Solar-Log™
we create connections

EN Product Portfolio 2024
Everything you need is at hand

Simon Schweda • VP Products & Programmanagement • Solar-Log GmbH

At Home in more than 141 Countries

More than 3,300 Integrated Components

More than 15 Years' PV Experience

Nina Rieber • Customer Service • Solar-Log GmbH

Introduction

Dear reader,
Standing still is moving backwards. That's why the Solar-Log portfolio is constantly being updated, adapted and expanded. However one thing remains a constant: the Solar-Log products and services are designed to make life easier for users. There's a lot happening in the world of renewable energies: sector coupling, redispatching and grid integration to name just a few. So the challenges are not getting any less. As a manufacturer-independent provider of system solutions, we're therefore keen to offer our customers the best possible support through our products and services, and to relieve them of much of the work and bureaucracy.

Feed-in management simply implemented – we have the expertise and the solutions. Intelligent feed-in management and grid integration provide a building block on route to climate neutrality. The VDE-AR-4110 standard involves many requirements and considerable red tape. Here Solar-Log offers all-in-one solutions, including on an individual basis. From planning to communicating with the grid operator, from installing to reporting, the specialised Solar-Log teams are there to help our customers. Redispatching to avoid grid congestion can be a straightforward task – with the Solar-Log™ direct marketing solution!

Flexibility has always been a trademark of Solar-Log as a globally leading company. We're constantly expanding this flexibility with new products. One example of this is the Solar-Log MOD 485 module. This allows the Solar-Log hardware to adapt PV plants in even greater detail to meet the diverse requirements that they are now facing. The Solar-Log WEB Enerest™ 4 platform, which was successfully launched two years ago, is continuously evolving. Data security has top priority and the simple, intuitive handling of Solar-Log WEB Enerest™ 4 is also constantly being developed further. One new feature, for example, is the flexible authorisation system.

Our proven motto, "we create connections", also applies to the latest Solar-Log portfolio and can still be interpreted in two senses. We create technical connections, but we also want to connect people and market participants. It's important to us to nurture excellent personal contacts with our partners that go beyond mere business ties. If you are a Solar-Log customer, you know this from your own experience.

Let our portfolio inspire you!

Your Solar-Log Team

Reference plants

Reference installation with a total of 170 kWp and two Solar-Log 1200 PM+

Electricity from the roadside on Federal Motorway 3 near Aschaffenburg with a length of 887 metres

In collaboration with our partner company Solar-Fabrik, a pioneering PV noise barrier was built on the side of Federal Motorway 3 near Aschaffenburg. Less noise and more clean energy go hand in hand.

The project, which was realised after many years of planning, is intended to provide insights into how photovoltaics can be sensibly integrated into noise protection installations and how such installations can be realised more quickly in the future.

The electricity generated here is fed into the public grid. With this energy from the roadside, 200 people can be supplied for a year or 80 electric cars can be operated for a year.

Reference plant with 400,000 kWh per year

Managed by a Solar-Log™ PV monitoring system.

Solar-Log™ is also technically involved in Europe's highest-yield solar plant at Handwerkerpark Wallisellen in Switzerland. With around 663-kilowatt peak, 400,000 kilowatt hours of renewable energy are generated here every year – a triumph of technology!

Solar power for nursing homes

66 Gateway Solar-Log 50 and two Solar-Log Base 100 gateways are in use.

It doesn't always have to be superlatives: Solar-Log™ also impresses with very individual solutions for special requirements. A nursing home with the KfW 40 plus energy standard in northern Germany shows how this works. In close collaboration with the operator and a local Solar-Log™ partner company, a system was set up that saves costs for the home operator and residents while generating safe, clean electricity.

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 market, we are an international company with over 100 branches, partners and customers worldwide.

Environment

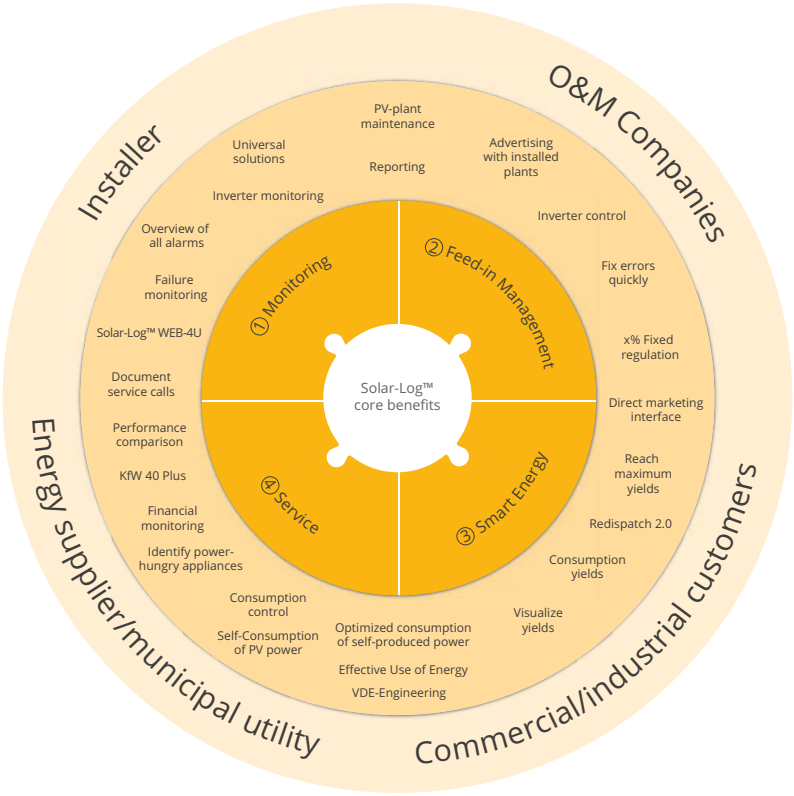
Sustainability as a Matter of Principle

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™



Olaf Nathe • Key Accounts & Distributors Germany • Solar-Log GmbH

01

Solar-Log™ WEB Monitoring Software

More than just PV Monitoring

With its online portal Solar-Log WEB Enerest™ 4, Solar-Log™ is once again setting standards. The pioneer of PV monitoring is reaffirming its impressive commitment to constantly innovate for the benefit of its customers. This thinking has a long tradition at Solar-Log™, a leading company in PV monitoring and energy management. With the know-how from more than ten successful years in the solar power industry, Solar-Log™ has created a powerful tool that makes the daily work of installers so much easier. Their requirements formed the focus of the development work for the new Solar-Log WEB Enerest™ 4 portal. Solar-Log's motto, "We create connections", also applies of course to the online portal. Numerous new features provide a better overview and even simpler, intuitive handling.

Solar-Log WEB Enerest™ 4

Highlights of the High-performing Online-Portal*

More than just PV monitoring

Thanks to a completely new approach using linked individual services, the system availability of the monitoring platform is now increased and the monitoring does not affect the performance even with high workloads..

Solar-Log WEB Enerest™ 4 provides an intelligent compilation of individual plant information relevant for real-time performance analysis. The Solar-Log™ data is processed and prepared for you in the portal. This makes troubleshooting and analysis quicker and easier. You can therefore ensure the smooth operation of your plants.

* Licence fees may apply for the use of the Solar-Log WEB Enerest™ 4 Portal.

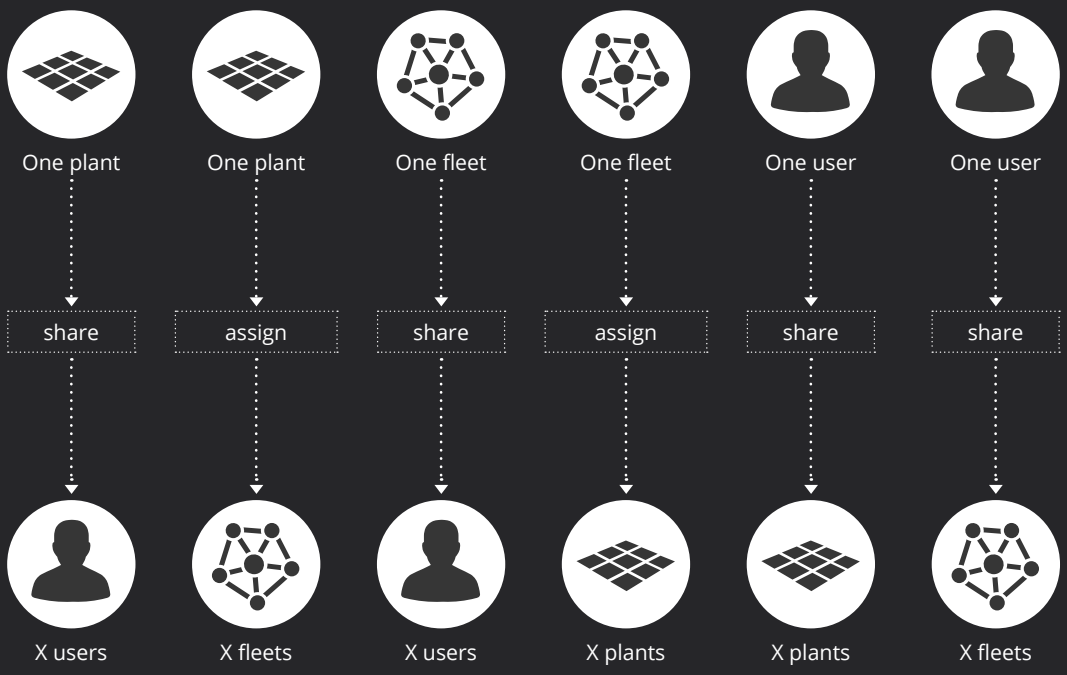
Security

Two-factor authentication (MFA/2FA)

Two-factor authentication adds an extra layer of security to your account, protecting it from attacks from the World Wide Web. A second source generates 6-digit security codes that are updated within a short period of time. We recommend that you enable this in your user profile.

Approvals

Share as many plants and fleets as you like with all your users. This way you can also integrate external service providers into your workflows with Solar-Log WEB Enerest™ 4. You decide who should have access to which features.



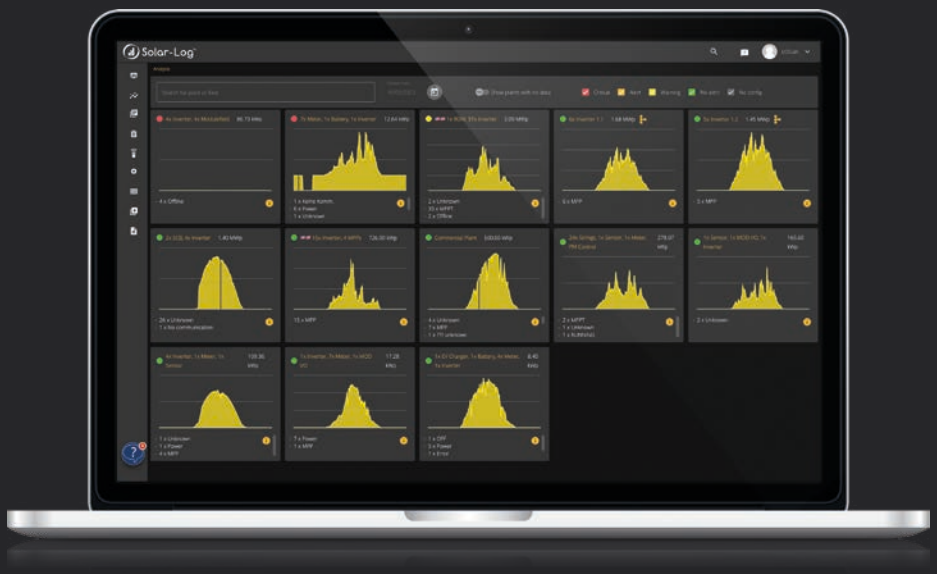
Operational data in the EU

Solar-Log™ data processed through our portal is stored on servers in the EU. This means that our data storage meets the highest European standards.

In addition, data backups are stored on servers in Norway, so they also remain in Europe.

Analysis

In the analysis module you can examine your data in detail. Choose from existing Solar-Log WEB Enerest™ 4 views, for example for string inverters, MPP trackers, sensors or battery storage. If these views don't yet meet your requirements, you can easily compile a graphic yourself.

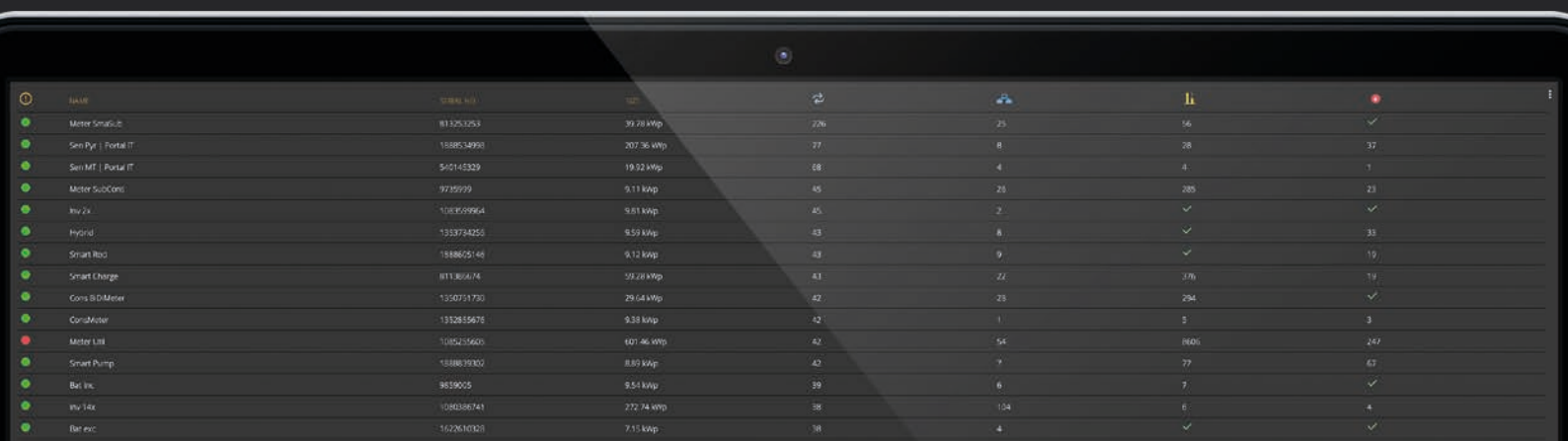


Monitoring

With real-time browser updates, we always show you the latest information without you having to refresh pages. This ensures that you're always working with the latest messages and data.

Overview of your options

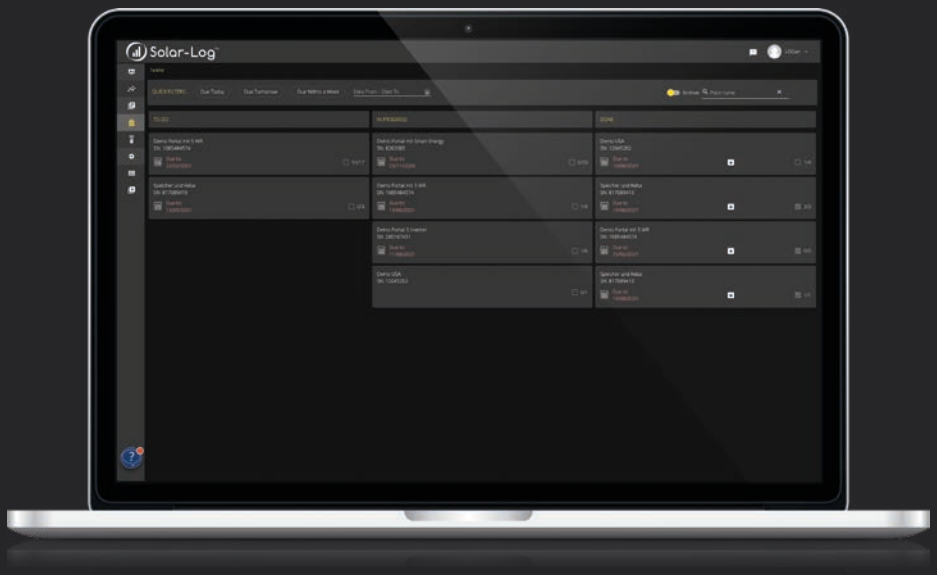
- Event monitoring of battery storage units and meters
- Monitoring communication between Solar-Log™ and connected components
- Data logger communication with Solar-Log WEB Enerest™ 4
- Status and events relating to connected components
- Detecting deviations down to string level.



For each type of alarm, we have compiled specific data on a single page. This enables you to analyse all the important data at a glance. You can then decide whether to view further graphs, archive the alarm or convert it into a task.

Task list

This is where all the converted alarms come together and we group them in a plant map. Here, too, all your tasks are grouped together and clearly displayed. To check your progress, you can place the plant maps in one of the three columns.



Pinboards & Slideshows

Pinboards allow you to create your own views from over 85 widgets. Choose from the widgets you already know from Solar-Log WEB Enerest™. Decide which data should be displayed for which plants. You can arrange and design them as you like. As soon as you've created several pinboards, you can also create a slideshow. A slideshow shows several pinboards one after the other. Saved pinboards and slideshows can be accessed and shared at any time.

Public pinboards

Create pinboards that can be accessed without logging in. Embed them in websites or use pinboards in digital signage systems.

Jörg Niche • CSO, Managing Director • Solar-Log GmbH

We create connections

Software

Solarfox

The large-scale displays from Solarfox can retrieve data via our WEB 4 and visualise it for you.

Solar-Log™ customers have free access to additional slides offered by Solarfox in your cloud.

Climkit

To simplify billing via ZEV, we offer an interface to Climkit. Retrieve data from Solar-Log™ using the Climkit software.

Data loggers from third-party suppliers

Monitor data loggers from competitors just like a Solar-Log™. Devices from the manufacturers listed below require an FTP or MQTT interface to be compatible with WEB4. Information about compatible series and restrictions can be found in our online help.

Huawei Data Logger

Compatible series:

- Smartlogger

Meteocontrol Data Logger

- blue'Log X-Serie (XM / XC)

Info:

A FTP licence from Meteocontrol is required for this.

