Switch, 16 A[3] WLAN, measuring function	255841	-	●	●	●	●
Relays	Solar-Log™ Smart Relay Station, 3 x 16 A (3 x 3.5 kW)	255755	-	●	●	●	●
	Solar-Log™ Smart Relay Box - 8 Relays	255656	-	● [4]	●	●	●
	Gude Expert Net Control 2301 - 4 x relays top-hat-rail mounting 230 V	www.gude.info	-	●	●	●	●
	Gude Export Net Control 2104 – 1 relay output	www.gude.info	-	●	●	●	●
	Gude Export Net Control 2110 – 4 relay outputs, controllable individually by Solar-Log™	www.gude.info	-	●	●	●	●
Meters	EGO Smart Heater Ethernet	256014	-	●	●	●	●
	Solar-Log™ PRO380-Mod	255913	● [4]	● S_0 [4]	●	●	●
	Solar-Log™ PRO380-Mod-CT	256059	● [4]	● S_0 [4]	●	●	●
	Iskra power meter, 1-phase – S_0	255346	●	●	●	●	●
	Solar-Log™ Utility Meter	255385	-	● [5]	● [5]	●	●
WiFi	Wireless Kit TP-Link	256012	●	●	●	●	●
	Wireless Kit Netgear	256013	●	●	●	●	●
Sensors	Sensor Box Professional Plus[1]	220060	●	●	●	●	●
	Sensor Box Professional[1]	255896	●	●	●	●	●
	Lufft UMB WS503	www.lufft.de	-	●	●	●	●
Misc.	PowerLine Package	256133	●	●	●	●	●
	Overvoltage Protection		255602	255602	255601	255601	255601
	Special PiggyBack for SMA	220020	●	●	●	●	●
	Outdoor case	See page 92	●	●	●	●	●

1) Can be connected to the same RS485 bus with some inverters
2) Separate RS485 interface always required - not with inverters on one port
3) Independent of country version
4) Note that only one RS485 port is available
5) Only power meter, no reactive power, cos phi, etc.

	Interface	Solar-Log 250	Solar-Log 300	Solar-Log 1200	Solar-Log 1900	Solar-Log 2000
Inverter interfaces	RS485/RS422 – interface usage	RS485/RS422 – combined interface usage		RS485 – interface, RS485/RS422 – combined interface usage	RS485 A – interface, RS485/RS422 B, RS485/RS422 C* - combined interface usage	
	RS485 – interface usage	Inverter connection (Fronius / Sunville can be connected on an RS422 interface without an additional interface converter)				
		-		Connection of a Sensor Box Professional Plus to record environmental data (irradiance, module and ambient temperature, wind sensor)		
		Sensor Box Professional				
		Meter connection, numerous options				
		-	Connection of the display panels produced by Schneider Displaytechnik, Rico or HvG			
		-	Solar-Log™ Smart Relay Box connection for the management of consumption data			
		-	-	-	Connecting the Utility Meter and I/O Box for PM remote control technology	
	CAN bus	-	-	-	For the connection of Voltwerk inverters and other inverters with a CAN interface	
Additional function interfaces	2 x S_0-In / 1 x S_0-Out	S_0 pulse input – for optional recording and calculation of self-produced power consumption				
		-	Second input to connect an additional power meter			
		-	S_0 pulse output to connect large external displays, pulse factor can be set to any value			
	Relay	-	-	For external switch control, e.g. heat pump		
	Alarm	-	-	-	Connection for anti-theft protection via contact loop for external alarms via potential-free contact	
	USB connection	-	To access data / Import firmware updates			
	PM+	-	For connection of a Ripple Control Receiver to regulate the plant			
		-	Fulfills the EEG 2017 requirements (Germany)			
	Solar-Log™ Meter**	-	Current measurements via transformers (extra accessory) up to 2 x 3 phases or 6 single phases			
	Network	Connection to the internet (Ethernet, fixed IP address or DHCP)				

* Not with GPRS models
** No longer included in the current product range

03

Smart Energy

Efficient Power Management and Optimized Consumption of Self-Produced Power

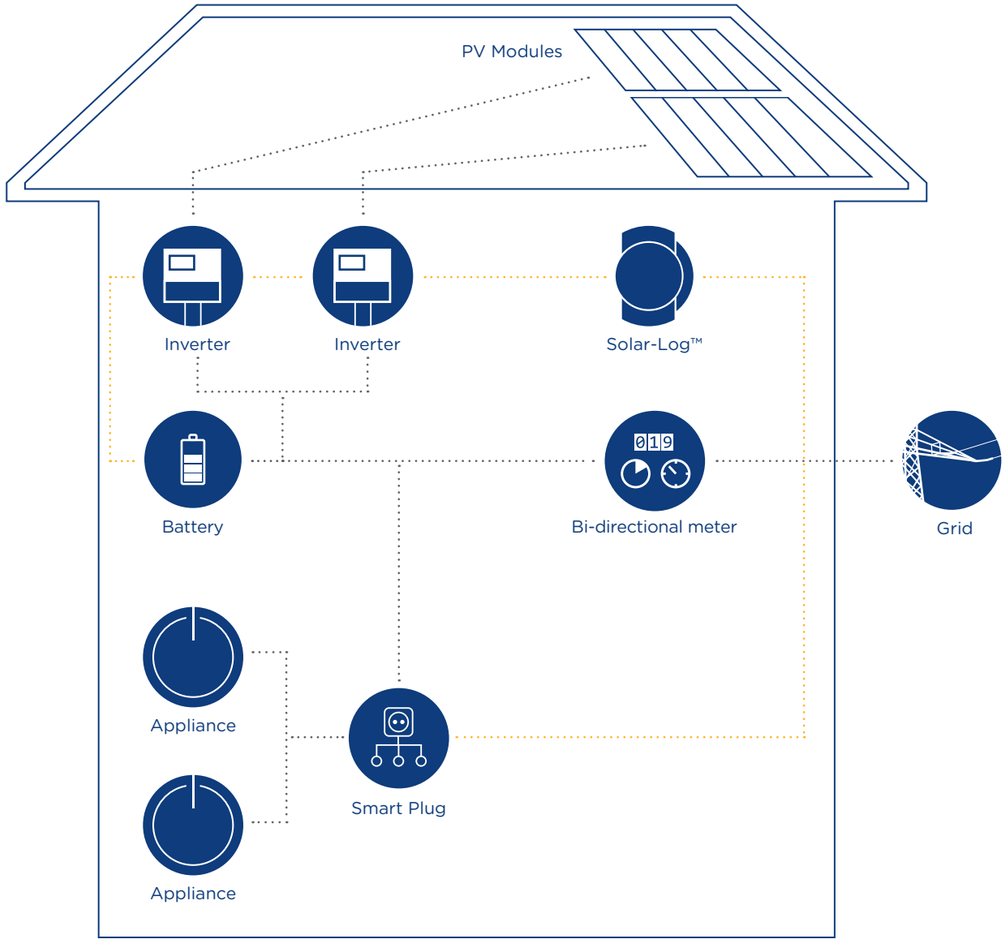
Solar-Log™ is setting international standards not just in monitoring but also in energy management of photovoltaic plants. Feed-in tariffs are being reduced, tax incentives and subsidies are being removed, and energy prices continue to rise. Consequently, storage and optimized consumption of self-produced power have become essential to meet the increasing energy needs.

Solar-Log™ distinguishes itself from competing systems with its intelligent control of energy, feed-in management, and monitoring of PV plants, as well as with the visualization and reporting options for plant data.

The Solar-Log™ energy management solutions include intelligent heating with PV power. Solar-Log™ controls heat pumps or smart heaters and provides them with surplus PV power. This is used to heat tap water or water in combination storage tanks.

Smart Energy with Solar-Log™

The Intelligent Energy Management System



Clever Control of Self-Produced Power

Various electrical appliances can be directly controlled by the Solar-Log 300, 1200, 1900 and 2000. Additional options to control appliances include networked “smart plugs” and the internal relays of the Solar-Log 1200, 1900 and 2000 and the Solar-Log™ Smart Relay Station.

You can operate Solar-Log 1200 and Solar-Log 2000 directly from the device. The graphical reports of a PV plant’s yield and consumption data, as well as the energy flows, are visualized on the color TFT-Touch-Display. The Smart Energy automation can be turned on and off from the color TFT-Touch-Display.

Graph of the daily consumption from the connected appliances.

The Solar-Log™ menu structure provides an intuitive user interface. This new structure allows smart electrical appliances, such as an EGO Smarter Heater in combination with Smart Plugs, to be controlled and prioritized based on the amount of surplus power. Different energy profiles and components can be linked and checked based on the simulation.

Battery Storage Monitoring

Visualization of Battery Power – Charge and Discharge

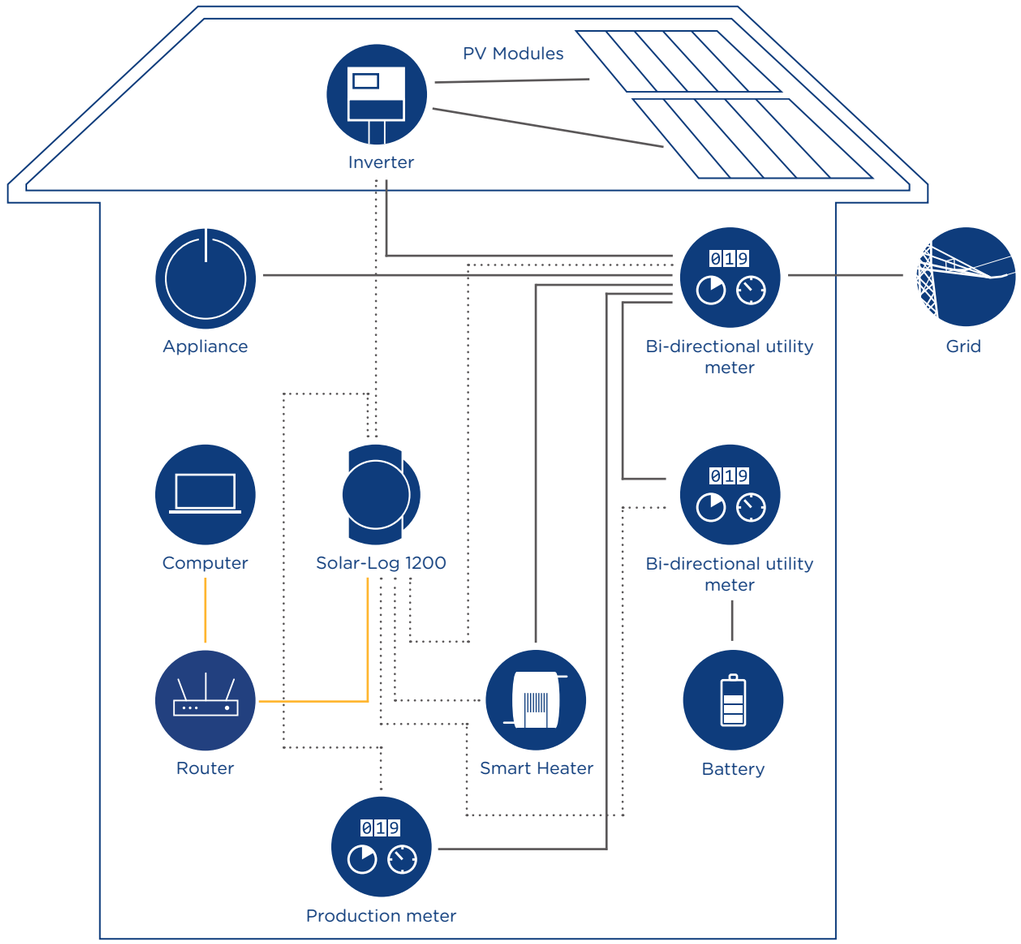
Battery storage systems are the ideal solution to store self-produced power from a PV plant for self-consumption. Consequently, these systems play an essential role in optimizing the consumption of self-produced power.

