**SolarDisplayConfigurator**

# Configuration software

# Operating instructions

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# 1 Important information

## 1.1 Copyright

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## 2.2 Disclaimer

This documentation has been prepared with utmost care. For any mistakes we can not accept any liability. Corrections, improvement suggestions, criticism and suggestions are welcome. Please write to: editing@siebert-solar.com.

## 2.3 Liability

Availability and technical specifications of the product are subject to change. The data specified is indicated solely for product description. They are not intended to be guaranteed in a legal sense.

## 2.4 Note

| ⚠ | **Note!** |
|---|---|
| | This symbol indicates important information that you should consider when using the software. |

# 2 Installation

## 2.1 System requirements

With the Siebert SolarDisplayCofigurator Siebert displays are parameterized for solar systems with the help of a PC. The PC must have the following minimum system requirements:

| | |
|---|---|
| Operating system | Windows XP (SP3), Windows Vista or Windows 7 |
| Processor | 1.000 MHz or higher |
| RAM | 512 MB or higher |
| Screen resolution | VGA (800 x 600 Pixel) or higher |
| Other | .NET Framework 4 |
| | Administrator rights during installation |
| | Network access (depending on type of display) |
| | Serial Interface RS232 or corresponding converter (depending on type of display) |
| | Bluetooth (optional, depending on type of display) |
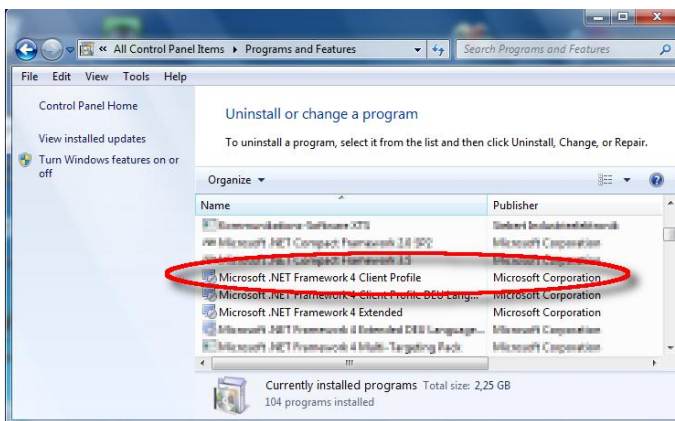


Which versions of .Net Frameworks are installed on the PC, you can check in the Windows Control Panel by using the list of installed programs.

If Microsoft .NET Framework 4 is not installed or if an earlier version is installed, first install the latest version.
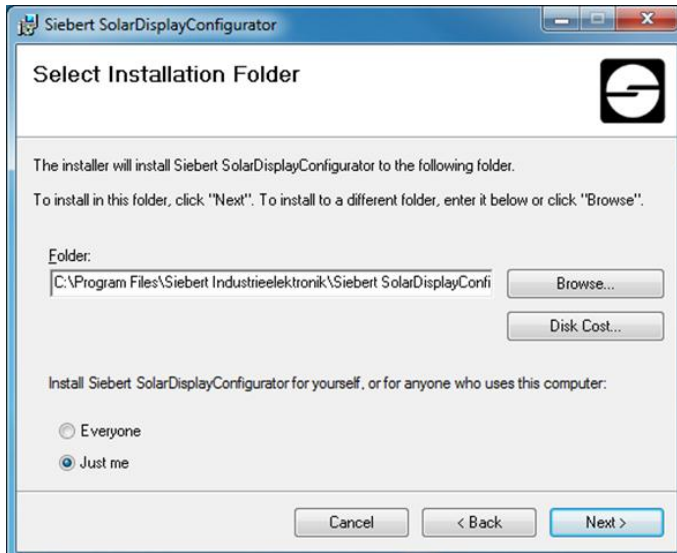
| ⚠ | **.NET Framework 4** |
|---|---|
| | If .NET Framework 4 is not installed on your PC, the installation process is stopped and a link to the Microsoft download page appears. |

## 2.2 Starting the installation

Start the Windows Installer package "SolarDisplayConfiguratorSetup.msi" from the data carrier supplied.

