

# Manual

## Sunprofit V 1.3.0.19

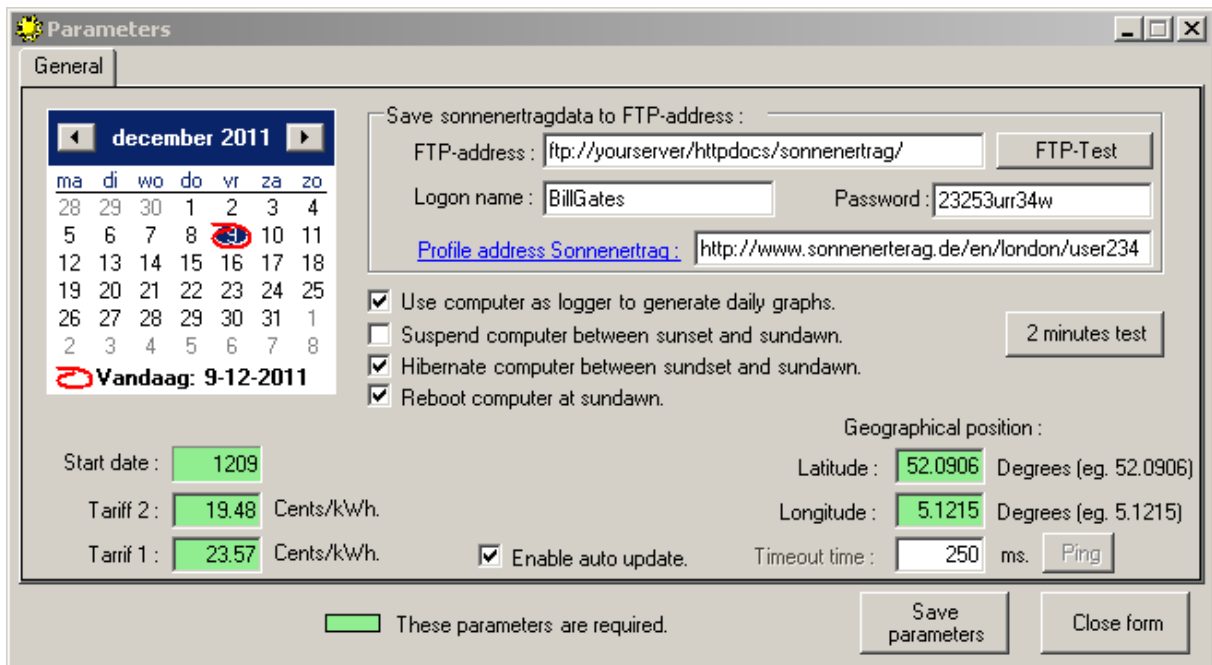
Chapter 1: Enter the settings	.....	Page 2
Chapter 2: The tab for the Soladin 600 and Windmaster 500 inverters	.....	Page 5
Chapter 3: The tab of the Chint, Phoenixtec and Eaton inverters	.....	Page 7
Chapter 4: The tab for the OK4	.....	Page 9
Chapter 5: The tab “Overview”	.....	Page 10
Chapter 6: The Matrix Orbital LCD	.....	Page 11
Chapter 7: Command Line commands	.....	Page 12
Chapter 8: Explanation of sunprofit.js	.....	Page 13
Chapter 9: Explanation of Sunprofit.php	.....	Page 15
Chapter 10: Known problems with the hibernate and sleep modes	.....	Page 17

## Chapter 1: Enter the settings.

After installing and starting the program, this screen appears first. The choice is yours:



Then the following screen appears.:



1. Select the Start Date on the calendar on which the rates have changed. Usually this is January 1 or July 1.
2. If you have two rates, please put the low rate at **Night tariff** in cents. (eg 19.58).
3. If you have two rates, please put the low rate at **Day tariff** in cents. (eg 23.44). Otherwise, fill in the average sum of the tariffs.
4. Enter the **Latitude** and **Longitude** of your location, to calculate the sunrise and sunset times. Please use the minus sign (-) if you live east of Greenwich and south of the equator.
5. If you use **Sonnenenertrag** or **SolarAnalyzer**, fill at the **FTPaddress** the internetaddress where you store your data, enter at **Logon name**, your username for the FTP upload and finally enter your password at **Password**. From version 3.0.1.18, you can also save the data on your local hard drive. Just enter the directory: e.g. C:\Temp\. Logon name password are not used in this case.

