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# 1 General Information

This user manual is intended to assist you in the operation of the Solar-Log<sup>™</sup>. The yield data from the Solar-Log<sup>™</sup> can be displayed in several ways:

- via a web browser in a local network (LAN) (Chapter 2)
- via the display (touch screen: only Solar-Log 1000, 1200 and 2000) directly on the device (Chapter 4) or
- via the Internet (Chapter 6)

Our product documentation is being constantly updated and expanded. The current versions of the documents can be downloaded from our website: www.solar-log.com.

The descriptions in this manual refer to firmware version 3.5.3

#### Security informa-

tion!



Update the Solar-Log<sup>™</sup> immediately to firmware 3.5.3 build 86 to protect it from security risks and define a user password.

## 1.1 The necessary steps for precision monitoring of your PV plant with the

## Solar-Log™

- Connecting and detecting inverters, refer to the "Inverter Connection Manual" and the "Configuring Connected Devices" chapter in the Installation Manual.
- Refer to the chapter "Configuring Connected Devices" in the Installation Manual for the configuration of inverters, generator power, MPP trackers and module fields.
- For configuring the notification function and status messages from the inverter, refer to the "Configuring Notifications" chapter in the Installation Manual.
- For activating and configuring performance monitoring, refer to the "Configuring Connected Devices" chapter in the Installation Manual.

Note!



The Solar-Log needs a continuous supply of electricity to avoid data loss and to ensure precision monitoring of the PV plant

# 2 Operating via a web browser within your own network

## 2.1 Requirements

## Information



For faster access, enter "solar-log" in the address bar of the web browser and create a bookmark.

#### In a local network (LAN)

To operate the Solar-Log<sup>™</sup> via a web browser, you will need to be on a computer that is connected to the same local network (LAN). This computer will also need to have a modern web browser installed on it. The Solar-Log<sup>™</sup> unit also has to be connected to this network with the proper network settings.

### Via the Internet

In addition to a computer with a web browser, you need an active Internet connection as well as a user account on a server.

To set up a user account, please contact your installer or see our website for more information: http://www.solar-log.com/en/products-solutions/solar-log-web.html

Note!



Requests and control commands are sent to the inverters, battery systems and intelligent appliances via the network interface. For this reason, the network should always be available (24/7). If the Solar-Log<sup>™</sup> is connected via WiFi, we recommend deactivating the overnight shutdown function.



Fig.: Navigation designations

The start page contains the following sections:

- Header bar (A)
- Left navigation (B)
- Tabs (C)
- Configuration page (D)

#### Header bar

The header contains three main sections:

• Yield data:

Here you will find your plant's yield overview within certain periods of time such as day, month, year and the total yield to date.

• Diagnostics:

Here you can view the fault and process messages while filtering them according to specified criteria.

• Configuration:

Here you can change the device settings as required.

#### Left-side navigation menu

Depending on the tab selected, you can access additional functions from the navigation menu (left-side).

#### Tabs

Additional configuration sections appear according to the function selected.

#### **Configuration Page**

Here you can make necessary configurations for the optimal monitoring and evaluation of your plant. You can also view information on the power output, yields and the device.

#### Log in button

You can entered a password protected section by clicking on the log in button (at the bottom right corner of the screen) and entering your user and password. On the right side on the bottom, there is a blue line next to the log in button which indicates if you are logged in and with which user level. (Refer to the Access Control section for more information)



Fig.: Log in button with selection box

#### Hide arrow

The "Hide Arrow" (on the right of the header bar) allows you to increase the amount of the page displayed in the browser by hiding the Welcome header.

VIELD DATA		â Ibr

Fig.: Header bar with the "Hide Arrow"

#### New Firmware

A notification is sent via the Web browser when a new firmware is version available; a green triangle with an exclamation mark is displayed at the top in the status line. (See illustration: Signal for new firmware)



#### Note!



The Automatic Firmware Update Check has to be activated in the Configuration | System | Firmware menu to use this function. (See illustration: Automatic Firmware Update Check with notification text displayed)

ACCESS CONTROL LANGUAG	SE/COUNTRY/TIME DISPLAY LICENCES FIRMWARE
Status	
Installed version	3.5.1 Build 84 - 05.09.2016
Important notice As new firmware-versions may neccessary to be informed abo Important notices are usually e If several firmware-versions we then all notices of the versions	change existing functions and/or require changes to th <mark>e</mark> configuration, it is ut the changes to ensure the reliable operation of the device. specially mentioned in the beginning of the release notes. re available between the currently used version and the version that is to be installed, in between apply.
Current firmware versions and	related notices can be found on our homepage under downloads.
Update firmware manı	Jally
Update firmware from hard dis	k Durchsuchen Keine Datei ausgewählt.
Check for update via I	nternet
Check USB drive for up	odate
Th	CHECK is setting allows to update Firmware versions which are fective. Generally this setting leads only to a green
Check Firmware ver <sup>ex</sup>	chamation mark in the first line, which indicates that a newer mware version exists.
Check Firmware version autom	atically I Activated

Fig.: Automatic Firmware Update Check with notification text displayed

The following notification text is displayed by clicking on the question mark:

"This settings allows firmware versions with critical errors to be automatically updated. However, generally, this setting only indicates that a new firmware version is available (green exclamation mark at the top).

Clicking on the green exclamation mark in the header displays the following window:



Fig.: Window displayed indicating that a new firmware version is available

Selecting "OK" redirects you to the page of the Solar-Log<sup>™</sup> for firmware updates. Selecting "Cancel" closes the window.

## Access control

Access protection for different parts of the Solar-Log<sup>™</sup> can be configured in this menu. The following sections can be restricted with a pin code or password.

- Access protection for the display
- Access protection for the browser menu
- Displaying advanced configuration

Access protection for the display (only Solar-Log 1000, 1200 and 2000)

A pin code can be activated to restrict access to the Solar-Log<sup>™</sup>'s display. The pin code may contain a maximum of 8 numerical digits.

Access at the display can be restricted for the entire display or just the settings section. **Procedure**:

- Enter the pin code.
- Enter the pin code again.
- Select restricted Sectionsby checking them.
- SAVE the settings.

## Access protection for the browser menu

In this section, the following parts of the Solar-Log<sup>™</sup>'s browser menu can be restricted with a password:

- User General access to the Browser menu
- Installer
  Access to the Configuration menu
- Feed-in management Access to the Configuration | Feed-in Management menu

The default password for access to the Feed-in Management menu is PM. Access for users and installers is not restricted.

Note



We advise installers to discuss with their customers the scope of the settings in the area of feed-in management, to block the configuration menu using a password and to assign an individual password.

### Procedure

- Activate the password restriction for the desired menus.
- Enter a secure password for each of the menus.
- Enter the password again.
- SAVE the settings.

#### Security informa-

tion!



Update the Solar-Log<sup>™</sup> immediately to firmware 3.5.3 build 86 to protect it from security risks and define a user password.

## 2.3 Accessing the Start page

Start your web browser and enter "solar-log" in the address bar of the web browser or select the bookmark in the browser's navigation bar. If there are several Solar-Log<sup>™</sup> devices connected to the network, enter http://solar-log-xxxx in the address bar. Here "xxxx" stands for the last 4 digits of the serial number of the Solar-Log<sup>™</sup>.

• The welcome screen is displayed.



Fig.: Welcome screen

From the start page, the following navigation menu can be selected from the header bar:

- Yield data
- Diagnostics
- Configuration
- The subsections in the in the tabs:
- Cockpit
- Energy flow
- Table

These are also located on the left side of the of the VLCD Display (see "VLCD Display" section for more details) and in additional sub-menus (depending on connected the devices) and as a selection in the main navigation menu.

## VLCD Display

The VLC Display is located above the left navigation menu and displays the notifications from the Solar-Log™in the form of codes and symbols in addition to the date and time. The codes and symbols correspond to those for the LCD display. (Refer to the illustration "VLCD Display" and the chapter "Meaning of the symbols on the LCD display")

The notifications are in real-time and are identical to those on the Solar-Log™ LCD Display. (Solar-Log 300, 1200 and 2000) (Also refer to the chapter "Notifications on the LCD Status Display")



Fig.: VLCD Display

## 2.4 Accessing Yield Data

## Access the yield data from the header bar.

The following options can be selected from the left-side navigation menu.

- Current values
- Production
- Consumption (only appears when a consumption meter is connected)
- Balances
- Finances
- Sensor (only appears when a sensor is connected)
- System Information

## 2.4.1 Current values

The Cockpit tab can be automatically selected from the Current values . the Dashboard view of the plant includes the following values:



Fig.: The plant's current values (cockpit view)

- Consumption (only when consumption meters are connected). This displays the current consumption.
- Production (power generated by the plant) + discharge \*only with a connected battery system) displays the current production and battery discharge.
- Feed-in amount (only when meters are connected). This displays the power output that is currently being fed into the grid.

There are two graphs located below the Dashboard display:

• The current day curve (graph on the left). There is also the option to display the previous five days as a curve in this graph. Therefore, just click on the day value in the graph on the right.

• The current day value as well as those from the previous 5 days (graph on the right). Move the mouse above one of the bars to display the day value. Click on one of the bars to have it display in the graph on the left as a curve.

Additional tabs can be selected in this view:

- Energy flow
- Table

#### Note



If the Solar-Log<sup>™</sup> is just used as a consumption monitoring tool, the menu is limited to Current values, Consumption and System information. All of the other menus are hidden.

#### Note



When only consumption meters are connected to the Solar-Log<sup>™</sup>, a large consumption tachometer is displayed instead of the production tachometer in the Current values | Cockpit menu.

## 2.4.2 Energy flow



The plant is displayed as a flow graphic in the Energy flow tab.

Fig.: Example of a plant with an energy flow

Depending on the particular devices connected, the following values are displayed in the flow graphic in real time:

- Production (W)
- Consumption (W)
- Grid fed / purchase from grid (W)
- Battery Status
  - Charge Status (%)
  - Charge / Discharge Output (W)

## Note:

When a battery meter is connected, the value for the battery's charge status cannot be read. That is why for the presentation of energy flows that the charge status is displayed with n/a and the charge with O W.

## **Energy Flow Color Key**

- Production (W):
  - Green, energy is being generated.
  - Gray, energy production is not active.
- Consumption (W):
  - Red, energy is being consumed.
  - Grey, no active consumption.
- Grid fed / purchase from grid (W)
  - Red, energy is being purchased from the grid.
  - Green, energy is being fed into the grid.
  - Gray, no energy transfer in either direction with the grid.

## Battery:

- Charge Level (%):
  - Red, battery is being charged.
- Discharge (W)
  - Green, battery is being discharged.

## 2.4.3 Table

The output recorded from the connected devices is displayed as a table in Table tab.

14.04.15 10.32.50	COCKPIT ENERGIEFLUSS TABEL	£	
Iomentanwerte			
rzeugung	Wechselrichter	Leistung	Status
/erbrauch	WR	657 W	Ferngesteuert
lilanz	Verbrauchszähler	Leistung	Status
ensor	SO-IN A	0 W	OFFLINE
inanzen	Janitza	530 W	RUNNING
ysteminfo	Switch 1	0 W	Off
	Sensor	Einstrahlung	Status
	Sensor	0 W/m <sup>2</sup>	DATA

Fig.: Table with the recorded output from an example plant

Depending on the particular device connected, the following values are displayed:

- The current output from each individual inverter.
- The total current consumption as measured by the consumption meters.
- The current irradiation per m<sup>2</sup> as measured by the sensor.
- The values from the battery with the columns Charge/Discharge, Charge Level (%) and Status.

## 2.5 Production



You can select a graphic display of your plant's production from the Production menu.

Fig.: Graphic display of the plant's total production

From this display, you can select the following tabs:

- Day
- Month
- Year
- Total

You can select to display the view as a graph or table. The values displayed in the graph or table depend on the view selected.

Note



The auto scaling option always scales the graphics up as much as possible. The auto scaling can be manually disabled for the respective graphics. Then the scaling is done based on the value defined in the device configuration. Please refer to the the chapter on configuring inverters in the Installation Manual.

The selected section can be enlarged by clicking on the graphic and dragging it.

## 2.5.1 Day view

The Day tab displays the current day as a curve graph. The values Output (W) and Yield (kWp), on the top left of the diagram key, can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves). With a right-click, all of the values (curves) other than the one selected can be hidden.

The different values throughout the day can be displayed by moving the mouse along the curve.



Fig.: Daily View of the Production Graph with the Auto Scaling activated

The following data is graphically displayed in the production day:

- Production (kWh) (If the daily yield value is modified with the data correction function, the modifications are displayed in brackets.)
- Target (kWh)
- Actual (%):



Fig.: Daily View of the Production Graph with the Auto Scaling deactivated

Different values with different units are displayed in the graph. The units used and their colors are defined in the key at the top.

1.2 m	DAY N	IONTH YEAD	R TOTAL			
Current values	Date 25.0	07.2015		To the monthly graph S	Display mode	Graph Table
Production						
Consumption						
Balances	Inverter	Name	Yield	Specific Yiel	d	
Sensor	0	INV 3	12.33	0.84		
Finances	1	INV 1	12.33	0.84		
System Information	2	INV 2	12.33	0.84		
	Tand		25.00	0.04		

Fig.: Day view of the production table

When you click on Table, the values from the current output generated will be allocated to the individual inverters and displayed as a table. In this way, you can check the output of every inverter at any time.

## 2.5.2 Month view

The tab Month displays the daily yields from the month as a total in a bar graph.

- The daily yield can be displayed by moving the mouse above one of the bars.
- Click on a bar to go to the corresponding day view.



