Solar-Log™

Productportfolio 2013

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Introduction

Dear Ladies and Gentlemen,

Renewable energy sources are completely altering the supply system and already today play a great role in improving the environment: they help to reduce the emissions of pollutants and environmental risks.

Solar power does consequently pave the way to a cleaner future. We at Solar-Log™ do also make our contribution with our sophisticated technology and years of experience. Always true to our motto: Maximized Sunpower. More performance, more efficiency and more success for every photovoltaic plant.

Solar-Log™ is the unchallenged market leader in the area of photovoltaic monitoring and management and we plan to remain the leader. Our ideas set standards for the industry. We continue to offer our innovative technology at the best price. To strengthen our market leadership, we constantly invest in new innovations - and this has proved successful. The innovations place increasing emphasis on managing energy flows so that plant owners can utilize their generated energy even more effectively.

As a result, we are committed to remain the best. And it is paying dividends: in the form of the OTTI Innovation Prize 2012, the Solar Award Prize 2012 and the nomination for the Solar Industry Award 2012 and Intersolar Award 2012. However, our search for new ideas and innovations is neverending. We already work at developing even more efficient solutions for Maximized Sunpower.

Yours,
Jörg Karwath

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Welcome to the market leader: Solar-Log™

Quality

We provide our customers world-wide with state-of-the-art solar energy system solutions. We are the world leader when it comes to monitoring with over 200,000 plants and 810,000 inverters. In total, we monitor over 8 gigawatts and this number increases every day. Our recipe for success does always stay a step ahead of the market with new ideas and innovations that get worked into our new Solar-Logs.

Monitoring

Precise advanced technology for plant monitoring: As an innovator in the solar industry, Solar-Log™ provides the most efficient data loggers worldwide. A photovoltaic plant can only reach maximum yields when it produces power uninterrupted and free of disturbances. The Solar-Log™ recognizes disturbances right away and reports them immediately - especially at large plants. This helps to eliminate long-term losses in yields due to undetected defects.

Managing and Analyzing

The Solar-Log™ is an intelligent monitoring system for photovoltaic plants that not only displays and presents self-produced power consumption but also efficiently manages it. The device analyses the cost effectiveness of your plant based on the yield figures and identifies optimization possibilities. The break-even point, i.e. the point in time where the investment enters the profit zone, can be calculated with the help of plant yields and of nominal values based on the yield forecast.

All-In-One Solutions

Unrivaled simplicity: With our all-in-one solutions, we are always a step ahead of the competition, saving you the time and effort of mastering several systems. The Solar-Log™ offers you all-in-one systems for all major inverters on the market. We have developed trend-setting products for self-produced power to ensure the most optimal use of this power.

Unmatched Security for Banks

Banks and investors already require 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 proof of its validity.

Advantages and benefits for installers, portal operators and service providers

1. **All information at a glance**
   Centrally monitor all PV plants from a single platform with the Solar-Log™ WEB "Commercial Edition".

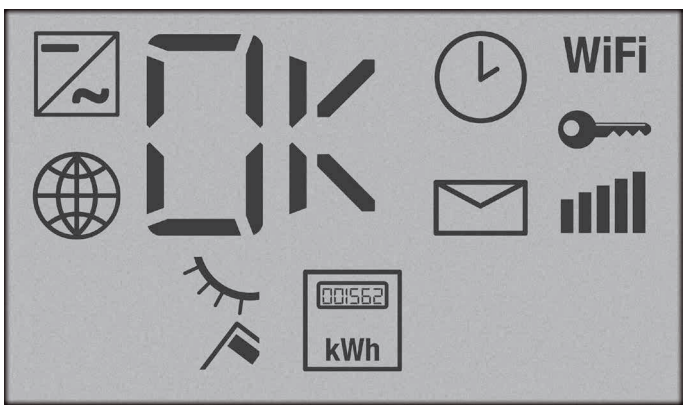
2. **Saving a considerable amount of time and money**
   Thanks to remote access via Solar-Log™ WEB "Commercial Edition" and real-time diagnostic tools, it is no longer absolutely necessary to check PV plants on site.

3. **Easily becoming more efficient**
   No PC or internet expertise is required to take advantage of the quick and simple installation with "Easy Installation".

4. **The LCD displays show the operating status**
   An LCD-Status-Display is included with all devices and provides comprehensive information on the installation and operating status.

5. **Greatly reduce the installation time and effort required for network set-up**
   For wireless communication, all Solar-Log™ models are optional available with WiFi, Bluetooth and GPRS.

6. **Compatible with all major inverters on the market**
   The single monitoring system for all inverters allows plant operators to select the best inverter for their needs.



Solar-Log™ LCD-Status-Display

Advantages and benefits for plant operators

1. Unmatched security for banks

   Banks and investors require guarantees on their PV investments.
   Solar-Log™ monitoring helps to ensure a solid rate of return from the PV plant.

2. Higher efficiency

   Error messages are immediately transmitted online or to mobile devices to guarantee yield certainty.

3. Effective and quick monitoring

   The device can be intuitively and conveniently operated via the color touch display or online.

4. No PC expertise required

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

5. Flawless and precise monitoring at an attractive price

   As the market leader, we produce larger quantities at the highest qualities and guarantee the best value for money. Made in Germany.

6. Optimize consumption of self-produced power and save money

   Optimal control and consumption of self-produced power with Solar-Log™. This optimization helps reduce the fear of rising electricity prices.

7. Reliability, a reassuring feeling for decades to come

   The ”Full-Service“ contract offers plant operators comprehensive professional monitoring and maintenance.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Performance Month
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Solar-Log™
www.solar-log.com

01

Solar-Log™ Hardware

Highlights of the new Solar-Log™ devices

The Solar-Log™ sets new international standards when it comes to monitoring and managing photovoltaic plants. Perfect and precise monitoring provides the basis for flawless operation and intelligent controlling systems ensure that you get the most out of your power: maximize your consumption of self-produced power in no time at all, for example with networked „smart plugs“ connected to existing electrical outlets or with the Solar-Log 1200 and 2000 via relays. All Solar-Logs are equipped with state-of-the-art technology with continuously optimized functions.

Thanks to the modern design, plant owners need not hide their Solar-Log™ from anybody. The black matte finish in combination with dark gray is suitable for any surrounding. The Solar-Log 1200 and 2000 come with a color TFT-Touch-Display to operate the device directly and to display yield graphics and plant data in a descriptive and easy to understand way. All Solar-Log™ devices come with a new LCD-Status-Display that provides comprehensive information on the installation and operating status.

Maximum plant size 15 kWp

Optional Powermanagement

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

Dynamic LCD-Status-Display

Solar-Log 300

For small domestic installations

Connections

Inverters

The Solar-Log 300 is compatible with all the major inverters. It can be connected to an unlimited number of inverters from one manufacturer with a maximum total power of 15 kWp.

Sensors RS485

The sensors measure irradiation, temperature and wind speed. However, they cannot be combined with every inverter manufacturer.

Meter S_0-in or RS485

The meter records your consumption data, can serve as an inverter or measures the power from incompatible inverters.

RS485 or S_0-out

Connect large displays to obtain an overview of your data.

Ripple Control Receiver

The signal to reduce active power is generally sent via a Ripple Control Receiver. This can be connected directly to the Solar-Log 300 PM+ to control the power of the PV plant.

Solar-Log 300 USB connection and Data Export

A USB stick can be connected to manually install new firmwares with additional inverter support or new functions, or to transfer backups and other data.

Visualization

Solar-Log™ WEB

The Solar-Log™ WEB "Commercial Edition" online portal expands the monitoring function of the Solar-Log™ and offers comprehensive monitoring reporting options in the form of graphs and tables via the internet.

Solar-Log™ APP

You can access your data and graphical reports at any time from anywhere in the world with the Solar-Log™ APP.

Solar-Log™ Dashboard

A feature with the WEB "Commercial Edition" is that the Dashboard displays all important information for a plant such as yields, CO_2 savings and plant performance.

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

Solarfox® large display and external displays

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

Accessing the Solar-Log™

The Solar-Log™ is operated from a PC with any standard web browser and via the TFT display. Remote access is possible with the WEB "Commercial Edition".

Options

Solar-Log 300 GPRS

Solar-Log 300 GPRS is the alternative to an external GPRS modem, allowing the data logger to be connected to the data network simply and securely. A GPRS connection is especially suited to free-standing plants or buildings which do not have a usable internet connection available.

Solar-Log 300 WiFi

The Solar-Log 300 WiFi allows you to connect the Solar-Log™ to any available WiFi network. This saves cables, installations time and reduces labor costs.

Solar-Log 300 Bluetooth

This data logger is equipped with a Bluetooth module and allows wireless connection to SMA BT inverters, up to a maximum of seven.

Solar-Log 300 PM+

The PM+ product line implements the feed-in and network safety management. It covers the entire spectrum of requirements for active and reactive power, e.g. the German Renewable Energy Law 2012 (EEG).

Solar-Log 300 Meter

The Solar-Log™ Meter makes it possible to monitor a PV plant completely and to measure its power consumption with just one device. With 2 x 1 to 3-phase current measurements, it determines the active power for production and self-consumption.

Functions

Solar-Log™ Easy Installation

The installation and initial setup start automatically. The inverter detection and the internet log-on starts immediately. The installation status is shown on the LCD display. Any subsequent manual configurations of the Solar-Log™ can be performed conveniently from a PC via the WEB interface. Easy Installation is compatible with the Solar-Log™ WEB "Commercial Edition" and "Classic 2nd Edition".

Self-consumption

The Solar-Log 300 offers the option to measure the amount of self-produced power consumed and to present it graphically via the Solar-Log™ WEB. A digital power meter serves as a consumption meter. Thanks to the new Solar-Log™ Meter, no additional electricity meter is needed as it is already integrated in the device.

Cable cover

With its attractive design, the cable cover for the Solar-Log™ offers the best possible mechanical protection for interfaces and cables.

Data security

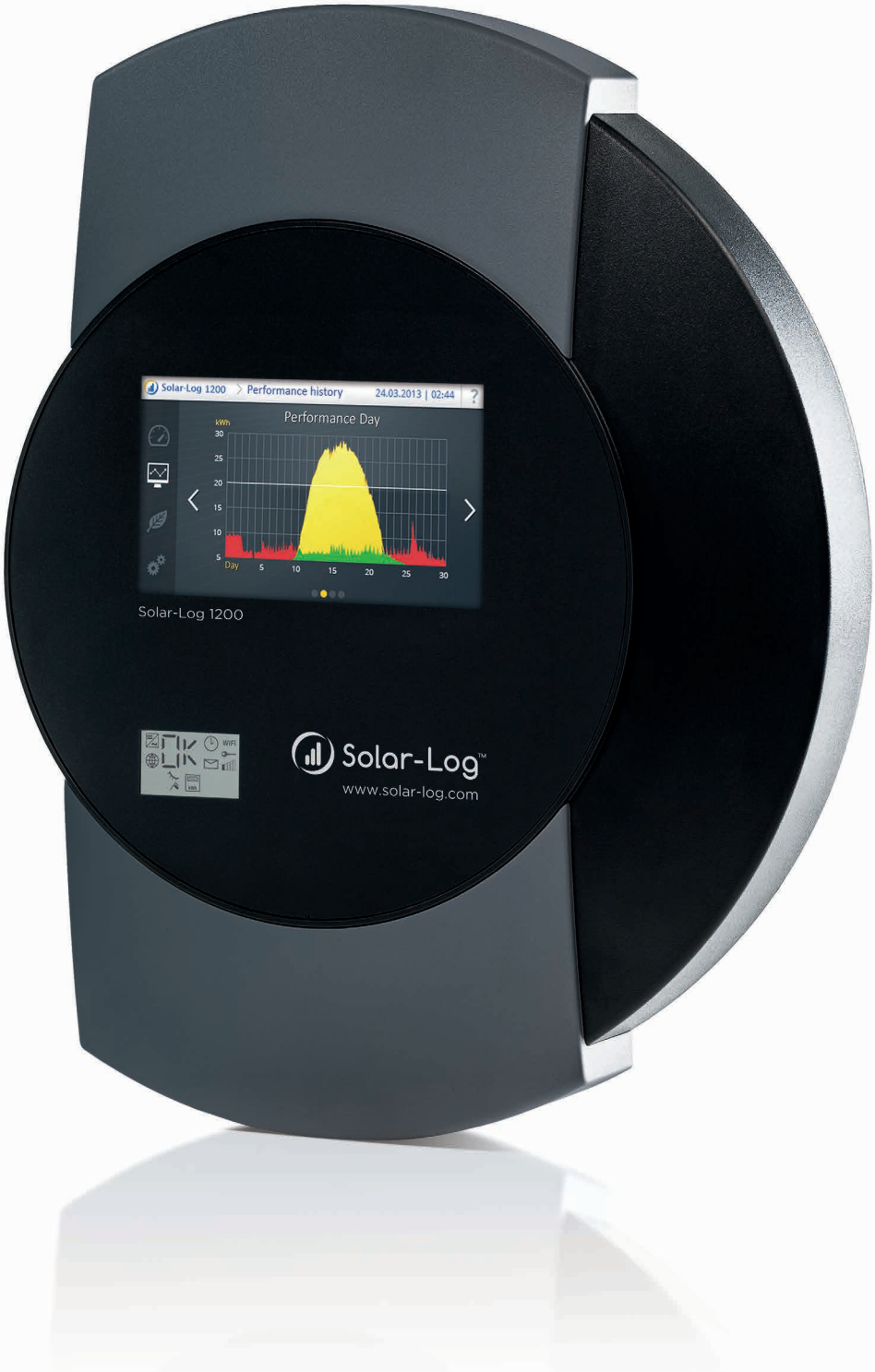
The data volume from the Solar-Log™ can be recorded for up to 20 years. The micro SD card is used to protect against any loss of data in the event of a power failure.