6. To test the FTP-address, click on '**FTP-Test**'.
7. If you're intend to use the computer as a logger then select **Use computer as logger to generate daily graphs**.
8. Select **Suspend computer between sunset and sunrise**. The computer then automatically wakes up when the sun rises and goes into sleep mode when the sun goes down. **Precondition is that the computer supports it and the mains power always remains on the computer**.
9. Select **Hibernate computer between sunset and sunrise** option. The computer then automatically wakes up when the sun rises and goes into hibernate mode when the sun goes down. **Precondition is that the computer supports it. The advantage over sleep mode is that the mains power can be shut off**.
10. If you use either the suspend or hibernate mode, you can also choose to reboot the computer if it wakes up. Otherwise the RAM could occur an overflow after a few days.
11. Select '**Enable auto update**' if you want to use auto update's of the program. The program checks and installs updates at every startup and if the computer wakes up at sunrise.
12. Click **Save parameters** and click yes at the next question.

Now the window below appears.



Select the desired inverter.

The next window appears. This one is for the Mastervolt inverters but the screens for the other inverters are all the same.

Select the comport or the IP-adress and select **'Search inverter'**.

**Add Soladin/Windmaster inverter**

Comport : 1  IP-address :   
Port :

Manufacturer : Mastervolt Type inverter : Soladin 600  
Delivered power kWh : 428.530 Firmware version : E3 / 1.04 / 0634  
Operating hours : 3767.55

If the inverter id found, the data will be shown as above. Click on **'Add inverter'** and confirm the next question. After a few seconds, the program will restart itself.

Now the next window appears.

**Parameters**

New LCD General

Inverter type : Soladin 600  
System name : Inverter1  
Serial number :   
Inverter ID : --

Comport : 1  IP-address : 000.000.000.000  
Port : 0  
Read interval : 5000 ms.

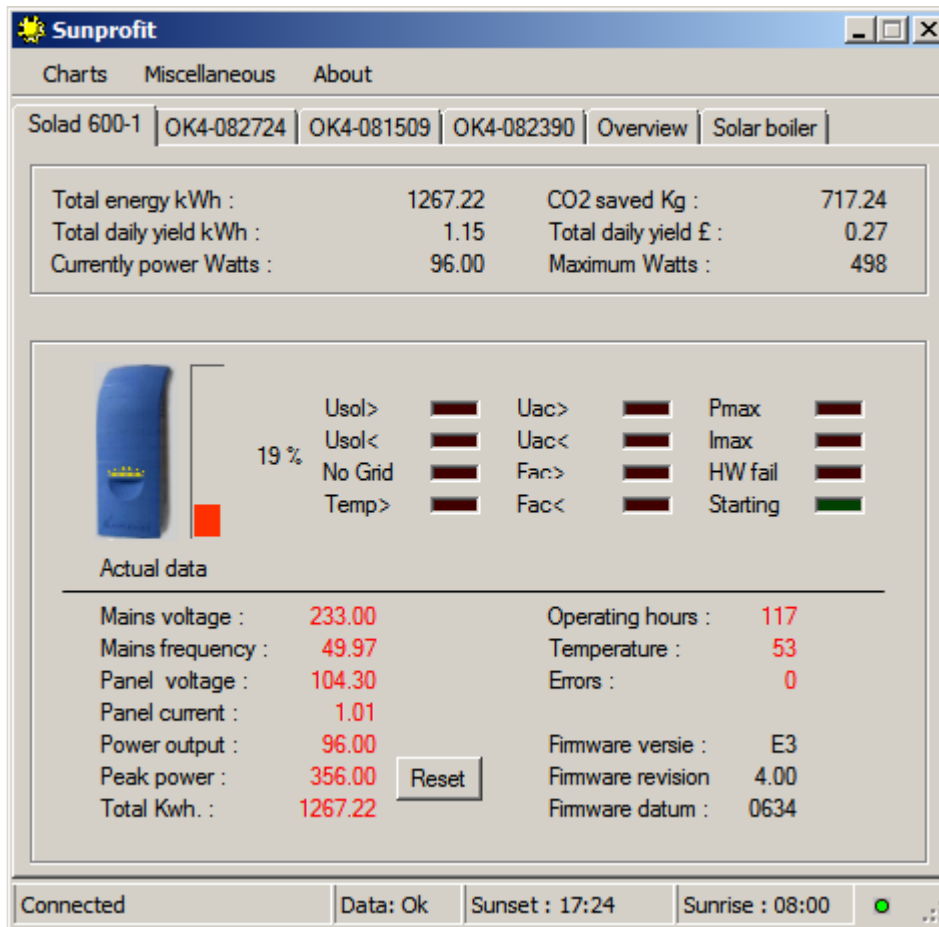
System start date : Day: 09 Month: 12 Year: 2011  
Number of days in operation : 0  
Purchase price : 3104 £  
Power delivered before start date : 428.530 kWh.  
Connected power string 1 : 510 Wp.  
Connected power string 2 :  Wp.  
Connected power string 3 :  Wp.  
Max. measured power inverter : 0 W.  
Maximum power reached on : 09-12-2011