Protocols

FTP

MQTT

API

Features Solar-Log WEB Enerest™ 4

Security

- 3-fold replication of all data in the EU
- Modern encryption methods for your data and accesses
- Flexible authorisation concept for users
- Data is backed up several times a day
- 2-factor authentication

Monitoring

- Create unlimited monitoring rules
- Control centre: central overview of your portfolio
- Detects deviations in MPP trackers and strings
- Communication monitoring between the portal and components
- Archive for alarms and mass archiving
- Convert alarms to tasks for tracking purposes
- Real-time updates in browser
- Event monitoring for battery storage and meters
- Graphs with relevant data at the time of the alarm

Task list

- Task management per plant
- Comment feature
- Progress overview
- Link to monitoring for converted errors
- Individual tasks

Visualisation

Analysis

- 10+ Enerest views
- Build your own views
- Compare components across plants
- Zoom and download
- Control possible via keyboard
- Views for day, month, year and total
- Analyse several days in a row

Pinboards and slideshows

- Build your own views
- Set as home page
- Choose from 65+ widgets
- Display pinboards on your website or external monitors
- Slideshow of multiple pinboards
- Share pinboards, access without login possible

Data studio

- KPIs: Specific yield (day, month, year), technical availability (day, month, year)
- Events for all connected components
- Value matrix (raw data)
- Power management regulations
- Data download

Reporting

- Balance report
- Inverter yields
- KPIs
- Daily alarm report
- Download as PDF
- Send as email
- Create your own templates

Administration

- Plant, fleet and user administration
- Monitoring settings
- Configuration of module fields
- KPI and financial settings
- Flexible assignment of users to assets and fleets
- Continuous documentation of significant changes (timeline)
- Remote commands (firmware updates, diagnostic files, ...)
- Support features

Other functions

- API for developers
- Compatibility with data loggers from other manufacturers
- Remote configuration (HTTP transfer only)
- Customised portal colours and logo
- Smartphone and tablet compatibility
- White and dark mode
- Download the free Enerest ToGo app

Added value and benefits

Complex data made understandable

Create your own views with which you can meet your plants' individual requirements. Inverters, MPPT, strings and battery storage are just a few of the compatible components.

High level of customisation

You decide on the colours, plant groupings, portal logo or your workflow. Your own home-page and individual views are just some of the possibilities.

One portal, many data loggers

Work with data loggers from many manufacturers with Solar-Log WEB Enerest™ 4. Error detection and analyses with the Solar-Log™ tools.

Enerest ToGo: Monitoring and service on the move

Our mobile monitoring and service app can be downloaded free of charge for Apple and Android devices. Monitoring with notifications and creating PV systems on the web made easy.

Reliably minimise yield losses

As an installer and service provider you can reliably protect your PV investments and minimise your customers' yield losses.

Free updates

We release new functions and bug fixes at regular intervals. We're continuously developing Solar-Log WEB Enerest™ further.

Solar-Log Daten bleiben in Europa

Um deutsche bzw. europäische Datenschutz- und Sicherheitsstandards einhalten zu können, bleiben alle Daten, die an unser Portal gesendet werden in Europa.

Enerest ToGo

Service & monitoring in your pocket

Our app is free to download for Apple and Android devices. You can use all the features as a provider of professional monitoring services, but you can also recommend the app to your customers.

Time-saving support for use on the construction site. The app notifies you when Solar-Log WEB Enerest™ 4 reports new alarms from your PV plants. While on the move, you decide whether these should be followed up or archived.

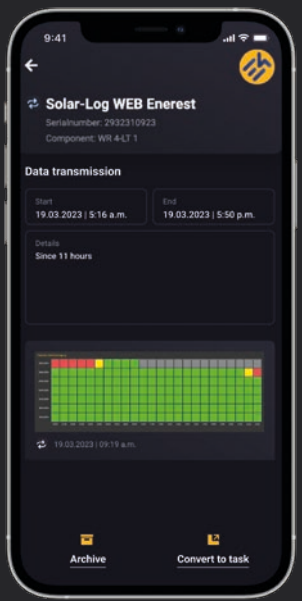
Own consumption at a glance

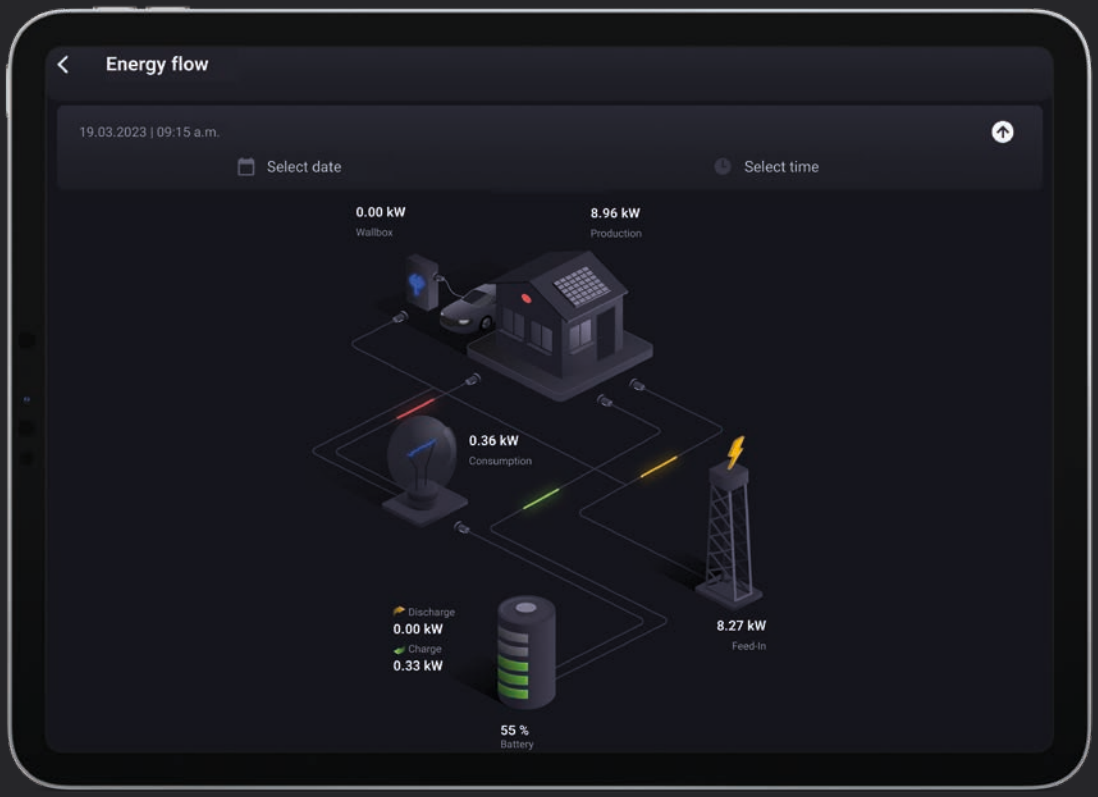
The app gives your customers an overview of all production and consumption values. This enables you to focus on monitoring and service.

Reports and alerts

Push notifications let you know immediately when alarms occur at your customers' plants. This means you are always informed and can respond quickly. Enable notifications for the entire portal or just for individual important plants

Yield and balance reports automatically provide your customers with informative summaries about their plants. You save valuable time and your customers are kept fully informed.





Added value and benefits

Real-time monitoring

Our mobile app allows you, as a professional, to monitor your customers' PV systems in real time from anywhere and receive up-to-date information on energy flows and alarms.

Service toolbox

- Create plant
- Device replacement
- Transmission test

Secure data transmission

Communication between the Solar-Log WEB Enerest™ 4 Portal and the mobile app is secured using the latest standards. Users can protect their account with two-factor authentication.

Free updates

We regularly release new features and bug fixes. We are constantly developing Enerest ToGo.

Enerest ToGo function overview	Installers	Plant owners
Graphics		
Inverter	●	●
Energy flow	●	●
Consumption	●	●
Balance	●	●
Target production	●	●
Charging station	●	●
Battery	●	●
Simulated battery	●	●
Green Energy	●	●
Self-sufficiency	●	●
Self-consumption	●	●
Reports		
View alarms	●	-
Live alarm notifications	●	-
Plant status	●	-
Yield report	●	●
Operator report	●	-
Notification centre	●	●
Monitoring		
Fleet	●	-
Plant info	●	●
Create plants with QR code scanner	●	-
Transmission test	●	-
Device replacement	●	-
Service		
Create support tickets	●	●
Tutorial	●	●
Find plants and fleets	●	● (plants only)
Add plant image	●	●
User settings	●	●

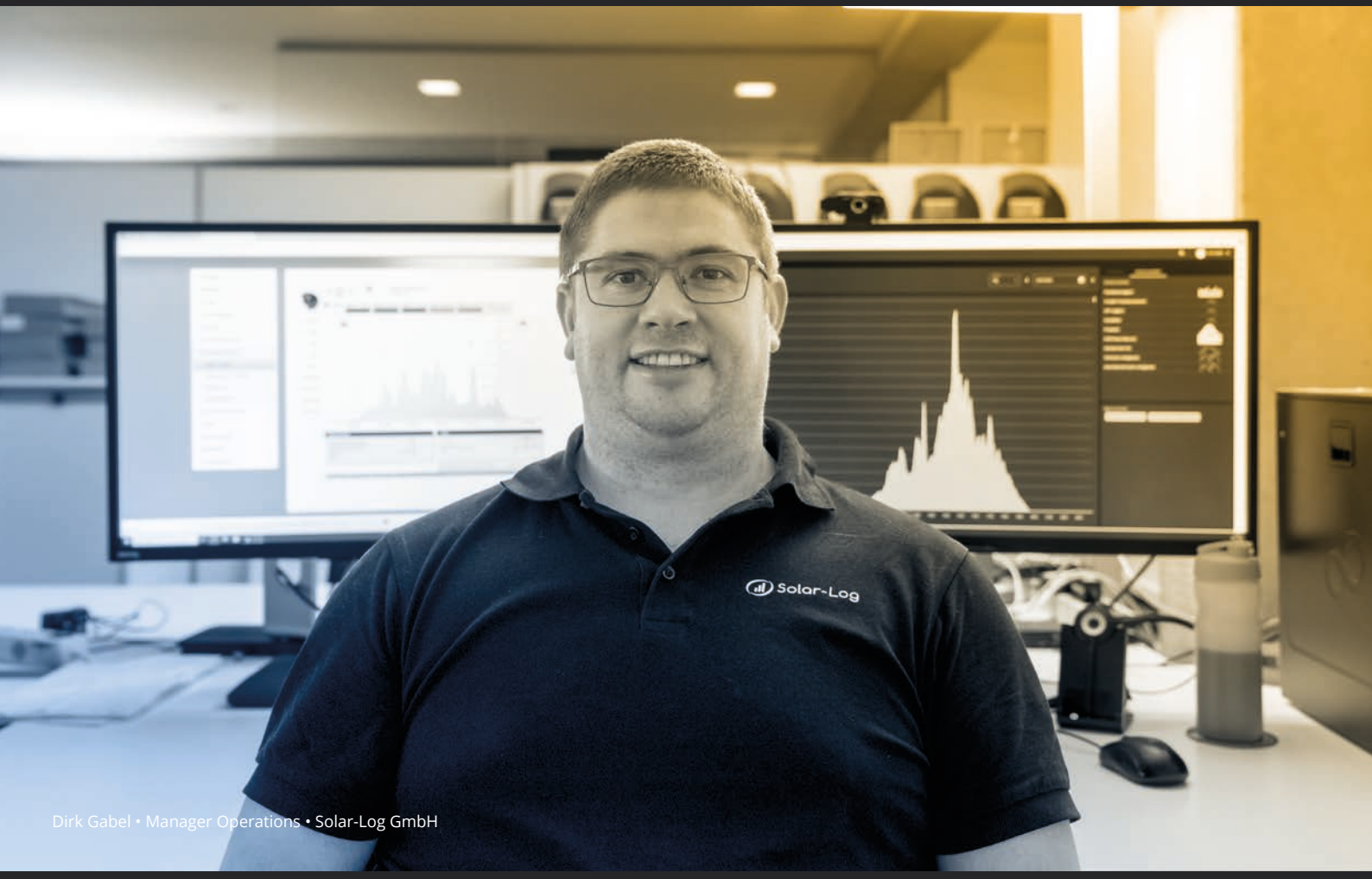
Download on the App Store

ANDROID APP ON Google play

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 407,000* installed Solar-Log™ devices, we have the know-how along with proven, reliable technology to meet any challenge.



Dirk Gabel • Manager Operations • Solar-Log GmbH

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 05/2024

Professional and Effective

If desired, we can take care of additional functions such as recording and setting up the PV system. Our expertise allows the portal operator to use their valuable time for other 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 alarm recovery
- 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 15 years.

Solar-Log™ WEB-4U

Vivian Bullinger • Product Marketing Manager • Solar-Log GmbH

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.

Considerable flexibility thanks to modular structure and expandable licences

Direct marketing, smart energy & feed-in management functions

Simple plug & play installation thanks to DIN rail mounting

Integrated bus analysis function

Models	Plant size	Article Number
Solar-Log Base 15	15 kWp	256325
Solar-Log Base 100	100 kWp	256326
Solar-Log Base 2000	2000 kWp	256327

Solar-Log Base

Our Most Powerful PV Energy Management System Ever

Your added Value and Benefits

The new revolutionary Solar-Log™ generation combines smart functionality with greater flexibility for more efficient control, management and monitoring of PV plants. For you, this means:

- **Security**
  Easily and effectively implement regulations for feed-in management.
- **Valuable time savings**
  Easily DIN rail mounted for simple installation.
- **Optimal price**
  You only have to purchase the functions you need for your plant requirements.

Function

Modular design – customised to your needs

Functions can be individually combined for each PV plant in accordance with requirements. Interface elements and various software licences can be purchased according to the needs of the system operator.

Installation licence – cleverly identifies which licences are required

With the Solar-Log Base devices, the required licences are already activated free of charge for 30 days during the installation. Within this period, the licences can then be purchased and registered conveniently from your office in the Solar-Log™ Shop.

The innovative bus analysis feature replaces the oscilloscope

With the Solar-Log Base models, you can measure and evaluate the signal quality of the inverter communication (RS485).

Solar-Log Base Direct Marketing – VPN Function

Previously, an external router was required to transmit data to the direct marketer. It is possible to make secure VPN date transfers without any additional hardware. This integration not only saves money from the hardware, but also the installation. In addition, Solar-Log™ now offers a complete solution for Redispatch 2.0**.

*PV Monitoring works with Solar-Log WEB Enerest™ 4 Monitoring Plattform
** Only relevant for the German market

Smart Energy - More Self-sufficiency than Ever Before

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

Feed-in Management – Guarantees Compliance with the Legal Requirements

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

Display Options

Solar-Log WEB Enerest™ 4* - Powerful performance in securing yields

The new online portal features an attractive new design and numerous features. The new features, such as system fault detection, workflow optimisation and accelerated troubleshooting.

The Enerest ToGo app for the Solar-Log WEB Enerest™ Portal – intuitive and free of charge

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 Apple App store and Google Play Store.

Solar-Log™ Pinboard & Slideshow

With the Solar-Log™ pinboard, Solar-Log WEB Enerest™ 4 dynamically displays all important information about the plant such as the yield and performance. For this purpose the pinboard can be individually configured with various widgets. All existing pinboards can be displayed with the slideshow. This function also fulfils the requirements for visualising PV systems stipulated by KfW 40 Plus*.

Large external display (RS485) – Present your PV Plant Data

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 interface.

VDE- 4110** with the Solar-Log Base – compliant, safe, flexible and convenient.

In 4 simple steps to successful VDE commissioning with our support.

* Licence fees may apply for the use of the Solar-Log WEB Enerest™ 4 Portal.
** Only relevant for the German market

Connections

Components

The Solar-Log Base is compatible with all standard inverter models. Compatible battery storage units, heat pumps, charging infrastructure and other Smart Energy components can also be connected. You can find details on these in our component database.

1 x S_0 in

For connecting meters with S_0in interface.

2 x RS485 or 1 x RS422

For connecting components with RS485 or RS422 interfaces.

2 x Ethernet

For connecting to the internet and components with Ethernet interface.

USB Connection

A USB stick can be connected for safe and quick manual installations of new firmware updates, configurations, and backups.

Licences

You can increase the performance limits of the Solar-Log Base with the Solar-Log Base extension licence.

Expandable Licences *	Solar-Log Base 15	Solar-Log Base 100	Solar-Log Base 2000
Solar-Log Base extension licence	from 15 kWp to 30 kWp	from 100 kWp to 250 kWp	-
Article number	256328	256329	-

* With additional costs

Technical Data	Solar-Log Base 15	Solar-Log Base 100	Solar-Log Base 2000
Interfaces			
RS485/RS422		2 x RS485 or 1 x RS422	
Ethernet network [1]		2 x 100 Mbit/s	
USB connection [2]		2 x USB 2.0	
S_0 in		1 x S_0	
Basic Functions			
Maximum plant size	15 kWp	100 kWp	2 MWp [3]
Inverter connection options		Ethernet, 2x RS485 or 1x RS422 [4]	
Battery storage: visualization, charging time shifts	●	●	●
Smart Energy	●	●	●
Powermanagement	●	●	●
Direct Marketing	●	●	●
Bus Analysis Function	●	●	●
Maximum cable length [5]		Maximum cable length 1000 m twisted pair	
Extension licences			
Expandable licence for max. plant size	up to 30 kWp	up to 250 kWp	-
Solar-Log™ interconnection control licence	●	●	●
Modbus TCP direct marketing licence	●	●	●
Modbus TCP PM licence	●	●	●
Solar-Log™ PM PRO licence	●	●	●
SCB Software licence	-	●	●
Additional function interfaces via the Solar-Log™ HBUS module connector 6)			
Digital control outputs		via an additional module (Solar-Log MOD I/O) [7]	
Digital control inputs		via an additional module (Solar-Log MOD I/O) [7]	
Interface for a ripple control receiver (PM+)		via an additional module (Solar-Log MOD I/O) [7]	
RS485 [9]		via an additional module (Solar-Log MOD 485) [7]	
RS422 [9]		via an additional module (Solar-Log MOD 485) [7]	
Visualization			
Integrated web servers	●	●	●
Graphic visualization		local and portal [8]	
Multilingual (DE, EN, ES, FR, IT, CN)	●	●	●
Recording duration: Daily, monthly, annual values		up to 10 years	
TFT Display	●	●	●

Technical Data		Solar-Log Base 15	Solar-Log Base 100	Solar-Log Base 2000
Display on the device		●	●	●
Data transfer to external portals [10]		API, ftps, ftp		
HTTP data transfers to Solar-Log WEB Enerest™ for low data volumes		●	●	●
Compatible with large external display (RS485 and Modbus TCP)		●	●	●
Installation				
Power supply unit [11]		Depending on the output voltage (24V DC (+-5%), if required 12V DC (+-5%)), observe component requirement		
Installation wizard		●	●	●
Network detection / DHCP		●	●	●
Name resolution solar-log		●	●	●
Powermanagement				
Reduction to X percent (with and without the calculation of self-consumption)		●	●	●
Control PV systems for providing active and reactive power (VDE 4110-compliant) [12]		●	●	●
Plant Monitoring				
Inverter alarms (failure, status, error and power deviation messages) in the portal		●	●	●
Yield forecast		●	●	●
MPP Tracker Comparison		●	●	●
Sensor system connection (irradiation / temp. / wind)		●	●	●
Self-produced energy consumption; Digital electricity meter		●	●	●
Self-produced energy consumption: Managing external appliances		●	●	●
General Data				
Device voltage [13]		24V DC (+-5%), if required 12V DC (+-5%)		
Device current [13]		max. 1 A		
Power consumption		typ. 2,4 W		
Memory		4 GB internal		
Real-time clock (RTC)		Battery buffered in case of power failure		
Dimensions / Weight	Housing / Dimensions (W x H x D)	3TE / 53,6mm x 89,7 mm x 60,3mm		
	Height from top edge of mounting rail	~54,5mm		
	Net weight	112 g		