Visualization of self-consumption

The battery storage acts either as a generator or a power-consuming appliance in the balance view and is displayed accordingly.

Daily overview: The battery system is charged when there is a surplus of PV power at the plant (light green) and is used when there is not enough PV power to cover consumption needs, preventing the need to purchase electricity from the grid.

Schematic Setup of a Smart Energy Installation



This diagram of the storage system may differ in some points, depending on the particular manufacturer.

Our Partners

Fronius KYOCERA Q CELLS Phono Solar sonnen VARTA Storage

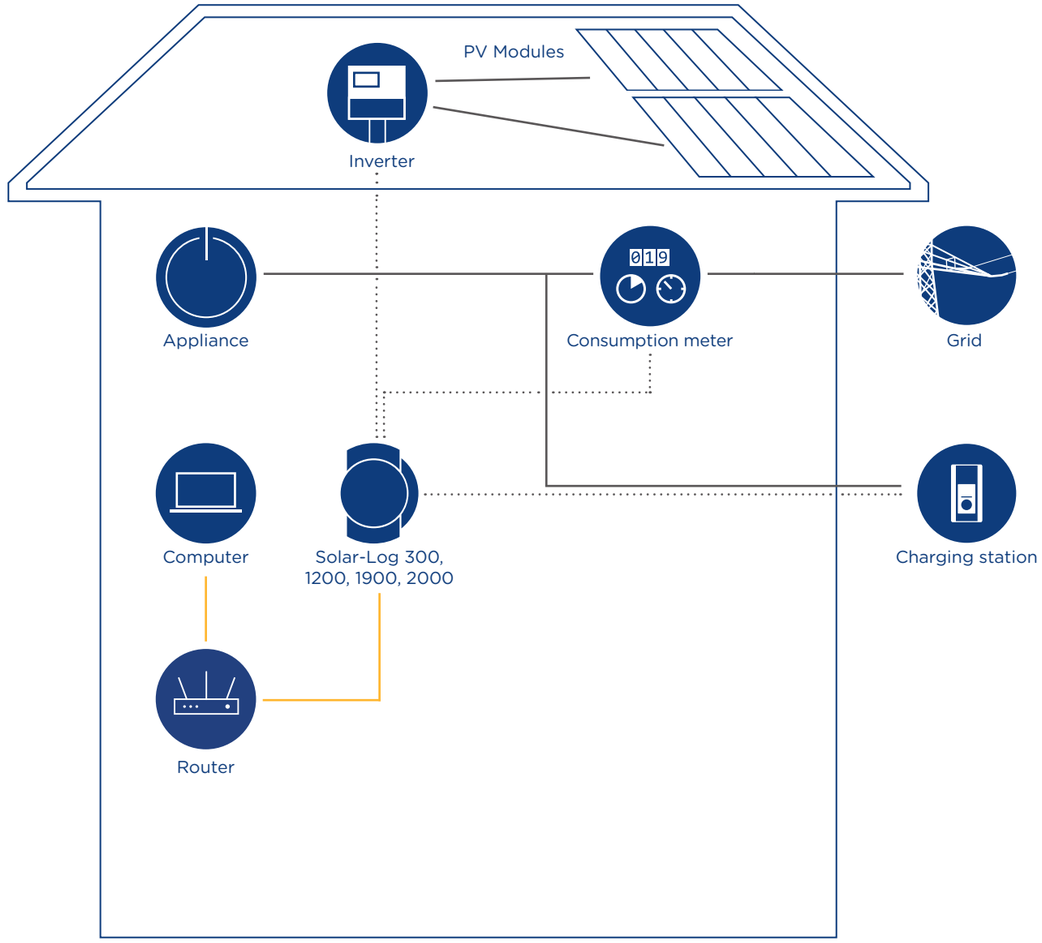
Charging Station E-Mobility

Efficiency during Charging: Solar-Log™ in Combination with Power Charging Stations

Through the combination of a photovoltaic plant, a Solar-Log™ device, and a charging station, electromobility becomes even more efficient. The interaction of these three components ensures that electric cars are always charged with the maximum amount of available power from the photovoltaic plant. It is cost-effective and environmentally friendly at the same time. Even when there is not enough power available from a photovoltaic plant, the Solar-Log™ “Surplus/Minimum Charge” function can be set to keep the charging process running. When additional PV surplus power is available, your electric car will be charged beyond the defined minimum charge level. The “Surplus/Minimum Charge” function offers the combination of reliable driving distances and cost-efficient charging.

Advantages for Plant Owners

- The charge data is recorded and concisely visualized with the Solar-Log WEB Enerest™ portal.
- The interaction of the PV plant, Solar-Log™ and charging station ensures that electric cars are always charged with the maximum amount of available power from the photovoltaic plant – cost effective and environmentally friendly at the same time.



Our Partner

KEBA
Automation by innovation.

Effective Use of Heat Pumps

The combination of photovoltaic and heat pumps offers another potential way to optimize the consumption of self-produced power. The basic idea is to have the heat pump use the surplus PV power. Depending on how the heat pump is connected to the Solar-Log™, a release signal or the surplus is reported to the heat pump.

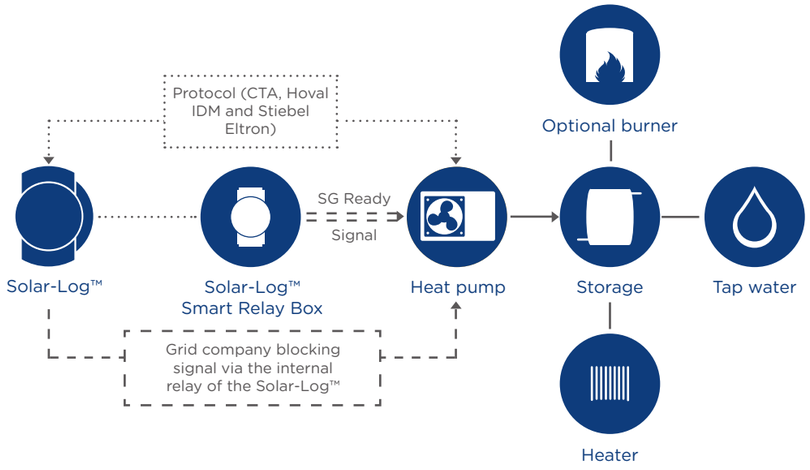
Additional Benefits for Plant Owners:

- The intelligent control of the heat pump makes it possible to optimize the use of surplus power.
- A building can be used as a heat buffer storage.
- Energy efficient buildings (i.e. energy-efficient building shell) are especially well suited for this.
- The target temperature in the rooms is then maintained by the IDM heat pumps depending on the selected comfort mode.
- Modern heat-pumps operate completely emission-free at their installation site: No soot, no smoke and no wood dust pollute the air.

The Solar-Log™ Smart Relay Box is well suited to connect a heat pump to the Solar-Log™ that does not have an integrated protocol. Here, both relays for the SG Ready input can be triggered depending on the amount of surplus power.

Heat pumps from IDM and Stiebel-Eltron can even be connected to the Solar-Log™ energy management system via their protocol. For heat pumps with a blocking contact, Solar-Log™ Smart Relay Box and the internal relays of the Solar-Log 1200 and 2000 are also well suited for the control via contacts.

The protocol connection to the IDM heat pumps additionally includes transferring the yield forecast data. Based on the weather forecast, the Solar-Log WEB Enerest™ calculates the specific yield forecast for the next three days. IDM heat pumps factor in this data for the next 12 hours, allowing for efficient heat pump operation.



Our Partners

EGO Smart Heater

Intelligent Heating with PV Power

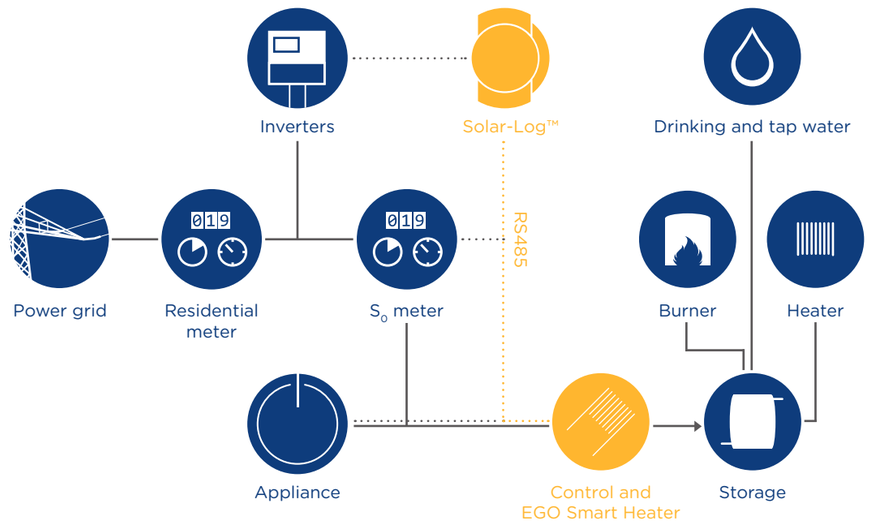
Thanks to the combination of the Solar-Log™ and the EGO Smart Heater, surplus PV power can be used to heat water which can also be used later when stored in combination storage tanks. The heating elements are activated to operate at different levels from 0 to 3500 watts depending on the amount of surplus power. This combination increases the degree of self-sufficiency, especially in the summer and in transitional periods when there is a high amount of surplus PV power. During this time, no fossil fuels are needed for the conventional heating of warm water. The minimal temperature for the hot water heater can be defined in the device configuration. This will ensure that there is always enough warm water available regardless of the amount of surplus PV power. The EGO Smart Heater can be conveniently configured from the Solar-Log™ web interface.

Even More Advantages for Plant Owners:

- Easy and quick installation for new and existing plants.
- Universally applicable in hot water storage tanks with and without corrosion protection thanks to its insulated construction.
- Frost protection function: when water temperature drops below 4°C, the EGO Smart Heater starts to heat the water at 500 watts to prevent the boiler from freezing (breakdown of the primary heater), regardless of the PV yield and settings.
- The EGO Smart Heater is a compact device – no additional connections beyond the power connection and data connection to the Solar-Log™ are needed.
- Once the target water temperature has been achieved, the PV power can be used by other appliances.
- Up to a total of six EGO Smart Heater Ethernet devices can operate together.