These parameters are required.

1. Enter the system name, which can be any name. This name is used in the tabs of the inverters and the general parameters screen.
2. **Serial nr.** You can place the serial number of your inverter here.
3. **Inverter ID** is only used by OK4 inverters and cannot be filled in.
4. Select **Comport** if you use an RS-232 converter to communicate with the inverter.
5. Select **IP-address** if you use an LAN to communicate with the inverter and fill in the IP-address. At **Port** you should enter the port number.
6. **Read interval** (5000 ms by default). This is the interval to communicate with the inverter
7. Enter the **System start date** of the system. The program uses this date to calculate various statistics.
8. Fill in the **Purchase price**. Also mend for statistical purposes.
9. **Power delivered before start date**, only useful if the system is second hand. This number is subtracted from the already delivered power.
10. **Connected power string X**. Enter the connected  $W_p$  of the strings. (e.g. 3 panels with  $175 W_p = 510 W_p$ ). If an inverter is connected with the capability of connecting multiple strings, the connected power string 2 and 3 are also to be filled in.
11. **Maximum power inverter**. This value will always be overwritten by the program if there is a new highest peak obtained. It can take several months when the system was put into service from September, October etc.
12. Click **Save parameters** and click yes at the next question.

## Chapter 2: The tab of the Soladin 600 and Windmaster 500.

After the program has restarted itself, the following screen appears.



In this screen the inverters are shown in their own tab. There is also an 'Overview' tab.

The upper section of the screen contains the Total yields of the inverter.

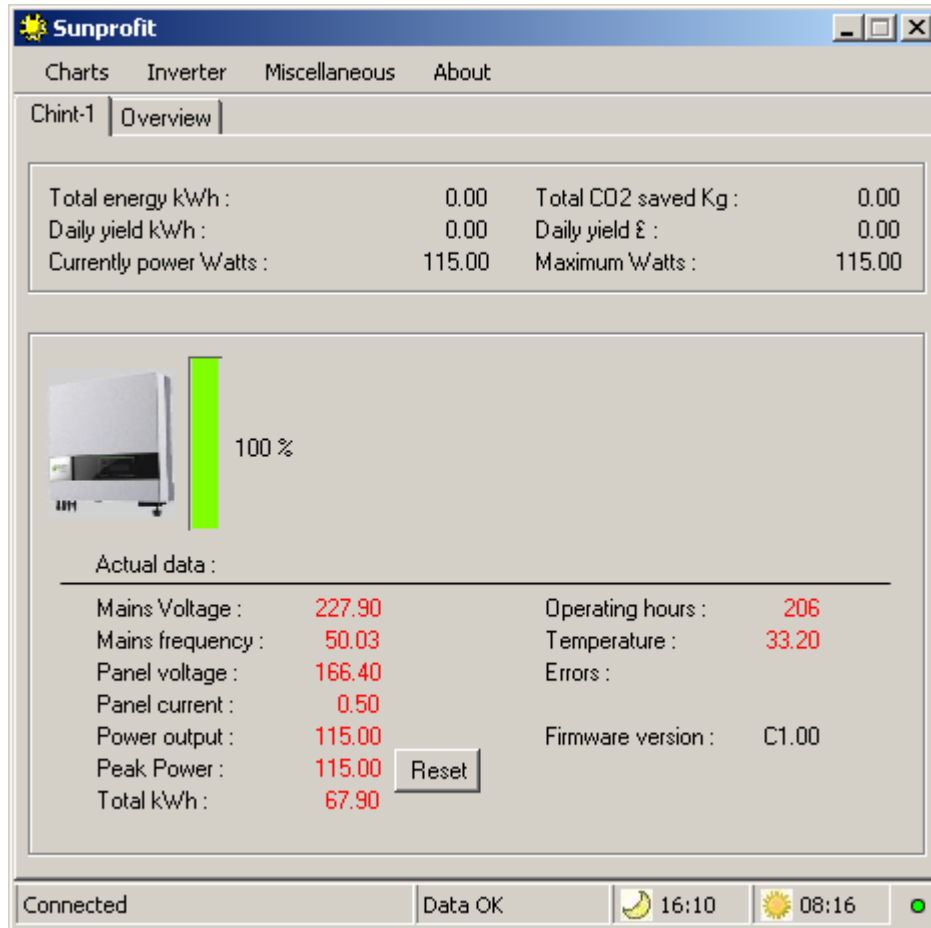
1. **Total energy kWh:** The amount of kWh that the system has been yielded. (For second-hand systems, the value " **Power delivered before start date** " has been deducted from the total.
2. **CO2 Saved Kg:** number Kg of CO2 saved by the system.
3. **Total daily yield kWh:** The amount of kWh that the system has yielded today.
4. **Total yielded today £:** Daily yield of the system in pounds.
5. **Currently power Watts:** Instantaneous power supplied by the inverter (also seen in actual data)
6. **Maximum Watts.:** Het highest ever achieved peak power of the inverter.