Maximum plant size 100 kWp

Optional Powermanagement

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

Possible to monitor, optimize and manage the consumption of self-produced power



Solar-Log 1200

For small domestic installations and medium-sized plants

Connections

Inverters

The Solar-Log 1200 is compatible with all the major inverters. It can be connected to an unlimited number of SDS supported inverters from any two manufacturers with a maximum total power of 100 kWp.

Interfaces

The Solar-Log™ has an RS485/RS422 and an RS485 interface.

Sensors RS485

The sensors measure irradiation, temperature and wind speed. However, they cannot be combined with every inverter manufacturer.

Meter S_0-in or RS485

The meter records your consumption data, can serve as an inverter or measures the power from incompatible inverters.

RS485 or S_0-out

Connect large displays to obtain an overview of your data.

Ripple Control Receiver

The signal to reduce active power is generally sent via a Ripple Control Receiver. Up to two Ripple Control Receivers can be connected to the 1200 PM+, one for power reduction and one for reactive power control.

Solar-Log 1200 USB connection and Data Export

A USB stick can be connected to manually install new firmwares with additional inverter support or new functions, or to transfer quick and secure backups and other data.

Visualization

TFT-Touch-Display

You can operate Solar-Log™ directly on the device and display yield reports as graphs on the high-quality color TFT-Touch-Display.

Solar-Log™ WEB

The Solar-Log™ WEB "Commercial Edition" online portal expands the monitoring function of the Solar-Log™ and offers comprehensive monitoring reporting options in the form of graphs and tables via the internet.

Solar-Log™ APP

You can access your data and graphical reports at any time from anywhere in the world with the Solar-Log™ APP.

Solar-Log™ Dashboard

A feature with the WEB "Commercial Edition" is that the Dashboard displays all important information for a plant such as yields, CO_2 savings and plant performance.

Solarfox® large display and external displays

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

Accessing the Solar-Log™

The Solar-Log™ is operated from a PC with any standard web browser via the TFT display. Remote access is possible with the WEB "Commercial Edition".

Options

Solar-Log 1200 GPRS

Solar-Log 1200 GPRS is the alternative to an external GPRS modem, allowing the data logger to be connected to the network. A GPRS connection is especially suited to free-standing plants or buildings which do not have a usable internet connection available.

Solar-Log 1200 WiFi

The Solar-Log 1200 WiFi allows you to connect the Solar-Log™ to any available WiFi network. This saves cables, installations time and reduces labor costs.

Solar-Log 1200 Bluetooth

This data logger is equipped with a Bluetooth module and allows wireless connection to a maximum of seven SMA BT inverters.

Solar-Log 1200 PM+

The PM+ product line implements the feed-in and network safety management. It covers the entire spectrum of requirements for active and reactive power, e.g. the German Renewable Energy Law 2012 (EEG).

Solar-Log 1200 Meter

The Solar-Log™ Meter makes it possible to monitor a PV plant completely and to measure its power consumption with just one device. With 2 x 1 to 3-phase current measurements, it determines the active power for production and self-consumption.

Functions

Solar-Log™ Easy Installation

The installation and initial setup start automatically. The inverter detection and the internet log-on starts immediately. The installation status is shown on the LCD display. Any subsequent manual configurations of the Solar-Log can be performed conveniently from a PC via the WEB interface. Easy Installation is compatible with the Solar-Log™ WEB "Commercial Edition" and "Classic 2nd Edition".

Self-consumption

The Solar-Log 1200 offers the option to measure the amount of self-produced power consumed and to present it graphically via the Solar-Log™ WEB. A digital power meter serves as a consumption meter. Thanks to the new Solar-Log™ Meter, no additional electricity meter is needed as it is already integrated in the device.

Daily summary with presentation of yield and power consumption balance, drawing down power (red), power production (yellow), consumed power (green).

Cable cover

With its attractive design, the cable cover for the Solar-Log™ offers the best possible mechanical protection for interfaces and cables.

Data security

The data volume from the Solar-Log™ can be recorded for up to 20 years. The micro SD card is used to protect against any loss of data in the event of a power failure.

Maximum plant size 2000 kWp

Optional Powermanagement
and cos phi control

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

Monitor central inverters and SCBs

Solar-Log 2000

For solar power stations and large-scale PV plants

Connections

Inverters

The Solar-Log 2000 is compatible with all the major inverters. A total of 100 SDS supported inverters from up to three different manufacturers can be connected.

Interfaces

The Solar-Log 2000 Standard and PM+ have two RS485/RS422 interfaces and one RS485 interface. The Solar-Log 2000 GPRS and PM+/GPRS have one RS485/RS422 and one RS485 interface, for two different inverter manufacturers and accessories such as Utility Meter, Pyranometer, SCBs etc.

Sensors RS485

The sensors measure irradiation, temperature and wind speed. However, they cannot be combined with every inverter manufacturer.

Meter S_0-in or RS485

The meter records your consumption data, can serve as an inverter or measures the power from incompatible inverters that cannot be connected directly.

RS485 or S_0-out

Connect large displays to obtain an overview of your data.

Ripple Control Receiver

The signal to reduce active power is generally sent via a Ripple Control Receiver. Up to two Ripple Control Receivers can be connected to the 2000 PM+, one for power reduction and one for reactive power control.

Solar-Log 2000 USB connection and data export

A USB stick can be connected to manually install new firmwares with additional inverter support or new functions, or to transfer quick and secure backups and other data.

Visualization

Solar-Log™ WEB

The Solar-Log™ WEB "Commercial Edition" online portal expands the monitoring function of the Solar-Log™ and offers comprehensive reporting options in the form of graphs and tables via the internet.

Solar-Log™ APP

You can access your data and graphical reports at any time from anywhere in the world with the Solar-Log™ APP.

Solar-Log™ Dashboard

A feature with the WEB "Commercial Edition" is that the Dashboard displays all important information for a plant such as yields, CO_2 savings and plant performance.

Accessing the Solar-Log™

The Solar-Log™ is operated from a PC with any standard web browser. Remote access to the WEB "Commercial Edition" is possible.

Solarfox® large display and external displays

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

Options

Solar-Log 2000 GPRS

Solar-Log 2000 GPRS is the alternative to an external GPRS modem, allowing the data logger to be connected to the data network simply and securely. A GPRS connection is especially suited to free-standing plants or buildings which do not have a usable internet connection available.

Solar-Log 2000 PM+

The PM+ product line implements the feed-in and network safety management. It covers the entire spectrum of requirements for active and reactive power, e.g. the German Renewable Energy Law 2012 (EEG).

Solar-Log 2000 PM+ & Solar-Log™ Utility Meter

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

Solar-Log 2000 & PM-Package

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

Solar-Log™ String Connection Box (SCB) or String Monitoring Box (SMB)

When used with the Solar-Log™ WEB ”Commercial Edition“ and either the SCB or SMB, the Solar-Log 2000 monitors every single string, ensuring the most complete and secure monitoring for large-scale PV plants with exact error identification and localization.

Functions

Self-consumption

The Solar-Log 2000 offers the option to measure the amount of self-produced power consumed and to present it graphically via the Solar-Log™ WEB ”Commercial Edition“. A digital power meter serves as a consumption meter.

Cable cover

With its attractive design, the cable cover for the Solar-Log™ offers the best possible mechanical protection for interfaces and cables.

Solar-Log 2000 data security

The data volume from the Solar-Log™ can be recorded for up to 20 years. The micro SD card is used to protect against any loss of data in the event of a power failure.

Solar-Log 2000 alarm function

This provides your plant with anti-theft protection and an external alarm against burglars and vandals.

	Product comparison	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
Basis functions	PM+ [2]	●	●	●
	PM+ / WiFi [2]	●	●	-
	PM+ / GPRS [2]	●	●	●
	Bluetooth (BT) [2]	●	●	-
	WiFi (Wireless Lan) [2]	●	●	-
	Bluetooth (BT) / WiFi [2]	●	●	-
	GPRS [2]	●	●	●
	Solar-Log™ Meter (CT)	●	●	-
	Central inverter SCB and SMB	-	-	●
	Communication interface	1 x RS485 / RS422 (1 inv. manufacturer per bus)	1 x RS485 1 x RS485 / RS422 (1 inv. manufacturer per bus)	1 x RS485, 2x RS485 / RS422, 1 x CAN (1 inv. manufacturer per bus)
	Max. plant size	15 kWp / 1 inverter manufacturer	100 kWp max. 2 inverter manufacturer	2000 kWp up to 3 inverter manufacturer
	Max. cable length	max. 1000 m [1]	max. 1000 m [1]	max. 1000 m [1]
Plant monitoring	String monitoring (depending on type of inverter / on tracking level)	●	●	●
	Inverter failure, status of fault and power monitoring	●	●	●
	Connection of sensors (irradiation / temp. / wind)	● [3]	● [3]	● [3]
	E-mail and SMS alarm	●	●	●
	Local alarm	-	-	●
	Yield forecast and degradation calculation	●	●	●
	EEG “own power consumption”: Digital current meters	●	●	●
	EEG “own power consumption”: Control of ext. consumers	●	●	●
Visualisation	Integrated web servers	●	●	●
	Graphic visualization – PC local and internet	●	●	●
	LCD-Status-Display	●	●	●
	Display on device	-	4.3“ TFT color display	4.3“ TFT color display
	Operation on device	-	via touch display	via touch display
	Large display RS485 / S_0 impulse	●	●	●

	Product comparison	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
Interfaces	Ethernet network	●	●	●
	USB flash drive	●	●	●
	Potential-free contact (relay)	-	●	●
	Alarm contact (anti-theft)	-	-	●
General data	Network voltage/device voltage/current consumption	115 V – 230 V / 12 V / 3 W		
	Ambient temperature	-10 °C to +50 °C		
	Housing/dimensions (W x D x H) in cm/ Assembly/Protection level	Plastic / 22,5 x 4 x 28,5 / wall-mounted / IP 20 (only for interior use)		
	Connection to Solar-Log™ WEB "Commercial Edition"	●	●	●
	Multi-lingual (DE, EN, ES, FR, IT, NL, DK)	●	●	●
	Memory, Micro-SD, 2 GB, Endless-loop data recording	●	●	●
	Warranty	5 years		

1) Depending on the inverter used and the cable length (details can also vary from one type of device to another).
2) More important information about Bluetooth and compatibility, Powermanagement, „own power" consumption, SCB and SMB central inverters can be found on our website www.solar-log.com.
3) Using every inverter on the same bus is not always possible, please see the inverter database www.solar-log.com

Accessories	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
Accessories	Fully packaged cable kits for most supported inverters		
	Digital Meter		
	PowerLine Package		
	RS485 Wireless Package		
	Sensors		
	Overvoltage protection		
Accessories for SMA inverters	Special PiggyBack RS485 (except TL-20 series)		
	Data Modul SMA RS485		

Top Features	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
LCD-Status-Display	Status display for installation and operations		
Easy Installation	Connection is usually possible without PC and installation expertise.		
	The inverter search and the internet registration is enabled immediately and is started automatically.	The inverter search and the internet registration is enabled immediately and is started automatically.	-
Network recognition	Automatic search for the DHCP server and assignment of a valid IP address on the local network.		
Ability to be reached on the local network	Registration is done with its name. The IP address of the Solar-Log™ no longer needs to be known, unless there are several Solar-Logs on the network. The Solar-Log™ can be accessed directly from a web browser with this address: http://solar-log.		
Additional functions	Monitoring, optimization and managing of self-consumption with a fixed regulation of active power including the calculation of self-consumption.		
	Evaluation of Sensor Box Commercial data		
	-	-	Monitoring of central inverters
Solar-Log™ Meter	Monitoring, feed-in management and power meter.		-
Support for the Solar-Log™ SCB/SMB	-	-	Individual string monitoring
Solar-Log™ PM+ functionality	Remote controlled active power reduction and reactive power adjustments		Monitoring large plants with the support of the Solar-Log 2000 or Solar-Log 2000 PM+ with active power reduction and reactive power control along with response signals.