Fig.: Month view production graph

● □K	Y
22.07.15 10:25:09	Ш.,
> Current values	-
> Production	-
Consumption	
Balances	
Sensor	
> Finances	
> System Information	

2240		- To the yearly graph	Diralay model Craph	
07.2015		2015	Table	
Date	Yield	Specific Yield	set value	Actua
			(cumulative)	
01.07.2015	37.24	0.84	164.59	-77.4
02.07.2015	196.63	4.46	164.59	+19.5
03.07.2015	248.10	5.63	164.59	+50.7
04.07.2015	207.53	4.71	164.59	+26.1
05.07.2015	92.05	2.09	164.59	-44.1
06.07.2015	256.50	5.82	164.59	+55.8
07.07.2015	190.44	4.32	164.59	+15.7
08.07.2015	256.96	5.83	164.59	+56.1
09.07.2015	206.11	4.67	164.59	+25.2
10.07.2015	250.47	5.68	164.59	+52.2
11.07.2015	192.38	4.36	164.59	+16.9
12.07.2015	262.36	5.95	164.59	+59.4
13.07.2015	172.61	3.91	164.59	+4.9
14.07.2015	209.98	4.76	164.59	+27.6
15.07.2015	206.92	4.69	164.59	+25.7
16.07.2015	182.53	4.14	164.59	+10.9
17.07.2015	190.88	4.33	164.59	+16.0
18.07.2015	103.41	2.34	164.59	-37.2
19.07.2015	256.18	5.81	164.59	+55.6
20.07.2015	204.46	4.64	164.59	+24.2
21.07.2015	253.74	5.75	164.59	+54.2
22.07.2015	173.99	3.95	164.59	+5.7
23.07.2015	199.46	4.52	164.59	+21.2
24.07.2015	259.53	5.88	164.59	+57.7
25.07.2015	36.99	0.84	164.59	-77.5
26.07.2015	249.52	5.66	164.59	+51.6
27.07.2015	11.05	0.25	164.59	-93.3
28.07.2015	0.00	0.00	164.59	-100.0
29.07.2015	0.00	0.00	0.00	0.0
30.07.2015	0.00	0.00	0.00	0.0
31.07.2015	0.00	0.00	0.00	0.0
T	5100.01	115.00	1000 50	110 -

Fig.: Month view of the production table

When you click on Table, the values: date, yield, specific yield and target (cumulative), current and target are listed for the entire month.

## 2.5.3 Year view

The tab Year displays the monthly yields from the year as a total in a bar graph.

- Move the mouse above one of the bars to display the monthly yield with a comparison of the current and target values in regard to the annual forecast.
- Click on a bar to go to the corresponding month view.



Fig.: Year view graph

When you click on Table, the annual values for the entire year are allocated to each month according to the actual output generated.

## 2.5.4 Total view

The Total tab displays the annual yields as a total in a bar graph. The red line displays the calculated target balance based on the annual forecast.

- Move the mouse above one of the bars to display the annual yield with a comparison of the current and target values in regard to the annual forecast.
- Click on a bar to go to the corresponding year view.



Fig.: Total view graph

#### Table:

The plant's total power output (since the monitoring started) is allocated every year according to the output generated.

The Date box is included in the day, month and year view and has a calendar function with which you can search for certain days, months or years according to the view selected. You can go backwards and forwards within the selected period with the arrow keys for the previous day or week, or for the following day or week.

## 2.6 Consumption

From the Consumption menu, you can view the exact consumption from appliances that are connected via networked "smart plugs" with the Solar-Log 1200 and 2000, relays or the Solar-Log™ Meter.

# Note

Consumption is only displayed once a meter is connected.

The day view can be selected from the Consumption menu. The view appears as a Day Graph with the total consumption values.

As soon as sub-consumers are connected, e.g. a washing machine or freezer, the view expands to include the tab Details Sub-consumers.

All of the appliances consuming electricity are shown in different colors here and they are also displayed as in a pie chart at the bottom with the colors in the key.

It is also possible to display the Daily Consumption graphic as a line graphic. There is the option to display or hide the consumption from particular appliances in line graphic view.



Fig.: Graph of daily consumption with meters connected



Fig.: Graph of daily consumption with meters connected and active line graphics



Fig.: Graph of daily consumption with connected appliances in the sub-consumer view



Fig.: Graph of daily consumption with connected appliances and active line graphics in the sub-consumer view You have the option to select additional menu items in the consumption view.

#### • Month:

displays the Month Graph View as a bar graph. There are two tabs in the Month View, the same as in the Day View:

The Consumption Overview and the Sub-consumer Overview.

The total consumption values are displayed in the Consumption Overview as a bar graph.

In the Sub-consumer Overview, you see the devices connected as a bar graph with the power consumption displayed in different colors. Below this, the values are also displayed in a pie chart with the colors in the key.

There is the option from both views to select the individual days directly from the individual bars and sections.

#### • Year:

displays the Year Graph View as a bar graph. There are two tabs in the Year View, the same as in the

Month View:

The Consumption Overview and the Sub-consumer Overview.

The total consumption values are displayed in the Consumption Overview as a bar graph.

In the Sub-consumer Overview, you see the devices connected as a bar graph with the power consumption displayed in different colors. Below this, the values are also displayed in a pie chart with the colors in the key.

There is the option from both views to select the individual months directly from the individual bars and sections.

## • Total:

displays the Total Graph View as a bar graph. There are two tabs in the Total View, the same as in the Year View:

The Consumption Overview and the Sub-consumer Overview.

The total consumption values are displayed in the Consumption Overview as a bar graph.

In the Sub-consumer Overview, you see the devices connected as a bar graph with the power consumption displayed in different colors. Below this, the values are also displayed in a pie chart with the colors in the key.

There is the option from both views to select the individual years directly from the individual bars and sections.

## 2.7 Balances

You can see the relationship between your plant's production and consumption from the Balances menu. The following points are displayed in all of the views (day, month, year and total):

- Production
- Consumption
- Self-consumption

The following points are additional displayed when a battery system is connected (see Fig.: Day Balance graph with battery system):

- Self-consumption Battery (kWh)
- Charge (kWh)
- Discharge (kWh)

Note



The consumption as well as the values from the battery are only displayed once the systems are connected (consumption meter + battery system).

#### Note



The auto scaling option always scales the graphics up as much as possible. The auto scaling can be manually disabled for the respective graphics. Then the scaling is done based on the value defined in the device configuration. Please refer to the the chapter on configuring inverters in the Installation Manual.

The selected section can be enlarged by clicking on the graphic and dragging it.



Fig.: Day Balance graph with battery system

The following tabs can be selected:

- Day
- Month
- Year
- Total

The start view displays the current daily values as a graph.

## 2.7.1 Day balance

The Day tab under Balances displays the production, consumption and self-consumption side-by-side as a day curve. The values in the diagram key, can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves).

With a right-click, all of the values (curves) other than the one selected can be hidden.

Different values with different units are displayed in the graph. The units used and their colors are defined in the key at the top.

The different values throughout the day can be displayed by moving the mouse along the curve.



Fig.: Daily Balance Graph with the Auto Scaling activated

The following data is graphically displayed in the daily balance:

- Production (kWh)
- Consumption (kWh) (If the daily consumption value is modified with the data correction function, the modifications are displayed in brackets.)
- Self-consumption

#### The meaning of the colored areas in the day curve:

The green areas display the amount of consumption that was covered with PV power. The yellow areas display the surplus of PV-generated power and the red areas display the amount of consumption that was not covered with PV power.

You have a choice between the Graph and Table display mode.

General definition of the different colored areas within the balance graphs:

(see figure: Daily Balance Graph)

- Yellow areas Production
- Red areas Consumption (Total = not covered by production (red in the graph) + covered by production (green in the graph).
- Green area self-consumption (covered by production green in the graph) with a percentage (in relation to production).

## 2.7.2 Month balance

The Month tab under balances displays the production and consumption side-by-side in a bar graph.

- Move the mouse above one of the bars to view either the daily yield or consumption.
- Click on one of the bars to go to the corresponding day view.



Fig.: Month view balance graph
# 2.7.3 Year balance

The Year tab under Balances displays the production and consumption side-by-side in a bar graph.

- Move the mouse above one of the bars to view either the monthly yield or consumption with a comparison of the current and target values in regard to the annual forecast.
- Click on one of the bars to go to the corresponding month overview.



Fig.: Year view balance graph

# 2.7.4 Total balance

The Total tab under Balances displays the production and consumption side-by-side in a bar graph.

- Move the mouse above one of the bars to view either the annual yield or consumption with a comparison of the current and target values in regard to the annual forecast.
- Click on one of the bars to go to the corresponding annual overview.



Fig.: Total balance graph

## 2.8 Finances

Your plant's financial performance can be displayed as a graph or table from the Finances menu. (See the chapter Defining Tariffs and Costs in Installation Manual for the configuration of the tariff and consumption values)



Fig.: Finances overview

The total financial performance of your plant is displayed as a graphic with the actual/target value curve in the overview.

The following values (split up in total and the last two years) are contained in the table.

Feed-in:

This displays the amount of generated power in kWh that has been fed into the public grid.

• Tariff:

The tariff calculates the financial compensation for the feed-in amounts based on the rate and currency defined in the Configuration | Plant | Tariff settings.

• Self-consumption:

This displays the amount of generated power in KWh that has been consumed locally.

Tariff:

Based on the rate in the settings for the tariff under Feed-in, this displays the financial compensation for the self-consumption refund (when such a compensation is allowed).

• Electricity costs saved:

Under electricity costs saved, the total amount saved based on all of the available data such as that from self-consumption (power not obtained from the grid) and from a battery storage system is displayed.

Purchased electricity:

This displays the amount of power consumed that was obtained from the grid.

- Electricity costs:
- The calculations are based on the rate defined in the Configuration | Plant | Electricity Costs settings.
- Savings + PV revenue:

This includes all of the revenue generated by the PV plant from the feed-in tariff and self-consumption. In addition to self-consumption, the amount of electricity saved by not obtaining it from the grid, such as from a battery system, is included.

- Purchased power expenses:
- This displays the total expenses for the power obtained from the grid.

• Total:

This is the total after the purchased power expenses have been subtracted from the PV revenue.

Note!



The overview curve is only visible in the Yield Data | Finances section after several weeks of data recording.

# 2.9 Sensor



A graphic evaluation from the connected sensors can be displayed from the Senor menu.

Fig.: Graph of Sensor Box values

The following values can be displayed individually:

- Irradiation W/m
- Module temperature C°
- Ambient temperature C°
- Wind speed m/s

Different values with different units are displayed in the graph. The units used and their colors are displayed in the key at the top.

All of the values displayed can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves). With a right-click, all of the values (curves) other than the one selected can be hidden.

You can select and subsequently evaluate certain days with the Date box.

Note!



The menu is only visible once a meter is connected.

# 2.10 System Information

Go to the System information menu to view plant and system information.

47.4 (m) ann 95.09.16.10.11.46	About this Solar-Log**		
	Model	Solar-Log 2000 PM+/CPRS	
Current values	Serial number	(inclusion)	
Production	Firmware version	3.5.1 Build 84 - 01.09.2016	
Consumption	Plant data		
Balances	Plant size	44100 Wp	
Sensor	Detected devices		
Finances	Inverters		
System Information		R\$485-A: 3 x Diehl AKO EIA485	
	Power meters		
		R\$485-A: 4 x Janitza	
	Sensors		
		R\$485/422-8: 1 x Mencke&Tegtmeyer Sensor Full/Light	
	Data transfers		
	Portal transfer	Deactivated	
	Export (FTP)	Deactivated	
	E-mail	Deactivated	

Fig.: System information from an example plant

The following information is displayed:

- About this Solar-Log™:
- Model
- Serial number
- Firmware version

Plant data:

- Plant size
- Detected devices:
- Inverters
- Power meters
- Sensors
- Hybrid System
- Heating rod
- Heat pumps
- Charging station
- Switch
- Data transfers:
- Portal transfer Last transfer with the time and date and state message (in the example: deactivated).
- Export (FTP): Last transfer with the time and date and state message (in the example: deactivated).
- E-Mail: Last transfer with the time and date and state message (in the example: deactivated).

# 2.11 Accessing Diagnostic values

Access the Diagnostic from the header bar. The following options can be selected from the **left-side navigation** menu.

- Inverter Diagnostic
- Event log
- Notifications
- Feed-In Management
- SCB Monitor (only Solar-Log 2000 with SCB activated)
- Alarm contact (only Solar-Log 2000)
- CSV Export

# 2.11.1 Inverter Diagnostic

To access the Inverter diagnostic menu, go to Diagnostic | Inverter Diagnostic.

The following tabs can be selected from this menu:

- Inverter details
- Tracker comparison
- Module field comparison

Different values with different units are displayed in the following diagnostic graph. A key is displayed for every graphic to define which units are used and their colors.

# Inverter details

To access the Inverter details menu, go to Diagnostic | Inverter Diagnostic | Inverter details. A particular date and device (e.g. inverter or sensor) can be selected under inverter details and evaluated.



Fig.: Inverter details graph

In the example (see Fig.: Inverter details graph), the following values can be displayed for the inverter:

- Pac
- DC power 1
- DC power 2
- DC power 3
- Yield
- DC voltage 1
- DC voltage 2
- DC voltage 3
- AC voltage (Uac) this value is displayed if the inverter supports this function).

All of the values displayed in the key can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves). With a right-click, all of the values (curves) other than the one selected can be hidden.

## Tracker comparison

To access the Tracker comparison menu, go to Diagnostic | Inverter Diagnostic | Tracker comparison. Two trackers (either from the same device or two different devices) can be compared on a particular date by selecting the date, device and tracker.