Lower selection of the screen 'Actual data':

1. **Image of inverter type:** No explanation needed.
2. **percentage bar:** Indicates the capacity percentages graphically. This value will be calculated following the highest ever achieved peak power. This bar colors from red (0%) to green (100%).
3. **Mains voltage:** Currently voltage of the mains.
4. **Net frequency:** Currently frequency of the mains.
5. **Panel voltage:** Currently voltage of the panels.
6. **Panel current:** Currently current of the panels.
7. **Power output:** See **Currently power Watts** of the upper selection of the screen.
8. **Peak power:** Peak power of the day.
9. **Reset:** With this button you can reset the peak power of the day. The program does this every day.
10. **Total kWh:** Total kWh delivered by the Inverter (this includes the number of kWh that a second hand system has already delivered.)
11. **Operating hours:** The total number of hours that the Inverter has been active.
12. **Temperature:** Current temperature of the inverter in centigrade.
13. **Errors:** The number of errors reported by the system. (At a check interval of 1000 ms all errors are recorded.)
14. **Firmware version, revision and date:** Information about the software of the inverter.

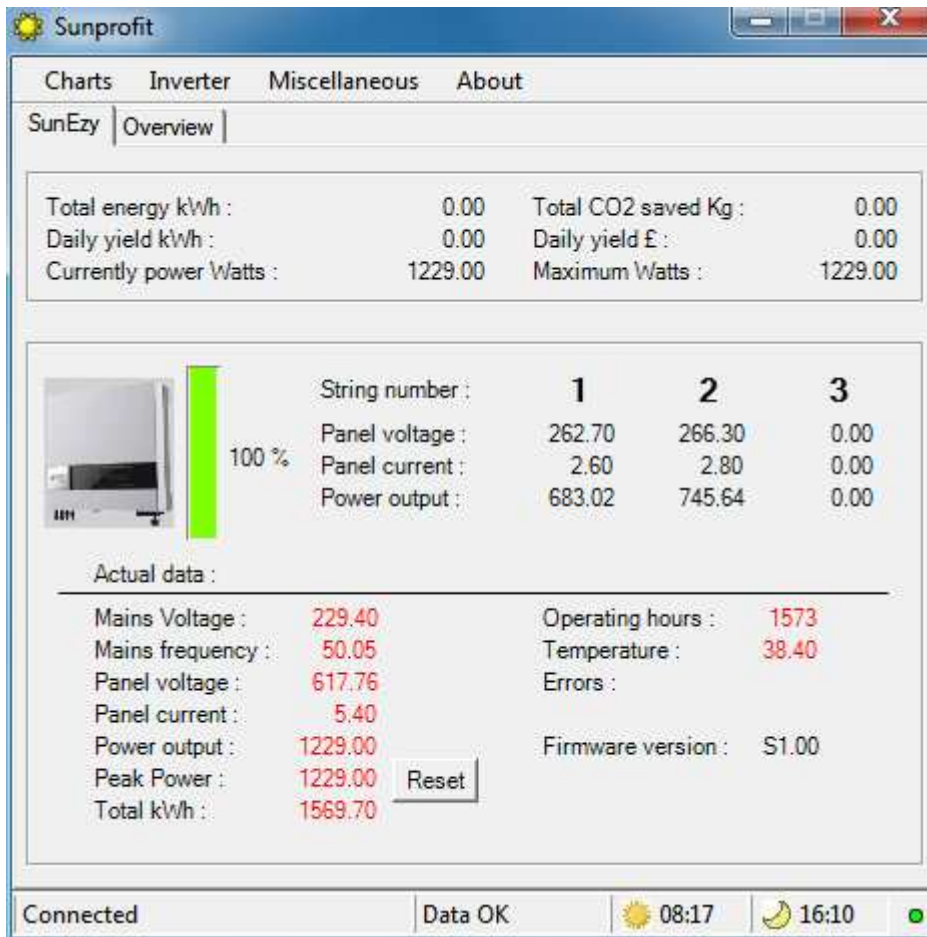
## Chapter 4: the tab of the Chint, Phoenixtec and Eaton inverters.