Solar-Log™ is compatible with my-PV AC ELWA®.

Technical Data	EGO Smart Heater Ethernet
Compatible with Solar-Log™ series:	Solar-Log$^{200, 500, 1000}$ and Solar-Log 300, 1200, 1900 and 2000 with firmware version 3.2.0 or higher (a free RS485 connection is also required)
Ambient temperature	0°C to +40°C
Heating capacity	Adjustable operating level from 0 - 3500 watts in 500-watt steps
Heating temperature	Adjustable to a maximum of 80° C
Minimal and maximum temperature	Configurable
Power frequency	50 Hz
Protection level	IP54 DIN EN 60529
Environmental type	For indoor use only
Maximum operating altitude	2,000 meters (VDE regulations) above sea level
Input voltage	1N/PE AC 230 V
Protection class	I
Overvoltage category	II
Power supply	230 V / 16 A
Self-consumption on standby	ca. 1 W
Switching voltage	Maximum 265 V AC
Power connection	Separate power cables with current ratings of more than 16A are required for the screw-in heating elements
Connection	Ethernet
Mounting threads	1.5 inch B / 38.1 mm
Width across flats	60 mm
Material / material quality	Stainless steel / 1.4301
Unheated length	95 mm
Immersion depth	450 mm
Safety standards	DIN EN 60335-1 - Safety of Household and Similar Electrical Appliances DIN EN 60730-1/9 - Thermostats
Protective temperature limit	Device installed internally (according to DIN EN 60730-1)
Warranty	2 years
Article number	256014



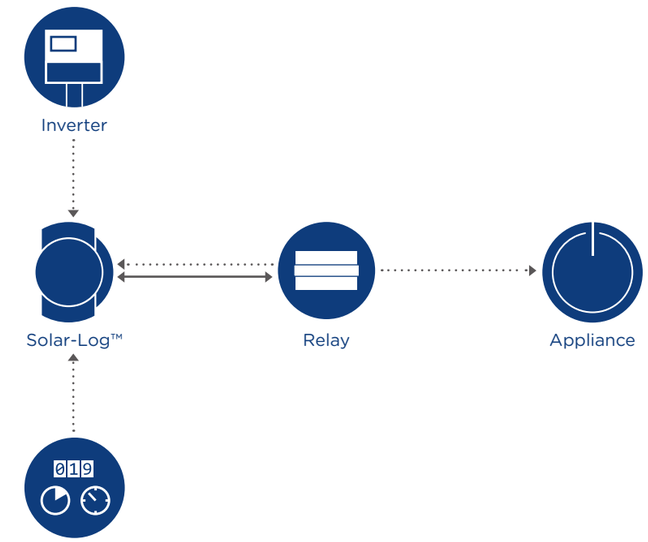
Smart Energy Logics and Devices

The Solar-Log™ specifically controls many different electrical appliances such as pumps, heating elements, air-conditioning systems and charging devices. With the help of Smart Energy Logics, various conditions can be defined for when an additional load is to be activated, for example at a certain surplus level. Different devices can be used to physically switch on the appliances. Depending on the specific purpose, the Solar-Log™ potential-free internal relay, a Smart Plug, the Smart Relay Box or the Smart Relay Station can be used. An appliance can be controlled via the internal relay of the Solar-Log 1200, 1900 and 2000. The relay can switch devices with a maximum voltage of 24 volts at a current up to 2 amps. The Smart Relay Box provides eight additional relays for the Solar-Log™ to use. Up to three appliances can be switched on and off with the Smart Relay Station; additionally, the Relay Station records the consumption via an internal meter.

Solar-Log™ Smart Relay Box

- Equipped with 8 potential-free contacts, e.g. for heat pumps (SG Ready).
- Connected to the Solar-Log™ via RS485
- Well-suited in combination with load relays to control motors, pumps and ventilation and air-conditioning systems.
- Free RS485 connection required

Appliances with line voltage and maximum power consumption of 16 amps can be directly switched with an external power relay, the Solar-Log™ Smart Relay Station. In addition to the switching, this also records the consumption of the appliance that is switched on. For this reason, the Solar-Log™ Smart Relay Station can be used as a sub-consumer without any additional hardware.



Solar-Log™ Smart Relay Station

- Equipped with 3 relays to directly switch loads up to 16A/230V.
- Receives a response with the consumption values from each individual relay.
- Connected to the Solar-Log™ via Ethernet

Combined Heat and Power Generators (CHP)

Optimally Using the Produced Power

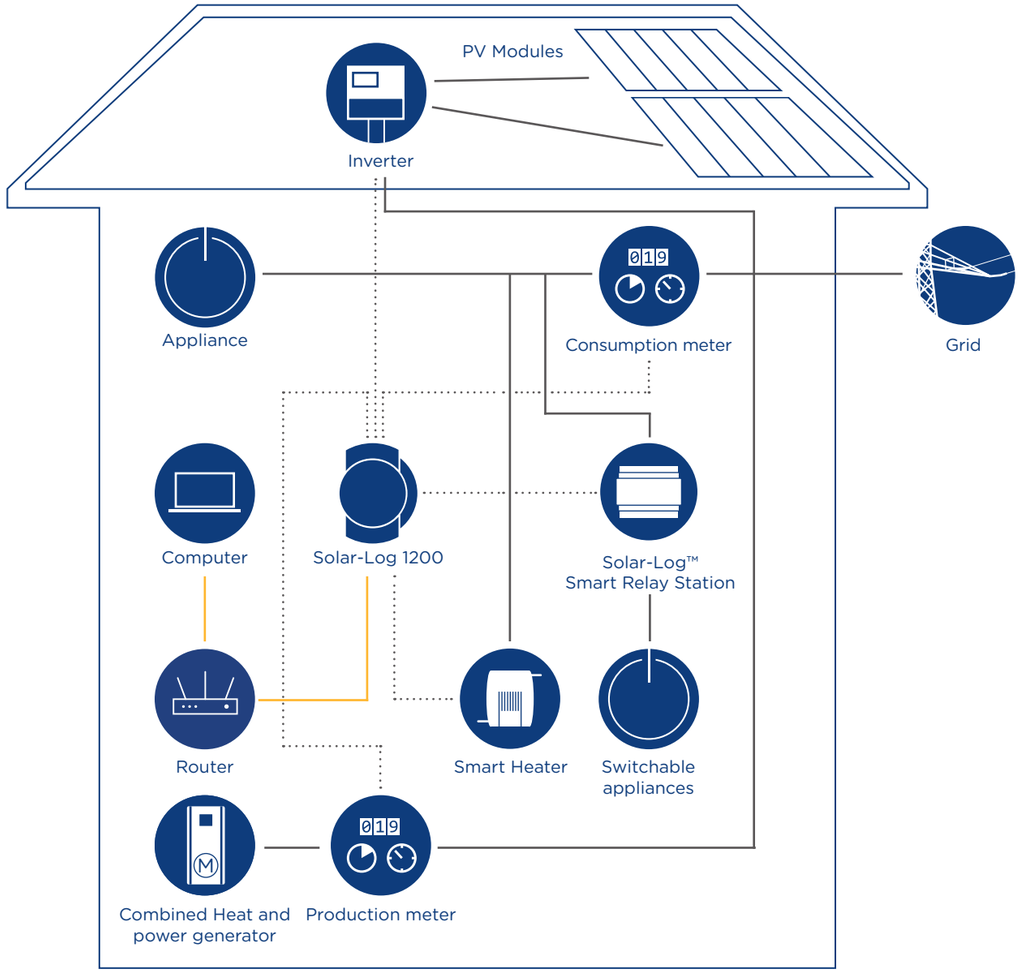
With the help of energy meters, the Solar-Log™ can record and visualize the production from a combined heat and power generator (CHP). Only two power meters need to be connected to the Solar-Log™. One of the meters records the current power output and the other one the consumption.

When there is a high heat demand, the consumption of power produced by combined heat and power generators (CHP) is optimized and the operating times are shortened in combination with intelligent electrical appliances such as the EGO Smart Heater. This allows unprofitable grid feed-in to be avoided and the Solar-Log™ can be used as a central monitoring and control element.

Daily Overview of Power Generator (CHP) and Heating Rod

Even More Advantages for Plant Owners

- Record and visualize the output generated from a combined heat and power generator (CHP) device and PV plants.
- Avoid unprofitable grid feed-in by using the surplus to operate intelligent appliances.
- Align production and consumption times.
- The combined heat and power generator (CHP) device is turned on depending on the current power consumption situation and makes more efficient utilization of power possible, especially in the summer months.

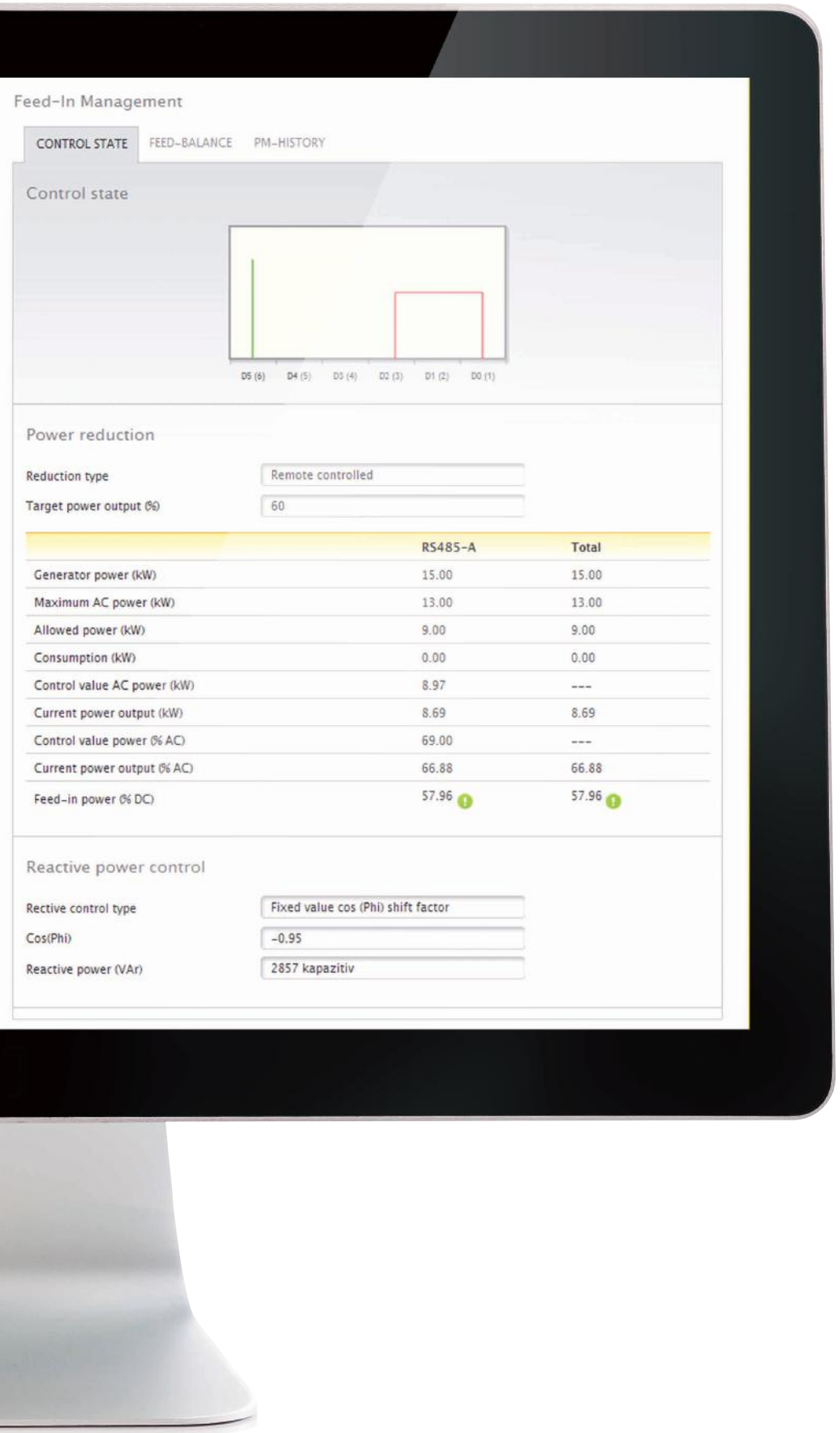


Required Hardware

- 1 x Solar-Log 300, 1200, 1900 or 2000
- 2 x 3-phase meter RS485 or S_0
- 1 x EGO Smart Heater

Optional

- Solar-Log™ Smart Relay Station or other networked smart plugs to activate appliances.