Fig.: Tracker comparison graph

In the example (see Fig.: Tracker comparison graph), two different inverters have been selected and evaluated. The better view has been selected for the DC voltage 1 and 2 values.

The two strings from inverter 3 and 1 are directly compared to each other.

The gray line displays the degree of deviation. The deviation is indicated as a percentage in the right column and displayed as a positive or negative percentage. In the example, the deviation between the strings is from about -5% to +5%. The column on the left indicates the kW/kWp output of the tracker.

All of the values displayed in the key can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves). With a right-click, all of the values (curves) other than the one selected can be hidden.

## Module field comparison

To access the Module field comparison menu, go to Diagnostic | Inverter Diagnostic | Module field comparison.



#### Fig.: Module field comparison graph

With the Date and Module Field boxes, the module field comparison permits all devices (e.g. inverters and sensors) and their strings that are assigned to the same module field to be compared on the current and previous days (see Fig.: Module field comparison graph) in order to more efficiently detect faults from the performance monitoring.

In the example graph, the following values are displayed:

- Sensor Box
- INV 3
- INV 1
- INV 2

All of the values displayed in the key can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves). With a right-click, all of the values (curves) other than the one selected can be hidden.

# 2.12 Battery Diagnostic

To access the Battery diagnostic menu, go to Diagnostic | Battery Diagnostic.

The following tabs can be selected from this menu:

- Current Measurement Values
- Charging History 1-Day
- Charging History 7-Days
- Balances

### **Current Measurement Values**

The following values are available from the Current Measurement Values tab:

- Battery voltage The current voltage of the battery.
- Charge Level (%)
  The current charge status of the battery as percentage.
  (The charge level for power meters in battery meter mode is currently not set.)
- Current charging power [W]
  The battery's current amount of charge in watts.
- Current discharging power [W] The battery's current discharge amount in watts.

10.07.15 09:09:09	CURRENT MEASUREMENT VALUES	CHARGE HISTORY 1 DAY CHAR	GE HISTORY 7 DAYS BALANCES
nverter diagnosis	Current measurement va	lues	
Battery diagnosis	Rattery Voltage M	188	
Event log	see hd	100	
otifications	SOC [N]	07	
eed-In Management	Current charging power [W]	1980	
components	Current discharging power [W]	0	
Smart Energy			
CSV Export			

Fig.: Battery diagnosis - Current measurement values

# Charging History 1-Day

A daily graph with the following values is in the Charging History 1-Day tab.

- Charge
  - The battery's charge levels throughout the day in watts.
- Discharge The battery's discharge levels throughout the day in watts.
- Charge Level (%)
  The battery's charge levels throughout the day as a percentage.
- U(V)

The battery's voltage curve throughout the day in volts.



Fig.: Battery diagnosis - Charging History 1-Day

The Date box offers the option to select a particular day for viewing. The arrow keys can also be used to move to the next or previous date.

The individual values, at the top-left of the graph key, can be displayed or hidden with a mouse click.

# Charging History 7-Days

A graph containing the last seven days with the following values is in the Charging History 7-Days tab.

Charge

The battery's charge levels from the last 7 days in watts.

• Discharge

The battery's discharge levels from the last 7 days in watts.

- Charge Level (%) The battery's charge levels from the last 7 days as a percentage.
- U(V)

The battery's voltage curve over the last 7 days.



Fig.: Battery diagnostic - Charging History 7-Days

The Date box offers the option to select a particular 7-day period for viewing. The arrow keys can also be used to move to the next or previous date.

The individual values, at the top-left of the graph key, can be displayed or hidden with a mouse click. If needed, click on the interrupt button to stop loading the data.

## Charge Level of the Battery via the LCD Display

The charge level of the battery is displayed via the charge history in the Web interface and via the LCD display. The following charge levels of the battery are indicated with the battery symbol elements. (see the following illustration)

- Charge level < 25%: Battery drained
- Charge level < 50%: 1 Element
- Charge level < 75% 2 Elements
- Charge level >= 75: 3 Elements
- The drained battery symbol blinks when the battery is offline.



Fig.: LCD Display with the battery symbol and one element

Also refer to the chapter "Current Values"

## Balances

The following sections are in the Balances tab:

- Electricity savings from battery usage
- Battery efficiency

### Electricity savings from battery usage

The following columns are in this section:

- Discharge The battery's discharge during its entire run-time in kWh.
- Electricity costs saved The electricity savings from battery usage during its entire run-time in the defined currency.

## Battery efficiency

The following columns are in this section:

• Charge

The battery's charge during its entire run-time in kWh.

• Discharge

The battery's discharge during its entire run-time in kWh.

• Efficiency values

The battery's efficiency values during its entire run-time as a percentage.

14.07.15 12-56-35	CURRENT MEASUREMENT VALUES	CHARGE HISTORY	1 DAY CHARGE HISTOR	Y 7 DAYS BALANCES
nverter diagnosis	-			
Battery diagnosis	Power saving from battery us	age		
Event log	Discharge	100.439	kWh	
Lvent log	Electricity costs saved	30.68	¢	
Notifications				
Feed-In Management	Battery efficiency			
Components	Charge	178.230	kWh	
Emart Enarmy	Discharge	100.439	kWh	
smart energy	Efficiency value	56.35	N	
CSV Export				

Fig.: Battery diagnosis - Balance

# 2.12.1 Accessing Event logs

To access the Event logs menu, go to Diagnostic | Event logs. The following mode is loaded when accessing the event logs.

29.67/13 16 22 48	Diagn The event log is being loaded, please wait.	
> Inverter diagnosis	wester0 : WR 1	•
> Event log	/ Inverter1 : WR 2	-
Notifications	werter2 : WR 3	•
Feed-In Management	O Inventer3 : W8 4	
Components		
Smart Energy		CLEAR SELECTION
CSV Export		
Support		

Fig.: The event log is being loaded.

After the event log has been loaded, the window switches back to the normal view.

A C MARKET BOOK			
28.07.15 11:46:50	All de	vices 🔹	
r diagnosis	25.07	7.15	
9	All str	atuscodes	
ations	All fai	ult codes	
Management			-
nents			CLEAR SELECTION
inergy			
port			
t Device	Event from - to	Status	Error
4	25.07.15 20:13:30 - 26.07.15 06:15:59	Online	-
4	25.07.15 20.12:15 - 25.07.15 20:13:29	МРР	
4	25.07.15 20:12:00 - 25.07.15 20:12:14	Online	-
	25.07.15 19:40:00 - 25.07.15 20:11:59	MPP	
4			-
4	25.07.15 19.38.00 - 25.07.15 19.39.59	Online	
4	25.07.15 19.38:00 - 25.07.15 19.39:59 25.07.15 06:26:00 - 25.07.15 19.37:59	Online	
4	25.07.15 19:38:00 - 25.07.15 19:39:59 25.07.15 06:26:00 - 25.07.15 19:37:59 25.07.15 06:24:00 - 25.07.15 06:25:59	Online MPP Online	

Fig.: Event log

The following settings are available from the four drop-down menus in this view:

• Devices:

Under devices (default "All devices"), you can select individual devices or leave the default selection as is.

Days:

Under days (default "All days"), you can select individual days or leave the default selection as is.

Status codes:

Under status codes (default "All status codes"), you can select individual status codes or leave the default selection as is.

• Fault codes:

Under fault codes (default "All fault codes"), you can select individual fault codes or leave the default selection as is.

By default, the current day is displayed in the table with all devices, fault codes and status codes.

## 2.12.2 Accessing Notifications

To access the Notifications menu, go to Diagnostic | Notifications.

05	Diagnosis / Notifica	tions				
20(07/15 11:00:15						
Inverter disease	Message date	Send date	Send Tries	Message type	Recipient	Text
averter diagnosis	29.07.15 12:25:11	pending	0	Offline	0	-
vent log	29.07.15 12:25:11	pending	0	Offline	0	-
lotifications	29.07.15 12:25:10	pending	0	Offline	0	-
eed-In Management	20.07.15.12.25.10	peoding	0	Offline	0	
omponents	29.07.13 12.23.10	pending	0	Omine	0	-
mart Engrav	29.07.15 12:25:10	pending	0	Offline	0	-
nart thergy	29.07.15 11:55:11	pending	0	Offline	0	-
SV Export	29.07.15 11:55:11	pending	0	Offline	0	-
ipport	29.07.15 11:55:11	pending	0	Offline	0	-
	29.07.15 11:55:10	pending	0	Offline	0	-

#### Fig.: Notification overview

The notification overview is displayed as a table.

A maximum of 50 messages is displayed in this table. The following columns are displayed:

- Message date:
- Displays when a fault is detected and reported.
- Send date:

This column displays the date when the message has been successfully sent. Pending is displayed in this column if there are more send attempts remaining, or aborted after 5 unsuccessful attempts to send the message.

Send Tries:

The number attempts needed to successfully send the message or the number of unsuccessful attempts is displayed in this column. It is reported as "aborted" after 5 unsuccessful attempts to sent the message. The number 1 to 5 can be displayed in this column if there are still more send tries remaining ("pending").

Message type:

This column displays the type message (for example, Offline. If an inverter is offline).

- Recipient:
- The method with which the message is sent is displayed here.
- Text:

There is the option to display the messages sent by the Solar-Log™ under Text.

### Note!



For sending notifications, see the chapter "Configuring Notifications" in the Installation Manual.

10:07/13:1141-06	Diagne		The message	text is			
Imuntar diagnoris	Mess	Solar-Log - notice inver	[SN: 7061756	] - breakdown 5 - 12:25:00	ige type	Recipient	Text
Durant lan	29.07	INV4 'INV 4' maybe broken	(SN: 08017206 down! Needs c	3) is offline, hecking!		0	-
Livent log	29.07					0	-
Notifications	29.07					0	-
Feed-In Management	29.07				1	0	-
Components	29.07			OK		0	
Smart Energy	29.07					0	
CSV Export	29.07					0	-
Support	29.07					0	
	29.07					0	-
	29.07.15	5 11:55:10	pending	0	Offline	0	

Fig.: Message with text field

# 2.12.3 Accessing Feed-In Management

To access the Feed-In Management menu, go to Diagnostic | Feed-In Management.



The menu Feed-In Management under Diagnostic | Feed-In Management only appears if active power has been configured in the Configuration | Feed-In Management section.

CONTROL STATE FEED-IN BALAN	NCE UTILITY METER PM-HISTORY	
ignosis Control state		
15		
nagement		
ts		
av		
	D5 (6) D4 (5) D5 (4) D2 (5) D1 (2) D0 (1)	
Power reduction		
Reduction type determined by	PMC INTERN	
Reduction type occurring by	PME NONE	
Value determined by	PMV MODE	
Target power putert (%DC)	100	
Target power output (%DC)	100	
	RS485/422-C	Total
Generator power (kW)	285.00	285.00
Maximum AC power (kW)	220.00	220.00
Allowed power (kW)	285.00	285.00
Consumption (kW)	114.17	114.17
Control value AC power (kW)	220.00	
Current power output (kW)	147.01	147.01
Control value power (% AC)	100.00	
Current power output (% AC)	66.82	66.82
Feed-in power (% DC)	11.52 🚺	11.52 😗
Reactive power control		
Reactive power determined by	PMC_INTERN	
Rective control type	PMF_RP_MATRIX	
Value determined by	PMV_RP_PIGGY	
Secondary type of reactive power	PMF_RP_NONE	
control		
Secondary value determined by	PMV_NONE	
Cos(Phi)	1.000	
Reactive power (VAr)	0 kapazitiv	

Fig.: Feed-In Management - Control State

The inverter control can be analyzed and adjusted in the Diagnostic | Feed-In Management settings section.

There is also a 10% Diagnosis Function to simulate a dynamic reduction to 10%. The values are displayed in the table.

#### Note!



The 10% Diagnosis Function can only be used when the 70% Fixed Reduction has been activated.

### Explanation of the Values in the Power Reduction Section

The following values are displayed in the Power Reduction section:

#### Power reduction type determined by:

The currently active control source is indicated in this field.

Explanation Text
No control source.
Controlled by the diagnostic mode.
Controlled by the ModBus PM V2 (new ModBusPM).
Controlled by the ModBus PM V1 (old ModBusPM).
Controlled by the PM Profile.
Controlled by the internal configuration.
Controlled by direct seller via ModBusDM.
Controlled by direct seller via ripple control receiver

### Type of Reduction:

This contains the current type of power reduction that is specified by the control source.

Explanation Text
No power reduction function.
An error occurred while determining the power reduction func- tion.
Fixed reduction at % DC.
Fixed reduction at X kW (AC)
Fixed reduction at % DC with self-consumption calculation.
Fixed reduction at X kW (AC) with self-consumption calculation.
Reduction based on the value from the matrix (ripple control receiver configuration).
Reduction based on the value from the matrix (ripple control receiver configuration) with self-consumption calculation.

## Value specification from:

This field indications how the control value used was determined.

Explanation Text
No control source.
The value is stored in the configuration.
The value can be determined by the reduction mode.
The value comes from the PM (power reduction) input (and is determined in combination with the matrix in the config- uration or PM profile).
The value comes from the PM (power reduction) input of the master (and is determined in combination with the matrix in the configuration or PM profile).
The value comes from the ModBus PM V1 interface.
The value comes from the ModBus PM V2 interface.
The value comes from the analog or digital input of the IO Box (Adam Box).
The value is specified in the PM profile.
An error occurred while determining the value.
The value was determined via the internal configuration based the Utility Meter measurement.
The value comes from the ModBus DM interface (direct seller interface).