The screen for these inverters is almost identical to the Soladin 600.  
However, no error messages are shown.



If an inverter is connected with more than one string, then the next screen will appear.

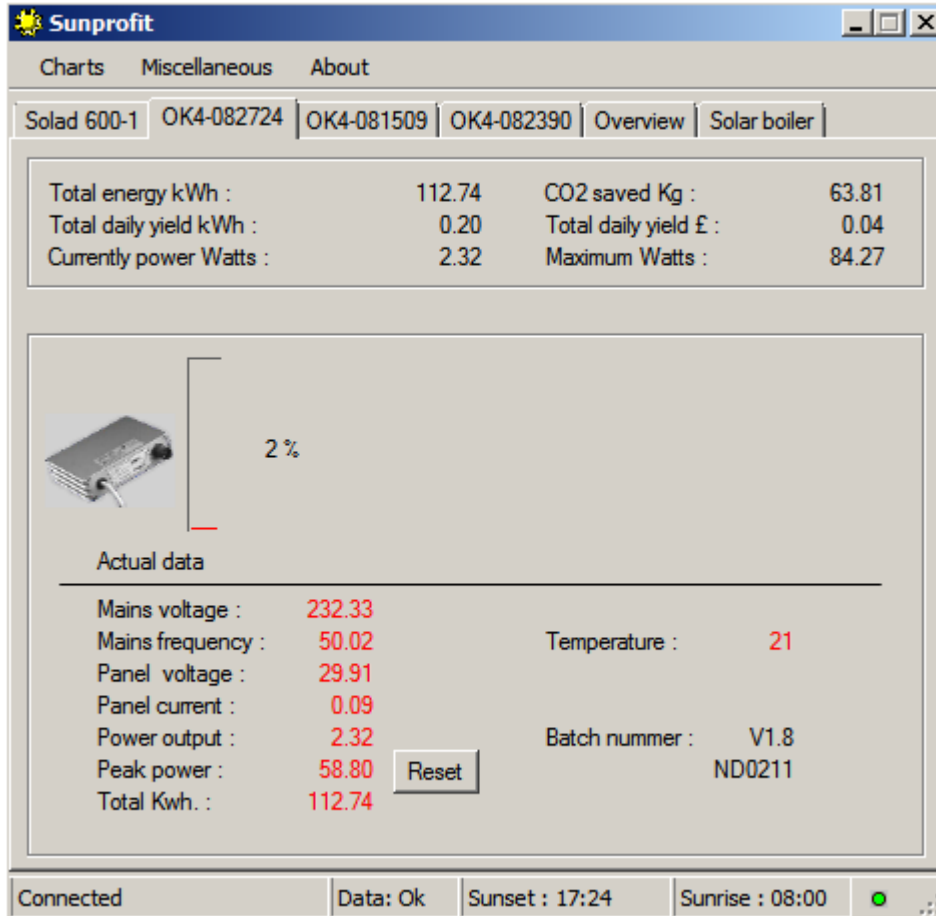




The only difference is the data in the middle of the screen. The multiple strings are now shown. In this screen the third string is not connected.