The installer guides you through the installation of
Siebert SolarDisplayConfigurator.
A user input from you is only required if you do not want to install the software in the therefor provided directory file. In this case please modify the target directory accordingly.

After successful installation, the software can be called up via the Start Menu. Click Start > All Programs > Siebert > SolarDisplayConfigurator.

## 2.3 Repair/Uninstalling

For reparair or uninstalling of Siebert SolarDisplayConfigurator start again the Windows Installer package "SolarDisplayConfiguratorSetup.msi".

The installer detects the currently installed software.
For repair click "Repair Siebert SolarDisplayConfigurator" and after click [ Finish ] .

To uninstall the software cklick "Remove Siebert SolarDisplayConfigurator" and after click [ Finish ].

# 3 Configuration of the display

## 3.1 Connecting the display

With displays of the type …-O1 with SO, RS232 or RS485 interface the configuration is done via the serial interface (RS232) of the display.

For configuration via RS232 you need to have ready the following items:

- A coss-type cable for the RS232 interface between the PC and the display.

- If your PC does not have such an interface, you need an USB on RS232 converter. Siebert offers such a converter, together with the matching ready-made cable, as accessories.

With displays of the type …-O5 with Ethernet interface the configuration is done via the Ethernet. Please have ready the following items:

- A cross-type Ethernet cable if you connect the PC for configuration directly with the display.

- A patch cable, if you connect the PC for configuration over a switch or router with the display.

For configuration via Bluetooth, you need a Bluetooth-enabled PC. Falls If your PC does not have a Bluetooth interface, you need an USB-to-Bluetooth converter. Siebert offers such a converter. (see Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**)

## 3.2 Control concept

The configuration of the display is done in several steps, which you are guided through by the Siebert SolarDisplayConfigurator. Here each step has an own dialog box. As the next step will not be called up before all previous entries are correct a faulty operation is almost impossible.

In the left column of the dialog box the steps required for configuration are listed. The current step is highlighted in colour.

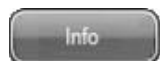The buttons which let you navigate through the various steps are in the bottom line:

| | |
|---|---|
| < Back    Next > | With the buttons Next and Back you go forward to the next step or backward to the last step. |
| Cancel | With the button Cancel you can stop the configuration at any time. |
| Help | With the button Help you open this operating instructions. |
| Info | The button Info indicates the version of the software. |

In the following the dialog boxes of all steps are described. The sequence of steps varies depending on the configuration settings. For help please read the section on the current step.

## 3.3 Configuration mode

After starting the software you need to set the configuration mode.



The complete configuration of the display is set in the "Configuration" mode. Here all required parameters are set.

With the mode "Brightness" the luminosity of the display can be modified, all other parameters remain unchanged. The brightness can be set at a later point of time.
(see Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**).