Article number	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
Standard	255574	255591	255592
BT	255577	255585	-
WiFi	255576	255584	-
BT / WiFi	255578	255586	-
PM+	255579	255587	255594
PM+ / WiFi	255580	255588	-
GPRS	255575	255583	255593
PM+ / GPRS	255581	255589	255595
Solar-Log™ Meter (CT)	255582	255590	-

	Interface	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
Inverter interfaces	RS485/RS422 – interface usage	RS485 / RS422 – multi-purpose interface	RS485 – interface, RS485 / RS422 – multi-purpose interface	RS485 A – interface, RS485 / RS422 B – / RS485 / RS422 C* - multi-purpose interface
	RS485 – interface usage	Inverter connection		
		Connection Sensor basic to record environmental data (irradiance and module sensor)	Connection Sensor Box Commercial to record environmental data (irradiance, module and ambient temperature, wind sensor)	
		For connection of an own-current consumption meter acc. to IEC 60870		
		-	For connection of the display panels produced by Schneider Displaytechnik, Rico or HvG	
		-	-	Connection Utility Meter and I/O Box for PM+ Remote control technology
	RS422 – interface usage	RS 422 Fronius/Sunville connectible without additional interface converter		
	CAN-Bus	-	-	For the connection of e.g. Voltwerk inverters
Additional function interfaces	2x S_0 In / 1x S_0 out	S_0 impulse input – for optional recording and calculation of self-produced power consumption		
		Second input to connect an additional power meter		
		-	S_0 impulse output for connection of external display units, impulse factor can be set to any value	
	Relais	-	For external switch control, e.g. heat pumps	
	Alarm	-	-	Connection for anti-theft protection via contact loop, for external alarms via potential-free contact
	USB connection	For reading out data		
		To update device firmware		
	PM+ interface	PM+ (Powermanagement)		
		For connection of a Ripple Control Receiver for feedback control of the system		
		Fulfills the EEG 2012 requirements (Germany)		
	Solar-Log™ Meter	Current measurements via transformers (extra accessory) up to 2 x 3 phases or 6 single phases		
Network	Network	Connection to the internet (Ethernet, fixed address or DHCP)		
	GPRS	Antenna connection and SIM card slot for Solar-Log™ with integrated GPRS		

* not with GPRS models


Yield History
30 kWh
25 kWh
20 kWh
15 kWh
10 kWh
5 kWh
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Day
Month
Year
Total
Weather
7.0 °C
Balingen,
Germany
Min: 3.0 °C
Max: 8.0 °C
Wind speed: 5.6 mph
3-day forecast
Th
Min: 6.0 °C
Max: 12.0 °C
Fr
Min: 7.0 °C
Max: 9.0 °C
Sa
Min: 8.0 °C
Max: 9.0 °C

02

Solar-Log™ WEB

The best way to present

Keeping everything in sight and under control: The Solar-Log™ WEB features concise presentation options that can be accessed from anywhere in the world via the internet. With this internet service, the plant yields, error messages and configuration data from the Solar-Log™ are transferred to our servers.

Solar-Log™ WEB comes in two versions which are tailored to your needs. With the “Commercial Edition”, the plant owner can purchase a Operation & Maintenance contract from the installer and portal operator. The owner does not have to worry about anything since the status messages are sent directly to the installer. This enables the installer and portal operator to react immediately by taking care of the problem remotely or by making a service call. The Solar-Log™ WEB “Commercial Edition“ is also a central control element that allows installers to adjust settings and activate functions remotely. The plant owner always has convenient access to the yield and plant information.
The ”Classic 2nd Edition“ offers the basic functions for plant monitoring. Private plant owners monitor their own plant and independently evaluate faults. They have options to display, analyze and compare yields over a period of weeks, months or years.

Solar-Log™ WEB “Commercial Edition”

The “Full Service” option from the installer and portal operator: Installation, Monitoring, Maintenance.

The Solar-Log™ WEB “Commercial Edition” has been developed for installers, portal operators and service providers. You can offer the plant owner a service contract to manage the PV plant remotely and to offer comprehensive professional monitoring. For the plant owner, this is the simplest and safest way since all of the installation and monitoring will be professionally and properly handled.

Professional remote maintenance

The ”Commercial Edition“ is an attractive service: without leaving the office, the installer and portale operator can react to error messages immediately by taking care of the problem remotely with access to configuration settings. If needed, service calls can also be arranged immediately. The plant owner also always has access to the yield and plant information.

Individual design of your own monitoring platform

The possibility to design your own platform individually is an additional service benefit. A range of function modules are available which can be integrated as required at the touch of a button without expert knowledge. Pages individually designed with HTML can also be integrated. Precise color selection makes it possible to customize the appearance to match the customer’s corporate design.

Solar-Log™ WEB “Commercial Edition” Advantages and Benefits

1. Professional maintenance

   The ”Full-Service“ maintenance concept offers plant operators ideal plant maintenance.

2. Effortless installation

   Integrate plants fast and easily into Solar-Log™ WEB ”Commercial Edition“ with Solar-Log™ Easy Installation.

3. Efficient monitoring

   Review the status of all monitored plants at a glance, quick and efficient.

4. Fast service

   Detect, analyze and remedy errors quickly with the diagnostic tools.

5. Easy administration

   Manage and log all activities, events and appointments in the plant logbook.

6. Detailed reports

   Update plant operators with reliable and easy-to-read reports. Reports can be optionally set up to be generated automatically with minimal efforts.

7. Concise presentation

   In connection with the WEB ”Commercial Edition“, the Solar-Log™ APP, Solar-Log™ Dashboard and Solarfox® access plant data.

8. Protection against data loss

   Plant yields, error messages and configuration data are secured, stored and displayed.

Errors or breakdowns can be recognized and analysed in a very short time.

Power tools for installers and service providers: Solar-Log™ WEB ”Commercial Edition“

Simple integration of the PV plant and remote configuration

The set-up wizard guides you through the first steps to integrate the plants into Solar-Log™ WEB ”Commercial Edition“. Once integrated, the Solar-Log™ settings can be conveniently accessed remotely via the internet, greatly reducing the installation time and effort required on site.

Central and dynamic plant monitoring

Solar-Log™ WEB ”Commercial Edition“ offers portal operators the option to centrally monitor all of the plants at the same time. Malfunctions such as inverter breakdowns or deviations in performance are shown according to their relevance. In this way, the daily plant control for all customer plants is reduced to one procedure which can be carried out by teams without any overlap.

Perfect organization with the plant logbook of the Solar-Log™ WEB ”Commercial Edition“

In the “Commercial Edition”, the plant logbook includes the option of an integrated ticket system to log and manage service calls. Service team members can be centrally assigned to service calls and appointments. A list of all of the relevant details, comments and the current service status can be entered and seen in the logbook.

Always in the know with regular reports

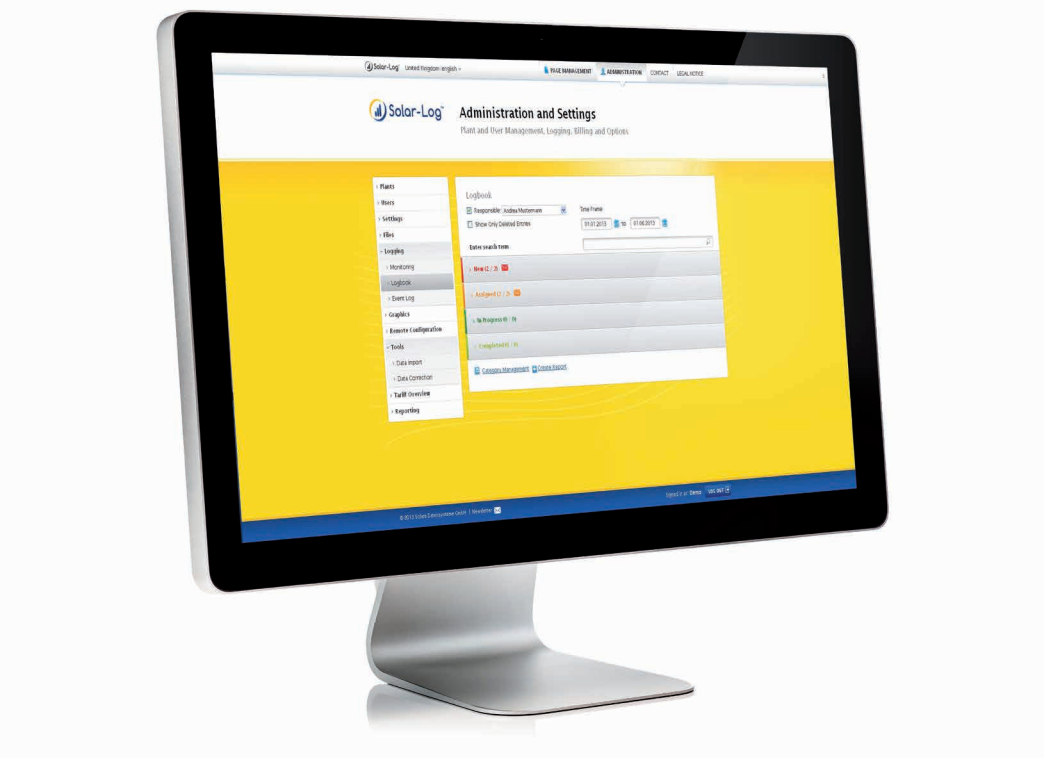
A well-arranged yield report for every plant that is monitored by Solar-Log™ WEB ”Commercial Edition“ is available in a PDF or CSV format. If requested, the reports can be automatically generated on a weekly, monthly or yearly basis and sent to as many e-mail addresses as you want; the ideal option for installers and their customers to be reliably informed on a regular basis.

Documents are available when you need them

Documents for specific plants such as string plans, contracts or specifications can be updated to the portal and are accessible at all times by authorized users.

Benefits for the plant operator

When quality of service plays a big role, the WEB ”Commercial Edition“ is the perfect solution with the convenience it offers to plant owners. No in-depth technical knowledge is required: no need to invest time in monitoring and managing. And when there is a malfunction, the plant owner is immediately informed and can offer possible solutions.



The overview of the log book entries are sorted according to status.

Upgrading to Solar-Log™ WEB “Commercial Edition”: Separate Portals, Central Administration

Service providers, project companies or investors have the option to administer several WEB ”Commercial Edition“ Portals at the same time with the comfort of a single operator interface. Every portals operator has full access to the individual portal or several portals and has limitless possibilities to design and to use it: central, convenient and with only one log-in.

No basic fees, no long-term commitments

There are no basic fees to use the software, just an annual fee per plant and per size. Every plant can be initially monitored 30 days without obligation before plant specific charges arise. Hence, all Solar-Log™ fees can also be correlated to the respective customers. On site or online trainings are available to get the most out of all of the possibilities that the Solar-Log™ WEB ”Commercial Edition“ has to offer.

The perfect overview for installers, service providers and plant operators

Monthly overview: Using the performance ratio graphic allows for a comparison of the potential yields, as measured by the irradiation sensors and actual yield.

Overall performance: The overview option impressively displays the overall performance, the total yield or the amount of CO_2 emissions that have been avoided.

Plant overview: The informative plant overview with search options.

References: The plants shown on a map clearly demonstrate the references of the portal operator.