#### Target power output %:

The fields indicates the percentage of the Plant's DC power determined by the control for the target output.

The detailed values for the individual bus connections and for the total plant are displayed in the following table below. The individual buses (RS485 A-C) are displayed depending on which bus is assigned to control the inverters.

The column Total always corresponds to the plant total and reflects the value from the grid connection point. The consumption values are displayed in all of the columns, but only the plant total is taken into account.

#### Note!



The values from the individual inverters are calculated per bus and for the entire plant.

#### Generator power (kW):

The generator power corresponds to the module output of the inverter that is connected to this data bus. This value results from the total of the partial outputs entered in the field generator power under configuration | Devices | Configuration. This kW values is used when calculating the output reduction (e.g.: the 70% reduction).

#### Maximum AC power (kW):

The maximum AC power of the inverter(s) depends on the device. Refer to the inverter specifications for this value and configure it in the field Maximum AC power under configuration | Devices | Configuration.

#### Allowed power (kW):

This kW value is the maximum amount of power that is allowed at the grid connection point. The value is calculated based on the generator output and the current power output.

#### Consumption (kW):

This value is calculated from the consumption meters and refers to the entire plant. The values displayed in the respective bus column only refer to the plant total and are not taken into account in the corresponding columns. The consumption value is normally subtracted from the allowed power from the entire plant.

#### Control value power (kW):

This value is calculated by the Solar-Log<sup>™</sup> and is the maximum current power output from the inverters. It is used for the current target power output.

Note!



Due to technical reasons, the calculation from the Solar-Log<sup>™</sup> is subject to a rounding factor. This may lead to deviations in the data recording.

#### Current power output (kW):

The value refers to the current output generated by the inverter per interface (column) and for the entire plant.

### Control value power (% AC):

The Solar-Log<sup>™</sup> calculates the control value power (kW) as a percentage of the maximum AC power and relays this to the inverters.

#### Current power output (AC%):

The value indicates the total output generated as a percentage of the maximum AC power for the inverter or all of the inverters on a bus.

#### Feed-in power (% DC):

This value is the current amount of feed-in power as a percentage of the generated output.

# Explanation of the Symbols in the Feed-in power (% DC) column:



The feed-in power value is in the target power range with a tolerance of -2% to +1%.



The feed-in power value is below the target value allowed. Generally, this means that the output allowed at the grid connection point is not being achieved due to low irradiation or high self-consumption.



This means that the value is above the target value allowed.

If the red triangle is only displayed at a bus and entire plant has a green symbol, this means that only this bus is over the target value allowed. However, the plant totals do not go over the target value because of self-consumption.

## Explanation of the Values in the Reactive Power Reduction Section

The following values are displayed in the Reactive Power Reduction section:

#### Reactive Power determined by:

The currently active control source is indicated in this field.

Displayed Text	Explanation Text
PMC_NONE	No control source.
PMC_DIAG	Controlled by the diagnostic mode.
PMC_MODBUS_2	Controlled by the ModBus PM V2 (new ModBusPM).
PMC_MODBUS_1	Controlled by the ModBus PM V1 (old ModBusPM).
PMC_PROFILE	Controlled by the PM Profile.
PMC_INTERN	Controlled by the internal configuration.
PMC_DM_MODBUS	Controlled by direct seller via ModBusDM.
PMC_DM_RCR	Controlled by direct seller via ripple control receiver
•••••••••••••••••••••••••••••••••••••••	•••••••••••••••••••••••••••••••••••••••

### Type of Reactive Power Reduction:

This contains the type of reactive power reduction that is specified by the active control source.

Displayed Text	Explanation Text
PMF_RP_NONE	No reactive power control.
PMF_RP_ERROR	An error occurred while determining the reactive power control function.
PMF_RP_FIX_COS	Fixed Cos(Phi) specification.
PMF_RP_FIX_Q	Fixed reactive power specification.
PMF_RP_Q_U_LINE	Reactive power determined by the characteristic curve Q(V)
PMF_RP_P_PN_LINE	Cos(Phi) determined by the configured characteristic curve P/Pn
PMF_RP_ADJUSTABLE	The control function is determined by an input (e.g. via a ripple control receiver or IO Box/Profile).
PMF_RP_MATRIX	The Cos(Phi) specifications are determined by the the config- ured matrix.
PMF_RP_ADJUSTABLE PMF_RP_ADJUSTABLE PMF_RP_MATRIX	The control function is determined by an input (e.g. via a ripple control receiver or IO Box/Profile). The Cos(Phi) specifications are determined by the the configured matrix.

### Value specification from:

This field indications how the control value used was determined.

Displayed Text	Explanation Text
PMV_NONE	No control source.
PMV_CONFIG	The value is stored in the configuration.
PMV_MODE	The value can be determined by the reduction mode.
PMV_RP_PIGGY	The value comes from the PM (reactive power control) input (and is determined in combination with the matrix in the config- uration or PM profile).
PMV_MRP_PIGGY	The value comes from the PM (reactive power control) input of the master (and is determined in combination with the matrix in the configuration or PM profile).
PMV_MODBUS_1	The value comes from the ModBus PM V1 interface.
PMV_MODBUS_2	The value comes from the ModBus PM V2 interface.
PMV_PROFILE_ADAM	The value comes from the analog or digital input of the IO Box (Adam Box).
PMV_PROFILE_INTERN	The value is specified in the PM profile.
PMV_ERROR	An error occurred while determining the value.
PMV_CONFIG_UTILITY	The value was determined via the internal configuration based the Utility Meter measurement.
PMV_MODBUS_DM	The value comes from the ModBus DM interface (direct seller interface).

### Secondary Type of Reactive Power Control:

If "PMF\_RP\_ADJUSTABLE" is entered as the "Type of Reactive Power Reduction," the variable assignment from the selected type of reactive power control is indicated in this field.

For example, a PM profile defines that the type of reactive power control is determined by the Adam Box. That means:

The profile is responsible for the control. It is set up in the profile that the control can be selected via the Adam Box.

The type of control selected is displayed under "Secondary Type of Reactive Power Control." The possible values are identical to those for "Type of Reactive Power Control."

#### Secondary value specification from:

When a secondary control is used, the source of the control value is indicated in this field. The possible values are identical to those for "Value specification from."

#### Cos(Phi):

The value defined in the Configuration | Feed-In Management | Reactive Power Control is displayed in this field.

#### Reactive power (Var):

The value defined in the Configuration | Feed-In Management | Reactive Power Control is displayed in this field.



Fig.: Feed-In Management - Feed-balance

The Feed-balance tab displays when there was a grid feed and when electricity was purchased from the grid. Negative values mean that the power was purchased from the grid and positive values mean that power was fed into the grid.

Move the mouse cursor over the black line to display the following values for the power reductions:

- Time
- Percentage (%DC)
- Watt

## **PM History**

The power reductions are displayed in a table with three columns in the PM History tab.

	Diagnosis / reeu-in management / r	M <sup>a</sup> riistory	
12 mm ann 17 10 45	CONTROL STATE FEED-BALANCE PM-HISTOF	Y	
werter diagnosis	PM-History		
Battery diagnosis			
Event log	Event from - to	Power reduction	Reduction type determined by
Notifications	08.07.15 10:05:54 - 08.07.15 16:19:29	100%	PMC_INTERN
eed-In Management	08.07.15 16:19:30 - 29.07.15 14:32:13	0%	PMC_INTERN
	29.07.15 14:32:14 - 29.07.15 14:32:44	100%	PMC_INTERN
Lomponents	29.07.15 14:32:45 - 29.07.15 14:43:57	0%	PMC_INTERN
imart Energy	29.07.15 14:43:58 - 29.07.15 16:10:29	100%	PMC_INTERN
CSV Export	29.07.15 16:10:30 -	60%	PMC_INTERN
transmit			

Fig.: PM History

- Event from to:
  - The time and date that a power reduction was activated.
- Power reduction type determined by:

Possible values in this column:

- PMC\_NONE
- PMC\_DIAG
- PMC\_MODBUS\_2
- PMC\_MODBUS\_1
- PMC\_PROFILE
- PMC\_INTERN
- PMC\_DIRECTM

(For an explanation, refer to the section: "Explanation of the Values in the Power Reduction " in the table "Power reduction type determined by").

- Power reduction:
  - The power reduction as a percentage.

Two additional tabs can be accessed in the Feed-In Management menu (as long as the devices are connected):

- Utility Meter
- I/O Box

There is a detailed guide for this in the Feed-In Management chapter of the Installation Manual.

# 2.12.4 Accessing the SCB Monitor (only Solar-Log 2000)

To access the SCB Monitor menu, go to Diagnostic | Components | SCB Monitor.

16.07.15 10 20-17	SO METER ALARM CO	NTACT SCB MONITOR	
er diagnosis	SCB string overvie	w	
log	Davica	0.508	
cations	Device	0.368	
In Management			
onents	Measurement from	n 16.07.15 13:29:25	
Energy			
xport	Analog no.	Туре	Value
	1	Current (string)	no data
	2	Current (string)	no data
	3	Current (string)	no data.
	4	Current (string)	no data.
	5	Current (string)	no data
	6	Current (string)	no deta
	7	Current (string)	no data.
	8	Current (string)	no data
	15	Voltage (total)	no data
	16	internal temperature	no data
	Digital no.	Туре	Value
	1	INT	no data.

Fig.: SCB string overview

The SCB String Overview is displayed in a split-screen window. The connected devices (SCBs) can be individually accessed in the top screen via the pull-down menu.

The bottom screen displays the current measurements of the individual strings based on the analog and digital number.

Note!



The SCB Monitor menu only appears when an SCB is connected. It is also only available with the Solar-Log 2000.

## 2.12.5 Accessing components

To access the Components menu, go to Diagnostic | Components.



Fig.: Components - SO meter on interface A and B

The following tabs are available in the Components menu:

- SO meter (see Fig.: Components SO meter on interface A and B)
- Alarm contact (only with the Solar-Log™ 2000) (see Fig.: Alarm contact)
- Wireless Package (only when connected and the Wireless package visible has been activated) (See Fig.: Connection test Wireless Package).

All of the SO meters connected to the Solar-Log<sup>™</sup> are listed in the Diagnostic | Components | SO-Meter menu. The following values are displayed in the Pulse meter box:

- Total number of pulses for the SO meter since the last restart of the Solar-Log™ (first number)
- Number of pulses since the menu has been accessed (second number)
- Pulse number interval in a minute (third number)

Note!



The Solar-Log<sup>™</sup> reorganizes the data every night so the total pulse counter of the SO meter is reset every night.

	Diagnosis / Components /	Alarm contact	
Inverter diagnosis	Alarm contact		
Event log	Acknowledge alarm manually	ACKNOWLEDGE	
Notifications	Porot alarm	PISET	
Feed-In Management	NESC BATH	PACE I	
Components			
Smart Energy	Current state		
CSV Export	Input	ALARM	
Support	Internal status	ОК	
	Manually acknowledged	not acknowledged	
	Automatically acknowledged	not acknowledged	

The Diagnostic | Components | Alarm contact menu is displayed in a split-screen window.

Fig.: Alarm contact

In the Alarm contact part at the top, you have the option to manually acknowledge the alarm or to reset it.

In the Current Status part at the bottom, you see the information in regard to the input of the notification (e.g. alarm), the internal status (e.g. OK) and if the notification has been manually or automatically acknowledged.



The alarm contact is only available with the Solar-Log 2000.

You can access the Wireless Package test function from the Diagnosis | Components | Wireless Package.



Fig.: Connection test - Wireless Package

To perform a connection test a Wireless Package has to be connected to the Solar-Log<sup>™</sup>, the interface with the Wireless Package has to be activated in the Configuration | Devices | Definition menu and the inverter has to be selected (refer to the RS485 Wireless Package Installation notes).

Select the interface that the Wireless Package is connected to and press the Start button for the connection test.

The test is successful when the line goes to 100% percent and remains there.

#### Note!



Successful data transfers can only be guaranteed when the wireless connection is permanently at 100%.





Refer to the Installation Manual for the installation and configuration of the Wireless Package.

# 2.12.6 Smart Energy

The following tabs are visible under the Smart Energy menu:

- Status (current)
- History
- Simulation

# Status (current)

The following values are displayed as a table in the Status (current) tab:

- Averaging (is visible when managing with average values)
- Total Plant
- Priority List

There is also the option in this section to directly switch to the configuration of the Smart Energy switching group by clicking on the arrow symbol 💟 in the top right corner.

# Explanations of the Tabs

### Averaging

The last time that the average value was calculated can be determined based on the countdowns in the averaging field.

Note!



The average value consists of the 5-, 10- or 15-minute average value depending on the number

of connected inverters:

< 30 INV: 5 minutes, 30-59 INV: 10 minutes, >= 60 INV: 15 minutes

Internal processes, e.g. HTTP transmission or communication with the inverters, may cause a delay in the interval. In such cases, the countdown remains at "O" until the interval has been calculated.

### Total Plant

The following values can be viewed under plant-wide:

- Production [W]The production from the entire plant in watts. Current or average value (this value is recorded directly from all producers)
- Consumption [W]

The entire consumption in watts. Current or average value (this value is recorded directly from all consumption meters)

• Remaining surplus [W]

Surplus that is still fed into the grid. Current or average value (calculation [production - consumption])

• Smart Energy Consumption [W]

This value is comprised of the nominal power or of the retrievable output from all of the currently active profiles and the current output from the controlled smart appliances. Current or average value.