04

Feed-in Management

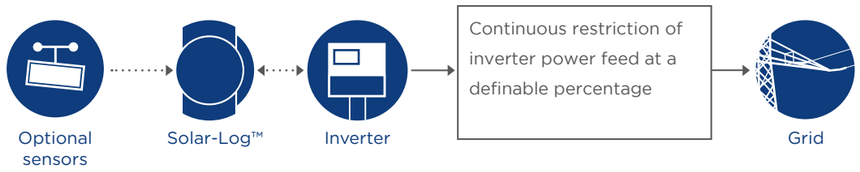
Individual Solutions for International Requirements

Due to the increasing number of decentralized, renewable energy production plants, the requirements for the international power grid have changed. Previously, power grids only provided for one-way power flows, from centralized power plants to consumers. Today, however, consumers have become “prosumers” (producer and consumer). This has made the main task of grid operators, maintaining grid stability, more complex. Solar-Log™ always provides the ideal technical solutions for the various international requirements from grid operators.

Feed-in Management

Individual Solutions for International Requirements

In the next few years, there will be new requirements for grid stability in all countries that have a certain amount of power produced from decentralized sources to stabilize the power grid on critical days with limited sunshine. The Solar-Log™ devices already cover the entire range of requirements for power management and provide a solution for every plant size.



Limited feed-in (x %)

A key function is to limit the feed into the grid. In Germany, plants with less than 30 kWp are required by law to have feed-in power limit of 70 % or to use remote control power limitations. This means that the Solar-Log™ records the consumption onsite and calculates this with the inverter production. Solar-Log™ ensures that the feed-in limit is not exceeded and that the amount self-consumption is maximized. The limit can be set to any percentage such as 50 % or 60 % or even to 0 % (only self-consumption, no feed-in).

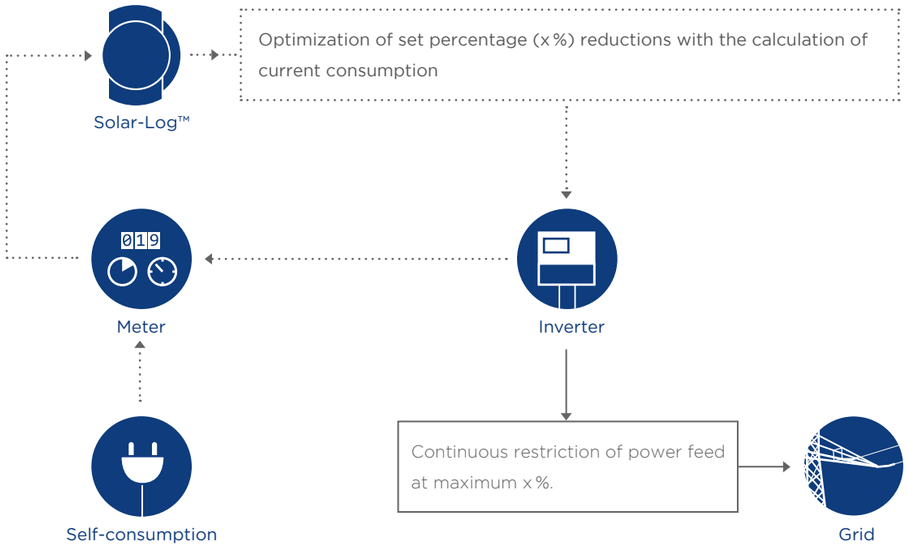
Reduction with the calculation of self-consumption

This function offers an innovative solution to minimize losses that result from percentage reductions. To carry out this function, only current consumption needs to be measured. The Solar-Log™ calculates the amount of consumption and the current inverter production. If the difference between the current production and consumption exceeds, for example, 70 % of the module's power output, the output from the inverters is reduced accordingly. This function can be also be used to define additional percentage reductions.

An additional external meter is needed to implement this function.

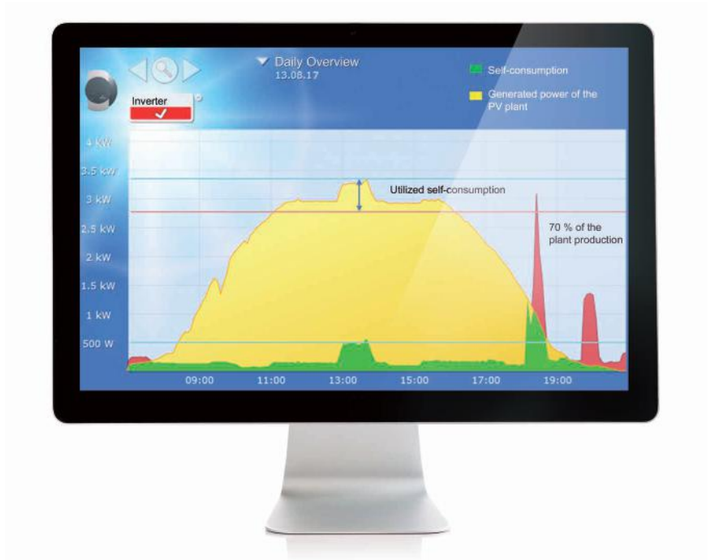
Zero feed-in without controllable appliances

The utilization of solar energy is increased when controllable appliances are activated.



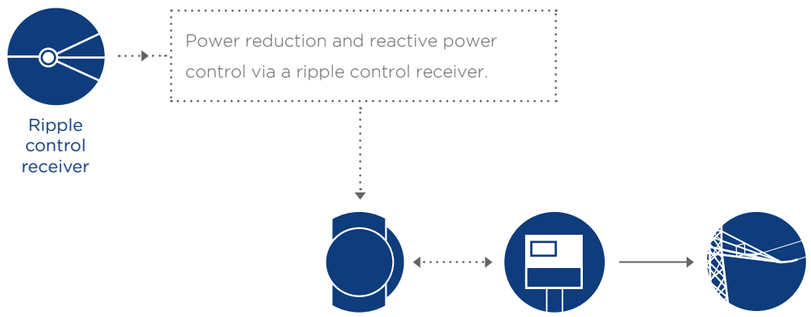
Example, see the following graphic:

A plant with 4 kWp may only feed 50 % into the grid and has to be limited to a maximum output of 2 kWp. If an appliance, such as a stove, that uses 0.5 kWp is turned on, the inverter could also convert 2.5 kWp into AC power. Only 2 kW is then delivered to the feeding point.



Simplified Feed-in Management

With simplified feed-in management, the signals to reduce active power are generally sent via a Ripple Control Receiver. The Solar-Log™ PM+ product line comes with an additional interface for potential-free contacts. Up to two ripple control receivers can be connected to this interface, one for power reduction and one for reactive power control.



Simple feed-in management can also implement the “remote controlled with the calculation of self-consumption” function. To carry out this function, the Solar-Log™ needs a special power meter to measure the current consumption.

Managing PV Plants in the Medium Voltage Network

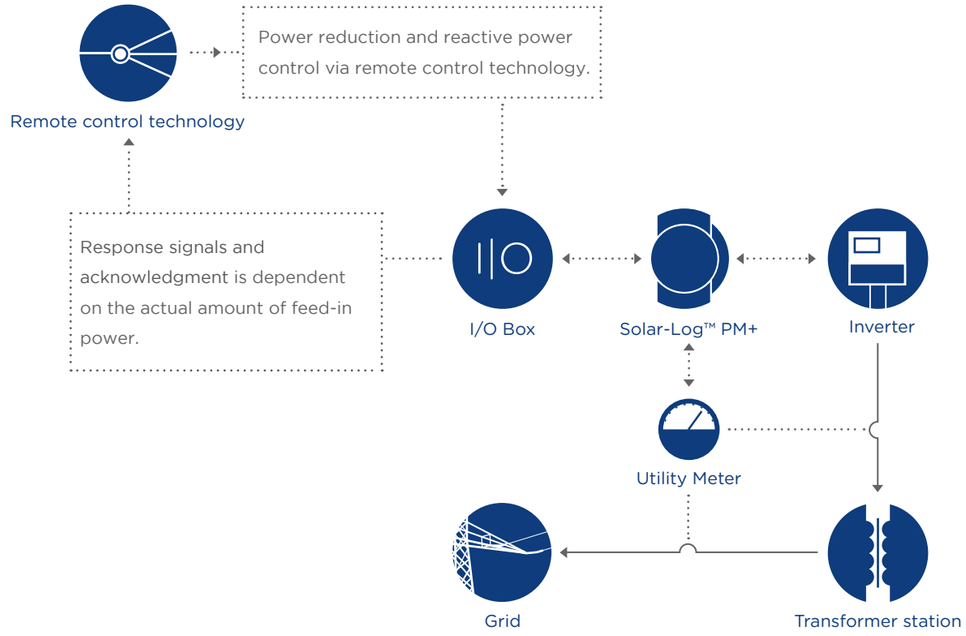
Feed-in Management

Large plants often have advanced requirements. In addition to the stipulations on controlling PV plants, the information on the actual amount of feed-in power may need to be provided. Communication with grid operators here is usually carried out with remote control technology such as telecontrol systems. This technology makes bi-directional communication possible. The signals are transmitted between the telecontrol system and Solar-Log 1900 PM+ and 2000 PM+ via I/O Box(es) with the PM Package. Depending on which value has to be transmitted to the grid operator, a measurement of transformer voltage and current with the Solar-Log™ Utility Meter is required.

Controlling active power and regulating reactive power represents a serious technical challenge. Grid operators rely on various concepts here. The Solar-Log™ Utility Meter is used to control voltage-dependent reactive power via the Q(U) function and reactive power at the feeding point. Other functions such as the fixed value cos phi shift factor or performance-related cos phi functions can be implemented without additional measurements.