A wide range of reporting and presentation options with WEB

The Solar-Log™ WEB "Commercial Edition" can process and analyze plant data in a graphic or numerical format in the form of daily, monthly and annual data reports. In addition, the yield line, input voltage, individual strings and inverters can be displayed. With the help of the Sensor Box Commercial, it is also possible to display environmental data and other benchmarks that support plant monitoring.

Daily overview

The daily view shows the graphic and numerical plant analysis as well as potential shading. All or only specific inverters can be selected. They are displayed in different colors within the view.

Sensor overview

The Solar-Log™ offers to option to connect a Sensor Box Commercial incl. irradiation sensor, module temperature sensor as well as wind and ambient temperature sensor. This data, in conjunction with the Solar-Log™ reports from WEB "Commercial Edition," is visually presented to provide a seamless and quick detection of errors.

Yield and consumption balance

The Solar-Log™ facilitates intelligent control and precisely timed recording of energy consumption. The data logger can "intelligently" switch on up to four external appliances.

Comprehensive Solar-Log™ failure monitoring and power balancing

String monitoring

To enable the solar power plant to run efficiently and without downtime, the power ratings of individual inverters are compared against one another. Here, the Solar-Log™ examines the data in terms of kWh / kWp (specific power) of the inverters which means different sized inverters can still be compared against one another. On multi-string tracking inverters, the Solar-Log™ can detect variances right down to string level. The Solar-Log™ transmits details of these variances either by e-mail or by SMS.

Inverter status

The Solar-Log™ continuously records the status and fault codes of the inverters, i.e. you can put your mind at rest that all connected inverters work properly. Fault codes from each manufacturer are saved in the Solar-Log™ as well as on the internet. In the event of a malfunction they are transmitted by e-mail or SMS.

Message transmission

The Solar-Log™ transmits yield and fault messages either by e-mail or by SMS. The LCD-Status-Display provides information about the operating status of the data logger. With the Solar-Log 1200 and 2000, variant values are also displayed on the screen.

Solar-Log™ WEB ”Classic 2nd Edition“

Online Monitoring for Plant Owners

The Solar-Log™ WEB ”Classic 2nd Edition“ has been developed for technically adept private plant owners. It offers basic functions for monitoring and analyzing status messages. The yields and reports are shown graphically. The ”Classic 2nd Edition“ can be used free of charge, depending on country or region, up to 30 kWp. There is a small fee for plants with more than 30 kWp.

Daily overview with presentation of yield and consumption balance.

All information at a glance

Present your photovoltaic plant's performance data in a unique way with individual style. The Dashboard delivers a concise presentation of yields, CO_2 savings and performance. As an alternative there are also Solarfox® large displays and our newly developed Solar-Log™ APP for mobile access.

Dashboard

The Dashboard provides customers a dynamic display of all of the important plant information, such as yield, CO_2 savings and performance. The display can be set up by selecting up to any four elements from the total six elements: Current Production, Yield History, Earnings, Weather, Plant Information and Environmental Contribution.
Any TV can be connected with a simple Android HDMI stick to be used for the visual presentation of a plant. The Dashboard is only available with the Solar-Log™ WEB "Commercial Edition".

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

Solar-Log™ APP

With the Solar-Log™ APP, you always have your data with you. Current and past data is represented in the form of daily, monthly, annual and total overviews. Additionally, the CO_2 savings from the plant, power consumption and self-consumption are displayed. Intuitive finger gestures (swipes) enable you to quickly navigate between different time periods. The APP saves all of the data in an internal cache so that, once loaded, it can also display yields - even when no internet connection is available.

Several different PV plants can be monitored by the Solar-Log™ and visualized with this APP.

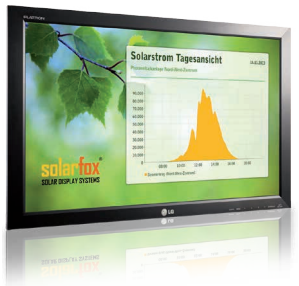
Supported plants include any that are accessible via the internet website Solar-Log™ WEB "Commercial Edition" and "Classic 2nd Edition".

The Solar-Log™ APP is available for both iOS (e.g. iPhone, iPad, ...) and Android devices (e.g. Samsung Galaxy S3, Samsung Galaxy Tab 2, ...). The APP is available from the iTunes Store for iOS devices and from Google Play for Android devices free of charge.

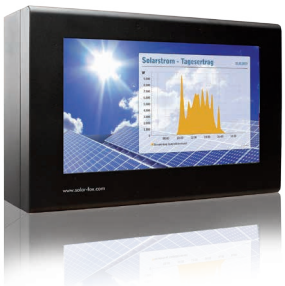
Solarfox® Large Displays

Descriptive diagrams and graphics present a plant's performance in a user-friendly and easy to follow way. Present your contribution to the protection of our environment to visitors and customers by displaying diagrams of the plant's performance, CO_2 savings or self-produced power consumption. Individual customized graphics, texts and logos can be added to the presentation at any time.

The German Federal Office of Economics and Export Control BAFA offers a 2,400 Euro funding program for displays in Germany.
(For more information: www.solar-fox.de/foerderung - in Germany)



Solarfox® SF-200 (LCD / Indoor)
24"(61 cm) to 47" (119cm)



Solarfox® SF-400 (IP65/Outdoor)
32"(81 cm) to 55" (140cm)

Solarfox® SF-300 (LED / Indoor)
24"(61 cm) to 55" (140cm)

For information and orders:

Solarfox® Solar Display Systems
SOLEDOS GmbH
Tel.: +49 60 58 – 91 638-0
E-Mail: info@solar-fox.de
www.solar-fox.de

	Product comparison	Classic 2nd Edition	Commercial Edition
	Plant monitored by	Plant owner	Installer / Portal operator
	Annual fees	with costs, up to 30 kWp* free	with costs
	PV plant registration	online: solar-log.com/classic2	online: Portal operator
Basis functions	Yields per kWp (specific yields)	●	●
Basis functions	Event log (error/status messages of the inverters)	●	●
Basis functions	Data sheet with the essential information and plant image	●	●
Basis functions	Performance comparison of the individual inverters and strings	●	●
Basis functions	Data and fault messages via e-mail	●	●
Basis functions	Compatible with Solar-Log™ APP for iOS and Android	●	●
Basis functions	Compatible with Solarfox® display	●	●
Basis functions	Standard transfer intervals: 30 min, 1 h, 2 h, 4 h, 8 h, daily	only standard	standard and every 10 or 15 min
Basis functions	Number of e-mail addresses for performance / fault messages	1	4
Basis functions	Simple configuration - Easy Installation	●	●
Monitoring & Management	Centralized and concise monitoring of several plants at a glance	-	●
Monitoring & Management	Remote configuration of the Solar-Log™	-	●
Monitoring & Management	Plant log book with ticket system and task assignment	-	●
Monitoring & Management	Plant project administration (location, owner, inverter, module and performance data)	-	●
Monitoring & Management	User administration and individual access rights	-	●
Portal design	Page layout with precise color selection and customized logo	-	●
Portal design	Individual page composition due to flexible Content Management System (CMS)	-	●
Portal design	Application as platform for promotional activities and customer relationship	-	●
Portal design	Configuration wizard to design the web pages	-	●
Portal design	Easily customized contact form	-	●
Portal design	Additional language options	Server language only	●

Displaying module

Product comparison	Classic 2nd Edition	Commercial Edition
Dashboard with performance, yield, environmental contribution, weather forecast, plant information and plant earnings	-	●
Display all current data (total yield, total output, CO_2 emission)	-	●
Integration of current data (total yield, total power output, CO_2 emissions and much more) into own texts	-	●
Display all plant locations on a map	-	●
Overview of the reference plant with search options	-	●
Graphical arrangement of up to 10 Solar-Logs	-	●
Performance Ratio graphic (only when sensors are attached)	-	●
String Connection Box graphic	-	●
User-defined automatic yield report (CSV, PDF) via e-mail or FTP	-	●
Powermanagement report with a calculation of yield losses	-	●
Report on self-produced power consumption and balance	-	●
Report on documented faults and service calls	-	●
Yield report at the inverter level	-	●
Simple integration or migration of plants from Classic 1st/2nd Edition	-	●
Compatible with SMA Sunny WebBox (limited functionality)	-	●
On request, individual Corporate Identity template	-	charged
On request, domain name of your choice (de/eu/com)	-	charged

*) country-dependent
Changes & additions subject to change without notice.


6
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SO+
L2
L3
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WS0031
kWh
se energy meter
1
)/400Vac, 10(65)A, 50Hz
SO-output:500imp/kWh
L2
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10

03

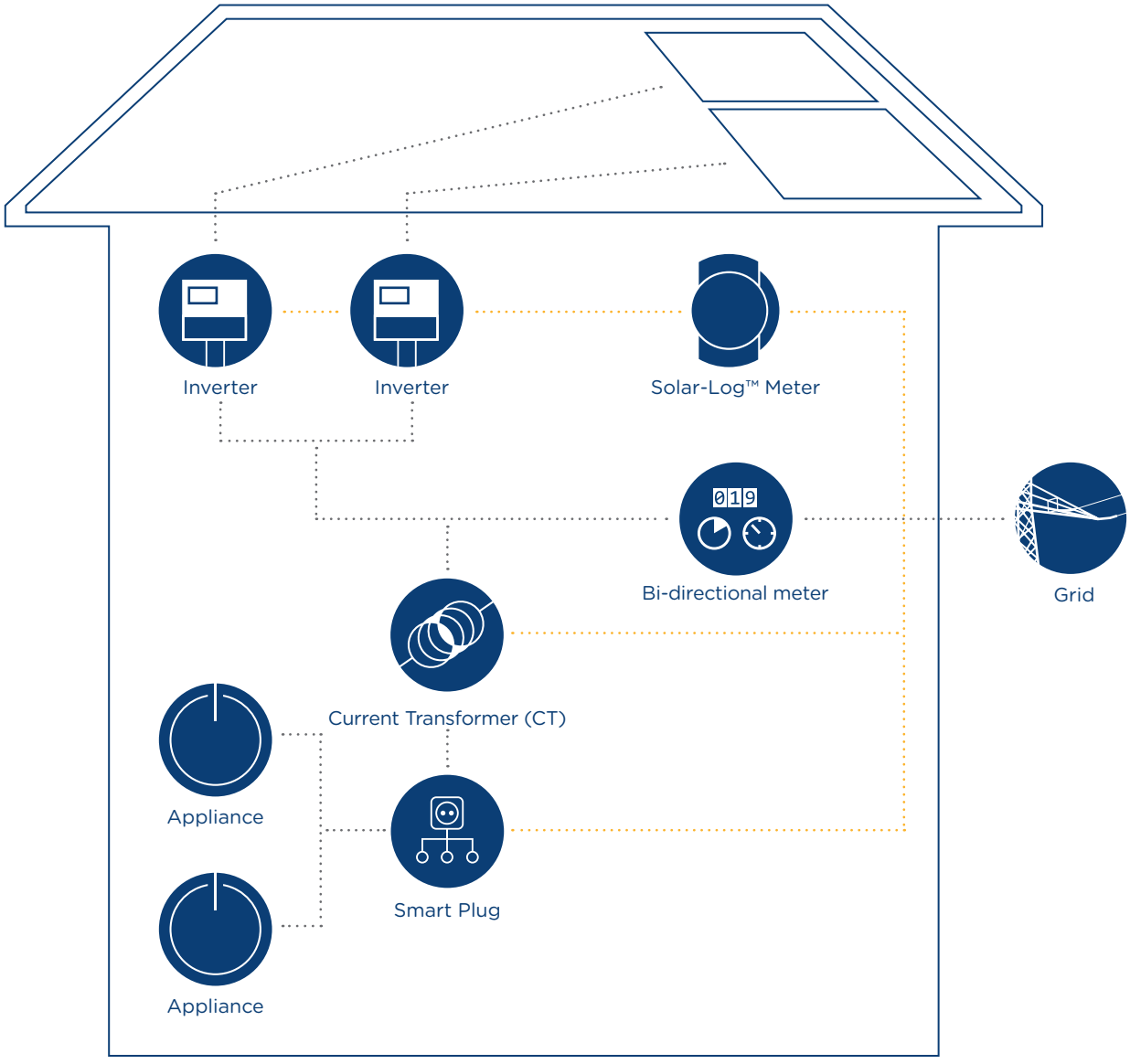
Energy Management

Efficient Power Management

Getting the most out of your power. Regardless of the amount of sunshine, smart controlling optimizes the use of self-produced power at all plants. Plant owners in Germany for example can easily implement requirements from the German Renewable Energy Act (EEG 2012) and have new options:
Plants below 30 kWp, for example, can be throttled at 70 %. With Smart Timing, the power from the photovoltaic plant can be consumed directly, and this saves hard cash, allowing customers to take rising electricity prices in stride.
The Solar-Log™ monitors the power production and current consumption and indicates when enough energy for self-consumption is available.
For investors with large solar plants, the Solar-Log™ delivers the hardware and software to implement efficient and reliable Powermanagement. With very little effort, grid operators can be granted access to all of the control functions.