• Smart Energy Production [W] (is only visible when at least one switching group is defined as a generator)

The value indicates all of the current power output (e.g. CHP) that is currently active via the Solar-Log™. Current or average value.

### • Theoretical surplus [W]

The theoretical surplus is the amount that would be fed into the grid if no Smart Energy logic was operating (including smart appliances). It is calculated accordingly: [(Production-Smart Energy Production)-(Consumption Smart Energy Consumption)]. Current or average value.

The selection for "Measurement values for control logic" under Configuration | Smart Energy | Surplus management determines whether the current values or or average values are displayed for the status.

### **Priority List**

The priority of the defined control logics are displayed under the Priority list. (See illustration: "Smart Energy Status (current)")

STATUS (CURRENT) HISTORY SIMULATION	
itatus (current)	
weraging in 00:57	
🏦 plant-wide	Average
Production [W]	9354
Consumption [W]	4624
Remaining surplus [W] ?	4730
Smart Energy Consumption [W]	4400
Theroretical surplus [W] ?	9130
Priority list	
Priority 1 – EGO	
Available surplus [W]	9130
Last surplus update	11:05:19
Temperature [°C]	26
Consumption [W]	0
Priority 2 – Pool pump <b>?</b>	
Available surplus [W]	9130
Last surplus update	11:06:19
Switching status	666
Runtime [Min.]	75.38
Number switch on operations	4
Consumption [W]	900

Fig.: Smart Energy Status (current)

Depending on the device or profile type selected, different information is displayed. For example: surplus available, runtime or temperature.

By clicking on the question mark the current configuration for the switching groups is displayed without switching to the configuration section.

## History

Daily graphics, all of the configured control logics and the intelligent appliances are displayed according to their priority in the **History** tab.

All of the relevant data for the particular device is displayed in the graphic.

Each graphic has the curves "Total production," Total consumption" and "Total surplus." This is identical for every graphic and is part of the overview with the plant-wide values.

(See illustration: "Smart Energy History - Example with EGO Smart Heater - Surplus Priority 1"): All of the values displayed in the key can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves). With a right-click, all of the values (curves) other than the one selected can be hidden.



Fig.: Smart Energy History - Example of Priority 1

Depending on the connected device and configured control logic the labels may be different and also the values may vary (e.g.: runtime or switching state).

Note!



The selected section can be enlarged by clicking on the graphic and dragging it.

Certain days can be selected to be viewed with the Date box. It is possible to scroll the dates back and forth with the arrow buttons.

The individual values that are displayed at the top-left of the graph key can be explicitly displayed or hidden with a mouse click.

#### **Basic View**

The basic view can be activated with a button.

If this option is selected for a basic surplus rule in which all of the contacts are switched together only the curves of the first contact are displayed in order to maintain a clear overview in the graphic.

There is the option to directly switch to the configuration of the Smart Energy switching group by clicking on the arrow symbol in the top right corner.

## Simulation

The configured control logics can be simulated under the Simulation tab to check if the logics are correct. The simulation is always based on the the underlying calculated averages.

(See the example Figure: "Smart Energy - Simulation with EGO - Surplus Priority 1")



Fig.: Smart Energy - Simulation with EGO - Surplus Priority 1
Similar to the History view, there are various values displayed in the graphic view. These values depend on the particular connected device and/or configured control logic.

All of the values displayed in the key can be selected and deselected at anytime with a left-click to display individual values (curve) or to display or hide all values (curves). With a right-click, all of the values (curves) other than the one selected can be hidden.

In the simulation, different view options can be selected for the production and consumption curves. The following options can be selected:

- Production curve
  - Zero line
  - Increasing
  - Decreasing
  - Constant (a fixed value in watts can be defined here)
  - Normal levels of irradiation
  - Very high levels of irradiation
  - Low levels of irradiation
  - Inconsistent levels of irradiation
  - Selected day (a particular day can be selected here)
- Consumption curve
  - Zero line
  - Increasing
  - Decreasing
  - Constant (a fixed value in watts can be defined here)
  - Normal
  - Smooth
  - Jagged
  - Selected day (a particular day can be selected here)

There is the option to directly switch to the configuration of the Smart Energy switching group by clicking on the arrow symbol in the top right corner.

# 2.12.7 Accessing CSV Export

To access the CSV Export menu, go to Diagnostic | CSV Export.

© K	Diagnosis / CSV Export
11.07.15 00.19.02	Minute values (max. 30 days)
> Inverter diagnosis	PREPARE
> Event log	
> Notifications	Daily values (all inverters individually)
> Feed-In Management	
> Components	PREPARE
> Smart Energy	
> CSV Export	
> Support	

#### Fig.: CSV Export

You can download a CSV file from your plant from the CSV Export menu. You can select between minute values or daily values for the CSV file.

When Minute Values are selected, the file contains only a maximum of 30 days' worth of values. When selecting Daily Values, all of the inverters are individually listed, but only the end-of-the-day value is documented.

The CSV file with minute values is in a table format and contains the 5-minute values from the last 30 days and the Pac and DC values from the individual inverters and also from every MPP tracker.

The CSV file with day values is in a table format and contains the day values from every individual inverter since the start of the plant's operation (with Solar-Log<sup>™</sup> monitoring).



Files in the CSV format can be created with simple text editors or spreadsheet programs like MS Excel or Open Office Calc.



Only a CSV file with day values can be imported and not a CSV file with minute values.



When importing CSV data, all of the data on the device is deleted and replaced.

## 2.12.8 Accessing Support

To access the Support menu, go to Diagnostic | Support.

16.07.15 12:05:02	GENERAL				
nverter diagnosis	System informa	tion			
Event log					
Notifications	Model	Solar-Log 2000			
Food in Management	Hardware	LCD TFT R\$485A R\$485B CAN 501 S02 RELAIS ALARM USB PM+ TEMP GPRS			
reeu-in management	Serial number	2753.0383			
Components	Firmware version	3.4.0 Build 76 - 23.06.2015			
Smart Energy	Revision	7171			
CSV Export	MAC	management.			
Furnant	RTOS	SC123/SC143 V1.90 FULL			
support	CLIB	V2.60			
	circumstances. You c computer. CREATE	an generate this report by clicking on the Generate button and then download it to your			
	Create screensh	iot			
	To better document problems on the Solar-Log's color display, you can create a screenshot with this button.				
	Restart device				
	Alternative to the rese	et button the device can also be restarted via browser			

Fig.: Support - General

There are three sections under the Support | General menu:

• System Information:

The following information is available in this tab:

- Model (type of Solar-Log™)
- Hardware (hardware components available for the device)
- Solar-Log<sup>™</sup> serial number
- Firmware Version and date
- Revision number
- MAC (MAC address of the device)
- RTOS (Solar-Log<sup>™</sup> operating system)
- CLIB (Version number of the Solar-Log<sup>™</sup> library used)
- Creating diagnostic reports:

You have the option to create and download a diagnostic report. This can be sent to Solar-Log support for analysis. See Figure: Support - General.

• Creating screenshots:

You have the option to create and download screenshots of the display in this section. This can be used to document errors on the Solar-Log's internal display. See Figure: Support - General.

Restart

As an alternative to the reset button the device itself, the Solar-Log<sup>™</sup> can be rebooted with the restart button in the WEB menu.

# **3** Notifications

## 3.1 Yield E-mail

All three Solar-Log models—300, 1200, 2000—come with an e-mail program that can send a daily overview of the day's performance to two different e-mail addresses.

The settings are configured under the Configuration | Notifications menu.

Click on the Recipient tab to enter the recipient's e-mail address.

42 am	RECIPIENT DEVICE NOT	TIFICATIONS YIELD ALARM POWER & FAILURE	PM
Network	E-mail		
Internet	Address	sunnart@salar-ing.com	
Devices		and bound a new root of the	
Plant			
Notifications		CANCE	L. SAVE
Smart Energy			
Feed-In Management			
Data			
System			

Fig.: Entering the recipient's e-mail address.

In the Yield tab, you can define yield notifications to be sent via e-mail or text message (SMS).

07.07.15 11:07:49	RECIPENT DEVICE NOTE	TALATIONS THELD ALARM POWER & PAILURE PM
Network	Messages by e-mail	
Internet		Yield everyiew (all INV & aroups)
Devices	Sending time	Desctivated
Plant	serving time	Vield overview (all INV)
Notifications		Toesday Wednesday
Smart Energy		Thursday 📝 Friday 📝
Feed-In Management		Saturday V Sunday V
Data		
System	Text message (SMS)	) notifications
		O Deactivated
	Sending time	18:15
		Monday V Tuesday V Wednesday V Thursday V Friday V Saturday V

Fig.: Defining Notification times and setting types

The time frame for notifications can be defined here. There are many types of settings:

- Deactivated
- Yield overview short
- Yield overview (all INV)
- Yield overview (all INV & groups)





See the chapter "Notification Settings" in the Installation Manual for additional information on the notification function.

## 3.1.1 Explanation of the individual E-mail Functions:

### Deactivated

• When no e-mail notifications are to be sent.

### Yield overview short

• The yield data from the entire plant is totaled and displayed for the day, month and year. See the figure: Screenshot of a yield message.

Day:

Total 44.28 kWh Spec. 0.73 kWh/kWp Target 154.8 kWh Act. yield 28 % Consumption meter 96.44 kWh

Month:

Total2616 kWhSpec.43.6 kWh/kWpAverage153 kWhTarget2635 kWhAct. yield99 %

Year:

Total	6560 kWh
Spec.	109 kWh/kWp

Fig.: Example of a yield message

#### Yield overview (all INV)

• Yield data is totaled for the entire plant with the totals for every individual inverter (also SO meters) broken down by day, month and year. This is then displayed in HTML format as a table. See the figure: Yield overview (all INV) in HTML format.

		Day	Month				Year				
	Total	Spec.	Target	Act. yield	Total	Spec.	Average	Target	Act. yield	Total	Spec.
Total	31.26 kWh	0.70 kWh/kWp	88.31 kWh	35 %	465 kWh	10.5 kWh4kWp	77.5 kWh	531 kWh	87 %	37423 kWh	848 kWh/kWp
INV 3	10.42 kWh	0.70 kWh/kWp	29.43 kWh	35 %	155 kWh	10.5 kWh/kWp	25.8 kWh	177 kWh	87 %	12474 kWh	848 kWh kWp
INV 1	10.41 kWh	0.70 kWh/kWp	29.43 kWh	35 %	154 kWh	10.5 kWh/kWp	25.8 kWh	177 kWh	87 %	12474 kWh	848 kWh/kWp
INV 2	10.42 kWh	0.70 kWh/kWp	29.43 kWh	35 %	155 kWh	10.5 kWh/kWp	25.8 kWh	177 kWh	87 %	12474 kWh	848 kWh/kWp

	Type	Daily total
Total	-	0.00 kWh
Meter	Consumption meter	0.00 kWh

Fig.: Yield overview (all INV) in HTML format

#### Yield overview (all INV & groups)

• Yield data is totaled for the entire plant with the totals for every plant and its inverter (also SO meters) broken down by day, month and year. This is then displayed in HTML format as a table. See the figure: Yield overview (all INV & groups) in HTML format.

	Day					Month				Year	
	Total	Spec.	Target	Act. yield	Total	Spec.	Average	Target	Act. yield	Total	Spec.
Total	31.26 kWh	0.70 kWh/kWp	88.31 kWh	35 %	465 kWh	10.5 kWh/kWp	77.5 kWh	531 kWh	87 %	37423 kWh	848 kWh/kWp
House	20.83 kWh	0.70 kWh/kWp	58.87 kWh	35 %	310 kWh	10.5 kWh/kWp	51.6 kWh	354 kWh	87 %	24948 kWh	848 kWh/kWp
INV 3	10.42 kWh	0.70 kWh/kWp	29.43 kWh	35 %	155 kWh	10.5 kWh/kWp	25.8 kWh	177 kWh	87 %	12474 kWh	848 kWh kWp
INV 1	10.41 kWh	0.70 kWh/kWp	29.43 kWh	35 %	154 kWh	10.5 kWh/kWp	25.8 kWh	177 kWh	87 %	12474 kWh	848 kWh/kWp
Bam	10.42 kWh	0.70 kWh/kWp	29.43 kWh	35 %	155 kWh	10.5 kWh/kWp	25.8 kWh	177 kWh	87 %	12474 kWh	848 kWh/kWp
INV 2	10.42 kWh	0.70 kWh/kWp	29.43 kWh	35 %	155 kWh	10.5 kWh/kWp	25.8 kWh	177 kWh	87 %	12474 kWh	848 kWh/kWp

	Туре	Daily total
Total		0.00 kWh
Meter	Consumption meter	0.00 kWh

Fig.: Yield overview (all INV & groups) in HTML format

# Explanation of the individual sections of the Yield Overviews

Subject: The Solar-Log serial number and time and date

Day:

Field	Explanation Text
Total	The actual amount of grid feed for the day in kWh.
Specific	Yield specific. The energy yield divided by the amount of generator power installed. (Values are normalized to 1 kWp)
Target	The yield in kWh that can be achieved according to the forecast.
Actual Yield	The percentage of days on which the target was achieved, The daily yield achieved as a percentage in relation to the total/target.
Total yield meter	displays the plant's total yield. (Lines only appear when a total yield meter is available.)
Consumption meter	The consumption is displayed with this meter. The consumption is displayed according to the configura- tion with several consumption meters (this line only appears when meters are connected).

#### Month:

Field	Explanation Text
Total	The actual amount of grid feed for the day in kWh.
Specific	Yield specific. The energy yield divided by the amount of generator power installed. (Values are normalized to 1 kWp)
Medium	The average daily production that was achieved for this month.
Target	The yield in kWh that had been achieved up to the cur- rent day according to the forecast.
Actual Yield	Displays the percentage of the monthly target that has already been achieved up to the current day. The monthly yield achieved as a percentage in relation to the total/target.