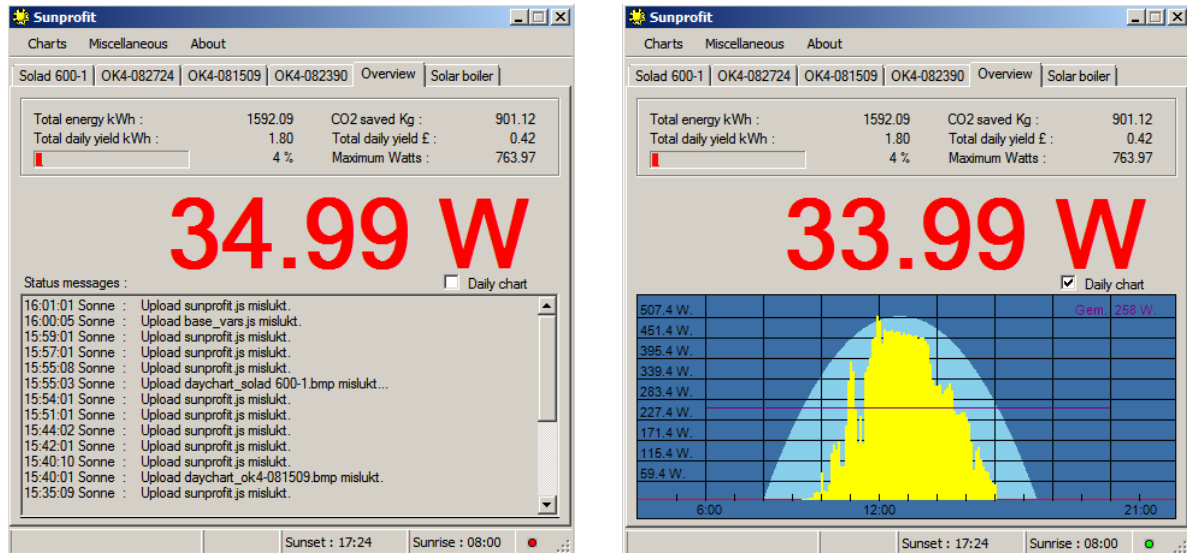
## Chapter 5: the tab of the OK4

The screen for the OK4 inverters is almost identical to the Soladin 600. However, no error messages are shown.



## Chapter 5: The Tab "Overview".

To reduce clutter, there is a tab "Overview ". The program shows the accumulated revenues and savings of the inverters.



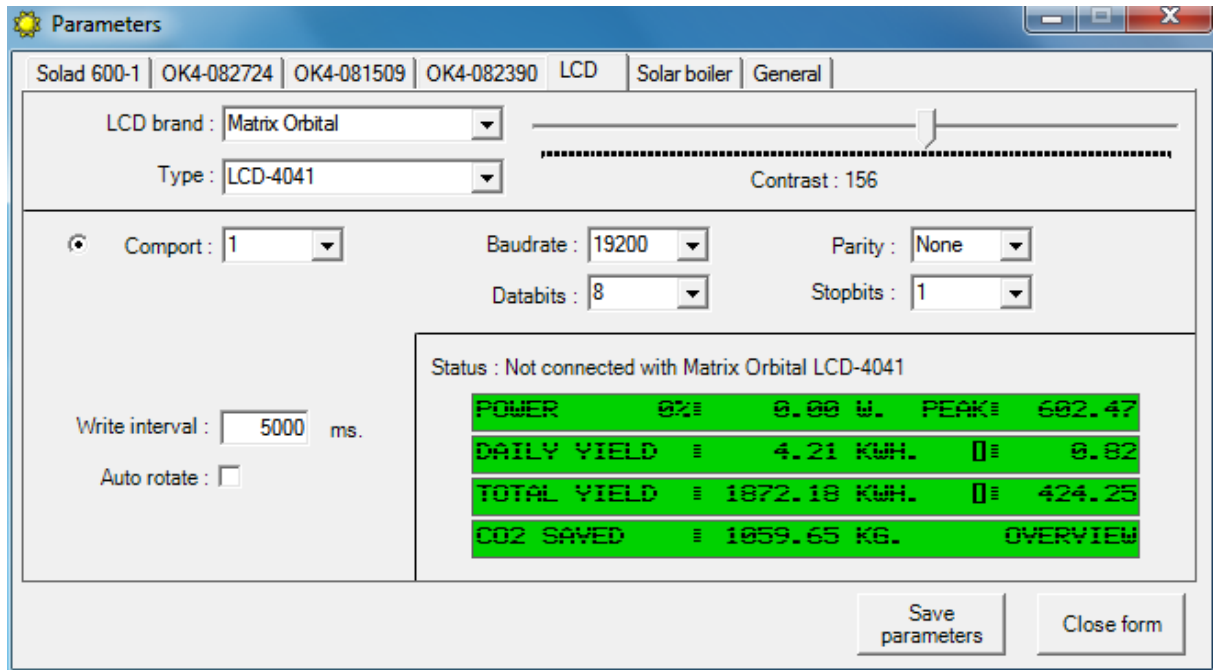
We also see the total power of this moment, given in Watts.