Smart Timing

Optimizing the consumption of self-produced power



More solar energy for one‘s own household or business

The Solar-Log™ maximizes the amount of self-produced power consumed. All devices offer the option to precisely control appliances via the Solar-Log™. Additional options to control appliances include networked ”smart plugs“, a devices that fit on top of existing electrical outlets and the integrated relays on the Solar-Log 1200 and 2000.

The flexible linking system makes it possible to create different scenarios for a particular appliance which is to be turned on or off. Heat pumps, electrical appliances, motors and pumps are ideal devices to help maximize the amount of self-produced power consumed. For example, you can create a ”heat pump“ profile with Solar-Log™ that has various running times configured to ensure a certain amount of heat even during periods with little sun. To carry out this optimization, all you need to do is measure your consumption. The Solar-Log 300 and 1200 Meter come with integrated power meters for 2 x 3 phases. Only single phases have to pass through the external current transformers (CT) which are connected to the Solar-Log™. The Solar-Log™ measures every phase individually and delivers the corresponding value. Additionally, two electricity S_0 meters or supported RS485 meters can used to measure consumption.

Daily summary with presentation of yield and power consumption balance, drawing down power (red), power production (yellow), consumed power (green).

Presentation options

In the display, the current power values are displayed and the amount of surplus power is calculated. This allows the operator to determine the ideal time for switching on external appliances. Depending on the amount of surplus, a “Smiley” emoticon indicates whether or not it makes sense to manually turn on appliances at a given point in time. If the power meter is configured as a ”consumption meter“, an additional ”power balance“ dialog is available on the touch screen.

Feed-in management

Powermanagement makes it possible to temporarily reduce the amount of fed-in power which is required in Germany since the German Renewable Energy Act of 2009 (EEG). The Solar-Log™ software and hardware products cover the entire range of requirements for Powermanagement. The particular requirements depend on the size of the plant.

	Solar-Log™ functions for feed-in management	Solar-Log 300 Solar-Log 1200	Solar-Log 300 PM + Solar-Log 1200 PM +	Solar-Log 2000
Active power	Reduction to X percent with or without the calculation self-consumption	●	●	●*
	Remote controlled reduction with or without the calculation self-consumption	-	●	●*
Reactive power	Fixed value cos phi shift factor	●	●	●
	Fixed reactive power in Var	●	●	●
	Variable cos phi shift factor over characteristic curve P/Pn	●	●	●
	Remote controlled fixed value cos phi shift factor	-	●	●
	Remote controlled switch between fixed and characteristic curve P/Pn	-	●	●
	Remote controlled switch between fixed and characteristic curve Q(U)	-	-	●
	Variable reactive power via characteristic curve Q(U) (only with Utility Meter voltage measurement)	-	-	●
	Controlled factor at the feeding point (only with Utility Meter voltage measurement)	-	-	●
Interfaces	Connection for two Ripple Control Receivers	-	●	●
	PM Packages Flexible interface for remote control technology Inputs: max. 4 analog and 9 digital Outputs: max. 3 analog and 10 digital	-	-	●
	Modbus TCP interface for a direct connection to remote control technology	-	-	●
	Solar-Log™ Master-Slave network	-	-	●

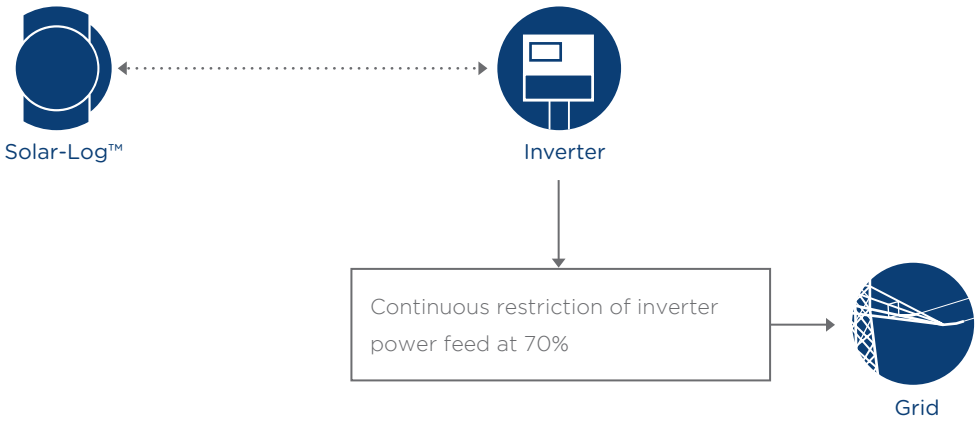
* allocation of self-consumption is not possible when using PM packages or Modbus TCP interface at the same time.

Powermanagement up to 30 kWp

Operators with a PV plant up to 30 kWp (German law at present) have a choice when it comes to power reduction. They can choose a remotely adjustable power reduction or a fixed reduction of 70 %. This fixed regulation is applied to 70 % of the power output from the installed module at the feeding point. The firmware of the Solar-Log 300, 1200 and 2000 offers two versions to implement the fixed 70 % power reduction.

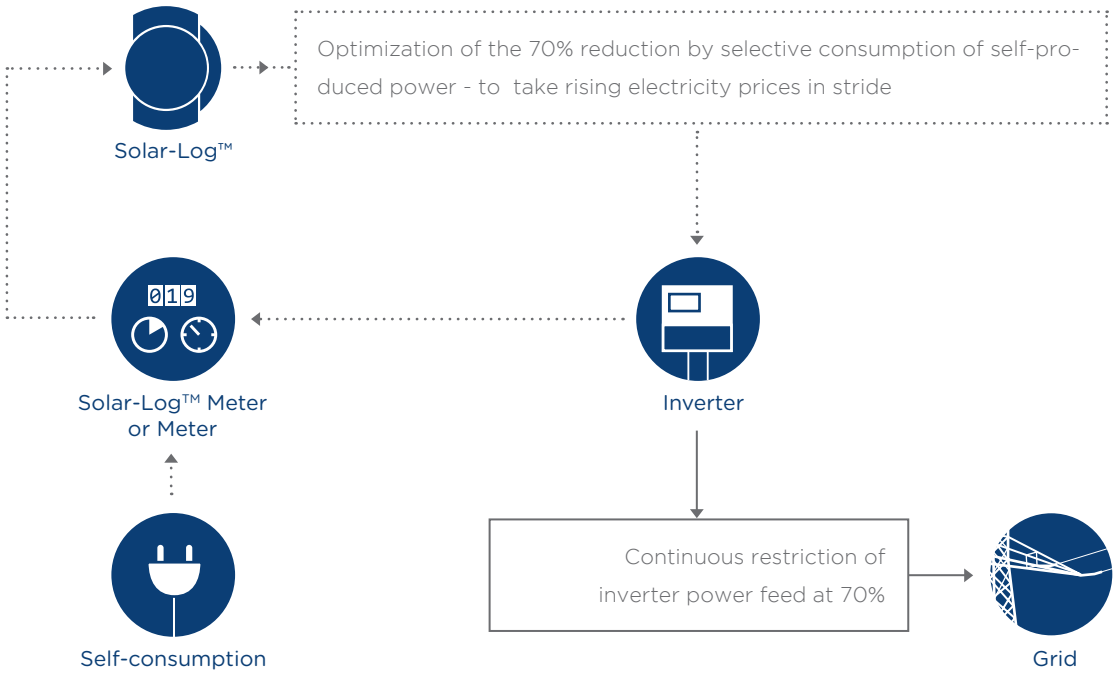
1. 70 % fixed reduction

With the fixed reduction, the inverter‘s power feed is limited to 70 % of the module‘s output. The Solar-Log™ adjusts the inverter to 70 % to limit the maximum yield accordingly. However, yield losses from about 3 to 5 % are to be expected with this function.



2. Fixed reduction with the calculation of self-consumption

This function offers an innovative solution to minimize losses that result from the 70 % reduction. To carry out this function, the Solar-Log™ only needs a power meter. The Solar-Log™ calculates the amount of private consumption and the current amount of power being produced by the inverters. If the difference between the current production and consumption exceeds 70 % of the module's power output, the inverters are regulated accordingly.



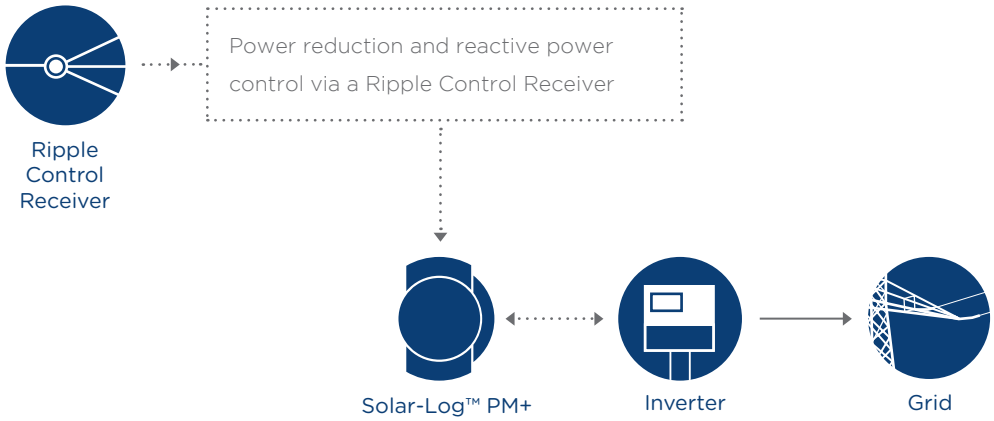
Example:

A plant with 10 kWp has to be limited to a maximum output of 7 kWp with the 70 % reduction. If an appliance, such as a stove, that uses 600 watts of power is turned on, the inverter could also convert 7.6 kWp into AC power. Only 7 kWp is delivered to the feeding point.

A Solar-Log™ Meter or an additional meter such as an ISKRA meter (our recommendation) is needed to implement this function.

3. Simple Feed-in Management for plants up to 100 kWp in Germany

The requirement of "simplified" feed-in management from the German Renewable Energy Act (EEG) has to be implemented for plants up to 100 kWp. The signal to reduce active power is generally sent via a Ripple Control Receiver. The Solar-Log™ PM+ product line comes with an additional interface for potential-free contacts. Up to two Ripple Control Receivers can be connected to this interface, one for power reduction and one for reactive power control. Reactive power can be conveniently controlled from the Solar-Log™ and does not have to be entered for every individual inverter.



Options	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
70 % fixed reduction	●	●	●
70 % with self consumption	+ Meter / Solar-Log™ Meter	+ Meter / Solar-Log™ Meter	+ Meter
Simple feed-in management	PM+	PM+	PM+
Feed-in management large plants	-	-	PM+, Utility Meter, I/O


F16+
F15+
F14+
F13+
F12+
F11+
F10+
F9+
F8+
F7+
F6+
F5+
F4+
F3+
F2+
F1+
F50
F51
A1
A2
brandner
GEREGELTE
STROMVERSORGUNG
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04

Managing and monitoring large plants

Solar-Log™ sets new standards for large plants

Since the grid can not save energy, but only allocate between generated and consumed power, a surplus of power may be produced under certain weather conditions. This could lead to a temporary grid overload and poor grid quality.

For this reason, the medium-voltage guidelines in Germany stipulate that grid operators need to be able to remotely measure and manage the power from their large feeding plants as required. These feed-in management requirements differ according to the PV plant‘s nominal power.