With the mode "Values" you change the values of the working safety statistics. The configuration of the display remains unchanged.
(see Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**).
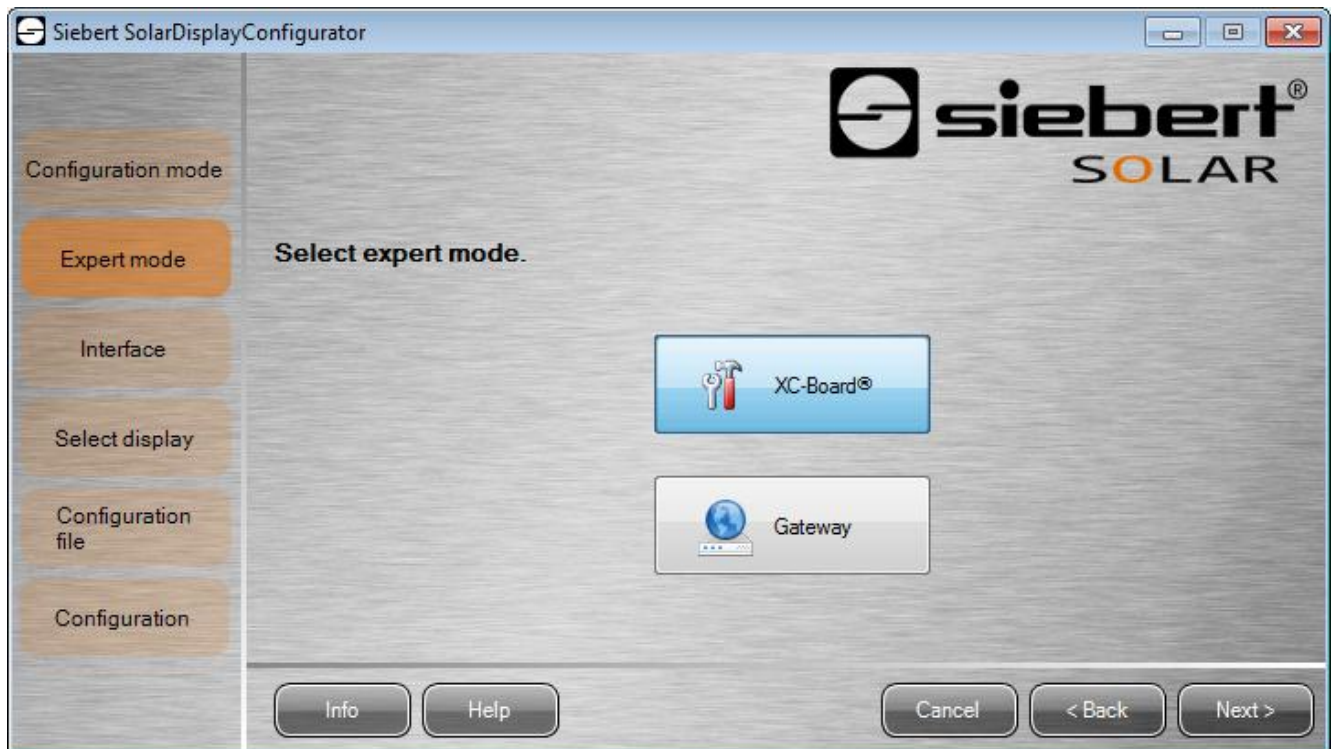
If you have decided on the expert mode then select whether you want to parameterize an individual display by clicking "XC-Board®" or a gateway solution. Then click "Next".

## 3.4 Interface

Here you set via which interface the display is connected with the inverter.



If the inverter, resp. the data logger is connected to the display via a SO interface, resp. a pulse exit please select "SO Pulse".

For displays which are connected to the converter, resp. the data logger via a serial interface select, acc. to specification of the interface, "RS232" or "RS485".

If your display is connected to the PC via a network choose "Ethernet".

## 3.5 Selection of display or gateway

In the next step all displays connected to the PC via the configuration interface (Ethernet or serial) are automatically recognized.

To select the display double-cklick the desired line in the display list. The selected display is marked by a green arrow.
If only one display is recognized this display is automatically selected.