1. The Status Message display speaks for itself. This is where all messages are displayed.
2. In the menu "Miscellaneous", submenu "Status messages" you can choose which messages are to be displayed.
3. If you select "daily chart", the power curve of the day will be shown.
4. From each converter, a daily chart bitmap will be created, which is updated every 5 minutes. You can find them in the Directory "Data\Sonnenertrag" that lies beneath the directory where the executable is. The bitmap files are uploaded by the program when at the "General" settings the "Sonnenertrag" data are filled in. The bitmap files are then saved to that server address.

## Chapter 6: The Use of a Matrix Orbital LCD module

If you don't want to use the internet or a monitor to see the live data, you can choose for a Matrix Orbital 4X40 LCD module.

The following screen shows an example of the parameters of the LCD.



The screenshot shows a software window titled "Parameters" with a blue title bar. The window contains several tabs: "Solad 600-1", "OK4-082724", "OK4-081509", "OK4-082390", "LCD", "Solar boiler", and "General". The "LCD" tab is active. The interface includes the following elements:

- LCD brand:** A dropdown menu set to "Matrix Orbital".
- Type:** A dropdown menu set to "LCD-4041".
- Contrast:** A slider control set to 156.
- Comport:** A dropdown menu set to "1".
- Baudrate:** A dropdown menu set to "19200".
- Parity:** A dropdown menu set to "None".
- Databits:** A dropdown menu set to "8".
- Stopbits:** A dropdown menu set to "1".
- Write interval:** A text input field set to "5000" ms.
- Auto rotate:** An unchecked checkbox.
- Status:** A text area displaying "Status : Not connected with Matrix Orbital LCD-4041".
- LCD Display:** A simulated LCD screen showing the following data:

POWER	0%	0.00 W.	PEAK	602.47
DAILY YIELD	=	4.21 KWH.		0.82
TOTAL YIELD	=	1872.18 KWH.		424.25
CO2 SAVED	=	1059.65 KG.	OVERVIEW	
- Buttons:** "Save parameters" and "Close form" buttons at the bottom right.

First you have to select the brand and the type of the LCD. Then the parameters for the communication follow automatically. At the start, the program looks for the LCD. If found, the program shows the data of the active screen. If the active screen is an inverter, it shows the data of that inverter. If the active screen is the overview screen, the LCD shows the data of that screen.

To show the inverters one by one, click on Auto rotate.

## Chapter 7: Command Line commands

It is anticipated that the program can/should start in the "system tray" or that a particular screen should be displayed when starting the program.

Commands are:

Drive:\Directory\Sunprofit.exe /x /tray

/x = Tab that should be opened after startup the program.  
(First tab = 0, second tab = 1, etc.)

/tray = the program should be started in the system tray.

## Chapter 8: Explanation sunprofit.js

From version 1.0.1.0 you can use the JavaScript '**sunprofit.js**'

The most important real-time values of the inverters are every minute saved in this file, so a web page can use them. The values can called as a function within a web page. This requires some experience with Java and HTML.

The following functions are included.

<b>invertername_*</b>	Name of the inverter.
<b>vac_*</b>	Mains voltage.
<b>iac_*</b>	Mains current.
<b>fac_*</b>	Mains frequency.
<b>pac_*</b>	Power on mains side.
<b>vdc_*</b>	Panel voltage.
<b>idc_*</b>	Panel current
<b>pdc_*</b>	Power on panel side
<b>tmp_*</b>	Temperature of the inverter in degrees centigrade.
<b>dailyyieldkwh_*</b>	Today's yield kWh.
<b>dailyyieldmoney_*</b>	Today's yield in money.
<b>dailypeakpower_*</b>	Today's peak power.
<b>dailykwhkwp_*</b>	Todays kWh/kWp.
<b>totalyieldkwh_*</b>	Total yield in kWh.
<b>totalkwhkwp_*</b>	Total yield in kWh/kWp.
<b>totalyieldmoney_*</b>	Total yield in money.
<b>totalco2saved_*</b>	Total CO2 saved
<b>startdatesystem_*</b>	The date on which the system is installed.
<b>sunrise</b>	Sunrise
<b>solarnoon</b>	Time when the sun reaches its highest point.
<b>sunset</b>	Sunset
<b>update</b>	Time of the last update.