Operator interface for installing PM profiles.

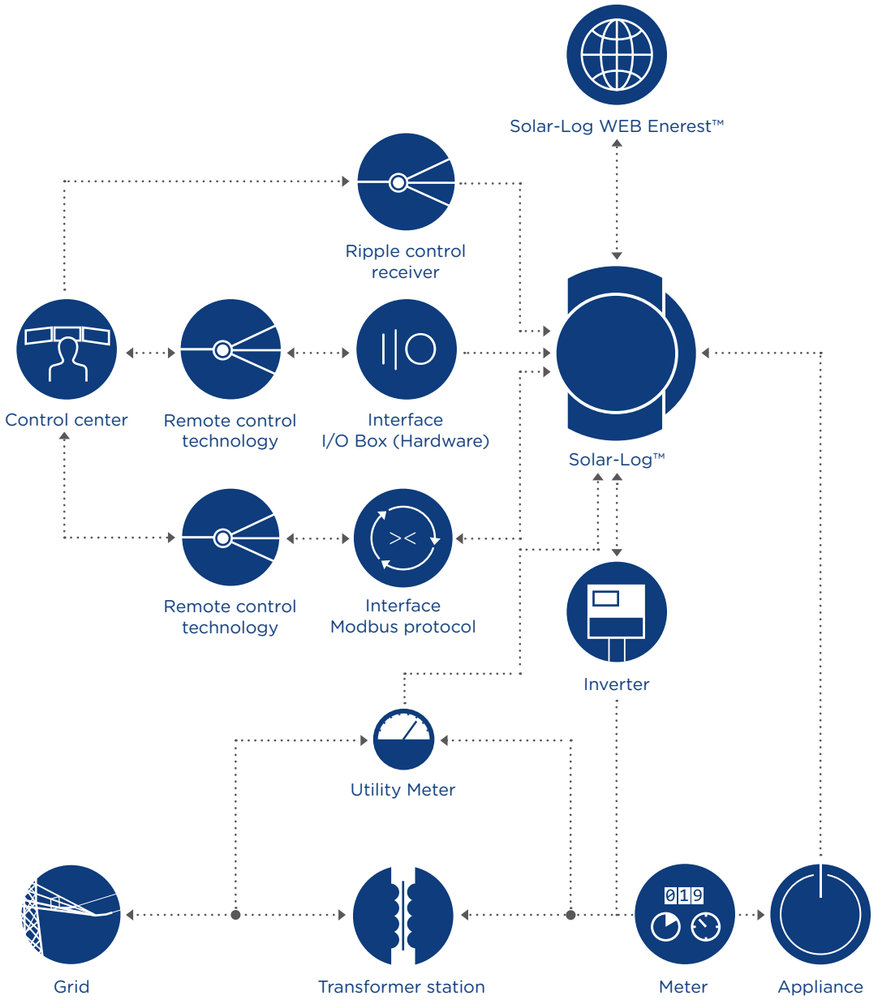
In contrast to simple feed-in management, a response signal with the actual amount of feed-in power is also required. That is why most grid operators deploy remote control technology with different command and response signals. The Solar-Log™ I/O Box can receive and send a wide range of signals from various grid operators. This function is only available with the Solar-Log 1900 PM+ and 2000 PM+. When used with the Solar-Log™ Utility Meter, measured values such as reactive power, voltage and currents are reported back.



Modbus TCP Powermanagement (PM) Interface

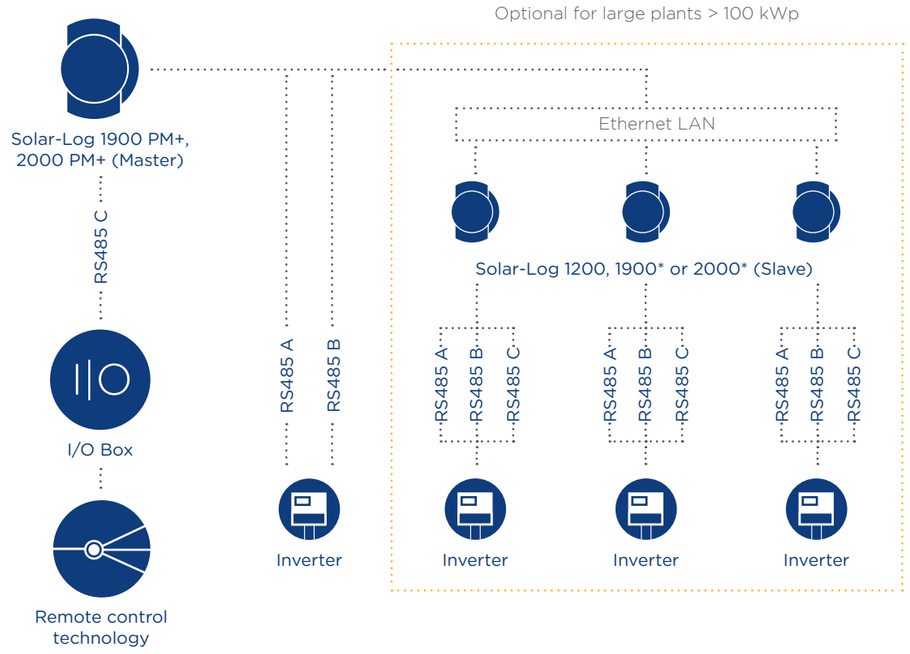
Complex grid operator requirements can be implemented by using telecontrol systems that are directly connected to the Solar-Log™ via the TCP-based Modbus protocol. With this set up, the command signals and response signals between the remote control technology and the Solar-Log 1900 PM+ and 2000 PM+ are relayed back and forth via the protocol without potential-free and analog interfaces. This direct connection with remote control technology can implement communication according to IEC 60870-C, 61850-5-101 and -104.

Several Ways to Transfer Commands and Responses Between the Solar-Log™ and Grid Control Center



Feed-in Management with Solar-Log™ Networks

The Solar-Log 1200, 1900 and 2000 are linked together with an Ethernet connection to implement feed-in management at larger plants. This linking over the network allows control signals from Ripple Control Receivers to be interchanged.



* RS485 C interface only available with the Solar-Log 1900 and 2000.

The grid operator's signals are received by the Solar-Log 1900 PM+ and 2000 PM+ (master) and distributed to the connected inverters via the Solar-Log 1200, 1900 or 2000 (slaves). The master can be connected to up to nine slaves in this setup. Linking the Solar-Log™ devices together over the network helps to implement complex requirements (several plant parts, feeding points and inverters from several manufacturers).

	Solar-Log™ Functions for Feed-in Management	Solar-Log 300, 1200, 1900 and 2000	Solar-Log 300 PM+ and 1200 PM+	Solar-Log 1900 PM+ and 2000 PM+
Active Power	Reduction to x percent with or without the calculation of self-consumption [1]	●	●	● [2]
	Remote controlled reduction with or without the calculation of self-consumption [1]	-	●	● [2]
Reactive Power	Fixed value cos phi shift factor	●	●	●
	Fixed reactive power in VAr	●	●	●
	Variable cos phi shift factor over characteristic curve P/Pn	●	●	●
	Remote controlled fixed value cos phi shift factor	-	●	●
	Variable reactive power via characteristic curve Q(U) (only with Utility Meter voltage measurement)	-	●	●
	Remote controlled switch between fixed and characteristic curve P/Pn	-	-	●
	Remote controlled switch between fixed and characteristic curve Q(U)	-	-	●
	Controlled shift factor at the feeding point (only with Utility Meter voltage measurement)	-	-	●
Interfaces	Connection for two Ripple Control Receivers	-	●	●
	PM Package (Powermanagement) Flexible interface for remote control technology Inputs: maximum 4 analog and 9 digital Outputs: maximum 3 analog and 10 digital	-	-	●
	Modbus TCP interface for a direct connection to remote control technology	-	-	●
	Solar-Log™ Master-Slave network	-	● [3]	●
	Modbus TCP DPM	-	-	●

1) Only with additional meter.
2) Allocation of self-consumption is not possible when using PM Packages or Modbus TCP interface at the same time.
3) Only possible with Solar-Log 1200 PM+

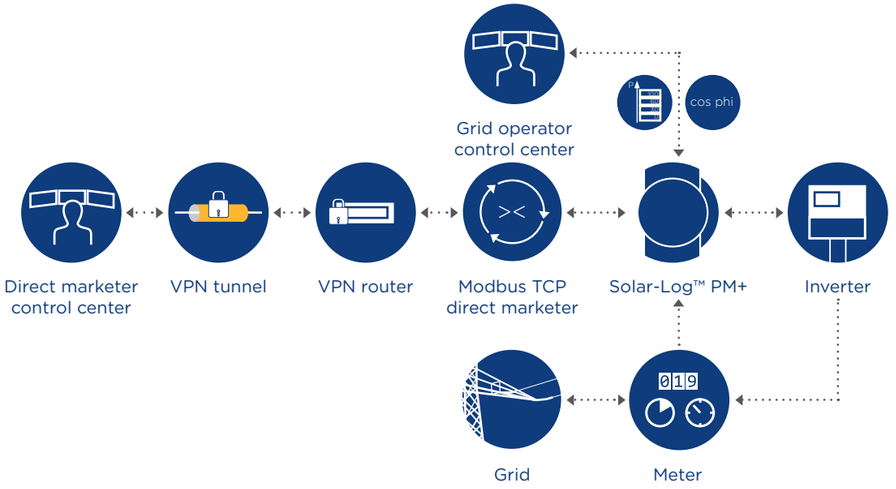
Direct Marketing

Modbus TCP DPM

Since the beginning of 2016 in Germany, PV plants with an installed output of more than 100 kWp are required to participate in direct marketing. Solare Datensysteme GmbH offers ready-to-connect packages for all direct marketers to connect to virtual power plants.

Advantages of Solar-Log™ direct marketing solutions (DPM)

- The direct marketing solution consists of a Solar-Log™ PM+, VPN router and Modbus TCP DPM interface for communication to the direct marketing control center.
- Individual VPN router configurations, including technical support for the initial installation, function tests and ready messages, are included as part of the Solar-Log™ DPM solution.
- A license which is available for different output classes needs to be purchased to use the direct marketing interface.
- The control commands from the grid operator/direct marketer can be evaluated with the Solar-Log™ PM+ and in the Solar-Log WEB Enererst™ portal. The online portal offers additional reporting functions.



The Solar-Log™ PM+ receives the command signals from the direct marketer via the Modbus TCP interface by Ethernet.

05

Components and Options for Solar-Log™

Challenging requirements require sophisticated products

The Solar-Log™ devices can be extended with different products. The components offer extra protection, new functions and extend the performance of Solar-Log™ devices. From overvoltage protection to connecting diverse inverters or sensors, we can meet all of your needs. Installers, dealers and service providers can offer their customers complete solutions with high-quality products.