#### Year:

Field	Explanation Text
Total	The actual amount of grid feed for the day in kWh.
Specific	Yield specific. The energy yield divided by the amount of generator power installed. (Values are normalized to 1 kWp)

# 3.2 Performance Monitoring

To monitor different sized inverters, the Solar-Log<sup>™</sup> normalized the value from every inverter to 1 kWp. The Solar-Log<sup>™</sup> uses the amount of generator power set in Configuration | Devices | Configuration. The generator power is equivalent to 100% and the value here is normalized to 1 kWp.

#### Example plant:







Fig.: Performance Monitoring: Example plant with two inverters

Inverter 1, Inverter 1 house	Inverter 2, Inverter 2 house
Generator Power: 25* 220W (modules) = 5500 Wp	Generator Power: 15* 220W (modules) = 3300 Wp
Module Field 1	Module Field 1

The Solar-Log<sup>™</sup> compares all of the inverters that are located in the same module field. Settings for the module fields are under Configuration | Devices | Configuration.

Device configura Device Model Address / serial numb	er wer & label	0: INV 3 13000 TLD 0000.0002	14018		•	
Device Model Address / serial numb	er wer & label	0: INV 3 13000 TLD 0000.0002	14018			
Model Address / serial numb Module field, po	er wer & label	1 3000 TLD 0000 0002	14018			
Address / serial numb	er wer & label	0000.0002	14018			
Module field, po	wer & label	0000.0002	19078			
Module field, po	wer & label					
Module field, po	wer & label					
Maximum AC Power		12900			W	
Pac Correction Factor		1000				
Fac correction Factor		1000				
	Module field	È.	Generator I	Power [Wp]		Name
Device			14700	7		INV 3
MPP Tracker 1	1		4900			String 1
MPP Tracker 2	1		4900			String 2
MPP Tracker 3	2		4900			String 3
	Pac Correction Factor Device MPP Tracker 1 MPP Tracker 2 MPP Tracker 3	Pac Correction Factor Module field Device MPP Tracker 1 1 MPP Tracker 2 1 MPP Tracker 3 2	Pac Correction Factor 1000 Module field Device MPP Tracker 1 1 MPP Tracker 2 1 MPP Tracker 3 2	Pac Correction Factor 1000 Module field Cenerator 1 Device 14700 MPP Tracker 1 1 4900 MPP Tracker 2 1 4900 MPP Tracker 3 2 4900	Pac Correction Factor 1000       Module field     Cenerator Power [Wp]       Device     14700       MPP Tracker 1     1       4900       MPP Tracker 2     1       4900       MPP Tracker 3     2	Pac Correction Factor

Fig.: Configuring module fields

Performance Monitoring Configuration under Configuration | Notifications.

ice ormance Monitoring mitoring parameters sitoring begin sitoring end sitoring end sitoring and sitoring as a percentage t duration in intervals	9: INV 3 per MPP-Tracker Deactivated per MPP-Tracker Som of all MPP-Tracker 11 13 20 10	•	) o'clock ) o'clock
ormance Monitoring unitoring parameters litoring begin litoring end imum amount of feed-in power lation as a percentage t duration in intervals	per MPP-Tracker Deactivated per MPP-Tracker Som of all MPP-Tracker 11 13 20 10	,	o'clock o'clock
nitoring parameters nitoring begin nitoring end imum amount of feed-in power lation as a percentage	Deactivated per MPP-Tracker Sum of all MPP-Tracker 11 13 20 10	,	o'clock o'clock
nitoring parameters nitoring begin nitoring end nimum amount of feed-in power nation as a percentage t duration in intervals	per MP-Tracker Som of all MPP-Tracker 11 13 20 10	)	o'clock o'clock
nitoring parameters itoring begin itoring end imum amount of feed-in power iation as a percentage it duration in intervals	11 13 20 10		o'clock o'clock
itoring begin itoring end imum amount of feed-in power iation as a percentage it duration in intervals	11 13 20 10		o'clock o'clock
itoring end imum amount of feed-in power lation as a percentage it duration in intervals	13 20 10		o'clock
imum amount of feed-in power lation as a percentage	20		18
iation as a percentage	10	20	
t duration in intervals		10	
Fault duration in intervals	6		í.
	=30 Minuten		
Maximum number of message to be sent per day	3		
w cover	Ι <u>ν</u>		1
tification as			
	E-mail Text message (SMS) Relay		
	imum number of message to be per day w cover tification as	imum number of message to be 3 per day w cover tification as E-mail Text message (SMS) Relay	imum number of message to be 3 per day w cover  tification as  E-mail Text message (SMS) Relay

Fig.: Configuring performance monitoring

The output measured from the inverters is compared to the generator capacity that is listed in the system. A notification is sent (by email) when the deviation exceeds the amount configured (for example 10%) over a set time period (for example 30 minutes).

# Note!

For performance monitoring configurations, see the chapter "Configuring Notification " in the Installation Manual.

# 3.2.1 Performance Monitoring Notification

#### Example Notification:

Module Field 1 - Inverter 1 'Inverter 1 House'

 $\mathsf{IRV}$  = 4916W (  $\mathsf{Inverter}$  2,  $\mathsf{Inverter}$  2 House' ),  $\mathsf{IAV}$  = 3950W, deviation = 19.65 %

#### The notification contains the following information:

#### Module field:

The module field which was affected or at least the module field in which a deviation was detected.

Deviating inverter:

#### Inverter 1

IRV:

The reference value that is used to contrast inverters. It comes from the most effective operating inverter, the value is in W.

#### IAV:

The amount of output from inverter with a deviation.

#### Dev:

The amount of deviation as a percentage of the reference value.



Fig.: Performance Monitoring with notification and inverter

Inverter 1, Inverter 1 house		Inverter 2, Inverter 2 house
Generator Power=	5500 Wp	3300 Wp
Current power output	= 3950 W	= 2950 W
Current efficiency	= 71.81 %	= 89.39 %
	Inverter with a deviation	Reference Inverter

The inverter that has generated the most power (inverter 2 with its value of 0.8939 in this case) is used as the reference inverter.

# 3.2.2 Calculation and Explanation of the Notification

In regard to the reference inverter, inverter 1 is compared to all of the inverters in the same module field (in the example only output is used).

A deviation of 19.65% is determined based on the comparison of the generator capacity and IRV forecast.

#### Calculating the Deviation for Inverter 1

Deviation Calculation	
Inverter 1 IRV calculation	(5500 x 89.39)100= IRV 4916 W
Efficiency of Inverter 1	(3950 W: 5500 W)* 100= 71.81%
This corresponds to 71.81 % of the generator power	r or a value of 0.7181 kWp.
Deviation as a percentage	
IRV Inverter 1 - IAV Inverter 1	4916 W -3950 W= 966 W
Deviation as a percentage	(966 W: 4916 W)* 100= 19.65 %

Inverter 2 is used as the reference inverter since it was the most effective one at the time of the measurement. Inverter 1 should have produced an output of 4916 W based on the measurement and the calculations comparing all of the inverters in the same module field. The actual output was 3950 W, a deviation of 19.65%. This caused a notification to be sent.

# 4 Operating the Solar-Log 1200 and 2000 via Touch Display

The Solar-Log 1200 and 2000 come with a touchscreen that displays information such as output, yield history (balance, consumption or production – depending on the configuration) and the environmental contribution and that allows adjustments to the configuration to be made directly on the device.



Never use a sharp, pointed object on the touch screen! This will damage the screen's delicate surface.

# 4.1 Navigating from the touch screen

After the Solar-Log 1200 or 2000 has started, the overview view is displayed.

🕖 Sola	r-Log1200>Power	13.09	0.16   13:09:01
	GPRS / Power Man Inverter: 3xDiehl A Digital meter: 4xJa Accessories: 1xMe	agement + .KO nitza ncke&Tegtmeyer , 1	хSCВ
13		Today	Total
13	Earnings through PV	2,17€	21.927€
*	Electricity costs	€0,00	4.749€
*	Total	2,17€	17.178€

Fig.: Start page of the display

The following is displayed in this view:

The header bar with:

- the Solar-Log™ module
- navigation heading
- date
- Time

The following symbols are displayed in the left-side navigation menu and can be selected for additional options:



Power



Yield History (Balance, Consumption or Production is displayed depending according to the configuration)



Environmental performance



Settings

The display window with:

- Solar-Log<sup>™</sup> type
- the connected devices (inverter, power meter etc.)
- A table with the following values: earnings from PV, purchased power (only with connected meters) and the total for the day and overall.

Swipe your fingers on the display, either from right to left or left to right, to switch to the next view. There is a split-screen window for the energy balance, environmental performance and yield history menus. The dots at the bottom of the screen ( ) indicate the current page of the menu. You can always view the power output for the current day by tapping on the top area with the time and date. The current Dashboard is displayed by tapping on it twice.

# 4.2 Accessing the Dashboard

From the Power menu, you can swipe to go from the start page to the Dashboard.



Fig.: Dashboard view

In the view from left-to-right:

Current consumption and today's consumption high (only with connected meters).

Current production and today's production high.

Current grid feed and today's grid feed high (only with connected meters).

# 4.3 Access Energy flow

From the Power menu, you can swipe from the Dashboard's start page to go to the Energy flow.



Fig.: Energy flow view

The plant is displayed as a flow graphic in this view.

Depending on the particular devices connected, the following values are displayed in the flow graphic in real time:

- Production (W)
- Consumption (W)
- Grid fed (W)
- Battery Status
  - Charge Status (%)
  - Standby (W)

# 4.4 Accessing the Energy Balance

From the Power menu, you can swipe from the start page to go to the Energy Balance.

🕖 Solar-	Log1200>Power		13.09.16   13:43:20
	Energy balance		
$(\mathbf{A})$	Production	26,17	7 kW
	Consumption	1,32	2 kW 💛
	Excess	24,85	5 kW
13	Heat pump	Freezer	Air conditioner
**	857 W	690 W	1,43 kW
*			

Fig.: Energy Balance view

The energy balance is a split-screen window. The top part of the window displays the following values: Production:

- Current plant production.
- Consumption:
- Current power consumption (only with connected meters).

#### Surplus:

• Current grid feed (only with connected meters).

The bottom window displays the connected appliances with their current consumption values. Use the arrows to display additional appliances.



All of the devices that are configured as sub-consumers are displayed in this view.

Note!



A maximum of 10 smart plugs can be recognized.

# 4.5 Start Smart Energy

Swipe in the Power menu to go to the Smart Energy section.



Fig.: Smart Energy view

The switching groups configured in the Smart Energy menu are displayed individually with the following information is this view:

- Switching group name
- Logic type
- Available surplus [W]

Below that, the state of the switching contacts within this switching group are visualized with a colored symbol (refer to Installation Manual, chapter 23.2.1 "Switch states / Color Definition").

There is a slide switch to the right of the switching contacts to switch the displayed switching group:

- All of the contacts are permanently switched off (switch position "left").
- The contacts are switched on according to the configured automatic switching rule.
- All of the contacts are permanently switched on (switch position "right").

Use the arrows to display additional defined switching groups

# 4.6 Accessing Forecast

Swipe in the Power menu to go to the forecast.



Fig.: Forecast view

The weather data is updated in the morning and in the evening with the Forecast view. The values for the current day and the next two days are calculated based on this data and shaded in gray.

This is automatically asked with the Classic 2nd Edition. This has to be entered in the inverter details with the Commercial Edition.

#### Note!



It is required to be registered and logged into our portal Classic 2nd or "Commercial Edition" to display the forecast on the Solar-Log™.

# Note!

Plant location and the alignment and inclination of the module need to be configured in the portal to receive daily weather updates.

The weather data is transfer to the Solar-Log™ in the morning and in the evening.

# 4.7 Accessing Yield history



The Yield history is accessed in the left navigation with the Yield History symbol.

The Yield history view is displayed in two sections:

In the top part, you have the option, depending on the display mode (year, month, year), to swipe on the display to go to the exact date.

In the bottom part, you can swipe to the next display mode: day, month, year or total.

# 4.8 Accessing Environmental performance

The Environmental performance is accessed in the left navigation with the Environmental performance symbol.



Fig.: Environmental performance - Day view

The Environmental performance view is displayed in two sections.

The top display contains:

- Day
- Month
- Year
- Total

The bottom display contains the values for your plant's environmental contributions:

- Avoided CO2 emissions
- Oil saved
- Reduced nuclear waste
- Trip with an electric car in kilometers
- Trees saved
- Households (energy needs for a family of four)

# 4.9 Accessing the USB menu

The USB menu is accessed in the left navigation with the USB menu symbol.

🕕 Solar-Log	g1200 > Settings	18.07.16   12:02:11
$\bigcirc$	Settings	
	Start	
M.	Basic settings	
Ø	USB	
12	Advanced settings	
¢		

Fig.: Menu Settings

This brings you to the main Settings menu. Tap on USB.

#### The sections:

- Start
- Basic settings
- Advanced settings

are described in detail in the chapter "Direct Device Configurations" in the Installation Manual.

10

Fig.: USB menu

You have the following options from the USB menu:

# Save all data:

• The Solar-Log<sup>™</sup> creates the folder "backup" on the stick and saves the solarlog\_backup.dat and solarlog\_konfig.dat files there.