<u>Selection of the display with serial connection</u>
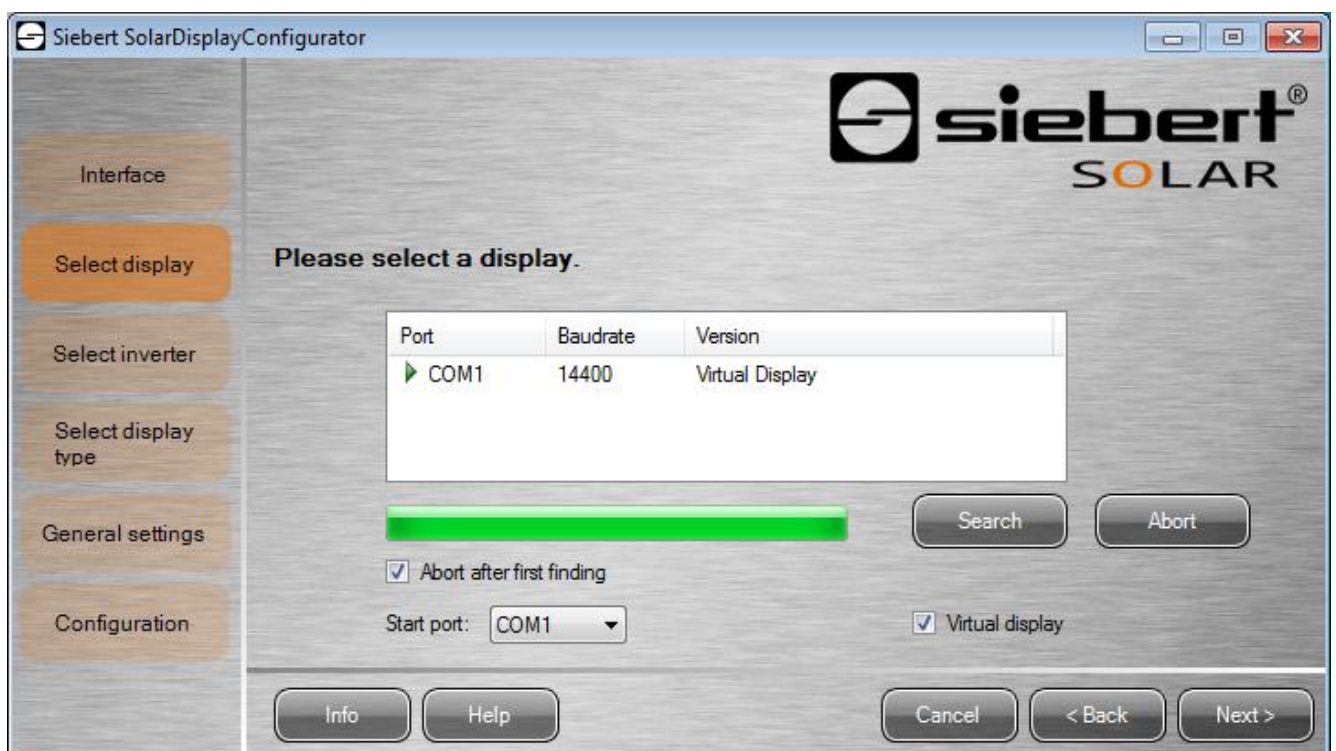


Clicking the "Search" button the recognition of the display can be restarted at any point of time. Clicking the "Cancel" button an already started recognition is stopped.

The list box "Start-Port" shows all serial interfaces available on your PC. Among those you will also find virtual interfaces which are created p. e. by USB-serial adapters or Bluetooth interface. The display recognition starts with the interface selected here. If the option "Abort after first find" is activated, the display recognition is stopped, when the first display is recognized. Displays connected to serial interfaces, on which a recognition was not performed yet, do not appear on the display list. Deactivate this option if you have connected various displays and wish to enter all displays.

By activating the option "Virtual display" a fictive displays is added to the display list. If you perform the configuration of this fictional display the parameterization is saved in a file.

Cklicking the "Next" button, the parameters of the selected display are read out.

Selection of the display or the gateway with Ethernet connection



Clicking the "Search" button, the recognition of the display can be started new at any time.

In the field "IP address" you can enter the IP address of the display manually. Then cklick the "Add" button, so that the display is added to the display list.

By activating the option "Virtual display" a fictive display is added to the display list. If you perform the configuration of this fictional display the parameterization is saved in a file.

By cklicking the "Next" button, the parameters of the selected display are read out.

| ⚠ | **IP address** |
|---|---|
| | Make sure that your PC and the display are in the same network segment. Displays outside the network segment of your PC are recognized, but a connection is not possible. If necessary adjust the IP address of your PC to the IP address of the display. |

## 3.6 Network installation

If the display is connected to the PC via a network, the network parameters have to be set under which the display has to be contacted in the network.



Choosing the option "DHCP" (Dynamic Host Configuration Protocol) the display is integrated automatically to the existing network. A DHCP server, transmitting IP address, subnet mask and gateway of the display, has to be available in the network.

Alternatively you can set the network parameters of the display manually.

In the field "IP address" you enter the desired network address of the display. Make sure that the address is not used by another network participant already. If in doubt, please contact your network administrator.

In the field "Subnet mask" you enter the Subnet mask number. This number, together with the IP address, specifies to which network segment the display belongs.
Usually values 0 and 25 are used for standard Subnet masks, p. e. 255.255.255.0.