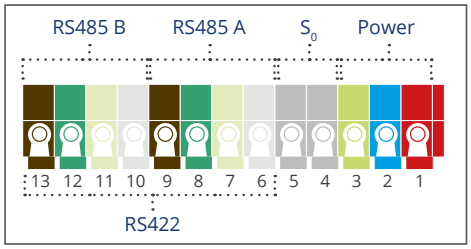
Technical Data		Solar-Log Base 15	Solar-Log Base 100	Solar-Log Base 2000
Mounting type	DIN rail	TH 35 / 7,5 or TH 35 / 15 to IEC/EN 60715		
	Wall mounting	Mounting / screw clips (without DIN rail or additional modules)		
Connection data	Connection technology	Push-in SPRING CLAMP®		
	Solid conductor	0,2 ... 1,5 mm² / 24 ... 16 AWG		
	Fine-stranded conductor	0,2 ... 1,5 mm² / 24 ... 16 AWG		
	Fine stranded conductor with ferrule	0,14 ... 1 mm²		
	Stripping length	8.5 ... 9.5 mm / 0.33 ... 0.37 inch, with ferrules ≥ 6 mm. Please note the diameter of the plastic collar		
Material data	Housing material	PC/ABS		
	Colour	black		
Ambient conditions	Ambient temperature	-20°C to +50°C (without condensation)		
	Ambient temperature storage/transport	-20°C to +60°C		
	Protection rating to EN 60529	IP20		
	Mounting position	any		
Warranty		2 years		
Conformity marking		CE		

1) No switch function. Only use Ethernet 2 interface for components.
2) USB interfaces for the specific use of enabled functions (firmware updates, configuration and data backups).
3) Several Solar-Log Bases can be combined into a virtual system in the portal for visual display purposes. An interconnection control licence is necessary if the PV plant needs to be completely controlled.
4) An RS485 meter cannot be connected when using RS422.
5) Depending on the inverter used, cable type and electrical boundary conditions (specifications may vary depending on the device type).
6) Additional modules connected to the Solar-Log Base are supplied with power and voltage via the Solar-Log™ HBUS module connector. The following aspects must be observed in this regard:
   1. The supply voltage on the Solar-Log™ HBUS module connector corresponds to the supply voltage on the Solar-Log Base.
   2. If the connected modules are not supplied separately with a higher voltage when required, the voltage at the outputs corresponds to the supply voltage at the Solar-Log™ HBUS module connector.
   3. The Solar-Log MOD I/O outputs can draw a maximum of ~0.4A from the Solar-Log™ HBUS module connector. If more current is required in total at the Solar-Log MOD I/O outputs, the Solar-Log MOD I/O must be supplied separately with its own power supply unit of sufficient capacity (note: a maximum current of ~0.15A is possible per Solar-Log MOD I/O output).
   4. If external components are to be supplied via the voltage outputs of the interfaces, an additional voltage supply for the Solar-Log MOD 485 module is essential.
7) Maximum number of expansion modules = 1 Solar-Log MOD I/O and/or 1 Solar-Log MOD 485.
8) Licence fees may apply for the use of the Solar-Log WEB Enerest™ 4 Portal.
9) Can only be used with Solar-Log Base firmware 6.x or higher.
10) Licence for a fee.
11) Only use NEC Class 2 power supplies for installations in the US market.
12) Further components (e.g. a PM package) may be necessary depending on the requirements of the energy supplier. You can find more details in our feed-in management section.
13) The Solar-Log Base and the Solar-Log MOD 485 module may only be supplied with 12V DC when used in conjunction with the special Piggy Back (Art 220020). Please also note the power supply for sensor boxes via the bus.

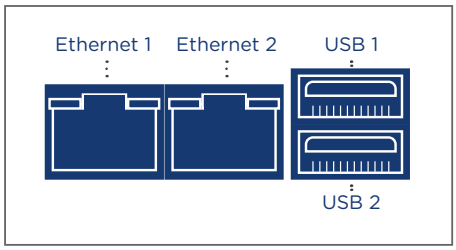
No power supply unit is included in the scope of delivery.

Connection

Top

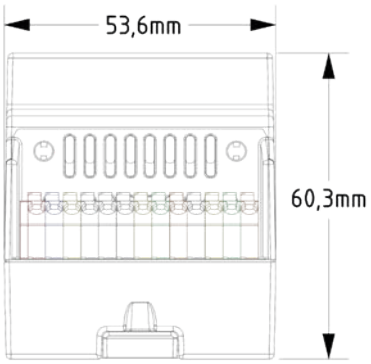


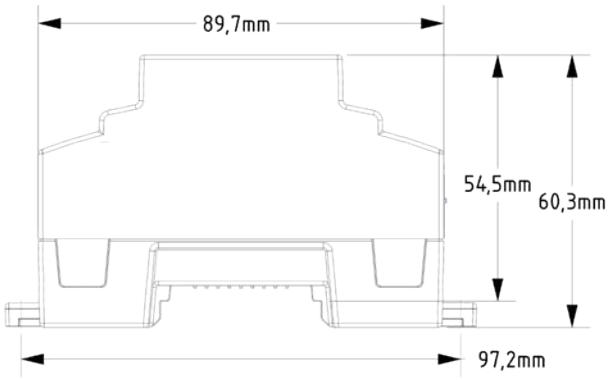
Bottom



Pin	RS485	RS422	Power	S_0 in
1	-	-	Vin 24VDC / (12 VDC)	-
2	-	-	GND	-
3	-	-	FE	-
4	-	-	-	S_0 IN +
5	-	-	-	S_0 IN -
6	Data +	T/RX+	-	-
7	24 V / (12 V)	24 V / (12 V)	-	-
8	Ground / GND	Ground / GND	-	-
9	Data -	T/RX-	-	-
10	Data +	R/TX+	-	-
11	24 V / (12 V)	-	-	-
12	Ground / GND	-	-	-
13	Data -	R/TX-	-	-

Technical drawings





Interface	Solar-Log Base 15	Solar-Log Base 100	Solar-Log Base 2000
Inverter interfaces			
RS485/RS422 – interface	2x RS485 or 1x RS422	2x RS485 or 1x RS422	2x RS485 or 1x RS422
RS485/RS422 – 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
Additional interfaces			
S_0-In	S_0 pulse input – for optional recording and calculation of self-produced power consumption		
	Input to connect an additional power meter		
USB Connection	To access data / Import firmware updates		
PM+	Only possible with Solar-Log MOD I/O		
Network	Connection to the internet (Ethernet, fixed IP address or DHCP)		

Accessories	Article number	Solar-Log Base 15	Solar-Log Base 100	Solar-Log Base 2000
Relays				
Solar-Log™ Smart Relay Station V2 [1]	257257	●	●	●
Solar-Log™ Smart Relay Box	255656	●	●	●
Smart Heater				
AC ELWA 2	257274	●	●	●
AC THOR	257255	●	●	●
AC THOR 9s	257256	●	●	●
Meters				
Solar-Log™ PRO380	255913	●	●	●
Solar-Log™ PRO380-CT	256059	●	●	●
Solar-Log™ PRO1	255914	●	●	●
Solar-Log™ PRO2	256324	●	●	●
Utility Meter UMG 104	255385	● [2]	● [2]	●
Utility Meter UMG 604 E-PRO (24V)	257272	● [2]	● [2]	●
Utility Meter UMG 604 E-PRO	257197	● [2]	● [2]	●
Sensors				
Sensor Box Professional Plus	220060	●	●	●
Sensor Box Professional	255896	●	●	●
Lufft (e. g. WS 501 UMB)	On request	●	●	●
Kipp&Zonen (Pyranometer)	On request	●	●	●

1) The Smart Relay Station V2 is supported starting with firmware version 6.0.
2) Can only be used as a consumption meter with firmware lower than 6.X.

Solar-Log MOD I/O*

I/O Interface Module

The I/O module is the perfect addition to Solar-Log Base, enhancing its functions. With I/O module's numerous digital inputs and outputs, you are fully equipped to meet the requirements for the implementation of feed-in management. With plug and play, you just have to connect the I/O module to the Solar-Log Base.

Advantages of the Solar-Log Base and Solar-Log MOD I/O Module

- **Transparent pricing**
  You only for the functions that you really need.
- **Future-proof**
  Simple implementation of new functions and adjustments.
- **Easy**
  Simple installation with top hat rail mounting.
- **Quick**
  Plug and play with the bus connector on the Solar-Log Base.

***Please note:**
With the current version, only the PM+ function (connection to a ripple control receiver) is available. Addition functions (relays, alarms, etc.) will be available in the future with firmware updates for the Base module.

Technical Data

Interfaces

Interface for ripple control receiver (PM+)	1 x PM (6 pole, 2 digital outputs, 4 digital inputs)
Digital inputs /outputs	8x I/Os (not galvanically isolated)

Visualization

Display on the device	3 status LEDs, Status displays for the I/Os

Installation

Power supply optional [1) 2)]	Depending on the output voltage (24V DC (+-5%), if required 12V DC (+-5%)), observe component requirement.

Solar-Log Base Communication

Solar-Log™ HBUS module connector [2)]	2 included in the delivery

General Data

Device voltage V_{ss} [1)]		24V DC (+-5%), if required 12V DC (+-5%) via BUS / optionally via connection terminal (depending on the capacity of the overall system)
Device current [1)]		max. 1 A
Power consumption		typ. 2 W
Input voltage	Nominal value	24 V, if required 12 V
	For signal „1“	15 V to 24 V (at Vin 24 V) 7,5 V to 12 V (at Vin 12 V)
	For signal „0“	0 V to 5 V (at Vin 24 V) 0 V to 2,5 V (at Vin 12 V)
Input current	For signal „1“	Typically 2 mA
Total current of the outputs		For power with the HBus: 250mA
		For external power supply: 1A
Output voltage	For signal „1“	V_{ss} – 1,2 V
Output current	For signal „1“	Max. 150 mA
	For signal „0“ (residual current)	Max. 0,5 mA
Cable length		Max. 30 m
Dimensions / Weight	Housing / dimensions (W x H x D)	53.6 mm (3 DU) x 89.7 mm x 60.3 mm
	Height from top edge of mounting rail	~54,5mm
	Net weight	125g
Mounting	Top hat rails	TH 35 / 7,5 or TH 35 / 15 by IEC/EN 60715

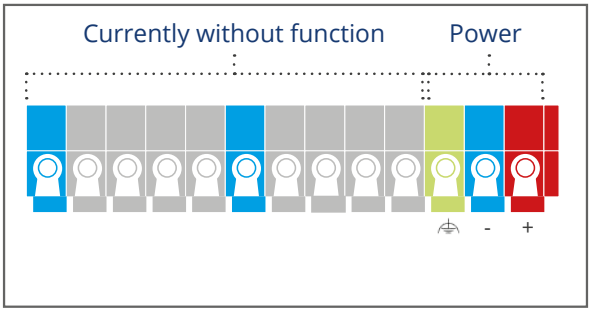
Technical Data

Connection data	Connection technology	Push-in SPRING CLAMP®
	Solid conductor	0,2 ... 1,5 mm² / 24 ... 16 AWG
	Fine-stranded conductor	0,2 ... 1,5 mm² / 24 ... 16 AWG
	Fine stranded conductor with ferrule	0,14 ... 1 mm²
	Stripping length	8.5 ... 9.5 mm / 0.33 ... 0.37 inch, with ferrules ≥ 6 mm. Please note the diameter of the plastic collar
Material data	Housing material	PC/ABS
	Colour	black
Ambient conditions	Ambient temperature	-20 °C to +50°C (without condensation)
	Ambient temperature Storage/transport	-20°C to +60°C
	Protection class according to EN60529	IP 20
	Mounting position	any
Warranty		2 years
Conformity marking		CE
Article number		256330

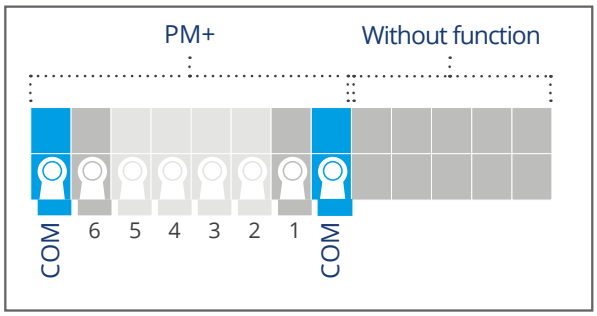
1) No power supply unit is included in the scope of delivery. Only use NEC Class 2 power supplies for installations in the US market.
2) The Solar-Log™ HBUS module connector is used to supply power and voltage to additional modules connected to the Solar-Log Base. The following aspects must be observed in this regard:
   1. The supply voltage on the Solar-Log™ HBUS module connector corresponds to the supply voltage on the Solar-Log Base.
   2. If the connected Solar-Log MOD I/O module is not supplied separately with a higher voltage when required, the voltage at the outputs corresponds to the supply voltage at the Solar-Log™ HBUS module connector.
   3. The Solar-Log MOD I/O outputs can draw a maximum of ~0.4A from the Solar-Log™ HBUS module connector. If more current is required in total at the Solar-Log MOD I/O outputs, the Solar-Log MOD I/O must be supplied separately with its own power supply unit of sufficient capacity (note: a maximum current of ~0.15A is possible per Solar-Log MOD I/O output).

Connection

Top

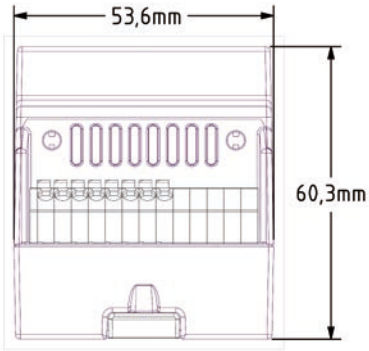


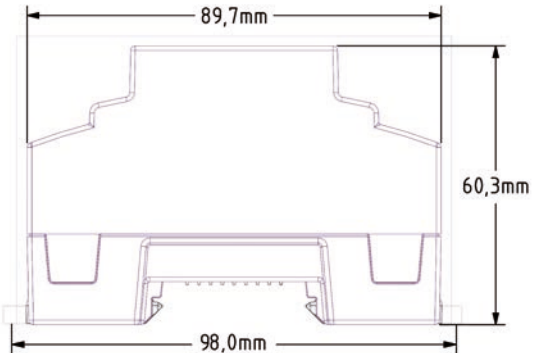
Bottom



Pin		Solar-Log MOD I/O
	COM	Functional earthing
	1	Control signal active power
	2	Digital_In 1
	3	Digital_In 2
	4	Digital_In 3
	5	Digital_In 4
	6	Control signal reactive power
	COM	Functional earthing

Technical drawings





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Solar-Log MOD 485

RS485 Interface Module

The Solar-Log MOD 485 module extends the number of interfaces for the Solar-Log Base and is therefore ideal for connection extensions (inverters, meters etc.). It is connected to the Solar-Log Base via an internal device bus connector (2 items included in delivery). Additional features are simply activated through firmware updates.

Advantages with Solar-Log Base and Solar-Log MOD 485

- **Transparent cost structure**
  Only pay for the features you really need
- **Future-proof**
  Easily implement new features and modifications (e.g. modifications due to normative changes).
- **Simple**
  Easy installation thanks to DIN rail mounting. All necessary licences on board
- **Quick**
  Plug and play connection via a bus connector on the Solar-Log Base.

Technical Data

Interfaces

Interface for external components (inverter, meter, etc.)	4x RS485 or 2x RS422 or 2x RS485/1x RS422

Visualization

Display on the device	3 status LEDs, 2 communication LEDs per interface channel (RS485 only)

Installation

Power supply optional [1) 2)]	Depending on the output voltage (24V DC (+-5%), if required 12V DC (+-5%)), observe component requirement.

Solar-Log Base Communication [3)]

Solar-Log™ HBUS module connector [2)]	2 items included in delivery

General Data

Device voltage [1) 4)]		24V DC (+-5%), if required 12V DC (+-5%)
Device current [1) 4)]		max. 1 A
Power consumption		typ. 2 W
Power supply [2)]		via HBUS
Cable length		max. 1000 m twisted pair
Baud rate/parity/stop bit		Automatically parameterised by the Solar-Log Base
Dimensions / Weight	Housing / Dimensions (W x H x D)	3TE / 53,6mm x 89,7mm x 60,3mm
	Height from top edge of mounting rail	~54,5mm
	Net weight	125 g
Mounting type	DIN rail	TH 35 / 7.5 or TH 35 / 15 to IEC/EN 60715
Connection data	Connection technology	Push-in SPRING CLAMP®
	Solid conductor	0,2 … 1,5 mm² / 24 … 16 AWG
	Fine-stranded conductor	0,2 … 1,5 mm² / 24 … 16 AWG
	Fine stranded conductor with ferrule	0,14 … 1 mm².
	Stripping length	8.5 … 9.5 mm / 0.33 … 0.37 inch, with ferrules ≥ 6 mm. Please note the diameter of the plastic collar
Material data	Housing material	PC/ABS
	Colour	black

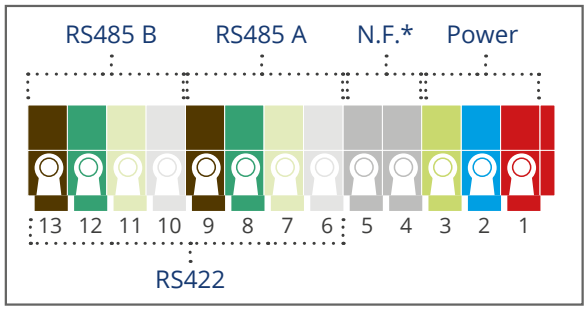
Technical Data

Ambient conditions	Ambient temperature	-20°C to +50°C (without condensation)
	Ambient temperature storage/ transport	-20°C to +60°C
	Protection rating to EN 60529	IP20
	Mounting position	any
Warranty		2 years
Conformity marking		CE
Article number		256331

1) No power supply unit is included in the scope of delivery. Only use NEC Class 2 power supplies for installations in the US market.
2) The Solar-Log™ HBUS module connector is used to supply power and voltage to additional modules connected to the Solar-Log Base. The following aspects must be observed in this regard:
   1. The supply voltage on the Solar-Log™ HBUS module connector corresponds to the supply voltage on the Solar-Log Base.
   2. If the connected Solar-Log MOD 485 module is not separately supplied with voltage, no voltage/power for external components can be drawn from the power supply connections for the interfaces. These connections are not supplied by the Solar-Log™ HBUS module connector.
   3. If it is intended to supply external components via the voltage outputs for the interfaces, an additional voltage supply for the module is absolutely necessary.
3) Can only be used with Solar-Log Base firmware 6.x or higher.
4) The Solar-Log Base and the Solar-Log MOD 485 module may only be supplied with 12V DC in conjunction with the special Piggy Back (Art 220020).