Import yield data:

• The Solar-Log™ searches for a valid solarlog\_backup.dat file on the USB stick and imports it. Import configuration:

• The Solar-Log™ searches for a valid solarlog\_konfig.dat file on the USB stick and imports it. Firmware update:

• The Solar-Log<sup>™</sup> searches for a firmware update to import and then starts the update.



For technical reasons, only the last 30 days of minute values are saved in a backup. To maintain a permanent record of your data (including minute data), we recommend registering your Solar-Log with our Classic-2nd Edition or Commercial Edition portal.

# Note!

As soon as a USB stick has been plugged in, the folder named "Backup" is automatically created on the USB stick. At the end of the day, the Solar-Log<sup>™</sup> saves a daily backup with the date in this folder.

Important!

The Solar-Log™ does not overwrite the daily backup files. Thus it is important to regularly backup or exchange the USB stick before it runs out of space.

# Important!

When importing data from the USB stick, all of the data on the device is deleted and replaced.

Note!



Import the current configuration before importing saved yield data.

# 5 Pac Correction Factor

At photovoltaic plants, several measuring points and power generators (inverters) are combined with one another. The Solar-Log<sup>™</sup> evaluates this data and partially looks for any correlations.

Since some of the components are not calibrated, deviations in the values measured can easily arise. For example, if the total amount of energy produced based on what the inverters display is compared with the values from calibrated power meters, deviations of up to 8% can arise.

In practice, meters and inverters both can display too much or too little kWh.

To correct these inaccuracies in the medium term, the Solar-Log<sup>™</sup> firmware uses a PAC correction factor. The PAC correction factor is located in the Configuration | Devices | Configuration menu.

# 5.1 Calculating the PAC correction factor

All yield data are always stored internally without any correction factor. This factor is applied only when the data are displayed. The factor can therefore be adjusted at any time.

#### The formula for calculating the correction factor is as follows:

(Yield power meter / yield inverter) \* 1000

If the inverter does not have a display, it is advisable to use the values which are recorded by the Solar-Log™ from a period over a week.

That is why it is recommended to leave the default PAC correction factor at 1000 initially.

The correction factor can be adjusted yearly after receiving the statement from the utility company.

#### Example calculation:

Inverter 1	Inverter 2	Calibrated power meter
Total energy	Total energy	Total energy
259.12 kWh	305.22 kWh	550.55 kWh
Total = 564.34 kWh		Deviation= 13.79 kWh

By comparing the values, you see that the inverters are more likely to display too much output.

#### Pac Correction Factor

Calibrated power meter total energy	Inverter total energy
550.5 kWh	564.34 kWh
Calculated PAC correction factor in the example:	
(550.55 kWh/564.34 kWh)* 1000= 975.66	

Rounded PAC correction factor = 976

# 6 Using Solar-Log WEB

With the Solar-Log<sup>™</sup> WEB, you can access your plant's yield data and event log via the Internet and set yield and fault notifications to be sent to an e-mail address daily. A Solar-Log<sup>™</sup> WEB account is required. The portal offers additional functions which can be tailored to your needs. Please contact your installer for more information or check out our website:

http://www.solar-log.com/en/products-solutions/solar-log-web.html.

# 6.1 Registering for Solar-Log<sup>™</sup> WEB "Classic 2nd Edition"

The Solar-Log<sup>™</sup> WEB "Classic 2nd Edition" online registration is very simple. Start your browser and go to the Solar-Log<sup>™</sup> WEB registration site: http://www.solar-log.com/classic2/

Select **Register** from the menu on the left. The registration form then appears.

🕕 Solar-Log~	Solare Datensysteme GmbH
--------------	--------------------------

Welcome	Projetration
> Plants	Registration
э Мар	Plant data
Registration	
FAQ	Solar-Log"Serial Number *:
Terms & Conditions	Easy Installation Code:
Privacy Policy	Publicly visible Deactivated
Right of Withdrawal	2
Legal Notice	Location data
Prices	Title*
Lost password?	
	Last name :
	Company:
	Street / house no.*:
	Zip Code*:
	Town*:
	Country*:
	State":
	Contact information         Email address*:         Email address (confirmation)*:         Telephone:         Mobile phone:         Fax:
	Terms & Privacy Policy         Confirmation         Please confirm that you have read and agree to our Terms and the Privacy Policy         9 c 2 56         Please enter the keyword contained in the image on the left side.         * Note: All boxes marked with an * are required.

Enter your device's Serial Number. The serial number (SN) is located under the top cover.

Select whether the data should be publicly visible on the Internet or not.

Your plant information can then be viewed by other portal users. When you select "No," then you have to log on to the site with your user data that you will receive from Solare Datensysteme GmbH once the registration process has been completed.

The "Public Visibility" setting can be changed later at any time from your site's configuration menu.

Enter your location and contact information. Confirm that you have read our General Terms & Conditions (GTC) and Privacy Policy.

Enter the password from the image. This system is used to prevent bots from trying to access our server. Confirm the information entered by clicking on **Register Now**.

If you forgot to enter a password or entered the wrong one, a new password is automatically generated again without having to reenter all of the information.

After the registration has been successfully completed, you will receive a confirmation e-mail. After you have confirmed the registration, we will check your data and activate your account.

#### Note!



Accounts are only activated during the week. This can take up to 24 hours.

### 6.2 Accessing Plant data

Start your browser and go to the Solar-Log<sup>™</sup> WEB start page. Enter the URL that you received in your confirmation e-mail in the address bar.

For example: http://home10.solarlog-web.de/

The welcome screen is displayed.

# Solar-Log Solare Datensysteme GmbH



Are you interested in professional monitoring? We would be happy to provide you with the contact information for your local <u>Solar-Log<sup>10</sup> WEB partner</u>. Are you an installer or service provider? Offer your customers a professional plant monitoring system with <u>Solar-Log<sup>10</sup> WEB Commercial Edition</u>.

Fig.: C2 registration site

#### Logging on to the Solar-Log<sup>™</sup> WEB

If you did not activate Public Visibility for your plant during the registration, you have to log on to Solar-Log<sup>™</sup> WEB first. You can skip logging on if Public Visibility is activated. Enter your User and Password and then click on LOG IN.

#### Accessing the Plant overview

To display plants click on Plants from the menu on the left. In the window that appears, you can enter search criteria.

J) Solar-Log"	Solare Datensysteme GmbH					
Welcome						
Plants	Search Blants					
Мар	Search manes					
Registration	Country:	all				
FAQ	Zip Code:				2	
Terms & Conditions	Plant Size kWp (from/to):				2	
Privacy Policy	Year build:	all				×
Right of Withdrawal	Module type:	all	~			
Legal Notice	Orientation (from/to):	all	~	all	~	
Prices	Roof pitch (from/to):	all	~	all		
Lost password?	with image.		• 1	Deactivate	d	
	with current data		0 7	Deactivate	d	
	with irradiation sensor:		0 7	Deactivate	d	
		_				
						MORE THAN 1000 PLANTS
						Your Favourite
						To create favourites, you have to be logged

Fig.: C2 Plant search screen

Here you have the following search options:

- Zip code
- Plant size from to
- Production year
- Module type
- Orientation from to
- Roof pitch from to

With Only results, the results can also be filtered with the following criteria:

- with image
- with current data
- with irradiation sensor

The number of plants matching the search criteria is displayed in Results.

Welcome					
Plants					
Мар	Search Plants				
Registration	Country:	all		×	
FAQ	Zip Code:		1		
Terms & Conditions	Plant Size kWp (from/to):		2		
Privacy Policy	Year build:	all		~	
Right of Withdrawal	Module type:	all	C.		
Legal Notice	Orientation (from/to):	all	all		
Prices	Roof pitch (from/to):	all	all		
Lost password?	with image:	0	Deactivated		
	with current data:	0	Deactivated		
	with irradiation sensor:		Activated		
				MORE THAN TO	00 PLANT
				Your Favo	ourite
				There were no plants market	d as favour

Fig.: C2 Plant search with a filter

The search results overview of the plants includes the number of installed inverters, their power output, orientation and roof pitch. A standard default image is used if there is no publicly viewable image available. You can also find an overview of the current plant yields in the column on the right.



Fig.: C2 Plant search with results

Clink on the Plant link above the day graph from today.



The graphic overview of the plant is displayed.

Fig.: C2 plant with a day curve

The graphic overview displays additional options that can be selected for your plant, such as current value, day yield and any fault notifications if present.

Create a bookmark in your browser for faster access to the plant details.

### 6.3 Accessing Yield Data

# 6.3.1 How to navigate between different overviews

How you navigate the website overviews corresponds to navigating the overview page from your local network.

#### Switching between overviews

Move your mouse to the inverted triangle on the left next to the displayed period. An overview of the periods is displayed.



Fig.: C2 Navigating in the view

Click on the desired period. The period overview is then displayed.

#### 6.3.2 The meaning of the values in the overviews

The values displayed below the graph correspond to the values from the overview page from your local network.

Due to privacy concerns, the plant revenues are not displayed on the Internet site.

# 6.3.3 Daily Overview

Start your browser and click on the bookmark for your plant.

- You might have to log on.
- The plant details overview is then displayed.
- Select Graphic from the menu on the left.
- The plant's daily overview is then displayed.



Fig.: Day curve with additional values

The daily yields are displayed as a curve graph. The dark green line indicates the daily target yield. The different values throughout the day can be displayed by moving the mouse along the curve.

#### Daily Overview selection buttons

- Yield: Yield curve from which the yield performance can be observed. Additionally, the dark green line indicates the daily target yield total.
- DC voltage: Generator voltage; To view the voltage of individual strings, only one inverter can be selected.
- kWp: Switches the scale from "Output in watt" to "Output in kW/kWp." After that, all of the curves will be comparable in regard to their specific output. Diminishing module performance can also be recognized.
- 24h: This displays the output for every hour of the day in comparison to the consumption for the entire day.

#### Additional functions with SO power meters

The following displays are additionally available when an SO power meter is connected to the Solar-Log™.

- CM: Displays the power consumption of your building as a graphic in watts.
- Cons.: Displays the power consumption of your building as a curve in kWh.
- Values: Displays various values for your inverter as text.
- Balances: Displays the relation between your power consumption and yield. In the box at bottom on the left, the ration is also displayed as a percentage.

#### Additional functions with the Sensor Box

The following displays are additionally available when a Sensor Box is connected to the Solar-Log™.

- Solar: Displays the reference value from an irradiation sensor. The plant's daily output has to lie within the range measured by the sensor.
- M °C: Displays the module temperature. that is measured by the Sensor Box.
- A °C: Displays the ambient temperature. This is measured by the ambient temperature sensor.
- Wind: Displays the wind speed and strength. These values are measured by the wind sensor.

#### Note!



The Sensor Box has to be in the same module field as the monitored inverter to correctly visualize it in WEB.

#### Click on the selection button and then on the magnifying glass icon.

• The selected curve is displayed.

# Explanation of the current and daily values

Name	Unit	Description
Feed-in power Pac	W	Current amount of feed-in power P on the AC side.
Generator output P1, P2, P3	W	Current amount of feed-in power P on the DC side (Solar generator), per MPP tracker When there are several inverters, this is the sum of the corresponding output parts (MPP tracker).
Efficiency of Inverter $\eta$	%	The current efficiency 'eta' from the generator power and feed-in power. The manufacturer's specification on the inverter's efficiency can be checked here.
Status / Errors		Status codes and – depending on the inverter – error codes. The codes displayed are manufac- turer-specific and need to be looked up in the particular inverter's manual. The same status notifications are always com- bined. "MPP" appears when all of the inverters are in MPP mode. However, if one of them, for example is derating, then it would look like this: "2xMpp, 1xDerating"
self-consumption share	%	The ratio of solar energy consumed locally to the total amount of energy generated.
degree of self-sufficiency	%	The ratio of self-consumption of solar power to the total amount of consumption.
Values

Daily yield	kWh	The daily total.
Daily yield	Euro	The daily sum multiplied by the feed-in tariff.
Daily yield specific	kWhp	The daily total divided by the plant size. This value is a good reference value when comparing plants.
Maximum value	W	The maximum value for one day.
Target	kWh	The Solar-Log <sup>™</sup> runs a forecasting statistics func- tion that specifies a certain target value for each month. The monthly target is converted to a daily target and displayed here. If the target value or higher has been achieved, the forecasted output has been produced.
Actual	%	The actual value displayed as percentage of the daily yield target.
Total amount of CO <sub>2</sub> emissions avoided	t	Total amount of $CO_2$ emissions avoided.

## 6.3.4 Monthly Overview

Select Monthly Overview from the navigation menu.





The daily yields from a month are displayed as a total in a bar graph. The dark green line indicates the month's target yield.

#### Move the mouse above one of the day bars.

• The yield from the selected day is displayed.

#### By clicking on a bar,

• the corresponding curve is displayed.

#### 6.3.5 Annual Overview

Select Annual Overview from the navigation menu.



Fig.: Plant C2 - Annual Overview

The monthly yields from a year are displayed as a total in a bar graph. The dark green lines indicate the annual target yield.

The forecast value is calculated from the yields already achieved for the year and from the projected yields from the remaining months of the year.

Move the mouse above one of the month bars.

• The yield from the selected month is displayed.

By clicking on a bar,

• the corresponding monthly overview is displayed.

Values

### 6.3.6 Total Overview



Select Overview of all Years from the navigation menu.

Fig.: Plant C2 - Total Overview

The individual annual yields are displayed as a total in a bar graph. The dark green line indicates the annual target yield. Two green lines are then displayed for the current year:

- The top line indicates the annual target.
- The bottom line indicates the accumulated annual yield compared to the annual target.

Move the mouse above one of the year bars.

• The yield from the selected year is displayed.