In the field "Gateway" you enter the IP address of the IP router, which is located in the same network segment. This entry is only necessary if there is such a gateway and the display is to communicate outside the limits of the network segment in which it is located.

In the field "DNS Server" (Domain Name System Server) you enter the IP address of the DNS server. This entry is only necessary if you work with name resolutions for the inverters or data loggers located in the network.

### 3.7  S0 parameter

If the display or the gateway is connected to an inverter or a data logger via the S0 interface the following data of the solar system have to be set:



Enter the peak performance of the solar system in the input field "Maximum power" and select the corresp. unit value in the drop down list. Based on the maximum power the maximum possible pulse rate is calculated.

In the input fields for the "pulse rate" enter the same pulse rate value as set in your solar system.In the first input field the number of pulses is set. In the second field enter the number of kilowatt hours (kWh) to which the number of pulses refer to.

| ⚠ | **High resolution by maximum possible pulse rate** |
|---|---|
| | To obtain the highest possible resolution of the displayed performance the value for the pulse rate should be close to the value of the maximum possible pulse rates. |
| | Whether and in which way you may adjust the pulse rate of your solar system please see in the manual of the device to which S0 interface the display is connected to. |

In the input field "Generated energy" you can enter the enery of the solar system before installation of the display. Select the appropriate value unit in the drop down list. This energy is included in the calculation of the total performance or of total $CO_2$ reduction.

The already generated energy you can take p. e. from your data logger or from the electric meter at the feed point.

## 3.8 Select inverter

If the display or the gateway is connected to an inverter, resp. to a data logger via the serial interface or Ethernet, the type of inverter, resp. of the data logger and the used data protocol must be set.



Choose the inverter, resp. data logger which is connected with the display in the drop down list "Inverter/Data logger".

In the drop down list "Solar protocol" you select the protocol of the inverter, resp. data logger. This setting is only necessary if your inverter or data logger has multiple output protocols. Please refer to the manual of your inverter or data logger.

In the drop down list "Baud rate" you selct the transmission speed used by the inverter or data logger. This setting is only necessary if your inverter or data logger is connected to the display via the serial interface. Please refer to the manual of your inverter or data logger.

In the input field "Maximum power" you enter the peak performance of your solar system and select the corresponding unit value in the drop down list.

| ⚠ | **Inverter is not in the list?** |
|---|---|
| | If you inverter, resp. data logger is not in the list select "Unknown". |
| | Check from the manual of the inverter, resp. data logger if one of the protocols from the list "Solar Protocol" is supported. |

### 3.9  Set the inverter

Data loggers with network interface have to be configured via their network parameters in the display so that it can make the connections for data transmission.



In the field "IP address"you enter due address of the data logger in the network.
If the data logger supports multiple network protocols select the desired protocol in the drop down list "Network protocol". In the field "Port" you can change the network port which is to be used for the chosen network protocol. With the selection of the network protocol the port which is to be used standardly by the data logger is predifined. Then click the "Add" button to apply the settings to the data logger list.

In the field "Query interval" you can enter the time interval in seconds which is used to query the data from the data loggers. The query interval applies for all configured data loggers.

If you configure multiple data loggers the display takes the data from each data logger and calculates the total values of the solar system.

To remove already configured data loggers from the data logger list mark the data loggers and click the "Delete" button.

By clicking the "Standard" button in the fields "Query interval","IP address", "Network protocol" and "Port" the standard values are set for the selected type of data logger.

| ⚠ | **IP address and network segment** |
|---|---|
| | Make sure that the data logger and the display are in the same network segment if you do not use a gateway. |
| | Make sure that no IP addresses are assigned twice in the network. |