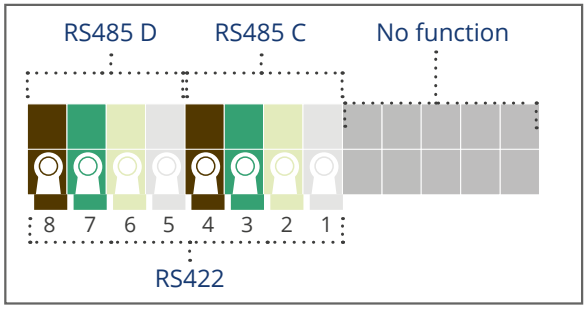
Connections

Top



* No Function

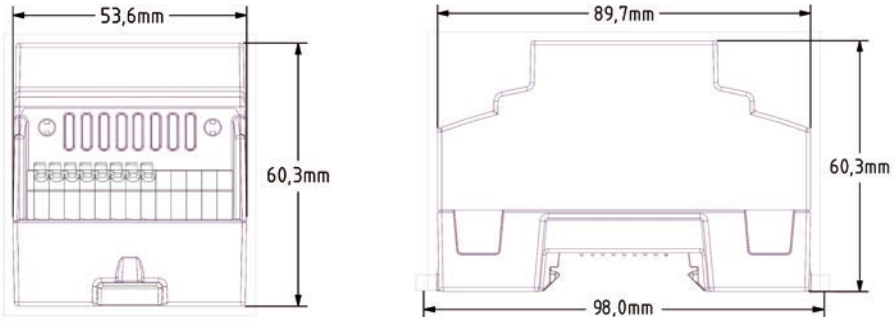
Bottom



Pin/Top	RS485-A/B RS422		Power
1	-	-	Vin 24VDC / (12 VDC)
2	-	-	GND
3	-	-	FE
4	-	-	-
5	-	-	-
6	Data +	T/RX+	-
7	24 V / (12 V)	24 V / (12 V)	-
8	Ground/GND	Ground/GND	-
9	Data -	T/RX-	-
10	Data +	R/TX+	-
11	24 V / (12 V)	-	-
12	Ground/GND	-	-
13	Data -	R/TX-	-

Pin/Bottom	RS485-C/D RS422	
1	Data +	T/RX+
2	24 V / (12 V)	24 V / (12 V)
3	Ground/GND	Ground/GND
4	Data -	T/RX-
5	Data +	R/TX+
6	24 V / (12 V)	-
7	Ground/GND	-
8	Data -	R/TX-

Technical Drawings



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Advantages and Benefits of Solar-Log™ hardware

For Installers, Portal Operators and Service Providers

Easily become more efficient

The configuration wizard, which supports the installation and commissioning of the device, enables the Solar-Log™ to be installed without any prior PC or internet knowledge.

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.

All information at a glance

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

Time-saving – React with remote access

Detailed status messages available through Solar-Log WEB Enerest™ 4 provide accurate error detection and analysis as well as quick remote access to PV plants.

For Plant Owners

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.

Higher efficiency

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

Effective and fast operation

The web browser enables intuitive and convenient operation.

No PC expertise required

No software needs to be installed to connect the Solar-Log™ to the network.

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.

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.

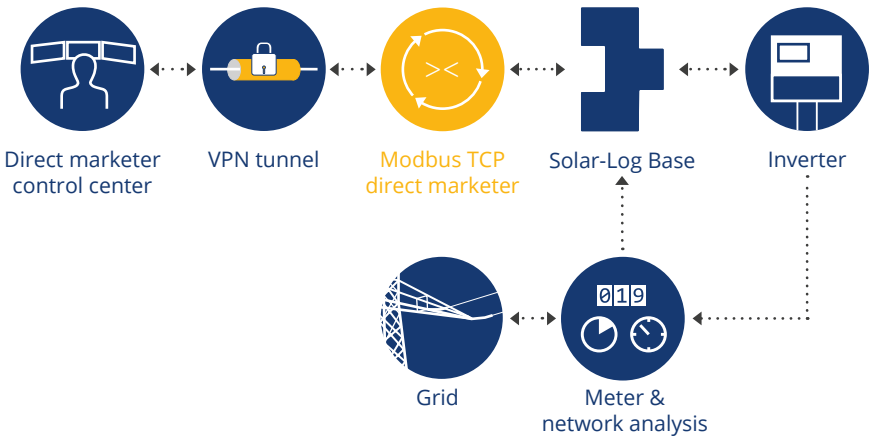
Reliability, a reassuring feeling for decades to come

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.

Solar-Log™ Licences

Solar-Log™ Modbus TCP Licence for Direct Marketing

For simple and efficient communication between direct marketers and remote controllable PV plants. The Solar-Log Base devices 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. With the Solar-Log Base devices, a VPN router is no longer required for transferring data between the generating plant and the direct marketer.

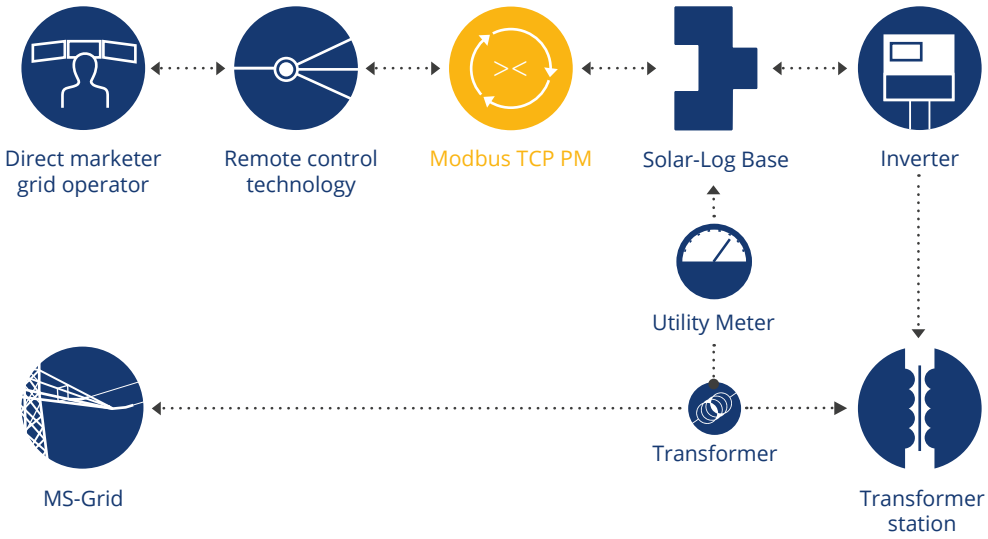


Articel number

Solar-Log™ Modbus TCP direct marketing up to 100 kWp	255935
Solar-Log™ Modbus TCP direct marketing up to 250 kWp	256010
Solar-Log™ Modbus TCP direct marketing up to 350 kWp	256011
Solar-Log™ Modbus TCP direct marketing up to 500 kWp	255936
Solar-Log™ Modbus TCP direct marketing up to1 MWp	255930
Solar-Log™ Modbus TCP direct marketing up to 2 MWp	255931
Solar-Log™ Modbus TCP direct marketing up to 5 MWp	255932
Solar-Log™ Modbus TCP direct marketing up to 10 MWp	255933
Solar-Log™ Modbus TCP direct marketing up to 20 MWp	255934

Solar-Log™ Modbus TCP PM Licence

With some grid operators, the remote control technology connects to the Solar-Log Base via the Modbus TCP feed-in powermanagement interface. Active and reactive power commands and response signals for various measured values are sent via this digital interface. If a utility meter is required for control purposes, a Solar-Log Base 2000 must be used.

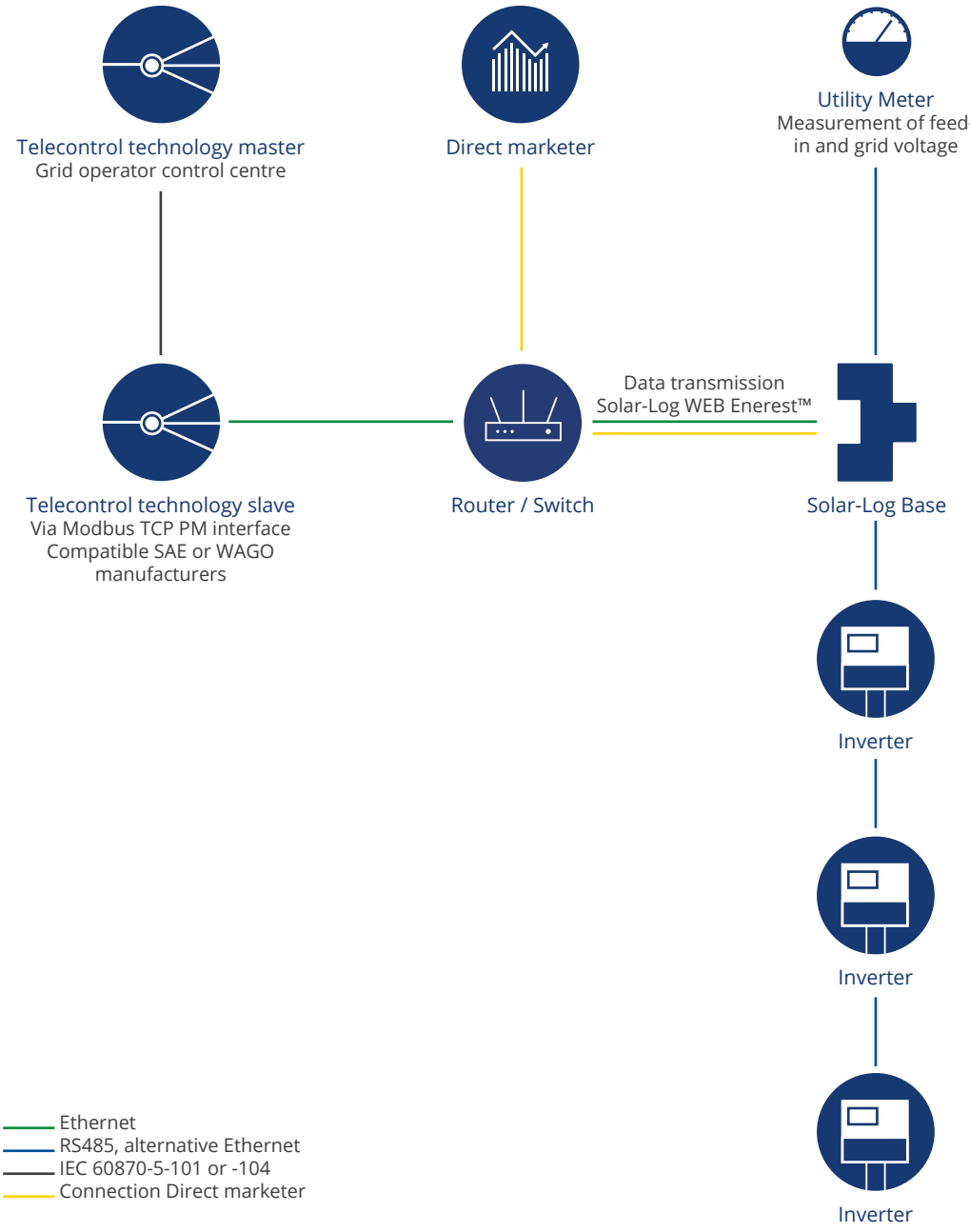


Articel number

Solar-Log™ Modbus TCP PM Licence	255511

Solar-Log™ PM PRO licence

You can easily meet energy companies' diverse requirements for plant control systems with the Solar-Log™ PM Pro licence. The licence includes a wide range of control modes, remote switching of control modes, fallback functions should connected devices fail, active watchdog functionality and the ability to generate feedback channels from the system. You can find a detailed description here.

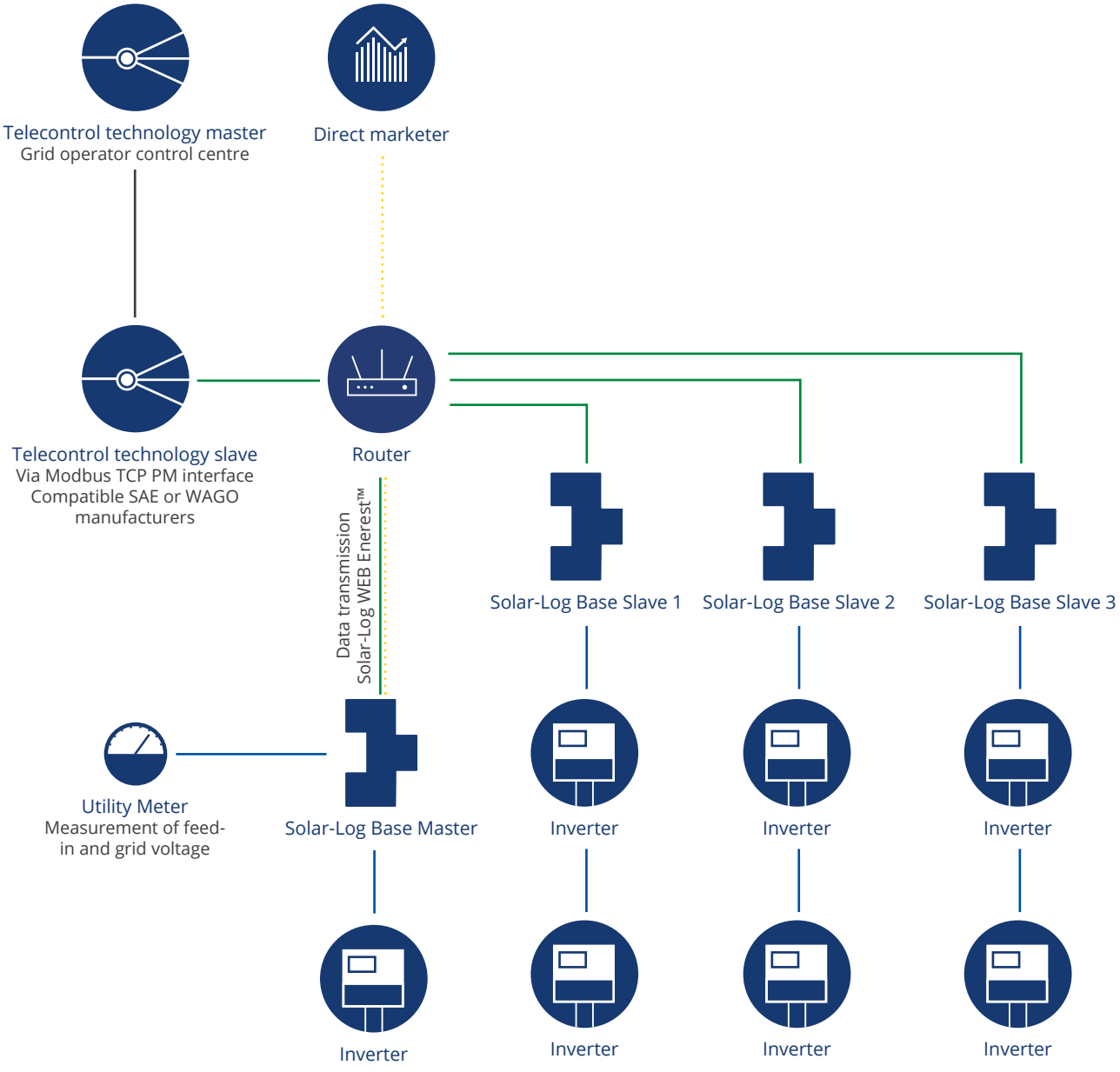


Articel number

Solar-Log™ PM PRO licence up to 500kWp	257201
Solar-Log™ PM PRO licence up to 1MWp	257202
Solar-Log™ PM PRO licence up to 2MWp	257203
Solar-Log™ PM PRO licence >2MWp	257204

Solar-Log™ interconnection control licence*

The Solar-Log™ interconnection control licence enables your PV plant to be flexibly structured. Several direct marketers can be mapped in one plant. Even plants with distant feed-in or measurement points can be implemented with the help of several Solar-Logs and the associated interconnection control licences.



Articel number

Solar-Log™ interconnection control licence	257205

*Maximum of 10 devices per Solar-Log™ interconnection licence

Solar-Log™ FTP/FTPS Licence

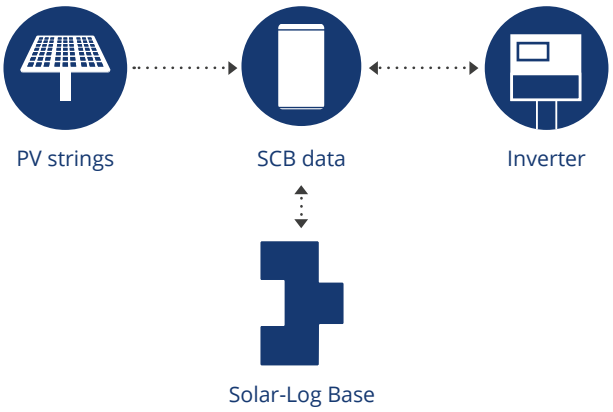
With the FTP licence, the data export can be used for third-party portals. With this licence, the Solar-Log 300, 1200, 1900 and 2000 and the Solar-Log Base devices make repeated, periodical data transfers.

Articel number

Extended FTP / FTPS transfer licence for Solar-Log Base 15	257019
Extended FTP / FTPS transfer licence for Solar-Log Base 100	257064
Extended FTP / FTPS transfer licence for Solar-Log Base 2000	257065
Extended FTP transfer licence for Solar-Log 300	255653
Extended FTP transfer licence for Solar-Log 1200	256233
Extended FTP transfer licence for Solar-Log 2000	256234

Solar-Log™ SCB Licence

The software licence activates data recording of different SCBs in the Solar-Log Base 100 and 2000, 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.

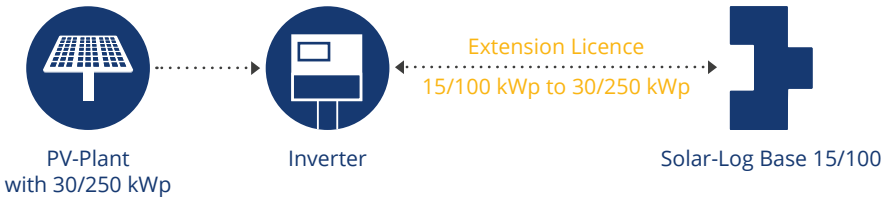


Articel number

SCB Software Licence for Solar-Log™ WEB activation	255380

Solar-Log™ opening and extension licences

For expanding the number of components or the size of the PV plant. The opening licence is compatible with firmware 3.5.0 and higher.