Networked Smart Plugs

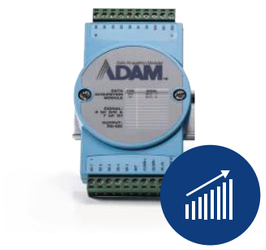
Optimizing the Consumption of Self-Produced Power

A consumption meter is required to visualize the consumption of self-produced power. Remote controlled switches can be used for additional automated optimization. External electrical appliances can be control by commands from the Solar-Log 300, 1200, 1900 and 2000 via smart plugs. Up to a total of 10 different switching groups can be controlled.

Technical data	Belkin WeMo Insight Switch
Maximum load	3680 watts
Maximum current	16 A
Control	WLAN 2.4 Ghz
Status	On / Off
Function	Switch / Metering Consumption Recording
Connector	B (Nema 5-15, 2 pole), C (Europlug), F (CEE 7/4 Schuko plug), I (AS/NZS 3112)
Dimensions (w x h x d) in mm, weight	130 x 160 x 100
Warranty	2 years
Article number	255841

Solar-Log™ Smart Relay Box

The Solar-Log™ Smart Relay Box comes with 8 relay outputs. The outputs allow devices to be switched on directly or to be adjusted in different levels according to the PV production. Only one free RS485 connection needs to be defined.



Technical data	
Outputs	8 relays (30 V / 1 A to 230 V / 250 mA), 4 of which are alternating relays
Rated operating voltage	10 - 24 V
Warranty	1 year
Article number	255656

Solar-Log™ Smart Relay Station

The potential-free relays of the Solar-Log™ Smart Relay Station are suited for the control of motors and pumps as well as ventilation, drying and air-conditioning systems. The Solar-Log™ Smart Relay Station can directly switch up to three appliances on and off; it also records the consumption from these appliances via its internal meter. This allows the power consumption to be presented in the daily curve and to improve the precision of the Smart Energy control.

The communication between the Solar-Log™ Smart Relay Station and the Solar-Log™ takes places via a network interface RJ45 (TCP/IP).

Technical data	3 x 3.5 kW
Maximum load	3 x 3680 W
Relay outputs	3 individual potential-free switch outputs
Switching voltage	230 V AC, 16 A / 24 V DC
Consumption measurement	Per switch channel
Power supply	12 V power supply
Control	TCP/IP, button on the device
Warranty	2 years
Article number	255755

Power Meters

Power Measurements

Depending on their use, different operating modes can be configured in the Solar-Log™ for the meters. It is possible to record production output (generator), consumption (consumption or bi-directional meter*) and sub-consumer values such as battery charge levels. Due to the operating modes, the compatible meters can be used for a wide range of possible applications.

* Bi-directional recording of the consumption with a single phase Iskra energy meter or Solar-Log™ PRO1 is not possible.

Technical data	Solar-Log™ PRO380-Mod three-phase current meter, MID (calibrated), RS485	Solar-Log™ PRO380-Mod-CT, Transformer-connected meter, RS485, three-phase	Solar-Log™ PRO1 single-phase energy meter, 1-phase, MID (calibrated), RS485	Iskra uncalibrated, 1-phase, S_0
Connections	External tariff switching / 4-pin S_0 Out for A+, A- / 2-pin Modbus interface	2 x S_0 (forward, reverse) RS485 (Modbus) External tariff switching	2-pin S_0-Out 2-pin Modbus interface	6-pin S_0-In / Out connector / maximum cable length 10 m
Direct connection	100 A	6 A (Transformer input)	45 A	80 A
Interfaces	S_0 / RS485 maximum 32 units	S_0 / RS485 maximum 32 units	S_0 / RS485 maximum 32 units	S_0
Voltage U_n	3 x 230 / 400V AC (-15% - +10%)	3 x 230 / 400 V AC (100 / 173V - 270 / 468V)	230 V AC	230 V -20 % – +15 %
Measuring range	20 mA - 100 A	6 mA - 5 A	20 mA - 45 A	4 mA – 80 A
Self-consumption	< 10 VA - < 2 W per phase	≤ 2 W per phase - ≤ 10 VA per phase	< 10 VA - < 2 W per phase	< 8 VA
Start-up current	20 mA	3 mA	20 mA	20 mA
Power frequency	50 Hz	50 Hz	50 Hz	50 Hz / 60 Hz
Dimensions (w x h x d) in mm	70 x 140 x 63	70 x 140 x 63	17,5 x 117 x 63	36.5 x 100.5 x 65
Wire diameter	25 mm²	Maximum 10 mm² or 2,5 mm² (Additional terminals)	Maximum 10 mm² or 2,5 mm² (Additional terminals)	2.5 - 10 mm²
Protection level	IP51	IP51	IP51	IP20
LCD Display	6 + 2 Digits	5 + 3 Digits	4 + 2 Digits	2 x 7-Digit-LCD
S_0 pulse	1000 Imp / kWh	1000 Imp / kWh, 30 ms	2 000 Imp/kWh, RA = 0,5 Wh/Imp	1000 p / kWh
Misc.	Blue illuminated display, one additional resettable counter, display for active and reactive power in two energy flow directions, Display: I, U, P, S, F, cos phi	Blue illuminated display, one additional resettable counter, display for active and reactive power in two energy flow directions, Display: I, U, P, S, F, cos phi	Blue illuminated display, one additional resettable counter, display for active and reactive power in two energy flow directions, Display: I, U, P, S, F, cos phi	2 counters: 1 x total, 1 x resettable
Warranty	2 years	2 years	2 year	1 year
Article number	255913	256059	255914	255346

Article number

Solar-Log™ PRO380-CT 500A Measuring transformer for conductor line 30 x 10 mm or compact round cable up to 26 mm Class 1, uncalibrated, secondary current 5A	256067
Solar-Log™ PRO380-CT 250A Measuring transformer for conductor line 30 x 10 mm or compact round cable up to 26 mm Class 1, uncalibrated, secondary current 5A	256068
Solar-Log™ PRO380-CT 100A Measuring transformer for conductor line 30 x 10 mm or compact round cable up to 26 mm Class 1, uncalibrated, secondary current 5A	256069
Solar-Log™ PRO380-CT 500A Cable split core current transformer Class 1, round cable up to 32 mm, uncalibrated, small size model, connecting cable 2.5 m included, secondary current 1A	256070
Solar-Log™ PRO380-CT 250A Cable split core current transformer Class 3, round cable up to 18 mm, uncalibrated, small size model, connecting cable 2.5 m included, secondary current 1A	256071
Solar-Log™ PRO380-CT 100A Cable split core current transformer Class 3, round cable up to 18 mm, uncalibrated, small size model, connecting cable 2.5 m included, secondary current 1A	256072
Solar-Log™ PRO380-CT 500A, Class 0.5, Measuring transformerfor conductor line 30 x 10 mm or compact round cable up to 26 mm, Declaration of Conformity, approval for billing, secondary current 5A	256073
Solar-Log™ PRO380-CT 250A, Class 0.5, Measuring transformer for conductor line 30 x 10 mm or compact round cable up to 26 mm, Declaration of Conformity, approval for billing, secondary current 5A	256074
Solar-Log™ PRO380-CT 100A, Class 0.5, Measuring transformer for conductor line 30 x 10 mm or compact round cable up to 26 mm, Declaration of Conformity, approval for billing, secondary current 5A	256075

Measuring transformer

Cable split core current transformer

Our Partner

INGENIEURBÜRO
Mencke & Tegtmeyer GmbH

PowerLine Package

Alternative to the Network Cable

The PowerLine Package is a problem-free alternative for transmitting data between the Solar-Log™ and the PC or the router without having to run extra cable when WiFi reception is poor or an Ethernet connection is problematic. An integrated power socket on the front panel prevents the power connection from being lost. The high bandwidth is achieved partially due to range+ Technology, which uses all three electric circuits for data transfers.

Technical data

Transmission speed	Up to 1,200 Mbit/s
Integrated electrical socket	Type F (CEE 7/4) • F (CEE 7/4) • (DE, NL, ES, PT, AT, SE, FI, NO, GR, HU)
Encryption	128 Bit AES
Device connection	1 x Ethernet RJ45
Power consumption	Maximum W/A: 4.2, typical W/A: 3.0, Stand-by W/A: 0.7
Output power for integrated bus	16 A
Power supply	No additional external power supply required, 196 - 250 V AC / 50 HZ
Temperature (storage, operating)	-25° C to 70° C, 0° C to 40° C
Ambient conditions	10 – 90 % humidity (non-condensing)
Range	Powerline 400 m
Registrations	CE compliant: EU + (NO), CE Class B (EU, CH, NO)
Dimensions (w x h x d) in mm	130 x 66 x 42 (without connector) 188.5 x 231 x 78.5 (single adapter) 188.5 x 231 x 78.5 (starter kit)
Gigabit / Number of ports / Auto-MDI-X	1 x Gigabit-LAN-Port with Auto-MDI-X Function for the connection of any network device via patch cable. It uses the grounding wire in addition to the phase and neutral line for the best possible data rates and range.
Mains filter	A special mains filter suppresses interfering signals.
Phase coupling	With automatic phase coupling, dLAN® is available in the entire builduing - also without phase coupling.
Safety standards	128-bit AES encryption
Warranty	3 years
Article number	256133

Solar-Log™ PM Package

Grid operators employ a wide range of signals that are required for feed-in management and that are used to send commands and the response signals. The Solar-Log™ PM Package is a single system to implement the various requirements with minimum effort. The PM Package consists of I/O Boxes and PM profiles. The I/O Boxes are a flexible gateway between remote control technology and the Solar-Log 1900 PM+ and 2000 PM+. The input and output signals from the I/O Boxes are defined by the PM profile according to the grid operator requirement.

Technical data

Inputs	Up to 4 analog and up to 9 digital
Outputs	Up to 3 analog and up to 10 digital
Rated operating voltage	10 - 24 VDC
Article number	On request*

*The operator specific PM+ profile needs to be ordered.

Solar-Log™ Utility Meter

The Solar-Log™ Utility Meter is a universal metering device. It can be integrated with both low and medium-voltage networks (via a transformer). In addition to voltage-dependent reactive power control Q(U), it is also used for reactive power control at the feeding point and to record the data that is needed to send signals to the grid operator. It is also suited as a consumption meter for heavy loads.

Technical data

Voltage measurement	17 V - 520 V L-L, 4 inputs
Current measurement	Maximum 5 A
Interface	RS485
Rated operating voltage	135 - 340 VDC voltage supply
Mounting	Top hat rails, 95 - 240 VAC / 135 - 340 VDC voltage supply
Warranty	1 year
Article number	255385

WiFi Kit

Wireless Internet

TP-Link Wireless Kit

The WiFi Kit allows the Solar-Log™ to connect to the Internet via an existing WiFi infrastructure. Its flexible use makes an optimum placement possible, independent of the location of the Solar-Log™. The kit provides speeds up to 750 MBit/s and communications with the new WLAN AC standard.

NETGEAR® Wireless Kit

The universal WiFi range extender from NETGEAR® improves the coverage of every WiFi router. The NETGEAR® wireless kit is distinguished by its dynamic LED display that helps locate the best position for optimal WiFi coverage. Thanks to its integrated socket, the wall power socket can continue to be used as usual.