Managing large plants

The power management for photovoltaic plants in the medium voltage network in Germany

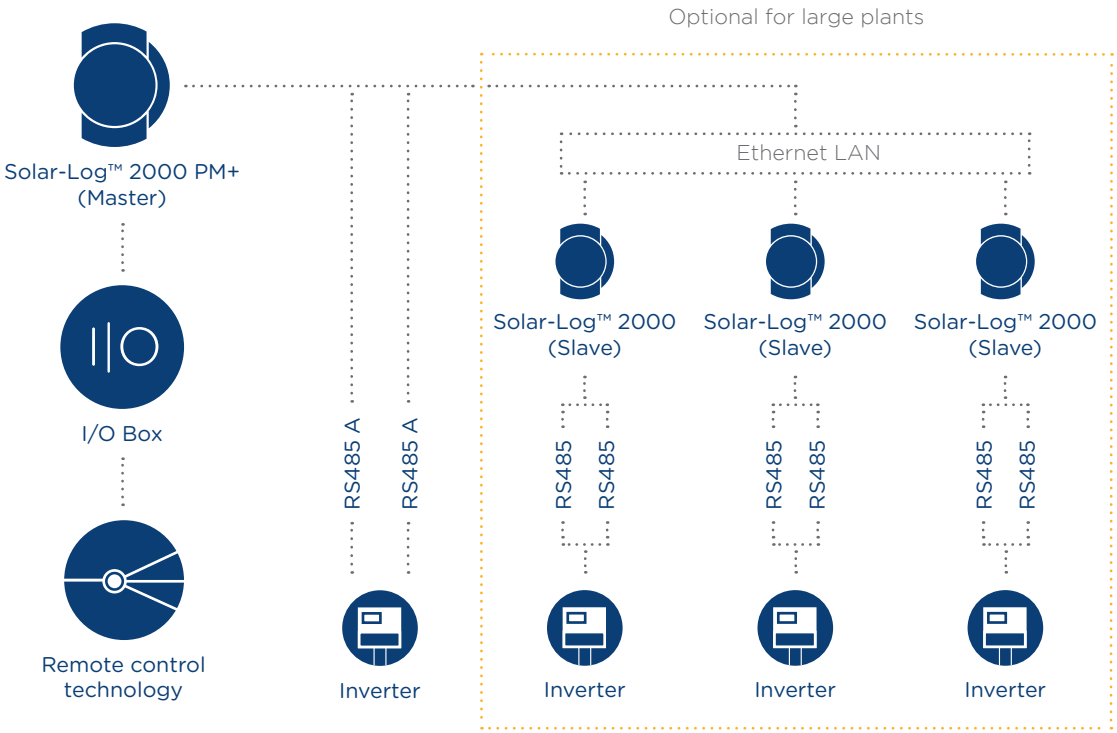
There are additional requirements for large plants (>100kWp in Germany) in the medium voltage network. In addition to the stipulations from grid operators on controlling photovoltaic plants, the information on the actual amount of fed-in power needs to be provided. The communication with the grid operators is usually carried out with remote control technology such as telecontrol systems in this plant category. Unlike ripple control technology, bi-directional communication is possible with telecontrol technology.

The signals are transmitted between the telecontrol system and Solar-Log 2000 via an I/O Box with the PM package. Depending on which value has to be transmitted to the grid operator, a measurement of transformer voltage, cos phi and/or current with the Solar-Log™ Utility Meter is required.

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

Feed-in management with Solar-Log™ networks

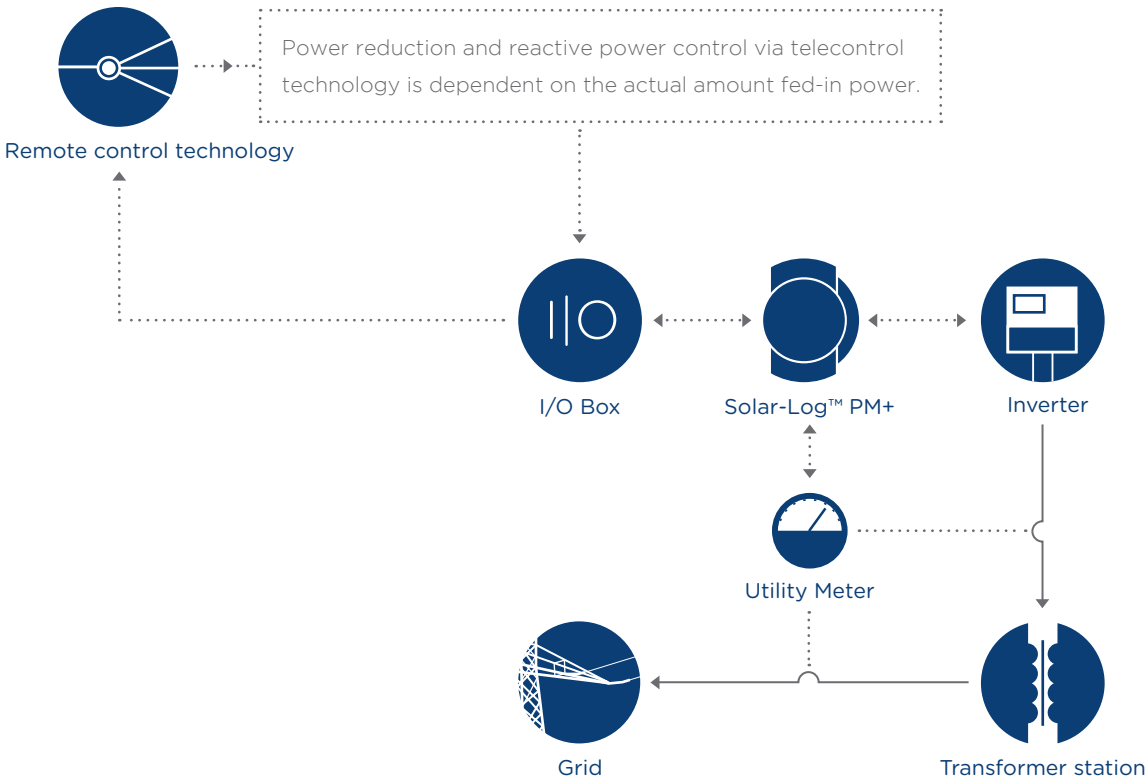
Solar-Log 2000 data loggers are connected via Ethernet to implement feed-in management at plants in the megawatt range. The networking allows the control signals from Ripple Control Receivers to be interchanged.



The grid operator's signals are received by the Solar Log2000 PM+ (master) and distributed to the connected inverters via the Solar-Log 2000 (slaves). The master can be connected to up to nine slaves in this setup. Linking the Solar-Logs together over the network helps to implement complex requirements (several plant parts, feeding points and inverters from many manufacturers).

Feed-in management for plants over 100 kWp in Germany

It is absolutely essential for plants with more than 100 kWp to use feed-in management. In contrast to simple feed-in management, a response signal with the actual amount of fed-in power is also required. That is why most grid operators deploy remote control technology. The Solar-Log™ I/O Box can receive and send the wide-range of signals from various grid operators. This function is only available with the Solar-Log 2000 PM+. When used with the Utility Meter, measured values such as reactive power, voltage and currents are reported back.



A Solar-Log 2000 PM+ and grid company specific PM profile with I/O Box(es) are required for this function. Depending on the power company, a Utility Meter might also be required.

Solar-Log™ PM-Packages

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

Technical data

Input	up to 4 analog and up to 9 digital
Output	up to 3 analog and up to 10 digital
Operating voltage	10-24 VDC
Type of protection	0-20 mA, 4-20 mA, 0-10 V

Solar-Log™ Utility Meter

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

Technical data

Voltage measurement	17 V-520 V L-L, 4 inputs
Current measurement	max. 5A
Interface	RS485
Operating voltage	135-340 VDC voltage supply
Mounting	Top hat rails, 95-240 VAC / 135-340 VDC voltage supply

Article Number

Solar-Log™ Utility Meter Measuring unit for cos phi control in conjunction with the network voltage	255385
The Solar-Log™ PM packages consist of an I/O Box with a grid operator specific PM+ profile.	on request*

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

Solar-Log™ String Connection Box (SCB)

The Solar-Log™ SCB, in connection with Solar-Log 2000 and Solar-Log™ WEB "Commercial Edition", monitors each individual string and ensures secure and accurate monitoring of PV plants. Large plants can be consistently and reliably monitored with up to 60 SCBs per Solar-Log™. The SCB adheres to the highest standards of quality and consists of high-quality standard components.

Product details

A Sensor Box Commercial delivers additional reference values. The Solar-Log™ and Solar-Log™ SCB only work with the Solar-Log™ WEB "Commercial Edition". All used components comply with current DIN and VDE standards. The Solar-Log™ SCB is designed for the use with systems up to 900 volts with all components down to the terminals and cables. An 1100 V, 160 A circuit breaker ensures reliable all-terminal DC disconnection at full load. The Class I / II, "B / C" surge protection as well as string protection on the positive and negative terminal provides comprehensive protection of connected modules. Additionally, a high temperature stability ensures continuous operation. The aluminum housing is able to withstand severe weathering without any difficulty. Clearly defined connections with contact protection inside the box assure high levels of reliability. The box is powered by the DC voltage from the modules, eliminating the need for external power cables.

	Product comparison	Solar-Log™ SCB 12 DC/DC [1]	Solar-Log™ SCB 16 DC/DC [1]
DC-input	Number of inputs	12 x Plus / 12 x Minus	16 x Plus / 16 x Minus
	Cable cross-section, flexible	1 – 6 mm²	1 – 6 mm²
	Input voltage – DC	440 – 900 V [1]	440 – 900 V [1]
	Cable current per string – DC	12 A	10 A
	Number of fuse holders/ fuse dimensions	12 + 12 / 10 x 38 mm	16 + 16 / 10 x 38 mm
	Type of protection (not included in the delivery)	IEC 60269-6	IEC 60269-6
	Overvoltage protection, type	Class I / II (B / C)	Class I / II (B / C)
Output	Number of outputs	1 Plus / 1 Minus	1 Plus / 1 Minus
	Cable cross-section, flexible	35 – 240 mm2	35 – 240 mm2
	Max. output voltage	900 V [1]	900 V [1]
	Cumulative current	160 A	160 A
	Protective Earth Conductor	External M12 connection pin	External M12 connection pin
DC circuit	Rated operating voltage, U_e (DC)	1100 V_{DC}	1100 V_{DC}
	Rated operating current in category DC22B, I_e	160 A_{DC}	160 A_{DC}
	Mechanical service life	25,000 engagements/120 per hour	25,000 engagements/120 per hour
	Reference standard	IEC 60947-3	IEC 60947-3
Data monitoring	Energy consumption/DC supply voltage [1]	< 8 W / self-sustaining from 440 to 900 V	< 8 W / self-sustaining from 440 to 900 V
	Ambient temperature	-20 °C to +65 °C	-20 °C to +65 °C
	Measuring channels (current – DC)	12	16
	Available data	String currents (12)	String currents (16)
		Total voltage	
		SCB internal temperature	
		Overvoltage protection triggered	
		Sensor data (irradiance, wind, module temperature, ambient temperature)	
	Configuration	Solar-Log™ Config Interface	
Bus	Type	RS485	RS485
	Bus spacing	2 m to 500 m	2 m to 500 m
	Max. number of SCB on the bus	60	60
Housing	Dimensions (h x w x d) without screw connections	600 mm x 600 mm x 170 mm	
	Weight	approx. 16.8 kg	approx. 17.5 kg
	Material	UV-resistant, powder-coated aluminium housing	
		UV-resistant cable apertures – screw connections M32 (DC-input) x M40 (DC-output) 1.5 RAL9004	
	Protection class, protection level	Protection class II, IP 65	
	Warranty	5 years	5 years

1) Voltage supply direct via the PV generator

Article number

Solar-Log™ SCB 12 DC/DC	255115
Solar-Log™ SCB 16 DC/DC	255123

Solar-Log™ String Monitoring Box (SMB)

String monitoring at large plants offers the best way to prevent failures. The Solar-Log™ String Monitoring Box, in combination with the Solar-Log 2000 and the Solar-Log™ WEB ”Commercial Edition“ provides the optimal solution when upgrading to string monitoring. The Solar-Log™ SMB is employed if an already present SCB only links the strings and does not monitor them.