Articel number

Gateway Solar-Log 50 Opening Licence to 30 kWp	256206
Solar-Log 300 Opening Licence up to 30 kWp	256034
Solar-Log 1200 Opening Licence up to 250 kWp	256033
Solar-Log Base 15 Extension Licence up to 30kWp	256328
Solar-Log Base 100 Extension Licence up to 250 kWp	256329

As of firmware 4.0 and above, licences are available in the Solar-Log™ Shop.

Tamara Weymann • Customer Service • Solar-Log GmbH

03

Smart Energy

Efficient Power Management and Optimized Consumption of Self-Produced Power

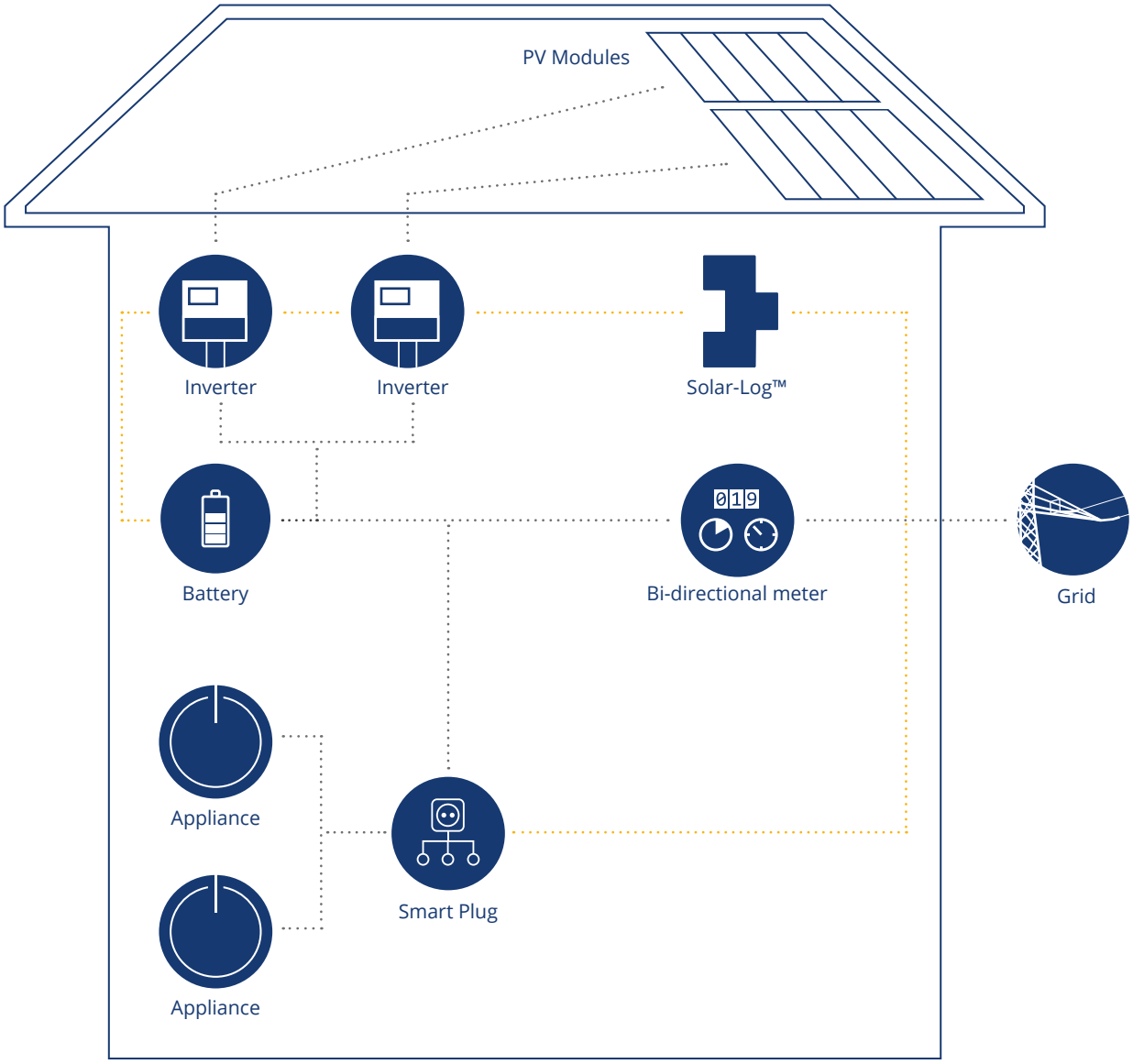
Solar-Log™ is setting international standards not just in monitoring but also in energy management of photovoltaic plants. Feed-in tariffs are being reduced, tax incentives and subsidies are being removed, and energy prices continue to rise. Consequently, storage and optimized consumption of self-produced 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 Base. Additional options to control appliances include networked “smart plugs” and the internal relays of the Solar-Log Base and the Solar-Log™ Smart Relay Station V2.

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 AC ELWA 2 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

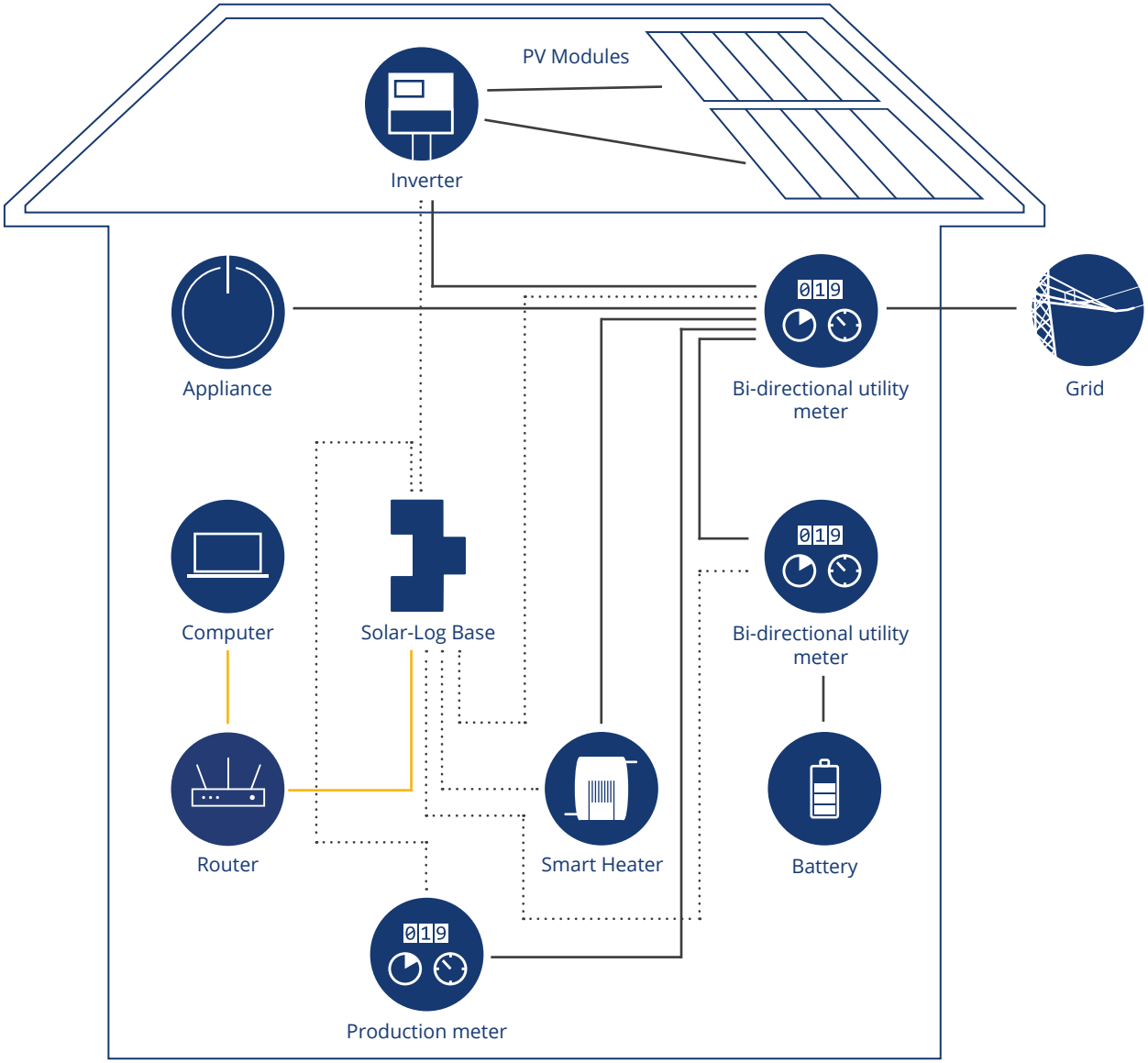
Battery storage systems are the ideal solution to store self-produced power from a PV plant for self-consumption. Consequently, these systems play an essential role in optimizing the consumption of self-produced power.

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 storage is charged with the excess power of the PV system (green) and discharged again if necessary (dark blue) to avoid drawing 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.

Charging Station E-Mobility

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

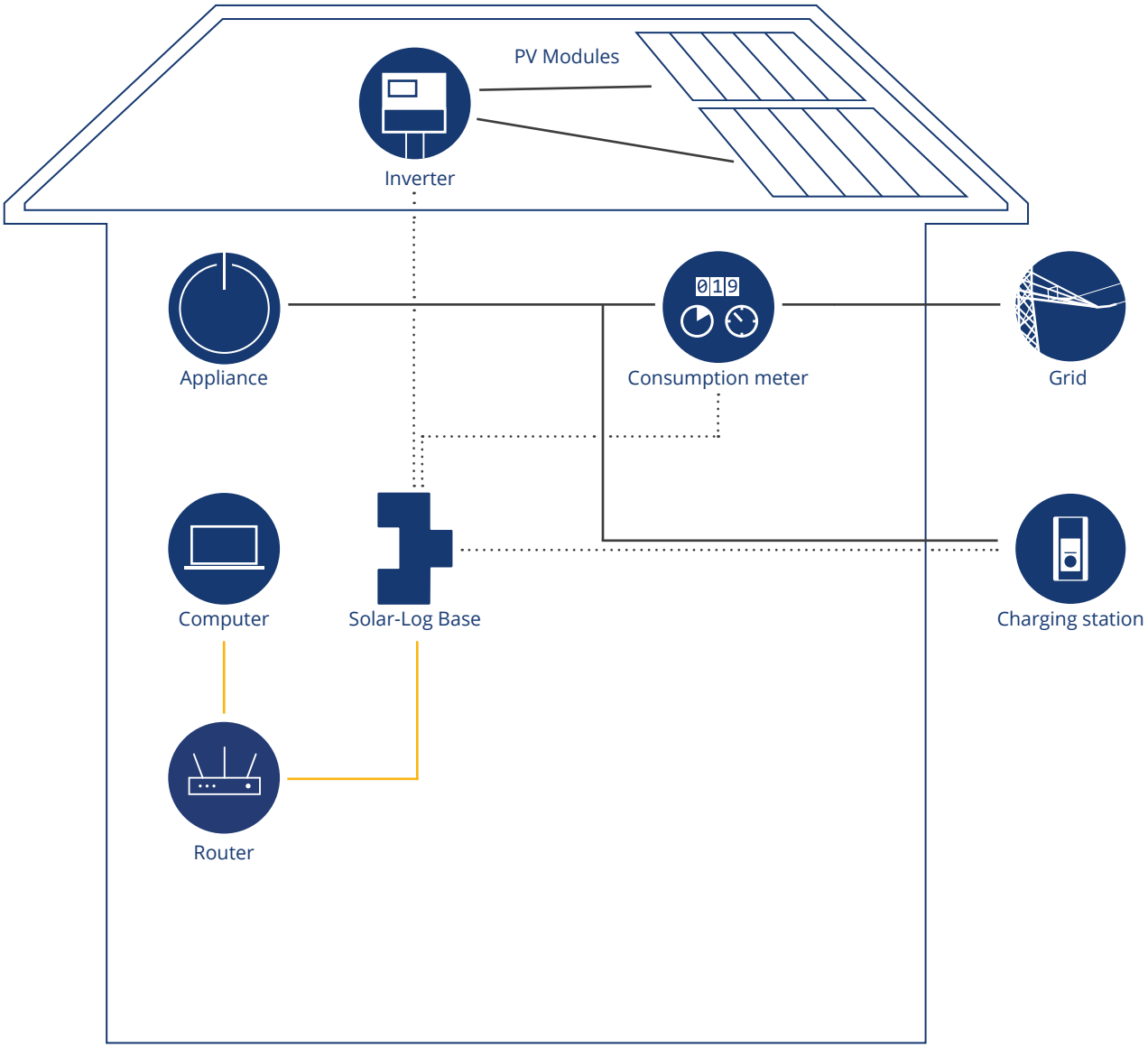
Through the combination of a photovoltaic plant, a Solar-Log™ device, and a charging station, electromobility becomes even more efficient. The interaction of these three components ensures that electric cars are always charged with the maximum amount of available power from the photovoltaic plant. It 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.

Compatible charging station

- KEBA (Type: P20 c-series, P20 x-series, P30 c-series, P30 x-series (incl. green edition))
- ChargeX (Aqueduct)
- Mennekes (Beta firmware available - AMTRON Professional, AMTRON Charge Control, AMEDIO Professional)
- ChargeHere (coming soon - Single Charger, Twin Charge)
- Weidmüller (C SMART ADVANCED, AC SMART VALUE and AC SMART ECO) probably from Q2/24



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.

Foto: iDM/Martin Lugger

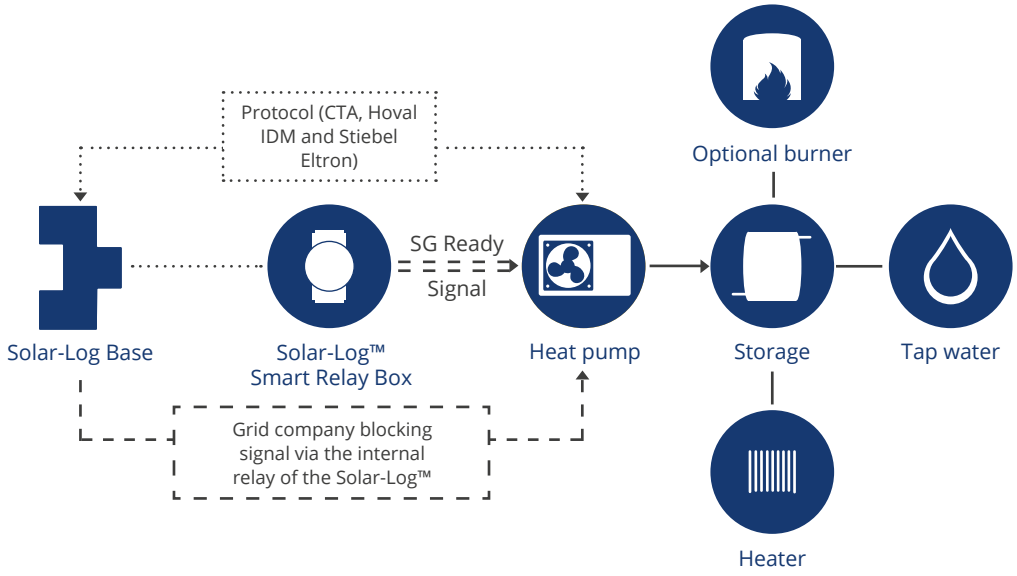
Additional Benefits for Plant Owners:

- 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. The Solar-Log™ Smart Relay Box or the Solar-Log MOD I/O is suitable for heat pumps with blocking contact.

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.



PV to Heat

Intelligent Heating with PV Power

With the AC ELWA 2 and AC-THOR products, Solar-Log GmbH has found a dependable cooperation partner with the my-PV company for heating rods and intelligent loads. my-PV's expertise in heating with solar power perfectly complements Solar-Log's expertise in smart energy.

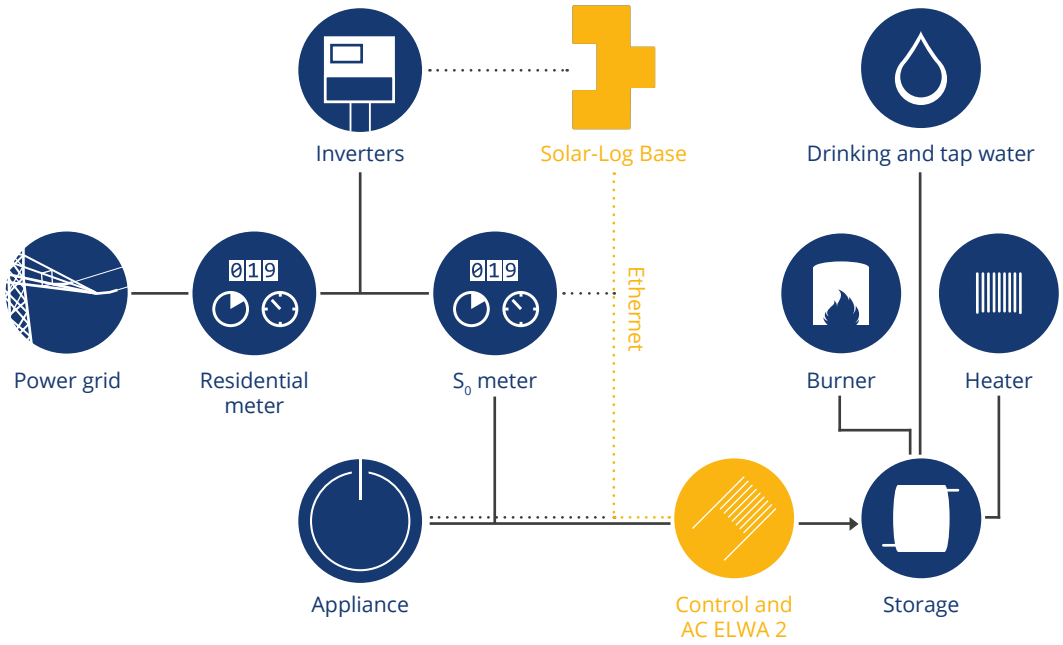
By combining the Solar-Log™ and the AC ELWA 2 from my-PV, excess PV power can be used to heat domestic hot water or combined storage tanks. The power is linearly controlled by the Solar-Log Base from 0 to 3,500 W depending on the surplus. This combination increases the degree of self-sufficiency, especially in summer and during transitional periods. During this time, fossil fuels can often be completely dispensed with for conventional hot water heating. The minimum temperature of the hot water tank can be defined by configuring the unit. This means that hot water can always be provided regardless of the excess PV power available. The AC ELWA 2 can be conveniently configured via the web interface for the Solar-Log Base.

The AC-THOR is a 0-3 kW infinitely variable control device for hot water, electric heat sources and optional heating.