The '\*' must be replaced by the Inverter number. E.g. 'Invertername\_0'

In the following variables you can also see totals for all inverters added. Instead of '\*' you should type a 't'.

<b>Pac_t</b>	<b>todayyieldkwh_t</b>	<b>dailykwhkwp_t</b>
<b>todayyieldmoney_t</b>	<b>todaypeakpower_t</b>	
<b>totalyieldkwh_t</b>	<b>totalyieldmoney_t</b>	
<b>totalco2saved_t</b>	<b>totalkwhkwp_t</b>	

An example of an HTML file:

```
1 <HTML>
2 <HEAD>
3 <TITLE> sunprofit</TITLE>
4
5 <script src="sunprofit.js">
6 </script>
7
8 </HEAD>
9 <body>
10 <SCRIPT LANGUAGE="JavaScript" TYPE="TEXT/JAVASCRIPT">
11 document.write("<b>");
12 invertername_0();
13 document.write(": <b>");
14 totalyieldkwh_0();
15 document.write(" kWh.");
16 </SCRIPT>
17 </body>
18 </HTML>
```

## Chapter 9: Explanation sunprofit.php

From version 1.2.0.13 you can use the variables in 'sunprofit.php'

The most important real-time values of the inverters are every minute saved in this file, so a web page based on php can use them. The values can called as a variable within a web page. This requires some experience with php.

The following variables are included.

<b>\$invertername_*</b>	Name of the inverter.
<b>\$vac_*</b>	Mains voltage.
<b>\$iac_*</b>	Mains current.
<b>\$fac_*</b>	Mains frequency.
<b>\$pac_*</b>	Power on mains side.
<b>\$vdc_*</b>	Panel voltage.
<b>\$idc_*</b>	Panel current
<b>\$pdc_*</b>	Power on panel side
<b>\$tmp_*</b>	Temperature of the inverter in degrees centigrade.
<b>\$dailyyieldkwh_*</b>	Today's yield kWh.
<b>\$dailyyieldmoney_*</b>	Today's yield in money.
<b>\$dailypeakpower_*</b>	Today's peak power.
<b>\$dailykwhkwp_*</b>	Todays kWh/kWp.
<b>\$totalyieldkwh_*</b>	Total yield in kWh.
<b>\$totalkwhkwp_*</b>	Total yield in kWh/kWp.
<b>\$totalyieldmoney_*</b>	Total yield in money.
<b>\$totalco2saved_*</b>	Total CO2 saved
<b>\$startdatesystem_*</b>	The date on which the system is installed.
<b>\$sunrise</b>	Sunrise
<b>\$solarnoon</b>	Time when the sun reaches its highest point.
<b>\$sunset</b>	Sunset
<b>\$update</b>	Time of the last update.

The '\*' must be replaced by the Inverter number. E.g. '\$Invertername\_0'

In the following variables you can also see totals for all inverters added.

Instead of '\*' you should type a 't'.

<b>\$pac_t</b>	<b>\$todaysyieldkwh_t</b>	<b>\$dailykwhkwp_t</b>
<b>\$todaysyieldmoney_t</b>	<b>\$todayspeakpower_t</b>	
<b>\$totalyieldkwh_t</b>	<b>\$totalyieldmoney_t</b>	
<b>\$totalco2saved_t</b>	<b>\$totalkwhkwp_t</b>	



An example of an php file:

```
1 <?
2
3 include 'sunprofit.php';
4 echo ' PV-System :'. $invertername_0 . '<br/>';
5 echo 'Total yield :'. $totalyieldkwh_0 . '<br/>';
6
7 ?>
```

## Chapter 10: Problems with sleep and hibernation mode

It can happen that the computer does not wake up from a sleep period.

This error could have a number of reasons.

1. The computer does not support sleep-mode. This can be checked by a command window. Start, run, cmd. Then type the following command in the window: "powercfg-a ". The computer will now show one or more sleep supports.

S1 = Standby mode, CPU and cache system remain intact

S2 = Standby mode, and CPU system cache reset.

S3= Standby mode, the memory of the computer remains intact but will be erased by a power outage

S4 = hibernate mode, the memory on the hard disk after a power failure will not be erased.

If your computer supports S3 and / or S4 then the alarm should work.