Product details

The Solar-Log™ SMB is a two-part monitoring system that consists of:

Solar-Log™ SMB-C

Control Unit for the communication with the Solar-Log™ including measuring unit for 16 strings

Solar-Log™ SMB-M

Measuring unit for 16 strings

The Solar-Log™ SMB-M is always connected to a Solar-Log™ SMB-C. That is why every plant has to have at least one Solar-Log™ SMB-C. That means a maximum of 16 strings can be monitored from the Solar-Log™ SMB-C and the additional 16 strings from each attached Solar-Log™ SMB-M (maximum 3 SMB-M per SMB-C), thus 64 strings in total. Up to 31 Solar-Log™ SMB-C can be connected to a Solar-Log™ RS485 interface and in total 60 SMB-Cs and SMB-Ms can be connected together. Please note that the Solar-Log™ SMB can only be used with the Solar-Log™ WEB "Commercial Edition" and needs a 24 V power supply.

Product comparison	Solar-Log™ SMB-C	Solar-Log™ SMB-M
Measuring number of strings	2 x 8 Strings	
Measuring range per string	0 – 20 A, < 1% tolerance	
Diameter for the cables	10 mm	
Temperature range	-20 °C to +70 °C	
Protection Class	IP65	
Dimensions	300 mm x 400 mm x 200 mm	
Power supply	23 VDC – 30 VDC	via Solar-Log™ SMB-C
Power consumption	Max. 800 mA	via Solar-Log™ SMB-C
Warranty	1 year	1 year

Article number

Solar-Log™ SMB-C	255427
Solar-Log™ SMB-M	255428

05

Solar-Log™ Accessories

Challenging requirements require sophisticated products

The Solar-Log 300, 1200 and 2000 can be upgraded with various products. The Solar-Log™ accessory modules offer extra protection, new functions or improved performance.
All needs can be met - no matter if surge protection, connecting diverse inverters or sensors - we leave nothing to be desired. Installers, dealer and service providers can offer their customers complete solutions with high-quality products.

Solar-Log™ Meter

Metering power in a simple and effective way

The Solar-Log™ Meter measures power consumption, PV production or battery charge and discharge. It has an integrated interface to connect current transformers (CTs). The current can be easily measured by 2 x 3 phases. The phases only have to pass through the sensors. Current transformers with opening mechanisms even permit an installation without opening the circuit. With this, the Solar-Log 300 and 1200 fulfill basic requirements with one device: monitoring, feed-in management and power meter. That means 1 to 3-phase current measurements to determine the active power for production and self-consumption. Easy to install, huge benefits.

Technical data

Input	up to 4 analog and up to 9 digital
Output	up to 2 analog and up to 10 digital
Operating voltage	10-24 VDC
Type of protection	0-20 mA, 4-20 mA, 0-10 V

Digital power meters for Smart Timing

Power measurements

A power meter relays the measured amount of power to the Solar-Log™ for analysis. If you wish to consume the self-produced power from a PV plant, the meter serves as a consumption meter, displaying a comparison of the power produced and consumed. The meter can be configured to operate with the Solar-Log™ in three different modes:

1. Measuring power consumption for the optimal utilization of self-produced power.
2. Measuring the total amount of power that has been fed into the grid.
3. Measuring the power production from inverters that are not directly supported by Solar-Log™.

Technical data	Iskra uncalibrated, 1-phase, S_0	Iskra uncalibrated, 3-phase, S_0
Connections	6-pin S0 In / Out connector / cable length max. 10m	
Direct connection	80 A	65 A
Rated current	10 A	10 A
Voltage U_n	230 V -20 % – +15 %	3 x 230 V / 400 V -20 % – +15 %
Measuring range	4 mA – 80 A	4 mA – 65 A
Power consumption	< 8 W	< 0,85 W
Start-up power	4 mA	4 mA
Mains frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Dimensions (h x w x d) in mm	100.5 x 36.5 x 65	84.3 x 53.6 x 65.1
Protection class	IP20	IP20
LCD display	7-digit-LCD	6+1 digit, 100 Wh resolution
S_0 impulse	1,000 p / KWh	500 p / KWh
Other	2 counters: 1x total, 1x resetable	no LCD display
	Class 1 EN 62053-21 und EN 62052-11	
Warranty	1 year	1 year

Technical data	Inepro calibrated, 1-phase, S_0 and RS485	Inepro calibrated, 3-phase, S_0 and RS485
Connections	RS485 Interface / cable length up to 500m	
Direct connection	100 A	100 A
Rated current	10 A	10 A
Voltage U_n	230 V / 400 V	3 x 230 V / 400 V
Measuring range	<1 mA – 100 A	<1 mA – 100 A
Power consumption	< 2 W	< 2 W per phase
Start-up power	< 1 mA	< 1 mA
Mains frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Dimensions (h x w x d) in mm	130 x 76 x 65	130 x 126 x 65
Protection class	IP51	IP51
LCD display	7-digit-LCD (5.2)	7-digit-LCD (5.2)
S_0 impulse	1,600 p / KWh	400 p / KWh
Other	Class 1 according to EN50470-1	-
	Class 1 according to EN50470-3 MID, RS485 and S_0	
Warranty	2 years	2 years

Article number

Solar-Log 300 Meter	255582
Solar-Log 1200 Meter	255590
Iskra uncalibrated 1-phase, S_0	255346
Iskra uncalibrated 3-phase, S_0	255347
Inepro calibrated 1-phase, S_0 and RS485	255420
Inepro calibrated 3-phase, S_0 and RS485	255421

Networked power sockets
Optimizing the consumption of self-produced power

External appliances can be turned on and controlled by the Solar-Log 300, 1200 and 2000. To optimize the consumption of self-produced power automatically, a power consumption meter is required as well as a networked power socket. It is also possible to manually control appliances. A maximum of 10 networked power sockets are supported.

Technical data	Standard 1,8KW	WLAN 1,8KW
Maximum load	1600-2000 watts	1600-2000 watts
Maximum current	8 A	8 A
Control	TCP / IP	TCP / IP
Status	On / Off	On / Off
Connector	Euro connector	Euro connector
Dimensions (h x w x d) / Weight	40 x 68 x 128 mm, 200 g	60 x 68 x 128 mm, 200 g
Warranty	2 years	2 years

Article number

Mains power socket standard 1.8 KW	255429
Mains power socket WLAN 1.8 KW	255430
Solar-Log 300 GPRS	255575
Solar-Log 300 PM+ GPRS	255581
Solar-Log 1200 GPRS	255583
Solar-Log 1200 PM+ GPRS	255589
Solar-Log 2000 GPRS	255593
Solar-Log 2000 PM+ GPRS	255595
Antenna extension GPRS modem, internal/external area, 5m, internal modem	255326
Antenna extension GPRS modem, internal/external area, 10m, internal modem	255327
Antenna extension GPRS modem, internal/external area, 15m, internal modem	255328
GPRS antenna for greater wireless coverage	255329
Antenna extension GPRS modem, internal/external area, 5m, external modem	255014
Antenna extension GPRS modem, internal/external area, 10m, external modem	255015
Antenna extension GPRS modem, internal/external area, 15m, external modem	255016
GPRS Antenna for greater wireless coverage, external modem	255221
Antenna adapter for Solar-Log™ GPRS to connect antenna accessories, external modem	255333

Solar-Log 300, 1200 and 2000 GPRS

The alternative to a permanent internet connection

The Solar-Log 300, 1200 and 2000 GPRS come with an integrated GPRS modem and an antenna with a magnetic base and two meters of cable. The SIM card holder is mounted to the inside of the device where it is protected against theft.

Please note that when using master/slave configuration with the Solar-Log 2000, each Solar-Log 2000 slave (maximum of nine) inside the network require its own SIM card or a GPRS router has be integrated.

Technical data

GSM bands	Quad-band GSM / GPRS
GSM power rating	GSM 800 / 850 Power Class 4 – 33 dBm +- 2 dBm GSM 1800 / 1900 Power Class 1 – 30 dBm +- dBm
Data transmission	Class 10, max. 85,6 kbps
Scope of delivery	2 m magnetic foot antenna
Connection	SMA antenna connection

GPRS external antenna

Improved data connection with GPRS

This antenna improves signal strength in response to poor GPRS reception and is suitable for outdoor wall mounting.

Technical data

Frequency	GSM 900: 880 – 960 MHz / GSM 1800: 1710 – 1880 MHz
Impedance	50 Ohm
Polarization	Vertical
Gain / power	0 dB / max. 10 W
Dimensions (h x w x d) / weight	370 mm x 155 mm x 36 mm (Ø 16 mm), 420 g
Temperature range / type of protection	-40 °C to +80 °C, IP 66
Cabel length / connection	4950 + 100 mm, FME Female or SMA

Solar-Log™ WiFi
Wireless Internet Connection

The Solar-Log 300 and 1200 WiFi can easily connect to an existing WiFi infrastructure. The signal strength is displayed on the WEB interface and on the device's LCD-Status-Display. The Solar-Log™ WiFi does not need an extra cable. Additional costs for installation and hardware are eliminated.

Technical data

WiFi (WLAN Modi)	802.11b and 802.11g
Max. output transmission power	802.11 b: +20 dB / 802.11 g: +17 dB
Max. input level	-10 dB
Frequency	2.412 – 2.472 channel 1 – 13 / 2.484 channel 14 / 5.180 – 5.825 channel 36 – 165
Encryption	WEP 128 and 64 Bit, WPA, WPA 2

PowerLine Package and cable accessories
Alternative to the network cable

The PowerLine Package is a problem-free alternative for transmitting data between the Solar-Log™ and the PC or the router without having to run extra cable when WiFi reception is poor or an ethernet connection is problematic. For PowerLine data transmission, at least two connectors are required, but this can be extended indefinitely. The PowerLine connector includes a network and a USB connection.

Technical data

Transmission speed	85 Mbit / s
dLAN connection	EURO mains connector
Device connection	Connector type: RJ 45 or USB (Universal Serial Bus) 1.1
Power intake	4.5 W (max.), 3 W in standby mode
Power supply	AC 100 – 240 V 50 / 60 Hz
Ambient conditions	10 – 90 % humidity (non-condensing)
Registrations	CE compliant in accordance with the technical requirements of all EU countries and for Switzerland: EN 55022/EN 50024/EN 60950
Dimensions (h x w x d) weight	85 x 53 x 30 mm / 92 g
Warranty	2 years

Sensor Box Commercial

Irradiation sensor specifically designed for commerical plants

Sensors measure the precise deviations between the potential power production and the current power production and deliver key statistical values in regard to the quality of the whole plant. The most important element in the Sensor Box Commercial is the irradiation sensor. This delivers a reference value for solar radiation and enables conclusions to be drawn about possible power generation problems. Due to the built-in internal module temperature sensor, it is easy to analyze reductions in performance. The sensor evaluation provides information about the cause of the fault. Up to 9 Sensor Boxes Commercial can be connected. The irradiation sensor is equipped with a high-quality monocrystalline cell which is rugged and specifically designed for long-term use in outdoor locations. It is not possible to use this device with RS422 inverters and some RS485 inverters on the same bus.

Technical data

Solar cell, laminated behind glass	Mono crystalline silicon (5 cm x 3,3 cm)
Dimensions (h x w x d), housing	14.5 cm x 8.5 cm x 4.0 cm, powder-coated aluminium housing, protection class IP65
Temperature range	-20 °C to +70 °C
Power supply	via RS485 data cable from Solar-Log™ (10 – 28 V_{DC}), no further power supply required
Tolerance	Irradiance sensor: +/-5 %
Scheduled	Not scheduled
Installation	On module assembly rails. Not necessary to open up the sensor.
Connecting cable	4 pin, 3 m, UV and weather resistant
Ambient temperature sensor	PT1000 measuring range: -40 °C to +85 °C
Wind sensor	Cup anemometer measuring range: 0-40 m/s, gusts 60 m/s
Warranty	2 years

Article number

Solar-Log 300 WiFi	255576
Solar-Log 300 BT / WiFi	255578
Solar-Log 300 PM+ / WiFi	255580
Solar-Log 1200 WiFi	255584
Solar-Log 1200 BT / WiFi	255586
Solar-Log 1200 PM+ / WiFi	255588
Develo DLan – Powerline Package Duo (2 units)	255431
Sensor Box Commercial, including irradiance sensor and module temperature sensor	220060

Sensor Box Commercial accessories

Ambient temperature and wind sensors

The optional ambient temperature sensor (PT1000) delivers additional information for the power generation. Less yields can also be a result of low temperatures with sunshine or with ice. Such problems can be detected much easier when a sensor is being used. In addition to this, wind speeds can be followed with a wind sensor or, when having a break-down or power reduction, storm losses can be identified much better as possible causes.