For example, in combination with the Solar-Log™, the AC-THOR controls the AC ELWA 2 heating rod in accordance with the PV energy and hot water demand. Missing residual energy can be drawn from the public grid. In addition, the AC-THOR can be easily configured at any time with little effort thanks to its touch display.

When the set temperature is reached, the PV power can also be used for other loads.

Technical Data	AC ELWA 2
Compatible with the Solar-Log™ device series	Solar-Log Base
Ambient temperature	0°C to 40°C
Heating output	0 – 3,500 W + 16 A switching output 16 A
Minimum/maximum temperature	Configurable
Protection class	IP21
Environment	For indoor use
Operating altitude	Maximum 2,000 m (m above sea level)
Mains connection	3 pole clamp, 2,5 mm² 230 V
Rated voltage	230 VAC
Mains frequency	45-65 Hz
Standby power consumption	< 1,5 W
Efficiency	> 99,3 % at nominal power
Cos Phi	0,999 at nominal power
Mains-side THDi	At 50 % power < 3 %; at 100 % power < 3 %
Protection class	1
Circuit protection	Circuit protection adjustable (13 A / 16 A). In the two compatibility modes, the power is limited to 3kW. Instead of „Max. power", „Fuse protection" is displayed at this point.
Operating pressure	Max. 10 bar
Connection/interface	Ethernet
Cartridge heater connection	1 ½ Zoll
Width across flats	AF 60 mm. The tightening torque must not exceed 50 Nm.
Display	Color Graphic, Touch Screen 2.83"
Dimensions (WxHxD)	580 x 133 x 117 mm with heating rod
Heating rod length	460 mm (from the sealing surface)
Weight	2 kg
Directives and standards fulfilled	CE standard (EN 55014-1, EN 55014-2, EN 60335-2-21, EN 60730-2-9, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, EN 62233), TOR D1 (AT), TAEV (AT), TAB(DE)
Warranty	2 years
Artikelnummer	257274



AC THOR and AC THOR 9S

The AC THOR and AC THOR 9S are power managers. Together with the Solar-Log Base and an electrical heat source, they enable excess PV power to be used to heat drinking water or combined storage tanks. The control takes place depending on the excess power of the PV system.
This happens steplessly between 0 and 3,000 W with the AC THOR and even up to 9,000 W with the AC THOR 9S. This combination increases the degree of self-sufficiency, especially in summer and in the transitional period. During this time, fossil fuels can be largely dispensed for conventional water heating.

The separation of the heat source and the power manager enables flexible installation and integration into existing systems.

The Power Managers can be conveniently configured via the Solar-Log™ web interface. This also allows the minimum temperature of the hot water tank to be defined in order to ensure the provision of hot water regardless of the weather.

Further advantages for the system owner

- Continuously variable control for optimal energy utilization.
- Cost savings through the use of self-generated PV energy and increased self-consumption.
- Simple communication via Ethernet.
- Friendly maintenance due to the separate Power Manager.
- Simple and quick installation, easy to retrofit in existing systems.
- Prioritization of the Power Manager over other loads in the installation.
- The AC THOR and the AC THOR 9s can be used together. Maximum of 1 units possible.

AC THOR only

- Power: 0 - 3,000 W
- Power cable included
- Output via protective contact socket for resistive loads

AC THOR 9S only

- Output: 0 - 9,000 W, with 3 x 230 V connection
- Three individual outputs with plug contacts

Technical Data	AC THOR	AC THOR 9S
Compatible with the Solar-Log™ device series	Solar-Log Base 15, Solar-Log Base 100, Solar-Log Base 2000	
Mains connection	Single-phase, earthing contact plug, 2.8 m connection cable	3 × 230 V
Mains frequency	50 Hz	
Stepless output	0 - 3,000 W + switching output 16 A	0 - 3,000 W, three outputs, max. 9,000 W
Load connections	Protective contact socket for resistive loads	Plug contacts
Circuit protection	16 or 13 A (with reduced power)	3 x 16 A
Mains-side THDi	At 50 % power <3 %; at 100 % power <3 %	
Efficiency	> 98 % at nominal power	
Display	Colour graphics, touch screen 2,83“	
Stand-by consumption	< 1,5 W	
Operating temperature	0 °C to 40 °C	
Storage temperature	–20 °C to 70 °C	
Admissible humidity	0 – 99 % (non-condensing)	
Minimum / maximum temperature	Configurable	
Environment	For indoor use	
Operating altitude	Maximum 2 000 m (m a.s.l.)	
Connection/interface	Ethernet RJ45, RS485	
Dimensions (WxHxD)	135 x 210 x 65 mm	135 x 195 x 65 mm
Weight	1,5 kg (incl. cable)	1,3 kg
Compatible temperature sensor	my-PV temperature sensor 5m	
Warranty	2 Years	
Delivery scope	Device, wall holder, mounting material	
Article number	257255	257256

Our Partners

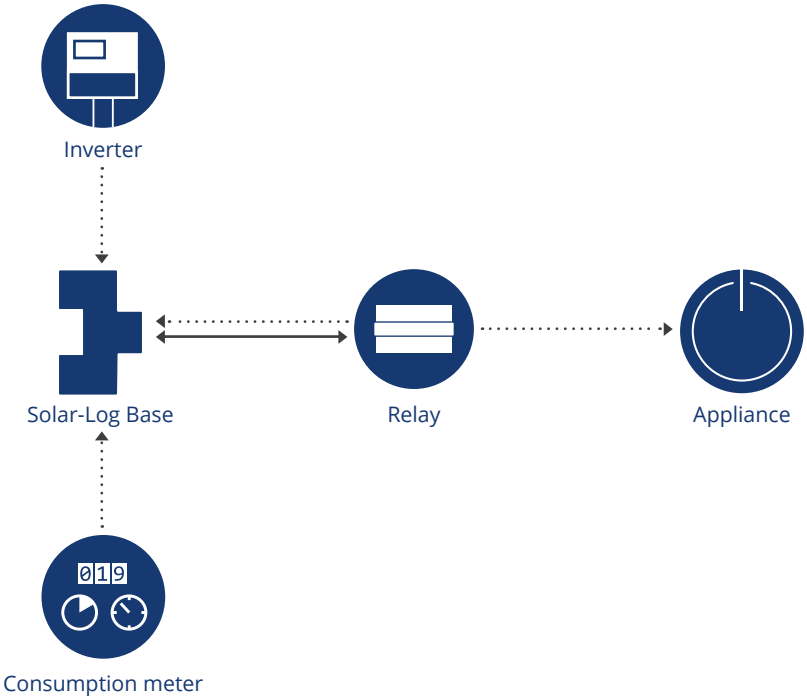
Smart Energy Logics and Components

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 components 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 Base. 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 V2. 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 V2 can be used as a sub-consumer without any additional hardware.



Solar-Log™ Smart Relay Station V2

- 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)

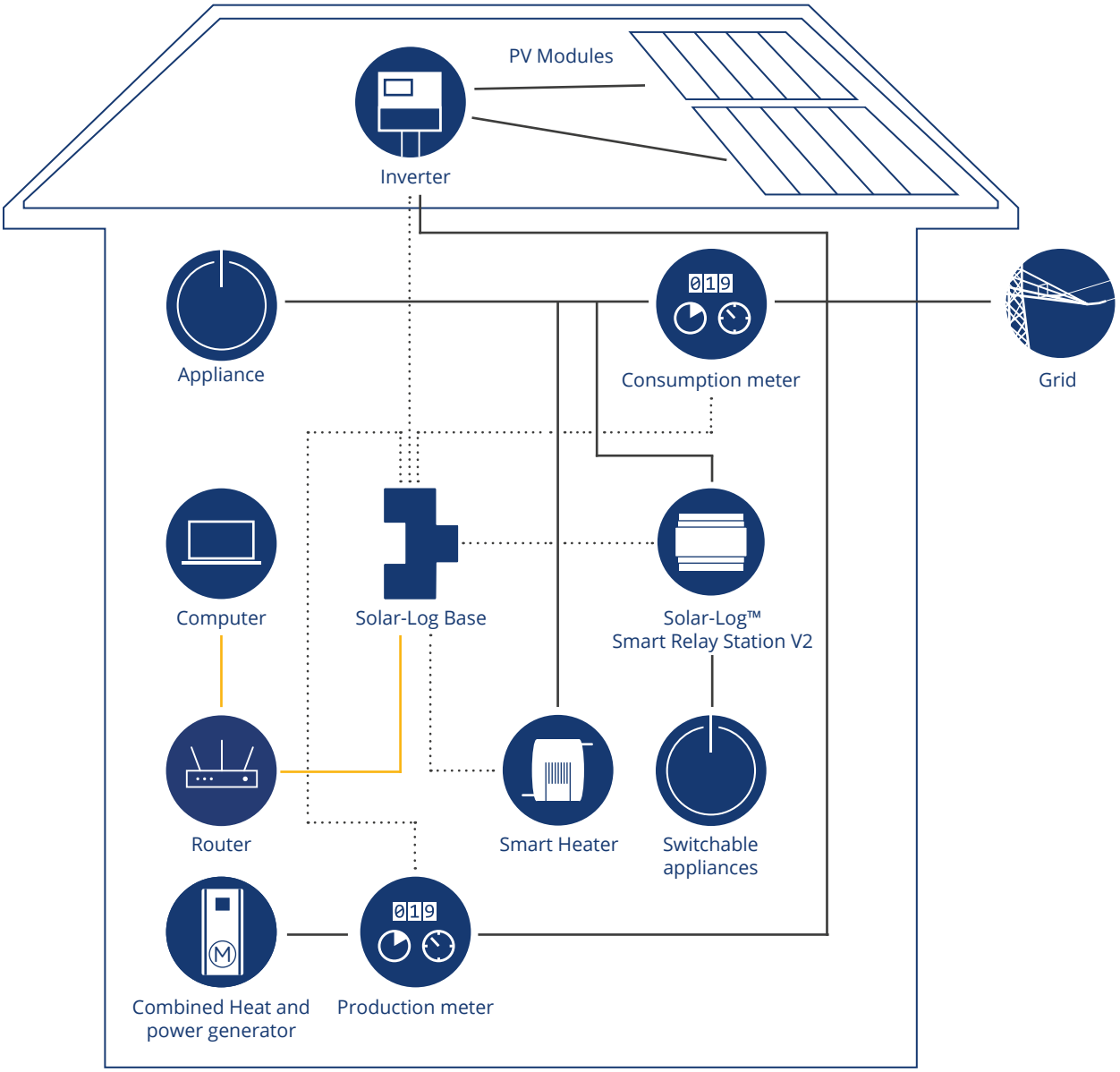
Optimally Using the Produced Power

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 AC ELWA 2. This allows unprofitable grid feed-in to be avoided and the Solar-Log™ can be used as a central monitoring and control element.

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.

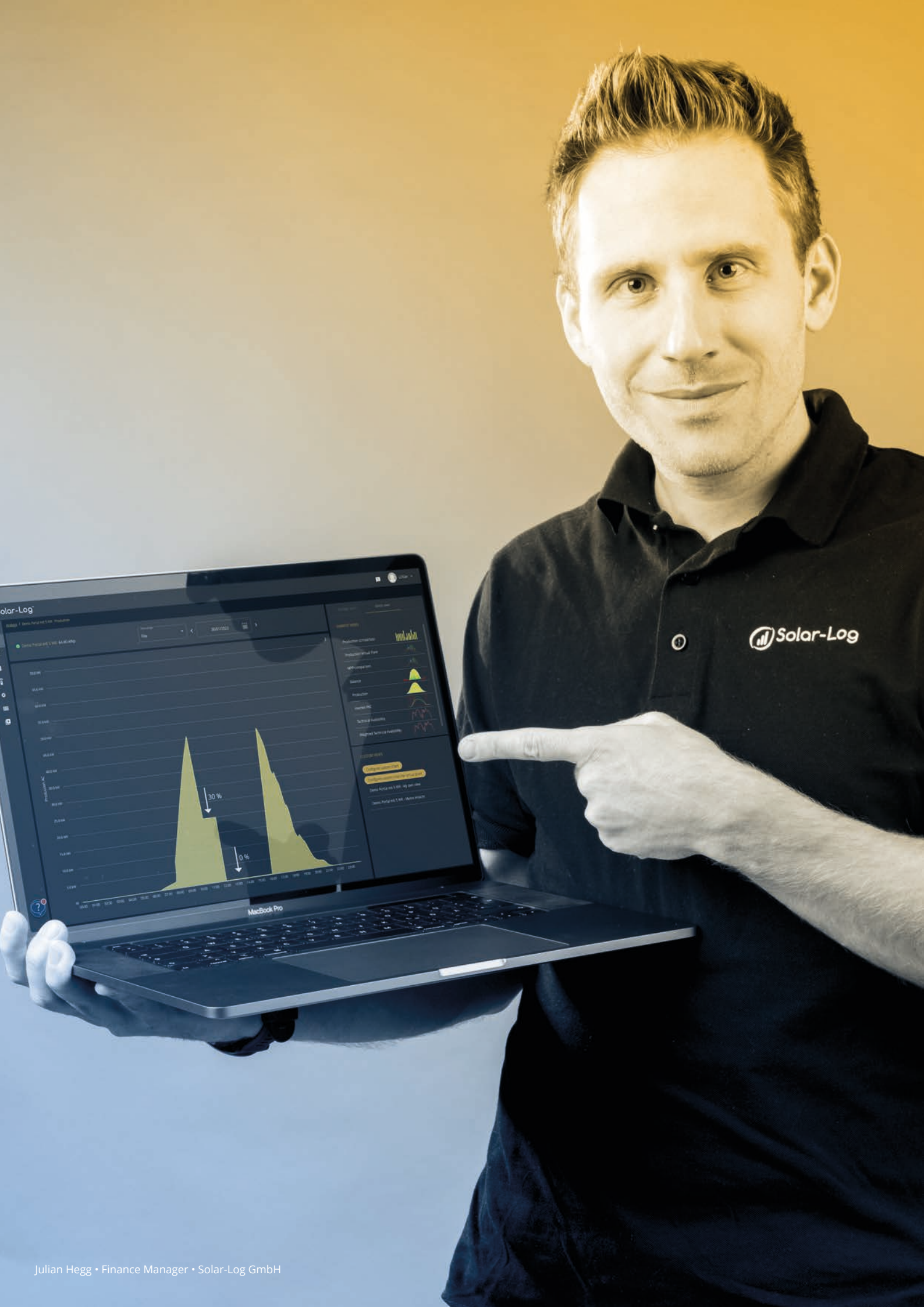


Required Hardware

- 1 x Solar-Log Base
- 2 x 3-phase meter RS485 or S_0
- 1 x AC ELWA 2

Optional

- Solar-Log™ Smart Relay Station V2 or other networked smart plugs to activate appliances.



Julian Hegg • Finance Manager • Solar-Log GmbH

04

Feed-in Management

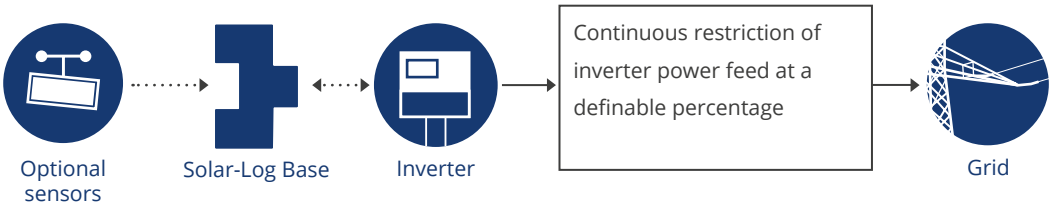
Individual Solutions for International Requirements

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

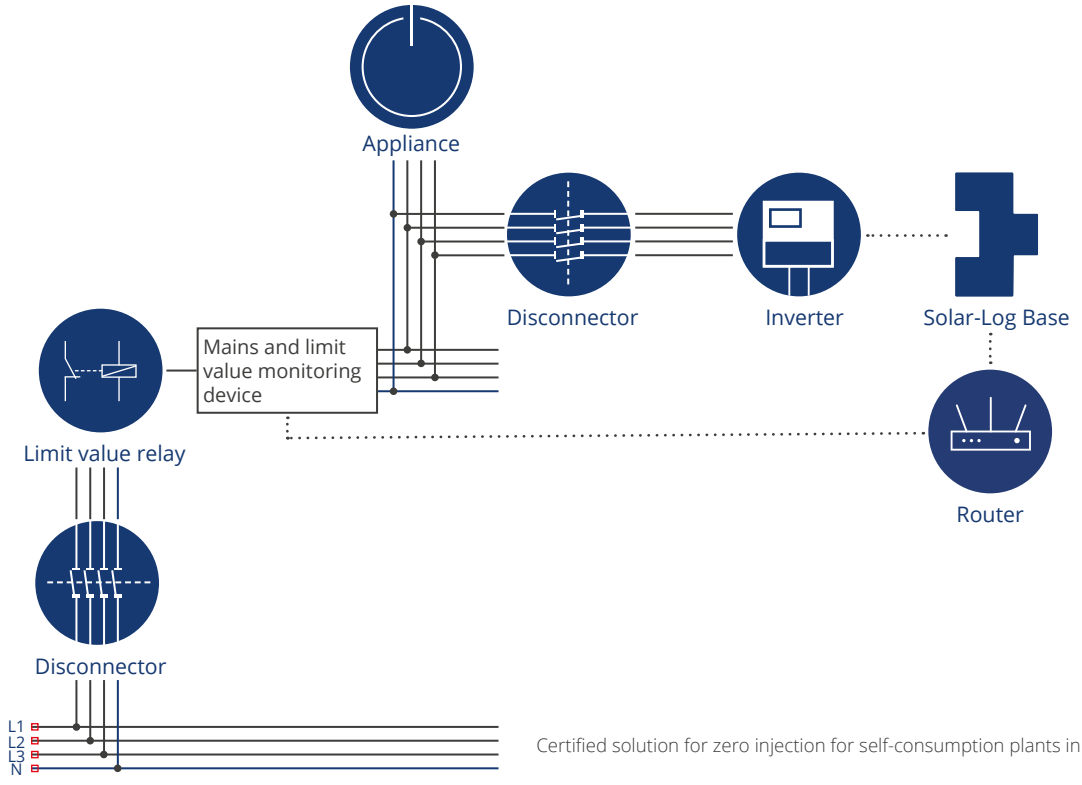
Individual Solutions for International Requirements

In order to stabilise the electricity grid even on critical days, there will be new requirements for grid stability in the medium term in all countries that provide larger amounts of decentralised energy generation. The Solar-Log™ devices already cover the basic functionalities for feed-in management with the basic firmware. For the entire range of PM requirements, we offer the PM Pro licence. With this licence you'll find the right solution for every grid stability requirement.



Limited feed-in (x %)

A key feature is concerned with limiting the feed-in to the grid. In many countries, fixed or dynamic power limits are now prescribed. This limit can be flexibly set for different threshold values. This enables different requirements to be met (70% regulation, 50 or 60% regulation with subsidised battery storage, 0% regulation in Spain, etc.).