Technical data	TP-Link	NETGEAR®
Communication standards	IEEE 802.11b/g/n, IEEE 802.11ac	IEEE 802.11 b/g/n
Frequency	2,4 GHz	2,4 GHz and 5 GHz
Antenna	Internal	External
Security / encryption	WPA/WPA2-PSK, 64/128-bit WEP	WPA/WPA2-PSK, WEP
Certifications	CE, FCC, RoHS	CE
Dimensions (w x h x d) in mm	110 x 65,8 x 75,22	114 x 55 x 22,5
Socket type	Europlug type C (CEE 7/16), EU, UK	Schuko type E+F (CEE 7/7), EU
Operating temperature	0°C - 40°C	0°C - 40°C
Device Ethernet connection	10/100 Mbps Ethernet Port (RJ45)	10/100 Mbps (RJ45)
Integrated power socket	-	Schuko type E+F (CEE 7/7), maximum power 16 A
Warranty	3 years	2 years
Article number	256012	256013

Sensor Box Professional and Professional Plus

Irradiation Sensor

Sensors help to record the deviations between the possible and the actual power production and provide important key figures in regard to the quality of the entire PV plant. An error message is generated when there is a deviation from the reference value and its current production.

Sensor Box Professional Plus

The internal cell temperature sensor allows the temperature coefficient of the modules to be included when calculating the reference values. At larger plants, up to nine Sensor Boxes Professional and Professional Plus can be connected to a Solar-Log 250, 300, 1200, 1900 and 2000. It is possible to use the Sensor Boxes with other RS485 components on the same bus.

Sensor Box Professional

Additionally, the Sensor Box Professional Plus can be expanded with ambient temperature sensors and wind sensors.

Technical data	Sensor Box Professional	Sensor Box Professional Plus
Solar cell, laminated inside glass	Mono crystalline silicon (5 cm x 3.3 cm)	
Dimensions (w x h x d) in mm, weight	155 x 85 x 40; approx. 360 g	
Housing	Powder-coated aluminum	
Protection mode	IP65	
Operating temperature	-35 °C to +80 °C	
Power supply	Via RS485 data cable from Solar-Log™, No additional power supply required	
Supply current	Typical 80 mA	
Communication port	RS485	
Protocol	Solar-Log™, 9600 Baud, 8N1	
Measurement uncertainty	Radiation strength: 5 W/m² ± 2,5 % of the measured value (0 W/m2 to 1400 W/m²) Cell-temperature: ± 1K (-40 °C to +85 °C)	
Installation	Same orientation and pitch as the PV generator	
Connection cable	4 pole, 3 m (10 feet), weather and UV resistant (LiYC11Y (4 x 0,14) expandable up to 50 m (0,14 mm²)	
Conformity	CE in accordance with DIN EN-61000-6-1:2007 and DIN EN-61000-6-3:2007	
Wind sensor	-	●
Ambient temperature sensor	-	●
Warranty	2 years	
Article number	255896	220060

Sensor Box Professional Plus Accessories

Ambient Temperature and Wind Sensors

The optional ambient temperature sensor (PT1000) delivers additional information about power generation. One problem that could arise and contribute to decreased yields is that the combination of cold temperatures and sunshine causes a buildup of ice. Such problems are easily detected when a sensor is being used. In addition to this, wind speeds can be tracked with a wind sensor and identified much better as possible causes for breakdowns, power reductions or power losses.

Article number

Wind sensor for connection to the Sensor Box Professional Plus, including a 5 m connection cable	220061
Ambient temperature sensor for connection to the Sensor Box Professional Plus, including a 3 m connection cable	220062

Overview of all of the String Connection Boxes (SCB) Supported by Solar-Log™ Devices

Solar-Log™ devices support SCBs from various manufacturers. Please refer to the component database for details on the supported SCBs and their manufacturers.

Article number

SCB Software License for Solar-Log WEB Enerest™ Connection	255380

Weather Station with a Pyranometer

Precise Measurements of Irradiance

The Weather Station with integrated CMP3 pyranometer provides information on air pressure, wind direction, wind strength, humidity and the local solar irradiation. The local measured values give information on how weather influences the PV plant's output. This data is available in the Solar-Log WEB Enerest™ XL portal.

Measurement	Measuring Range	Measuring Method
Pyranometer	1,400 W/m²; spectral range (50 %): 300 – 2800 mm	Kipp & Zonen CMP3
Ambient temperature	-50 °C – +60 °C	NTC
Humidity, air pressure	0 – 100 %, 300 – 1,200 hPa	Capacitive, MEMS capacitive
Wind direction, wind speed	0 – 359.9 °, 0 – 75 m/s	Ultrasound, Ultrasound

Technical data

Power supply	24 Vdc +/- 10 %
Power consumption	20 VA at 24 V
Connection, protection class	RS485, IP66
Dimensions in mm	Diameter: 150, Height: 332, Weight: 1.5 kg
Warranty	2 years
Article number	On request
Compatible pyranometer types	WS 301 UMB, WS 501 UMB

Our Partner

Special PiggyBack (RS485)

Communication Between SMA Inverter and Solar-Log™

The special PiggyBack (RS485) is an inexpensive alternative to the standard SMA PiggyBack (RS485). It can only be used with the Solar-Log™ and requires 4-pin wiring. The device is supplied with power from the Solar-Log™ unit and therefore needs to have the proper connecting cable with a sufficient wire diameter and length. It is suitable for use with all SMA inverters, unless a data module, Quick Module or Speedwire* is being used. Please refer to the inverter manufacturer's manual for additional information. The interface card is to be installed by qualified personnel only. Important Notice: Solare Datensysteme GmbH is not liable for damage arising from connecting the PiggyBack to the inverter.

Article number

PiggyBack – compatible with SMA inverters	Special PiggyBack (RS485) for SMA inverter – only for Solar-Log™ systems (not compatible if a Data Module or a Quick Module is required)	220020
	Data Module SMA (RS485 SB3000 / SB4000 / 5000TL-20 (Next Generation)	220053
Fronius and identical inverter designs	ComCard Retrofit Fronius and identical designs	220022

*In many countries, the designation "Speedwire" is a registered trademark of SMA Solar Technology AG.

Overvoltage Protection

Greater Security Thanks to Optimal Protection

The Solar-Log™ overvoltage conductor is a two-stage protective circuit with a gas-filled surge arrester as its coarse protection element. The precision protection consists of suppressor diodes. This maintenance-free conductor is used to protect data and signal lines. This device protection has been specially developed for retrofitting the RS485/422 interface of the Solar-Log™. It is easy to install in just a few quick steps. Failures due to power surges are minimized. Please note that it is not possible to have the overvoltage protection with the Solar-Log 1900 and 2000 for the RS485 C interfaces. It is recommended to test the surge arrester after every lightening season or from time to time. Please contact Solar-Log™ support for more information.

Technical data	Solar-Log 250 and 300	Solar-Log 1200, 1900 and 2000
Nominal operating voltage	5 V	
Maximum operating voltage	6 V_{DC}; 4,25 V_{AC}	
Maximum operating current	500 mA	
Protection level data line ground	<= 25 V	
Protection level data line GND	<= 8,5 V	
Fused interfaces	1 x (RS485/422)	2 x (RS485 A + RS485/422 B)
Dimensions (w x h x d) in mm	52 x 88 x 14	
Warranty	1 year	
Article number	255602 Extended cover and overvoltage protection	255601 Extended cover and overvoltage protection

Solar-Log™ Installation Housing for Outdoor Use

Protection Against Dust and Moisture

The Solar-Log™ provides reliable protection to ensure safe operation under all weather conditions with protection against dust and moisture. The housing is available in two versions. The housing can be equipped with a Solar-Log™ and other components, e.g. an external communication module. In addition to the Solar-Log™ socket, a second socket is included.

Technical data	Version 1	Version 2
Installation Housing	The housing material is made of polycarbonate and ABS plastic. For quick and easy installation of the Solar-Log™, the holes on the mounting wall have been pre-drilled. There is space in the box for additional components.	
Mounting	4 PG connections are available for the grid power network and other connections. To mount the data logger properly, please remove the mounting plate from the installation and then mount the Solar-Log™ device. Then screw the mounting plate back on. Hinges can be ordered to help open the cover easily.	5 PG connections are available for the grid power network and other connections.
Standard color for the enclosure	Gray / RAL 7035	
Surface	The Installation Housing is non-fading.	
Power sockets	2 pieces, power cable provided by the customer	3 pieces, 1 m power cable with angle plug
Protection class	IP 65 when used with the proper cable screws and when the cable conduits are properly sealed.	
Dimensions (w x h x d) in mm, Weight in kg	400 x 300 x 130, 3.53	600 x 300 x 130, 5.25
Warranty	2 years	2 years
Article number	255422	220063

Article number

Transparent cover for Installation Housing IP 65 (version 1)	255435
Hinges (two units) for the Installation Housing	220072

Solarfox® Large External Displays

Solarfox® large displays visualize the performance of PV plants and function as an “innovative bulletin board” to provide information to the public quickly and easily. All content such as images, texts, videos, colors and layout can be individually set. It is an informative eye catcher for visitors and customers to visualize one’s commitment to sustainability, and customized messages can be displayed. It is easily operated from a convenient online management system. It is important to clearly communicate technical relations and information. Therefore, Solarfox® displays work with an effective visual language.
The following information can be visualized on a Solarfox® multi-media display: energy output, power consumption, CO_2 savings, storage and charging status, weather information, news, events and other customized content. Solarfox® is compatible with all Solar-Log™ models, and all can be visualized regardless of the plant’s location.

Solarfox® SF-100 and Solarfox® SF-300.