## 3.10 Define the display

In this step the illustration of information of the display is defined. It is defined which line shows which value and how many digits each value has and in what units the values are displayed.
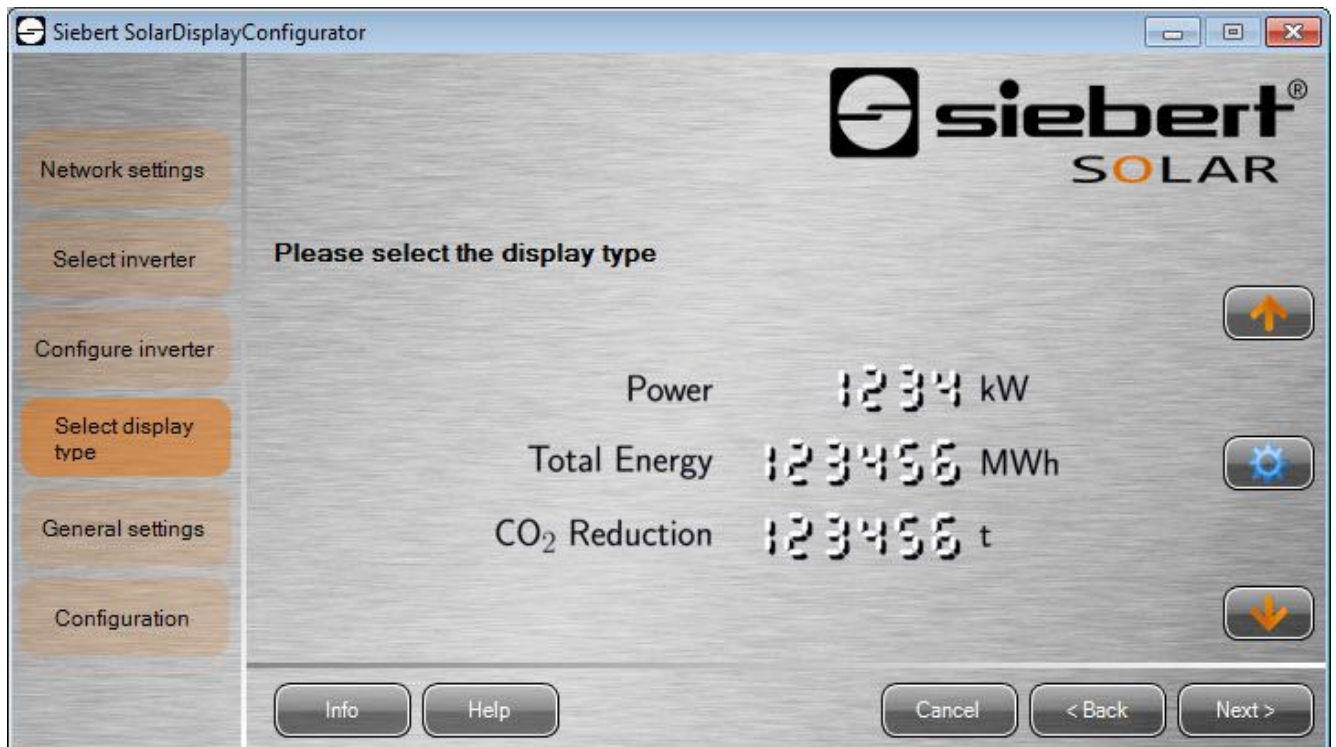


If your display is a display out of the serial product range you can configure the display type by selecting the corresponding display image. Use the arrow keys to scoll the display images until you find the right display.

Pay attention to the line positions of the values, the number of digits and the units to identify your display correctly.

If your display does not match with any of the display images click ![cog wheel button]
(button with cog wheel symbol) to configure a custom display.
The following window opens:

In the column "Measured variable" you choose what line of the display shows which measured variable.

In the column "Digits" the number of digits for the corresponding line is set.

In the column "Unit" the physical unit of the measured variable is set.

In the column "Decimal places" the number of digits after the decimal point is set. The value "-1" causes, that the number of digits after the decimal point are automatically calculated by the SolarDisplayConfigurator.

Clicken the "OK" button to safe the settings.

To cancel the custom settings, call the diaolog box Customed display again and click the "Abort" button.

## 3.11 General settings



In the field "CO2 factor" the conversion factor, which is needed to calculate the $CO_2$ reduction out of the total energy, is determined.

| ⚠️ | **Not!** |
|---|---|
| | The $CO_2$ reduction is a measure for the contribution of climate protection. The $CO_2$ factor varies regionally and depends on the mix of electricity as well as the technology to generate electricity. Your power supply company can tell you the height of your $CO_2$ factor of the electricity supplied to you. |

## 3.12 Brightness

The static brightness of the display can be set with the entry field "Brightness".
The display then shines constantly with the set value.