Certified solution for zero injection for self-consumption plants in Spain

Active power control with consumption compensation

The controls make it possible to take consumption into account with x % regulation and thus minimise losses from the regulated PV plant.

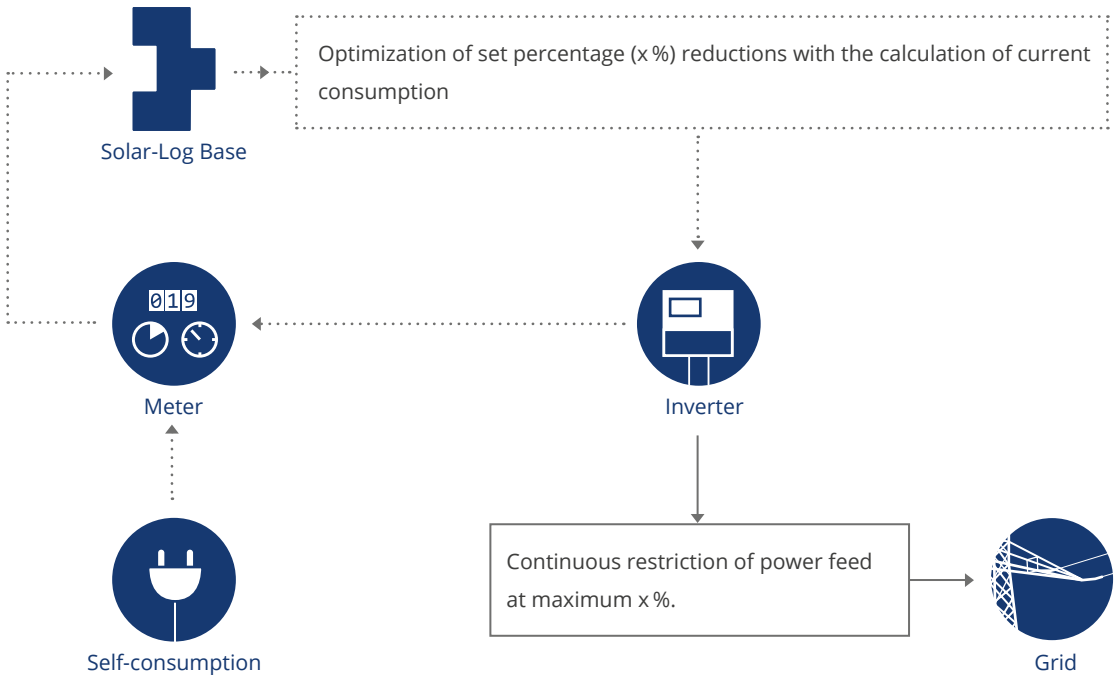
Two options are available for the function in accordance with the installation location of the meter used.

- Control with consumption meter. (The meter is located directly in the consumer branch)
  The current consumption is measured for the control. The Solar-Log™ offsets this with the current production from the inverters. The inverters are only correspondingly curtailed if the difference between the production and consumption exceeds, for example, 70% of the module output.

A meter that determines the consumption directly in the consumption branch is required to implement this.

- Control with meter at the feed-in point.
  With this control, the direction and values are measured at the feed-in point. Depending on the measured values, the inverters are controlled directly and curtailed if necessary.

You can find further information and instructions on this topic in our Solar-Log_Handbook_PM_Control manual.



Managing PV Plants in the Medium Voltage Network

Feed-in management (with Solar-Log™ PM Pro licence)

In Germany, PV systems connected to the medium-voltage grid are subject to increased requirements. The various regulations that may be applied to a plant are bundled in the VDE-AR-N-4110 (VDE-4110) standard.

In addition to the way the PV system is controlled, it is also generally stipulated that diverse information about the current status of the PV system must be made available to the energy company.

This information is communicated to the energy company via telecontrol systems. The signal is normally transmitted between the telecontrol system and the Solar-Log Base via a Modbus/TCP interface, more rarely via the I/O box(es) (analogue, digital) included in the PM package. In addition to controlling the active power, the reactive power control represents a special technical challenge.

VDE-4110 envisages various voltage- or power-controlled concepts in this regard. The voltage-guided reactive power control requires a measurement at the feed-in point, for which a utility meter approved by Solar-Log GmbH is required.

ZERTIFIKAT

kiwa

Komponentenzertifikat

Nr.: 20-166-01

Hersteller / Antragsteller	Solare Datensysteme GmbH Fuhrmannstraße 9 72351 Geislingen – Binsdorf Deutschland
Komponenten-Typ	EZA-Regler, Modelle: Solar-Log Base 15 / Solar-Log Base 100 / Solar-Log Base 2000 / Solar-Log Base Flex
Technische Daten	Bemessungsscheinleistung: –
	Bemessungsspannung: –
	Nennfrequenz: –
Zertifizierungsprogramm	SOP 9.3_08 EZE Certification Program, 11/20 Auf Basis von: FGW Technische Richtlinie Nr. 8 Rev. 9
VDE-Anwendungsregel	VDE-AR-N 4110:2018-05-17 „TAR Mittelspannung"
Mitgeltende Normen/ Richtlinien	FGW Technische Richtlinien Nr. 3 Rev. 25 FGW Technische Richtlinien Nr. 4 Rev. 9
Prüfberichte	TR3 19PP207-01 vom 28.07.2020 TR4 19PP207-02 vom 05.02.2021 TR8 19PP207-03 vom 05.02.2021

Die oben bezeichnete Komponente erfüllt die Anforderungen der oben aufgeführten VDE-Anwendungsregel.

Es gelten folgende Einschränkungen und Abweichungen:

☒ keine

Der Hersteller hat die Zertifizierung des Qualitätsmanagementsystems seiner Fertigungsstätte nach ISO 9001 nachgewiesen.

Validiertes Simulationsmodell:

P2012_SDS_ParkController_enc_R01_V01.pfd

MD5-Checksumme: 505dc8a3e7801b6e2b919c0a7f46ccd73

Das Zertifikat besteht aus 2 Seiten beinhaltet folgende Angaben:

- Technische Daten der Komponente, der eingesetzten Hilfseinrichtungen und der verwendeten Softwareversion;
- den schematischen Aufbau der Komponente;
- zusammengefasste Angaben zu den Eigenschaften der Komponente.

Das Zertifikat besteht zusätzlich folgende Anhänge mit insgesamt 30 Seiten:

- Anhang 1: Verfahren zur Bewertung der Prüfberichte
- Anhang 2: Bewertung der Prüfergebnisse gemäß TR8, Rev. 9
- Anhang 3: Auszug aus dem Prüfbericht „Bestimmung der elektrischen Eigenschaften"
- Anhang 4: Angaben zu Einstellmodi und Parameterbereichen
- Anhang 5: Herstellererklärung zu spezifischen Daten
- Anhang 6: Herstellererklärungen

Das Zertifikat ist gültig bis 13.08.2025.

Kaufbeuren, 08.02.2021

Jürgen Seegger
Certification Review Engineer

Raphael Rader
Certification Engineer

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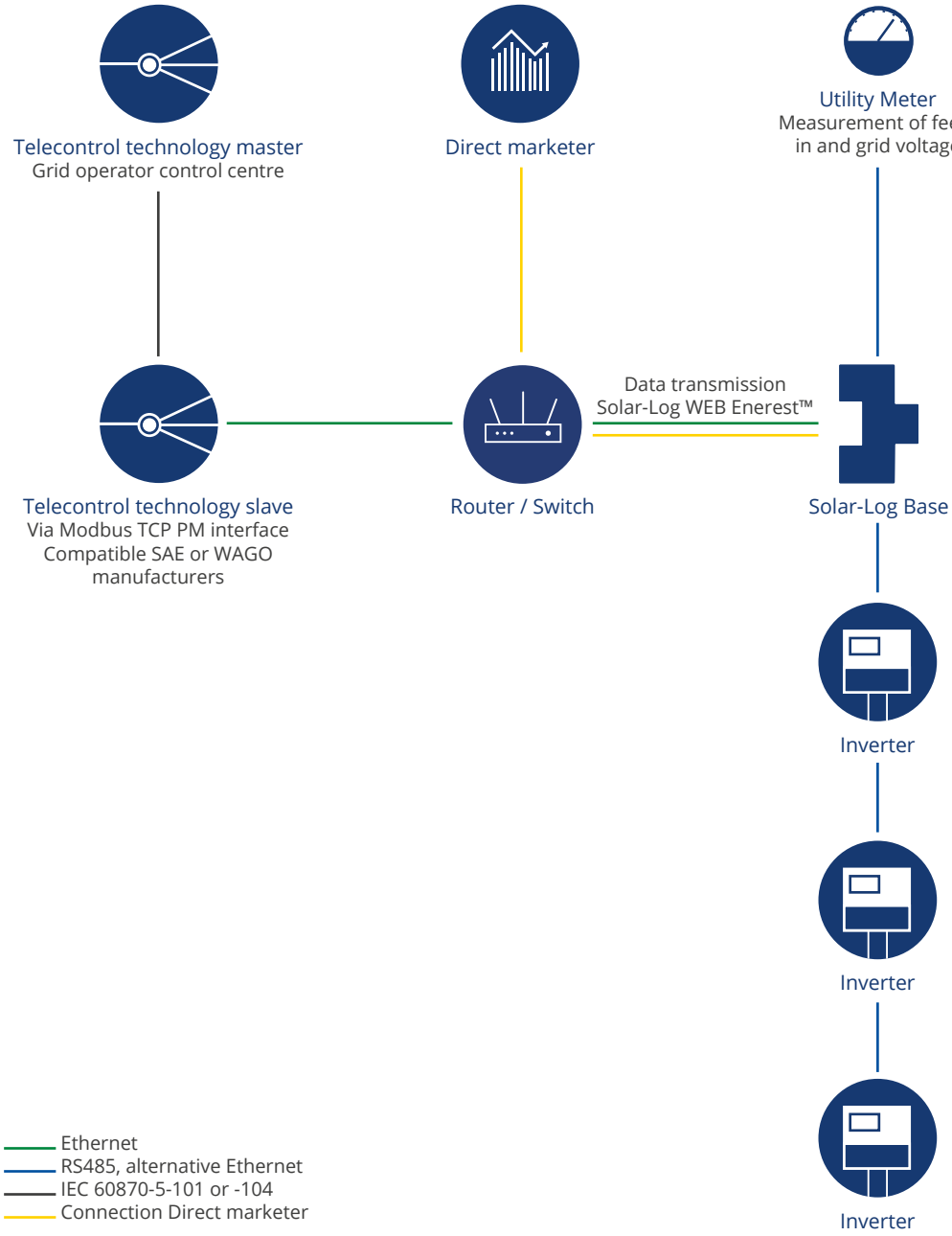
DAkkS Deutsche Akkreditierungsstelle D-ZE-12089-03-00

Dieses Zertifikat darf nicht in Auszügen verwendet werden

Seite 1 von 2

Component certificate according to VDE-AR-N-4110

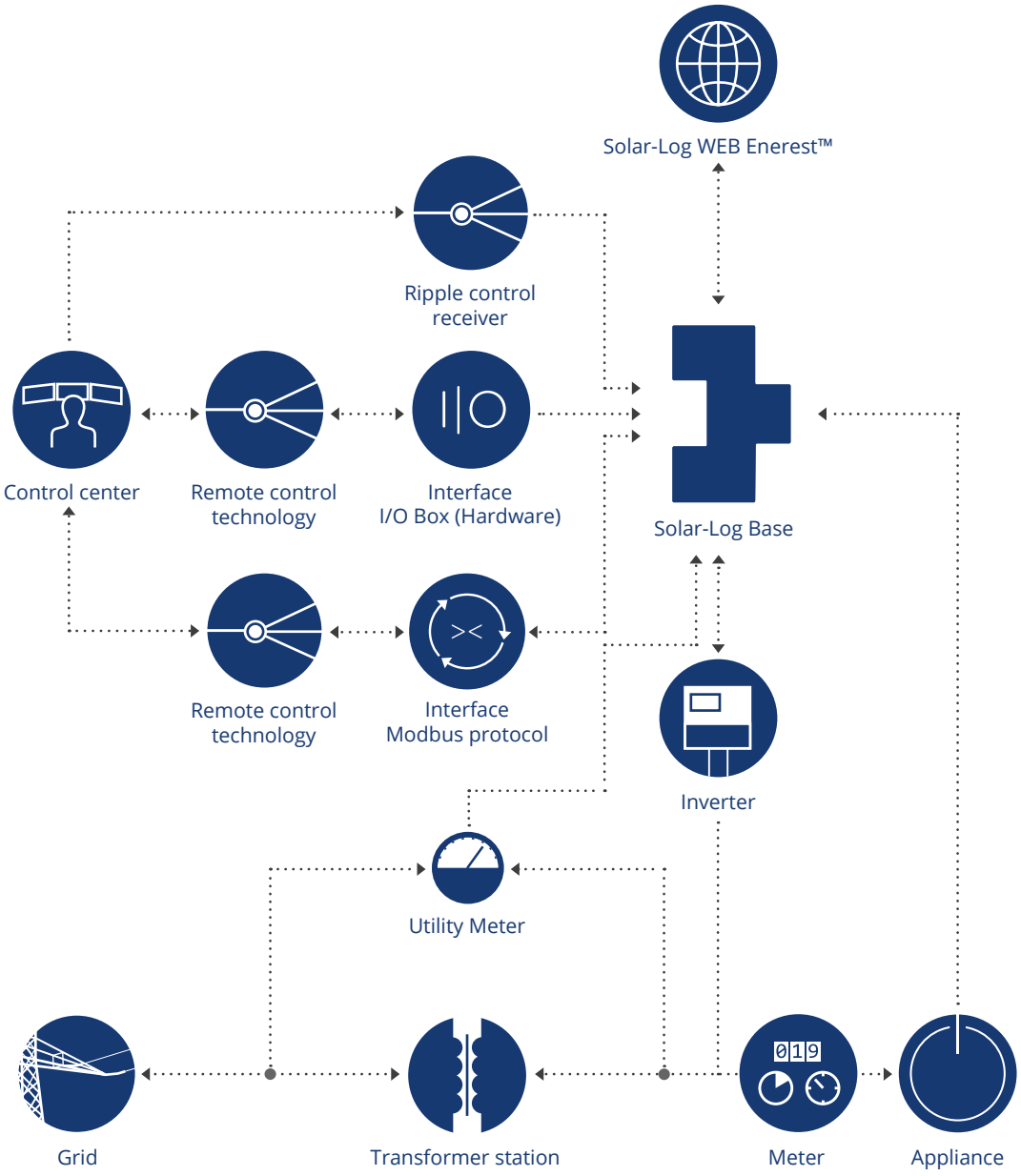


Solar-Log™ VDE-AR-4110

Modbus TCP Powermanagement (PM) Interface

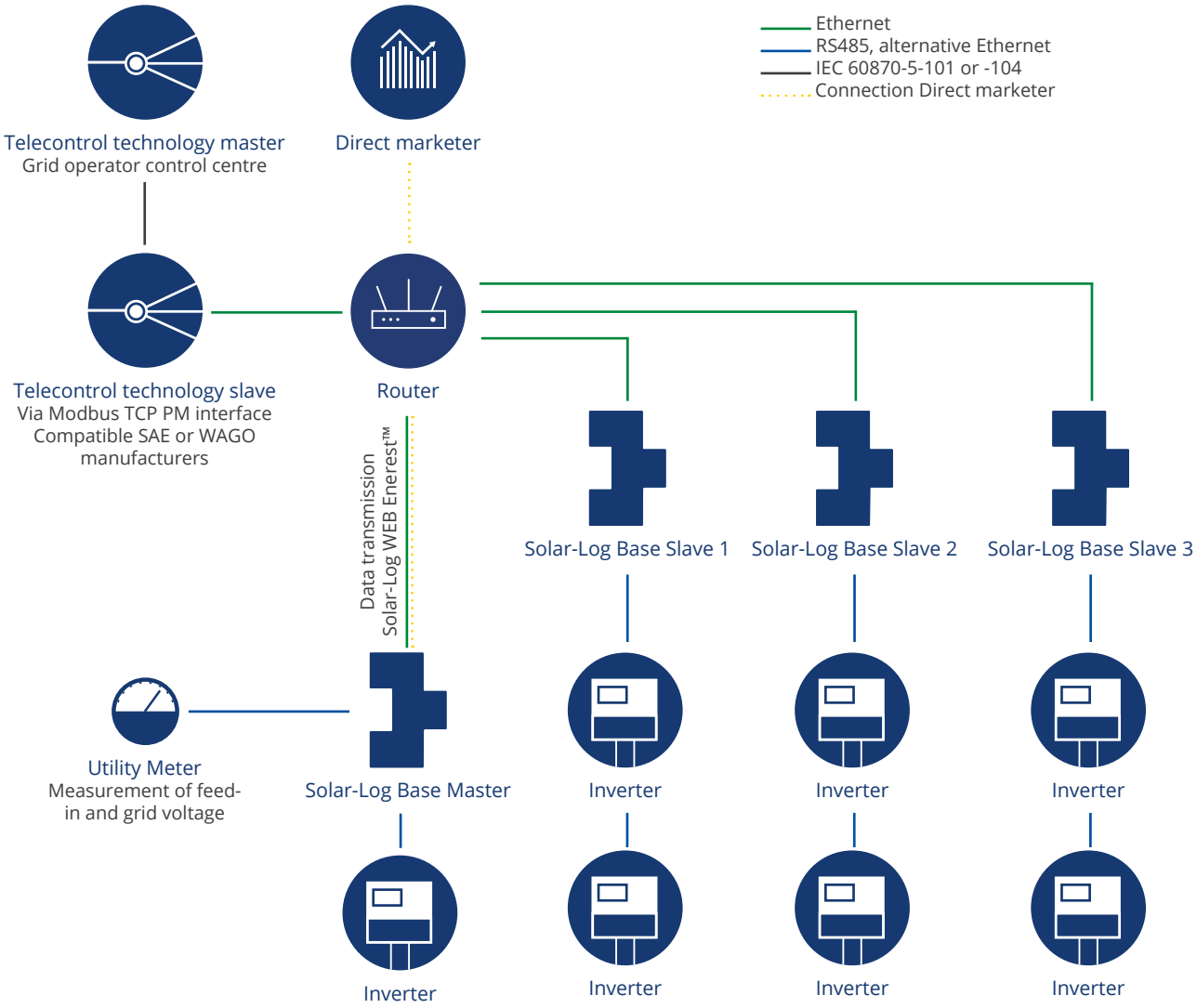
Complex grid operator requirements can be implemented by using telecontrol systems that are directly connected to the Solar-Log™ via the TCP-based Modbus protocol. With this set up, the command signals and response signals between the remote control technology and the Solar-Log Base 2000 are relayed 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



Interconnection control – PM management with Solar-Log™ networks

In order to implement feed-in management for larger-scale plants, the Solar-Log Base devices are linked together via an Ethernet network. Networking allows the grid operators' control signals to be exchanged with one another.