By clicking on a bar,

- the corresponding annual overview is displayed.
- Click on Linear Overview Years:
- The total linear overview is then displayed.

## 6.3.7 Accessing and filtering the Event log

Select Events from the menu on the left.

• The complete list of all of the system events is displayed.

All Inverters	✓ All Days ✓ All State	us (15) ~	All Errors (3) ~	Clear Selection	Export
Inverter	Date	Status		Error	
1	18.07.2016 03:03 -	Power			
1	18.07.2016 03:03 - 18.07.2016 03:0	)3 offline			
1	17.07.2016 03:03 - 18.07.2016 03:0	)3 Power			
1	17.07.2016 03:03 - 17.07.2016 03:0	03 offline			
1	16.07.2016 03:03 - 17.07.2016 03:0	2 Power			
1	16.07.2016 03:03 - 16.07.2016 03:0	)3 offline			
1	15.07.2016 03:03 - 16.07.2016 03:0	02 Power			
1	15.07.2016 03:03 - 15.07.2016 03:0	)3 offline			
1	14.07.2016 03:03 - 15.07.2016 03:0	02 Power			
1	14.07.2016 03:03 - 14.07.2016 03:0	)3 offline			
1	13.07.2016 03:03 - 14.07.2016 03:0	2 Power			
1	13.07.2016 03:03 - 13.07.2016 03:0	)3 offline			
1	12.07.2016 03:03 - 13.07.2016 03:0	2 Power			
1	12.07.2016 03:03 - 12.07.2016 03:0	)3 offline			
1	11.07.2016 03:03 - 12.07.2016 03:0	2 Power			
1	11.07.2016 03:03 - 11.07.2016 03:0	03 offline			
1	10.07.2016 03:03 - 11.07.2016 03:0	2 Power			
1	10.07.2016 03:03 - 10.07.2016 03:0	03 offline			
1	09.07.2016 03:04 - 10.07.2016 03:0	3 Power			
1	09.07.2016 03:03 - 09.07.2016 03:0	)3 offline			
1	08.07.2016 03:03 - 09.07.2016 03:0	3 Power			
1	08.07.2016 03:03 - 08.07.2016 03:0	)3 offline			
1	07.07.2016 03:03 - 08.07.2016 03:0	2 Power			
1	07.07.2016 03:03 - 07.07.2016 03:0	)3 offline			
1	06.07.2016 03:03 - 07.07.2016 03:0	2 Power			
1	06.07.2016 03:03 - 06.07.2016 03:0	)3 offline			
1	05.07.2016 03:03 - 06.07.2016 03:0	2 Power			
1	05.07.2016 03:03 - 05.07.2016 03:0	)3 offline			
2	18.07.2016 11:33 -	Мрр			
2	18.07.2016 11:32 - 18.07.2016 11:3	2 Mpp-Pea	k		
2	18.07.2016 11:30 - 18.07.2016 11:3	2 Mpp			
2	18.07.2016 11:30 - 18.07.2016 11:3	0 Mpp-Pea	k		
2	18.07.2016 11:29 - 18.07.2016 11:2	9 Mpp			
2	18.07.2016 11:29 - 18.07.2016 11:2	9 Mpp-Pea	k		
2	18.07.2016 11:29 - 18.07.2016 11:2	9 Mpp			

Fig.: Plant C2 - Notifications

Use the filter function to view a particular event or events from a particular day within the last 35 days.

All Inverters	✓ 16/07/2016 ∨ Startup	✓ All Errors (1)	✓ <u>Clear Selection</u> Export
Inverter	Date	Status	Error
3	16.07.2016 21:24 - 16.07.2016 21:24	Startup	
3	16.07.2016 05:50 - 16.07.2016 05:50	Startup	
3	16.07.2016 05:44 - 16.07.2016 05:44	Startup	
3	16.07.2016 05:33 - 16.07.2016 05:33	Startup	
3	16.07.2016 05:30 - 16.07.2016 05:30	Startup	
3	16.07.2016 05:29 - 16.07.2016 05:29	Startup	
3	16.07.2016 05:28 - 16.07.2016 05:28	Startup	
3	16.07.2016 05:26 - 16.07.2016 05:27	Startup	

Fig.: Plant C2 - Notifications filtered by day

- 1. Select the desired inverters from the "All inverters" drop-box.
  - Only the events from the selected inverters are displayed.
- 2. Limit your selection by selecting the desired day from the All Days drop-box.
  - Only the events from the selected day are displayed.
- 3. Limit your selection further by selecting the desired day from the All Days drop-box.
  - The status selection options available are only those that occurred during the selected time period.
- 4. Additionally, you can limit your selection further by selecting the type of fault from the All Faults drop-box.
  - The fault selection options available are only those that occurred during the selected time period.
- 5. Click on Clear Selection to reset all of the filter settings.

# 7 Cleaning and care

### 7.1 Cleaning tips

#### Important!

Be sure to unplug the device prior to cleaning it!



- Clean the device on the outside only with a dry, lint-free cloth.
- If the device is very dirty, it can be cleaned with a slightly damp cloth and a commercially available household cleaner.

#### Important!

When cleaning, make sure that no moisture gets into the device!



## 7.2 Care tips

- Make sure that the device is not exposed to any moisture at the location where it is kept.
- Make sure that the device is not exposed to any heat or strong sunlight at the location where it is kept.
- Please take note of the Technical Data.

# 8 Notifications on the LCD Status Display (Solar-Log 300, 1200 and 2000)

The Solar-Log 300, 1200 and 2000 have an LCD status display for notifications during installation and operation.

## 8.1 Meaning of the symbols on the LCD display

The following symbols are shown on the Solar-Log™ LCD display:



Fig.: LCD Status Display with all of the symbols

#### Meaning of the symbols on the LCD display





Note!



For detailed information on the LCD status codes, refer to the chapter "Notifications on the LCD Display, Error Messages and Faults" in the Installation Manual .

# 9 Disposal

#### Important!



Solar-Log<sup>™</sup> contains electronic components that can release highly toxic substances if burned or disposed of along with domestic waste.

#### Note!



Make sure you dispose of the Solar-Log<sup>™</sup> as electronic scrap in the recycling center.

# 10 Technical Data (Solar-Log 300, 1200 and 2000)

	Product comparison	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
	PM+ <sup>(2)</sup>	•	•	•
	PM+ / WiFi <sup>(2)</sup>	•	•	-
	PM+ / GPRS <sup>(2)</sup>	•	•	(4)
	Bluetooth (BT) <sup>(2)</sup>	•	•	-
	WiFi (Wireless LAN) <sup>(2)</sup>	•	•	-
2	Bluetooth (BT) / WiFi (2)	•	•	-
	GPRS <sup>(2)</sup>	•	•	•
5	Solar-Log™ Meter (CT)	•	•	-
	Central inverter SCB and SMB	-	-	•
ž	Communication interface	1 x RS485 / RS422 (one INV manu- facturer per bus)	1 x RS485 1 x RS485 / RS422 (one INV manu- facturer per bus)	1 x RS485, 2x RS485 / RS422, 1 x CAN (one INV manu- facturer per bus)
	Max. plant size	15 kWp / one INV man- ufacturer	100 kWp / max. two INV man- ufacturers	2000 kWp / max. three INV manufacturers
	Max. cable length	max. 1000 m <sup>1)</sup>	max. 1000 m <sup>1)</sup>	max. 1000 m <sup>1)</sup>
	String monitoring (depend- ing on inverter type)	•	•	•
	Inverter failure, status of fault and power monitoring	•	•	•
ב ת	Sensor system connection (irradiation/ temp./ wind)	3)	3)	<b>3</b> )
	E-mail and Text Mes- sage (SMS) Alarm	•	•	•
	Alarm (local)	-	-	•
	Yield forecast and deg- radation calculation	•	•	•
	Self-produced energy consump- tion: Digital electricity meter	•	•	•
	Self-produced energy consump- tion: Managing external appliances	•	•	•

	Product comparison	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
	Integrated web server	•	•	•
ation	Graphic visualization - PC local and Internet	•	•	•
	LCD Status Display	•	•	•
sualiz	Display on the device	-	4.3" TFT col- or display	4.3" TFT col- or display
Ś	Controls on the device	-	via touch screen	via touch screen
	Large external display RS485 / S <sub>o</sub> pulse	•	•	•
	Ethernet network	•	•	•
aces	USB flash drive	•	•	•
cerfa	Potential-free contact (relay)	-	•	•
	Alarm contact (anti-theft)	-	-	•
	Power supply voltage/device voltage/ power consumption		115 V - 230 V / 12 V / 3 V	V
	Ambient temperature		-10 °C to +50 °C	
Data	Housing / dimensions (W x D x H) in cm / Mounting / protection level	Plastic/2	2.5 x 4 x 28.5/Wall-mou (indoor use only)	nted/IP 20
eneral	Connection to Solar-Log™ WEB "Commercial Edition"	•	•	•
9 0	Multi-lingual (DE, EN, ES, FR, IT, NL, DK)	•	•	•
	Memory, Micro SD card, 2 GB, endless data logging	•	•	•
	Warranty		5 years	

Depending on the inverter used, and the cable length (details can also vary from one type of device to another).
Other important information about Bluetooth and compatibility, Power Management, self-con-

sumption and SCB and SMB 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 at solar-log.com.

4) Solar-Log 2000 PM+ / GPRS interfaces: 1 x RS485, 1 x RS485 / RS422, 1 x CAN (1 INV manufacturer per bus).

Accessories	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
	Ready-to-instal	Il cable kits for most sup	ported inverters
	••••••	PowerLine Package	
Accessories	••••••	RS485 Wireless Packag	e
		Sensors	
	••••••	Surge protection	
Accessories for CMA invertors	Special Pigg	gyBack RS485 (except ∃	ΓL-20 series)
Accessories for SMA inverters		Data module SMA RS48	5
Top Features	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
LCD Status Display	Status dis	play for installation and	operations
	Installation is pos	sible without PC and ins	tallation expertise.
Easy Installation	The inverter detec- tion and Internet registration is enabled by default and is started automatically.	Inquiry for addi- tional information, then automatic inverter detec- tion and Internet registration.	-
Network recognition	Automatic se ment of a v	earch for the DHCP serv valid IP address in the lo	er and assign- cal network.
Local network accessibility	Registration is do I to be known, unless The Solar-Log browser	ne with its name. The IP lar-Log™ no longer need s there are several Solar- ™ can be accessed dired with this address: http://	address of the So- ds Logs in the network. ctly from a web /solar-log.
	Monitoring, o sumption witl cluding th	ptimization and managi h a fixed regulation of a ne calculation of self-cor	ng of self-con- ctive power in- nsumption.
Additional functions	Evaluatic	on of Sensor Box Comm	ercial data
	-	-	Monitoring of central inverters
Solar-Log™ Meter	Monitoring ment an	g, feed-in manage- Id power meter.	-
Support for the Solar-Log™ SCB/SMB	-	-	Individual string monitoring
•••••••••••••••••••••••••••••••••••••••		• • • • • • • • • • • • • • • • • • • •	

Solar-Log™ Meter (CT)

Top Features	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
Solar-Log™ PM+ functionality	Remote controlled tion and reactive	active power reduc- power adjustments	Monitoring large plants with sup- port from 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

255590

-

255582

	Interfaces	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
	RS485/RS422 - interface usage	RS485 / RS422 - combined interface usage	RS485 - interface, RS485 / RS422 - combined interface usage	RS485 A - in- terface, RS485 / RS422 B - / RS485 / RS422 C* - combined interface usage
			Inverter connection	
erface		Connection of a Sensor Basic to record environ- mental data (irradiance and module sensor)	Connection of a S mercial to recor data (irradiance, r ent temperatur	Sensor Box Com- d environmental nodule and ambi- e, wind sensor)
int	RS485 – interface usage	Connection of meter	for self-consumption ac	cording to IEC 60870
/erte		Connection of th D	ne display panels produc isplaytechnik, Rico or Hv	ed by Schneider ′G
Nu V		-	-	Connecting the Utility Meter and I/O Box for PM remote control technology
	RS422 – interface usage	RS 422 F out a	ronius / Sunville connect dditional interface conve	tible with- erters
	CAN bus	-	-	For the con- nection of Volt- werk inverters
		S <sub>o</sub> pulse inpl lation of s	ut - for optional recordin elf-produced power con	ig and calcu- isumption.
	2x S <sub>o</sub> In / 1x S <sub>o</sub> Out	Second input	to connect an additional	power meter.
S		S <sub>o</sub> pulse or plays, pu	utput to connect large ex lse factor can be set to a	xternal dis- any value.
face	Relay	_	Relay for exter trol. e.g. he	nal switch con-
lter				Connection for
unction ir	Alarm	-	-	anti-theft protec- tion via contact loop for external alarms via poten- tial-free contact
al fl			To access data	
tion	USB connection	Impo	ort firmware updates at p	plants
ddi		F	PM+ (Power Managemen	t)
Ac	PM+ interface (optional)	For the c	connection of a ripple-co eiver to regulate the plar	ontrol re- nt.
		Fulfil	ls the EEG 2012 requirem	nents.
	Solar-Log™ Meter (optional)	Current mea: cessory) up	surements via transform o to 2 x 3 phases or 6 sin	ers (extra ac- igle phases.

	Interfaces	Solar-Log 300	Solar-Log 1200	Solar-Log 2000
1	Network	Connection to the In	ternet (Ethernet, fixed IF	<sup>2</sup> address or DHCP)
Net	O ≥GPRS (optional)	Antenna co Iar-L	nnection and SIM card s og™ with integrated GP	lot for So- RS.

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\* not with GPRS models

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