If the display has a light sensor, you can activate this sensor via the "Brightness control". The brightness of the display varies, depending on the ambient brightness, between the values given in the entry fields "Min. brightness" and "Max. brightness". Since the LEDs of the display shine even brighter, the brighter the ambient conditions are, the optimum readibility of the display is guaranteed.

| ⚠ | **Automatic brightnesss control** |
|---|---|
| | If the display has no light sensor this function is not supported. |

Click "Test" button to check the set brightness values of the display.
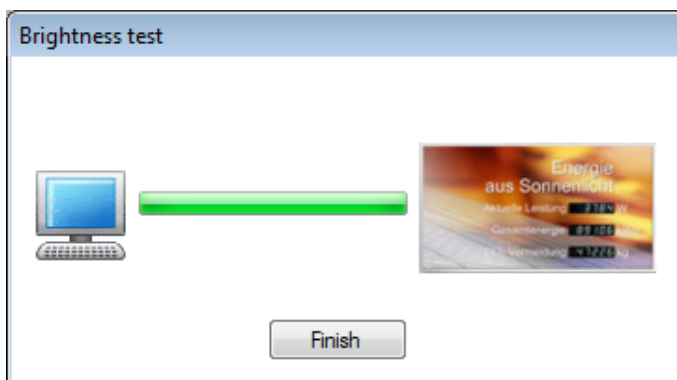


The dialog box "Brightness test" appears and the luminosity of the display is set to the defined values.

Then cklick the "Finish" button to complete the test. The original settings are transmitted back to the display.