The grid operator's signals are received by the Solar-Log Base 2000 (master) and distributed to the connected inverters via the Solar-Log Base 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).

By using the interconnection control licence, it's also possible to divide plants for direct marketing. By using slave units, each plant is divided into individual areas. A separate direct marketer can then be selected for each area. Any reduction commands from the direct marketers are prioritised with the commands from the energy suppliers and documented accordingly.

We simplify direct marketing

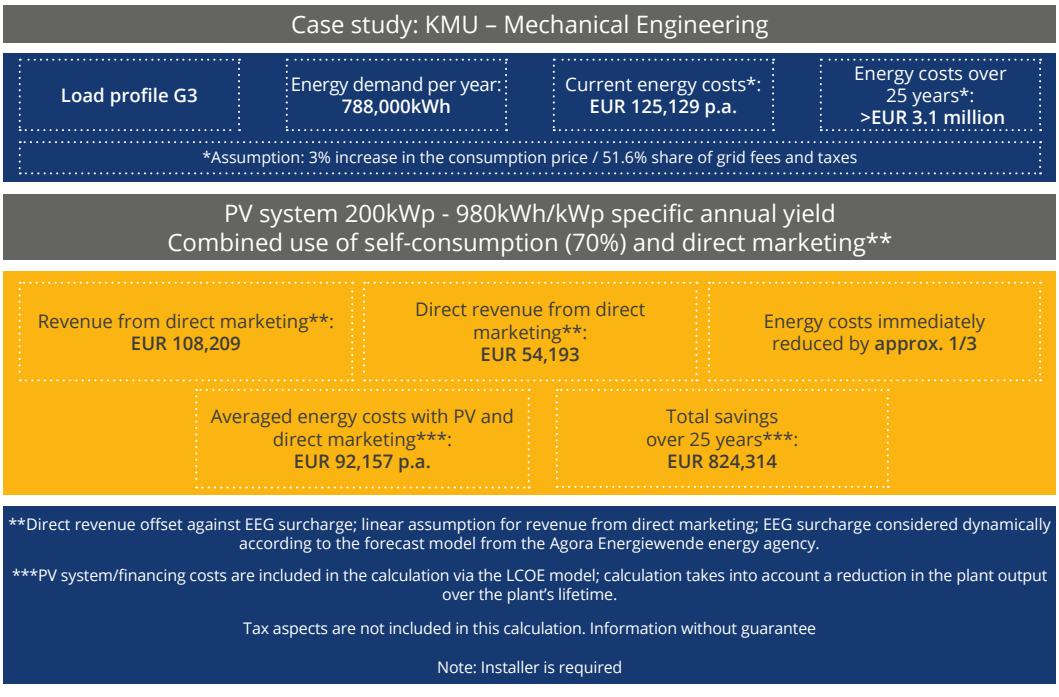
Modbus TCP DPM

With Solar-Log Base and our platform for direct marketing, you can easily market your solar power yourself. Benefit from our solution now and take advantage of our individual value-added offers! This is not only worthwhile for PV systems with an installed output of 100 kWp or more, for which direct marketing is already mandatory*.

Direct marketing of PV electricity – what's it about?

It's very simple. Direct marketing is the sale of electricity from renewable energy on the electricity exchange.

- The plant operator sells the electricity generated via our Solar-Log™ platform to our reliable partner, the direct marketer EnBW/Interconnector*.
- In return, the plant operator receives the market value (exchange price) from the direct marketer every month.
- This refers to the average electricity price achieved on the exchange.
- The distribution system operator also pays a market premium.
- The total value for the market value and market premium is at least equal to the EEG (German Renewable Energy Sources Act) feed-in tariff.
- The additional revenue is provided by the management premium, which is additionally paid out by the distribution system operator.

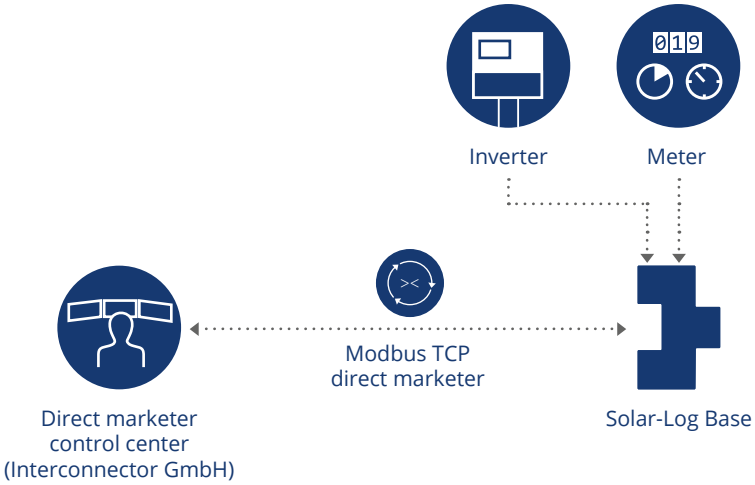


* Only relevant for the German market

The Solar-Log™ complete solution – see how convenient it is

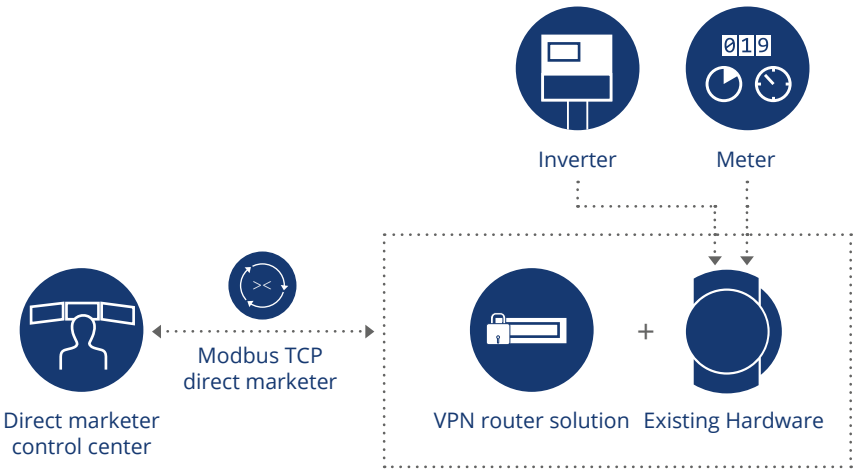
The quick and convenient solution

Install Solar-Log Base and register the PV plant for direct marketing in just a few minutes via our platform. With the Solar-Log Base energy management system, we offer you a secure data connection to the direct marketer.



In addition to the integrated direct marketing solution from Solar-Log™, you can also implement a direct marketing solution with any other provider of your choice.

Older devices such as Solar-Log 1000, 1200, 1900 or 2000 must have an external VPN connection via VPN router for which additional costs for the VPN certificate may be incurred by the commissioned service provider of the direct marketer. These additional costs do not apply when using a current Solar-Log Base. This can communicate directly with our compatible direct marketers..



These are your Solar-Log™ advantages

- Everything is from a single source with just one contact partner for the Solar-Log™ hardware, Solar-Log WEB Enerest™ software a link to the direct marketing platform on our website.
- With Solar-Log Base, the installation is significantly quicker and it's very easy to register for direct marketing via the platform.
- With Solar-Log Base, the data is transmitted via a secure VPN connection. You don't need any additional hardware..
- Upon installation, Solar-Log Base automatically recognises which licences are required.
- The required direct marketing licence is activated free of charge for 30 days during installation.
- The licence can be purchased in our Webshop. Die Installation erfolgt nach einem Tag automatisch, alternativ dies kann auch vor Ort getätigt werden.
- Simply use our direct marketing platform to register your PV system with the Interconnector virtual power plant through us. After you have contacted us, we'll support you during the further process until your plant goes into direct marketing.
- In addition, you'll receive free technical support during the term of the contract when direct marketing is commissioned.
- Place your trust in us and our long-standing direct marketing partners.

Future-proof with Redispatch 2.0

Ensuring the stability of the electricity grid

From 1 October 2021, the Federal Network Agency (BNetzA) is introducing new regulations known as Redispatch. This is intended to further improve grid and system stability during the course of further expanding renewable energy (RE) plants.

The changes now affect all

- RE plants with a capacity ≥ 100 kW,
- plants that can be remotely controlled by a grid operator at any time

In order for plant owners to be able to meet the upcoming Redispatch regulations, they must assign two new roles: “Einsatzverantwortlicher” (EIV, Resource Provider) and “Betreiber der technischen Ressource” (BTR, Producer).

Direct marketing companies generally offer this service as part of the direct marketing service.
In order to fulfil the technical requirements, a data logger must be used as a monitor that provides the required values.
If you’re already using a Solar-Log™, we will be happy to check whether the device meets the requirements, or provide you with a suitable offer.
We can offer you our complete solution (everything from a single source). This link will take you to the quick calculation, which will then redirect you to the registration on the DV platform. We’re also happy to implement our technical solution with any other DVUs in Germany, provided that you’re also offered this service there. Please check the compatibility with your selected DVU via this link using the direct marketing component selection.

Your fourfold benefits with our solution concept

1. Meet the technical requirements to receive the service for redispatch via a compatible DVU.
2. Takes over the PV system control in accordance with the EEG active power regulation. This prevents control commands from the EVU and the DVU from colliding and possibly causing damage to the PV system.
3. Since this technical retrofitting is required by law, it’s only a small step to have the specialist installer also ensure the PV system’s operational capabilities. You can optimally provide this additional service by using our Solar-Log WEB Enerest™ 4 (Link to demo portal).
4. Continues to generate revenue for the system.

You can contact us here. Please consider that Redispatch is only relevant for the german market.

Holger Schroth • CPO, Managing Director • Solar-Log GmbH

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 energy meters 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.

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
Dimensions (BxHxT)	70 mm x 112 mm x 25 mm
Warranty	1 year
Article number	255656

Solar-Log™ Smart Relay Station V2*

The potential-free relays of the Solar-Log™ Smart Relay Station V2 are suited for the control of motors and pumps as well as ventilation, drying and air-conditioning systems. The Solar-Log™ Smart Relay Station V2 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 V2 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	Solar-Log™ universal power supply 12V
Control	TCP/IP, button on the device
Dimensions (BxHxT)	105mm x 70mm x 90mm
Warranty	2 years
Article number	257257

* The Smart Relay Station V2 is supported starting with firmware version 6.0.

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 Solar-Log™ 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+, 2000 PM+ and Base. 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.

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 Licence for Solar-Log WEB Enerest™ Connection	255380

Power Meters

Power and Energy Measurements

Each PV plant has its own energy measurement requirements. Solar-Log™ offers different power meters from which it can be selected the one that best fits with the project.

The following power meters can be configured for different operating modes in the Solar-Log. This depends on the requested use for the meter. It is possible to record the production output (generator), the consumption (consumption meter or bi-directional meter) and the sub-consumption values such as the registration of battery charge or battery discharge levels.

Solar-Log™ PRO1

Solar-Log™ PRO2

Solar-Log™ PRO380

Solar-Log™ PRO380-CT

Power Meter	Solar-Log™ PRO1	Solar-Log™ PRO2	Solar-Log™ PRO380	Solar-Log™ PRO380-CT
Manufacturer	Solar-Log GmbH			
Short description	Single-phase meter, MID (calibrated)		Three-phase meter, MID (calibrated)	Current transformer meter, MID (calibrated)
Interfaces	RS485, 2-pin S_0-Out		RS485, RS485, External tariff switching/ 4-pin S_0-Out for A+, A-	
Communication	Modbus RTU (maximum 32 units)			
Direct connection (measurement)	45 A		100 A	-
Current transformer connection	-	-	-	6 A x/1, x/5A (Transformer input)
Number of phases	1	1	3	3
Voltage measurement	230 V AC		3 x 230/400V AC (-20% up to +20%)	
Voltage supply	230 V AC		3 x 230/400V AC (-20% up to +20%)	
Power frequency	50 Hz			
Measuring range	20 mA - 45 A		20 mA - 100 A	6 mA - 6 A
Self-consumption	≤ 2 W/phase - ≤ 10VA/phase			
Dimensions (w x h x d) in mm	17,5 x 117 x 63	35,8 x 141,5 x 63	70 x 140 x 63	70 x 140 x 63
Wire diameter	≤ 25 mm^2, ≤ 2,5 mm^2 (Additional terminals)			
Protection level	IP51			
LCD Display	4 + 2 Digits (5 +1 digits >9999.99 kWh)	5 + 2 Digits (6 +1 digits >99999.99 kWh)	6 + 2 Digits (7 +1 digits >999999.99 kWh)	
Measurement interval	-	-	-	-
Misc.	Illuminated display. display for active and reactive power in 2 energy directions.Display: I, U, P, S, F, cos phi			
Warranty	2 years			
Article number	255914	256324	255913	256059

Solar-Log also offers universal power meters. These can be used as utility meters in addition to the above-mentioned operating modes - for example, for its use at the grid connection point (e.g. for EZA controllers according to VDE-4110 in Germany).

They can be integrated into both the low-voltage and the medium-voltage network (via transformers). In addition to voltage-controlled reactive power control Q(U), they are used for reactive power control at the feed-in point and for recording measured values for feedback to the grid operator. They are also suitable as consumption meters for large loads

Utility Meter UMG 104

Utility Meter UMG 604 E-PRO & UMG 604 E-PRO (24V)

Power Meter	Utility Meter UMG 104	Utility Meter UMG 604 E-PRO	Utility Meter UMG 604 E-PRO (24V)
Manufacturer	Janitza electronics GmbH		
Short description	Utility Meter, for measurement on medium voltage side with curent transformers		
Interfaces	RS485, RS232 2 Digital inputs, 2 Digital outputs	RS485, RS232 Ethernet 10/100 BaseTX, 2 Digital inputs, 2 Digital outputs	
Communication	Modbus RTU (maximum 32 units)	Modbus RTU (maximum 32 units), Modbus TCP	
Direct connection (measurement)	-	-	-
Current transformer connection	6 A x/1, x/5A (Transformer input)		
Number of phases	3		
Voltage measurement	L-N: 10 - 300 V AC, L-L: 17-520 V AC		
Voltage supply	95V AC - 240V AC, 135V DC-340V DC	95V AC - 240V AC, 135V DC- 340V DC	20 V AC - 50 V AC, 20 V DC - 70 V DC
Power frequency	45 - 65 Hz		
Measuring range	0,005 - 7,5 A	0,005 - 7 A	
Self-consumption	max. 3,2W, max. 9VA		max. 5 W / 8 VA
Dimensions (w x h x d) in mm	90 x 82 x 107,5		
Wire diameter	≤ 1,5mm² (when using ferrules)	≤ 2,5mm² (when using ferrules)	
Protection level	IP20		
LCD Display	multi-info, 8 digits		
Measurement interval	200 ms		
Misc.	LCD backlight can be adjusted, voltage transformer connection for medium voltage measurement. Display: I, U, P, S, F, cos phi		
Warranty	1 year		
Article number	255385	257197	257272

A classification of the power meters according to their operating modes is as follows

Operating modes	Solar-Log™ PRO1	Solar-Log™ PRO2	Solar-Log™ PRO380	Solar-Log™ PRO380-CT	Utility Meter UMG 104	Utility Meter UMG 604 E-PRO	Utility Meter UMG 604 E-PRO (24V)
Consumption meter, sub-consumer meter, generator meter							
1-phase	●	●	-	-	-	-	-
3-phase	-	-	●	●	●	●	●
Battery meter							
1-phase	●	●	-	-	-	-	-
3-phase	-	-	●	●	●	●	●
Total plant meter consumption meter as a bi-directional meter at the grid connection point							
3-phase	-	-	●	●	●	●	●
Utility meter (measuring point for EZA controller according to VDE 4110)							
Voltage	-	-	-	-	●	●	●
Voltage + Current	-	-	-	-	●	●	●
Voltage + Current Self-consumotion	-	-	-	-	●	●	●

We offer the following current transformers for the Solar-Log™ PRO380-CT meter

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

LTE-Router Multi Use

Our “LTE-Router Multi Use” is a real universal genius. Equipped with LTE and WAN, it is ready for all requirements in the direction of internet communication. The router thus covers all requirements in the field of plant communication and direct marketing. The option of communicating with the router via Wifi simplifies installation and maintenance on site considerably. The LTE mode allows the router to be used as a fallback in case of a DSL connection failure.

Technical data	LTE-Router Multi Use
LTE Cellular router	LTE 4G / GSM/GPRS/EDGE/UMTS
LAN	1 x LAN 10/100 Mbit
WAN	1 x WAN (can be configured as LAN)
Wireless	802.11 b/g/n 2x2 mimo
Encryption	VPN-Client
Protocolls	IPSec Client/Server, VPN Client/Server, L2TP, PPTP
Working temperature range	-40°C to +75°C
Material	Metal housing
Weight	250 g
Antenna	Incl. 2 pieces magnetic base antenna for LTE
Mounting	Top hat rail adapter
Dimensions (BxHxT)* in mm	100 x 30 x 85
Compatibility (Internet access)	For all Solar-Log™ models
Compatibility (transfer to direct marketers)	For previous models Solar-Log 1000, 1200, 1900 und 2000; not needed for Solar-Log Base
Warranty	12 months
Article number	257252

*Housing measurements are presented without antenna connectors and screws

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 Base, 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

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™ 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 weather stations	Lufft (e. g. WS 501 UMB); Kipp&Zonen (e. g. SMP3)

Our Partner KIPP & ZONEN Lufft

Solar-Log™ and the OMEXOM boxes

Large PV plants with complex connections to the grid operator are our speciality. With our partner Omexom Smart Technologies GmbH, we develop customised solutions that are measured by the high levels of customer satisfaction.

The Omexom boxes offer a simple and modular all-in-one solution for complex systems. They enable flexible feeding into the power grid and additional fault protection.

Omexom PM BOX

Power management without ifs and buts. The PM Box is your scalable solution for large VDE 4110 systems with a connection to the grid operator's control centre using the IEC 60870-5-101 or -104 protocol.

- Scalable, complete telecontrol system
- VDE 4110-compliant for the German market
- Manufacturer-independent monitoring system
- Optional UPS components can be integrated
- Supplied pre-configured and ready for connection

Omexom PAV, E – Box

More PV power for small grid connections. The PAV,E - Box monitors the feed-in power and enables a higher generator output within the framework of VDE 4105.

- Complete power management system
- VDE 4105-compliant for the German market
- Manufacturer-independent monitoring system
- Your PV plant achieves up to 2/3 more generating capacity for higher yields
- Supplied pre-configured and ready for connection

If you are interested, please contact our Sales department!

Our Partner OMEXOM

Solar-Log™ Compatibility

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