Available modules

Indoor: Solarfox® SF-100 24“ (61 cm) to 32“ (81 cm)

Indoor: Solarfox® SF-300 24“ (61 cm) to 75“ (191 cm)

Outdoor: Solarfox® SF-400 32“ (81 cm) to 55“ (140 cm)

For Further Information and Orders:

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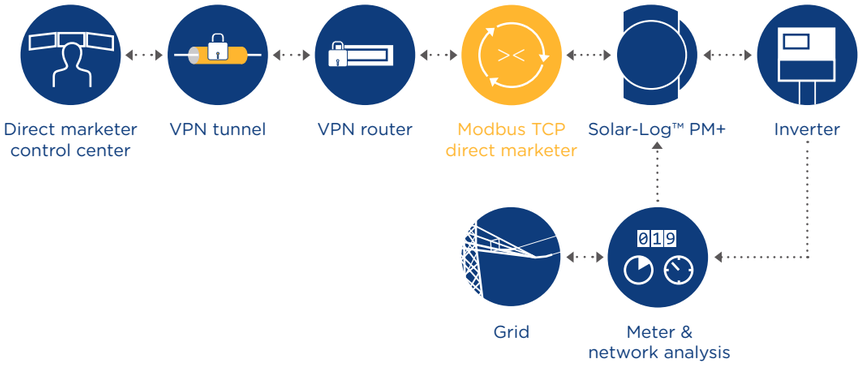
SOLEDOS GmbH
Tel.: +49 60 58 – 91 638-0
E-mail: info@solar-fox.de
www.solar-fox.de

solarfox®
SOLAR DISPLAY SYSTEMS

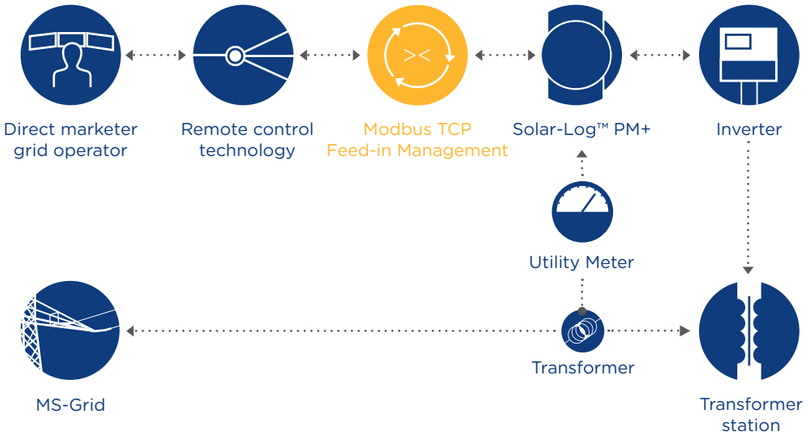
Solar-Log™ Modbus TCP License for Direct Marketing

For simple and efficient communication between direct marketers and remote controllable PV plants. The Solar-Log 1200 PM+, 1900 PM+ and 2000 PM+ can receive reduction commands from the direct marketer and report the current output via this interface. This means that all prerequisites for the management bonus in Germany are met. A VPN router is required for data transfers between the production plant and direct marketer.



Solar-Log™ Modbus TCP Feed-in Management License

With some grid operators, the remote control technology connects to the Solar-Log 1200 PM+, 1900 PM+ und 2000 PM+ via the Modbus TCP feed-in management interface. Active and reactive power commands and response signals for various measured values are sent via this digital interface.

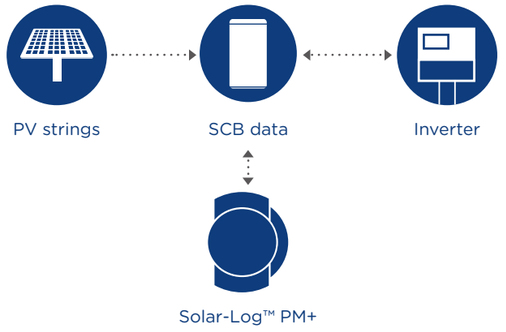


Solar-Log™ FTP License

With the FTP license, the data export can be used for third-party portals. With this license, the Solar-Log 300, 1200, 1900 and 2000 make repeated, periodical data transfers.

Solar-Log™ SCB License

The software license activates data recording of different SCBs in the Solar-Log 1900 PM+ and 2000 PM+, as well as the visualization and monitoring of individual string values in the Solar-Log WEB Enerest™ portal. Please refer to the component database for technical data on the supported SCBs.



Solar-Log™ Opening License to Increase the Plant Size

The license for the expanded plant sizes requires at least firmware version 3.5.0.

Article number

Solar-Log™ Modbus TCP Direct Marketing License	255935
Solar-Log™ Modbus TCP Feed-in Management License	255511
Solar-Log™ FTP License	255653
Solar-Log™ SCB License	255380
Solar-Log 1200 Opening License up to 250 kWp	256033
Solar-Log 300 Opening License up to 30 kWp	256034

As of firmware 4.0 and above, licenses are available in the License Portal

Solar-Log™ PM Box 1200 & 2000

Flexible Feed into the Power Grid and Additional Error Protection

In some countries, the grid network capacity for feed-in energy produced by a solar PV installation is becoming more of a concern, with some G59/3 applications even being rejected completely by the responsible DNO. In other areas, grid saturation constraints lead to stipulated maximum reverse power limits imposed by the DNO, which is often far less than the peak theoretical limit that the Solar PV array can produce.

The Solar-Log™ PM Box combines the inherent power management capabilities of Solar-Log™ control systems with a fail-safe backup unit, should the control system fail or ceases to be effective. This solution is a standardized yet scalable framework to provide dynamic, closed-loop power management control over the inverter bank, suitable for up to 2 MWp size arrays and can be implemented globally.

In most countries, an installation of this kind needs to be inspected by the local energy grid authorities. Please make contact with them in advance.

Solar-Log™ Feed-in Fail-Safe Function

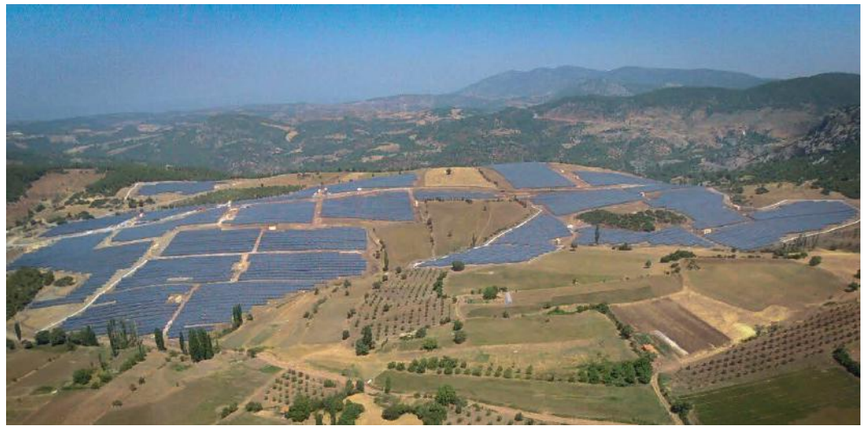
Article number

Solar-Log™ PM Box 1200	256079
Solar-Log™ PM Box 2000	256080

Reference Plant for the Solar-Log™ PM Box

The one and only solution for the ONIX spa in Kosovo

In Kosovo, no electricity can be fed into the power grid. The 0 % grid feed-in reduction is applied. The Solar-Log™ PM Box was used to implement this requirement at a PV plant in Kosovo.



Reference Plants with a total of 42 MWp in Akhisar and Kula

As of today, Solar-Log™ is monitoring an installed volume of 400MWp in Turkey

The Asunim Group and SDS have been sucessfully working together for many years. Both projects as well as numerous other PV plants are monitored with Solar-Log™ and the Solar-Log WEB Enerest™ online portal.

Reference Plant Midware Data Systems – ECOsys Division

One of the largest private PV plant in Lebanon, monitored by the Solar-Log 2000

The amount of energy generated is equivalent to the demand of about 500 households, an annual output of 621 MWh.

Reference Plant Migros Neuendorf Distribution Center – Helion Solar / Tritec

This photovoltaic system is one of the largest roof-mounted systems in Switzerland

Since 2013, the plant has generated electricity for around 4,000 households, approximately 30 % of the electricity consumption of the distribution center.

Solar-Log™ Compatibility

ABB
ADVANCED ENERGY
AEG POWER SOLUTIONS
ALBATECH
alpha
AROS SOLAR TECHNOLOGY
ASTRONERGY
ATEN
AZZURRO
Bonfiglioli
CARLO GAVAZZI
CEHE
CHINT POWER
CMS Group
CONERGY
CONVERTEAM
CyberPower
Danfoss
DELTA
EATON
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EFFEKTA
ELTEK always on

evoco energy
enfinity
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Fronius
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SIEMENS
SMA SOLAR TECHNOLOGY
solaredge architects of energy

socomec Innovative Power Solutions SOLAR
SolarMax
SOLAX
SOLECTRIA RENEWABLES
SOLUTRONIC
SSE
steca Elektronik
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sunways Photovoltaic Technology
Sustainable Energy Technologies
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Vaillant
Valenia
VISION UPS SYSTEMS
VOLTWERK outperforming the sun
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YASKAWA
zentralsolar deutschland
zeversolar
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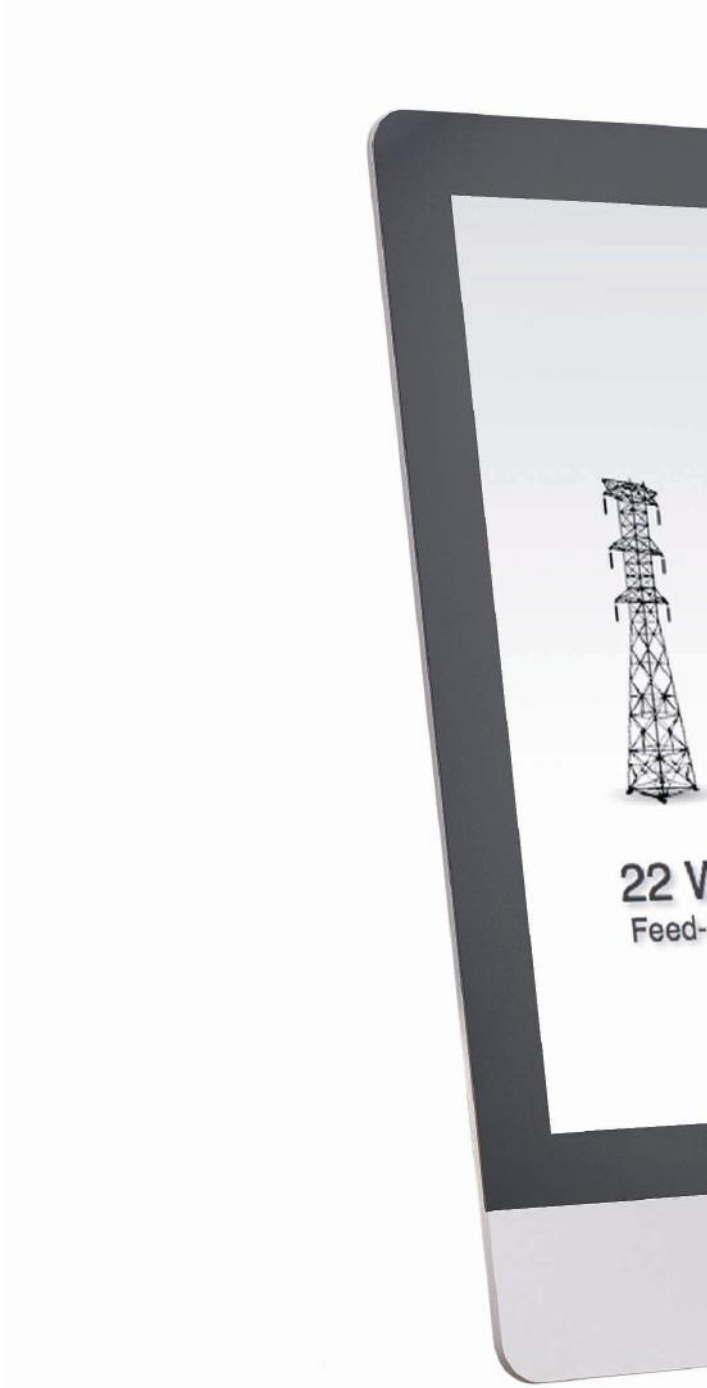
Solar-Log™



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