Sensor basic

Irradiance sensor specifically designed for residential systems

Sensor basic delivers the irradiance values as well as the module temperature. Compared to the Sensor Box Commercial, the measurements from the Sensor basic are only 3 % less precise. It is not possible to connect a wind or ambient temperature sensor and to use an RS422 inverter on the same bus. A maximum of one Sensor basic can be connected to an RS485 bus.

Technical data

Solar cell	Amorphous thin layer silicon cell (3.5 cm x 3.5 cm)
Dimensions (h x w x d), housing	64 mm x 99 mm x 36 mm, Polycarbonate, UV-stabilised IP65
Temperature range	-25 °C to +75 °C
Power supply	Via RS485 data cable from Solar-Log™ 10-28 VDC, no further power supply required
Measuring range, radiation strength	0 to 1,400 W/m²
Tolerance	Irradiance sensor: +/-8 %
Scheduled	Not scheduled
Installation	On module mounting rails. Not necessary to open up the sensor - all sensors are screwed in place.
Connection cable	4-pin, 3 m, UV and weather-resistant
Warranty	1 year

Weather station with a pyranometer

Precise measurements of irradiance

This Weather station provides data on air pressure, wind direction and speed, module temperature and the exact local prevailing overall irradiance at large plants. The data is collected by the integrated CMP 3 pyranometer. Measuring the local irradiance provides information on the influence of weather conditions on the PV plant's performance. The data from the Pyranometer is used in the Solar-Log™ WEB "Commercial Edition" to calculate the Performance Ratio.

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

Technical data

Power supply	24 Vdc +/- 10 %
Power consumption	20 VA at 24 V
Connection type	RS485
Protection class	IP65
Dimensions	Diameter: 150 mm, height 332 mm, weight: 1.5 kg

Article number

Sensor basic including irradiance sensor and module temperature sensor	255258
Wind sensor for connection to the Sensor Box Commercial; including a 5 m connection cable	220061
Ambient temperature sensor for connection to the Sensor Box Commercial, including a 3 m connection cable	220062
Pyranometer with weather sensors	on request

Solar-Log™ Bluetooth (BT)

Bluetooth module for wireless connections

Easily connect the Solar-Log™ to SMA inverters with Bluetooth. There is no wiring required to connect the devices. The Solar-Log™ BT supports all SMA Bluetooth devices. A mixed inverter operation via Bluetooth and RS485 interface or SMA Speedwire is possible. A major advantage: by using the SMA network connection, it is possible to have large distances between the Solar-Log™ and the inverters since every inverter operates as a signal repeater. A maximum of 7 SMA Bluetooth inverters can be connected to the Solar-Log 300 and 1200 BT, and the maximum distance between two inverters depends on the surroundings, e.g. 50 meters in open spaces.

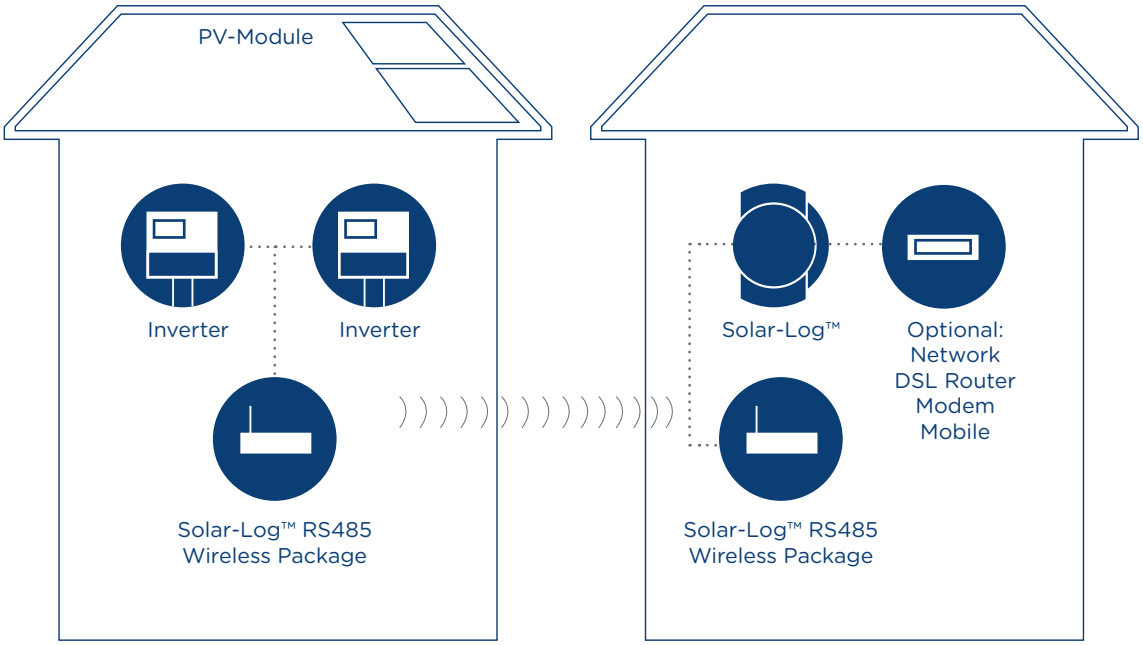
Solar-Log™ RS485 Wireless Package

Connecting inverters wirelessly

The Solar-Log™ RS485 Wireless Package allows for monitoring even in places where cable connections are difficult. Radio modules are always deployed in pairs. When used in conjunction with the external and directional radio antenna, connections can be made at larger distances. The test function helps to find the optimal assembly location. When placing an order, please do always provide the name of the inverter manufacturer so that the Wireless Packages can be fully pre-configured. The Wireless Package cannot be used with all inverters.

Technical data

Range inside buildings	up to 80 m (up to three concrete walls)
Range over open field	up to 500 m, with directional radio antenna up to 800 m
Protection class, approval	IP 20, only suitable for internal use, CE standard
Power supply / performance	7 – 18 V, 1 watt
Frequency	2.4 Ghz
Temperature range	0 ° – 70 °C
Dimensions per piece (w x h x d) / Weight	70 x 140 x 30 mm / 200 g
Antenna	Dipole antenna, 2.1 dBi amplification



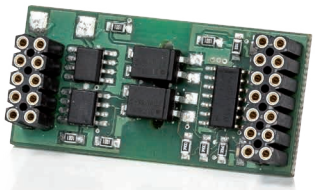
Article number

Solar-Log 300 BT	255577
Solar-Log 300 BT / WiFi	255578
Solar-Log 1200 BT	255585
Solar-Log 1200 BT / WiFi	255586
Solar-Log™ X24 RS485 Wireless Package (2 units) Please specify type of inverter for pre-configuration.	220058

Special PiggyBack (RS485)

Communication between SMA inverter and Solar-Log™

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



Article number

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

Article numbers cable sets

RS485 – interface; cable set 3m	BKL2 Universal / Alphasol / Powercom / Winaico	255107
	BKL3 Universal / Solutronic xx / Q3 xx00	220050
	BRJ2 Universal / Motech / Zentral Solar	255157
	BRJ3 Universal / Samilpower / Enfinity	255331
	BRJ4 Universal / Danfoss / AEG PV	220042
	BRS1 Universal / Solutronic SP 1xx / Q3 1xx00	255264
	Delta	255125
	Diehl AKO	220064
	Effekta	255034
	Hyundai HPC-250 HT-E	255154
	Hyundai HPC-050 / 100 HT-E	255156
	Kaco	220038
	Kostal / Convert	220055
	Mastervolt	220054
	Mitsubishi	220049
	Power-One	220043
	Refu	220056
	Santerno-Solar-Log™ (from Solar-Log™ to 1st inverter incl. connector) – always required	255109
	Santerno inverter (from one inverter to another)	255110
	Schüco	220051
	SMA	220037
	SolarMax	220040
	Steca	255066
	Sunways	220039
	Sustainable Energy	255155
	Vaillant	220044
	Vectron	255012
	Xantrex GT 30 E	255348
RS422 – interface; cable set 3m	BKL1 Universal / Salicru (EQX) / SE SunEzy	255106
	BKL4 Universal / Eaton / Phoenixtec / Sunville / Riello / AEG PS	220057
	BRJ1 Universal / Europa Solar / Ever-Solar	255108
	Fronius	220041
	SamilPower	255331
Canbus; 3m	Voltwerk / Conergy (from Solar-Log™ to 1st inverter incl. connector) – always required	255001
	Voltwerk / Conergy (from one inverter to another)	255002
Extension cable	RS485, 4 pin sheathed, length 8 m	255145
	RS422, 6 pin sheathed, length 8 m	255146

Article numbers cable sets

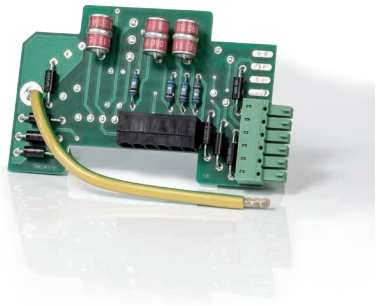
RS485 for home-made cables	sheathed 4 pin cable for RS485 wiring, 5 m indoor applications only	220012
	sheathed 4 pin cable for RS485 wiring, 10 m indoor applications only	220013
	sheathed 4 pin cable for RS485 wiring, 25 m indoor applications only	220014
	sheathed 4 pin cable for RS485 wiring, 100 m indoor applications only	220068
Warranty	2 years	

Overvoltage protection

Greater security thanks to optimal protection

The overvoltage protection device for the Solar-Log™ offers protection against power surges. This protects the Solar-Log™ from surges which could result from removing inverter communication cables from the logger while the inverter operates as well as from lightning strikes in the vicinity.

This device protection has been specially developed for retrofitting the RS485/422 interface of the Solar-Log™. It is easy to install in just a few quick steps. Failures due to power surges are minimized tremendously.



Technical data

Nominal operating voltage	5 V
Maximum operating voltage	6 V_{DC}; 4,25 V_{AC}
Maximum operating current	500 mA
DC resistance in operation	2.7 Ohm
Line-ground capacitance	< = 5 nF
Protection level core - core, max.	8 V
Protection level line - ground, max.	90 VDC (1KV / microS)
Impulse protection level line - ground	< = 450 V
Nominal discharge current (1 KV/QS)	10 KA
Width x height x depth in mm	52 x 88 x 14

Solar-Log™ Installation Housing for outdoor use

Protection against dust and moisture

The Solar-Log™ provides reliable protection to ensure safe operation under all weather conditions. Two versions are available: one with a transparent case cover and one with an opaque case cover. From these versions, you can pick the one to best suit your needs. This box can be equipped with a data logger and additional accessories such as the RS485 Wireless Package. In addition to the Solar-Log™ socket, a second socket is included.

Technical data	Version 1	Version 2
Installation Housing	The housing material is made of polycarbonate and ABS plastic.	
	For quick and easy installation of the Solar-Log™, the holes on the mounting wall have been pre-drilled.	
	There is space in the box for additional accessories.	
Mounting	4 PG connections are available for the mains power connection and other connections.	5 PG connections are available for the mains power connection and other connections.
	To fix the data logger properly, please remove the mounting plate from the installation housing, please remove it from the housing and then fix the Solar-Log™ device. Then, please screw the mouting plate back again.	
	Hinges can be ordered to help open the cover easily.	
Standard color for the enclosure	Grey / RAL 7035	
Surface	The Installation Housing is non-fading.	
Protection class	IP 65 when used with the proper cable screws and when the cable conduits are properly sealed.	
Dimensions (w x h x d) in mm	300 x 400 x 130	600 x 400 x 130
Warranty	2 years	2 years

Article number

Extended cover and overvoltage protection for Solar-Log 300	255602
Extended cover and overvoltage protection for Solar-Log 1200 and 2000 (only RS 485 + RS485/422 A)	255601
Solar-Log™ Installation Housing IP 65 version 1 for outdoor use including 2 power connections, mounting plate	255422
Solar-Log™ Installation Housing IP 65 version 2 for outdoor use including 2 power connections, mounting plate incl. transparent cover	220063
Transparent cover for Installation Housing IP 65 (version 1)	255435
Hinges (2 units) for the Installation Housing	220072

Solar-Log™ worldwide

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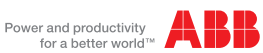

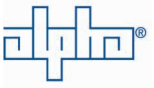

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