## 3.13 Loading the configuration file
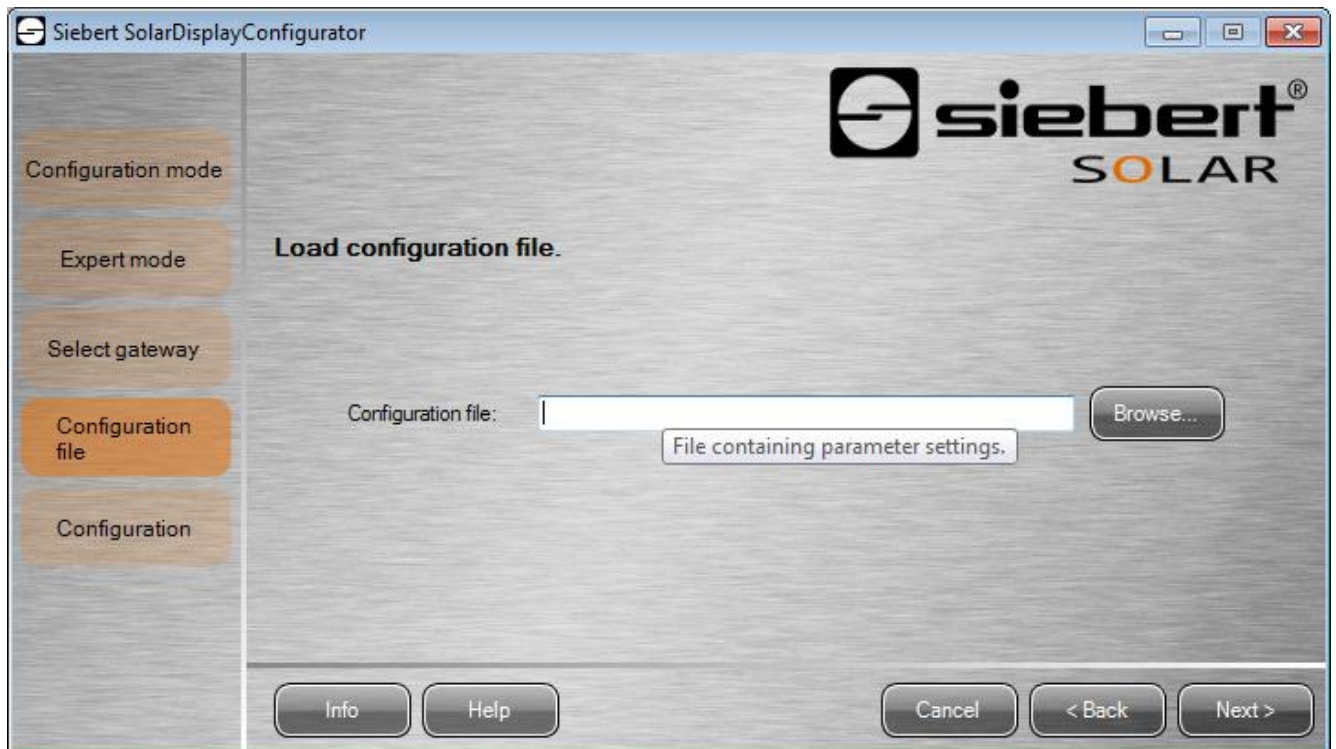


This step allows the configuration of the display with the help of a configuration file. This is necessary if the display does not meet the standard program or you want to use the configuration file that was created by a virtual display .Click the "Browse" button to select the desired configuration file and then click "Next".

## 3.14 Complete configuration

In this step you transfer the previously made settings to the display.
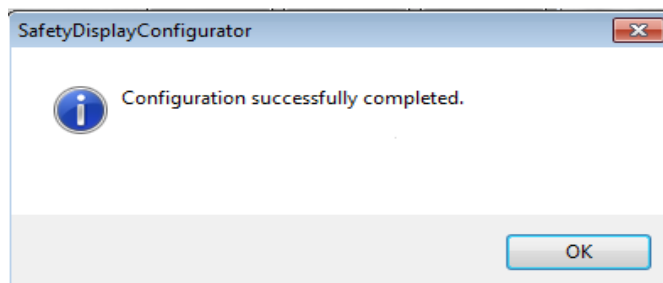




Click "Next" to start the transfer of the configuration. After successful configuration of the display the shown dialog box appears.

Then click "OK", this ends the SolarDisplayConfigurator and the display is successfully configured.

If you have configured a virtual display the settings are saved in a configuration file and the memory location is is shown in a display box.

# 4  Bluetooth connection

This exemplarily describes the Bluetooth installation and the connection with a Siebert display for a Bluetooth USB adapter.

This requires that the Bluetooth USB adapter is used with the standard Windows drivers and no additional driver software is required. If your Bluetooth USB adapter requires special drivers observe the documentation of your adapter.

## 4.1  Installation

Plug the Bluetooth USB adapter into an available USB port of your PC and wait for the automatic hardware recognition from Windows. After the message
„The device was installed and is ready to use" the Bluetooth symbol appears in the task bar.

Once the Bluetooth USB adapter is successfully installed the coupling (pairing) between the Bluetooth module of the display and the Bluetooth USB adapter has to be established.
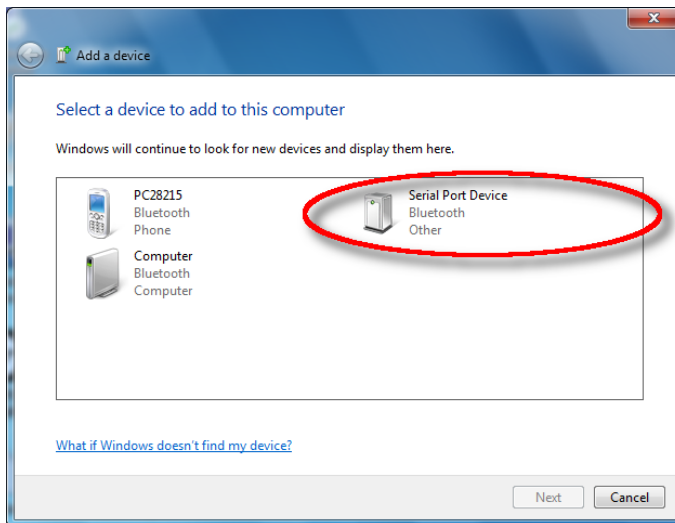
The coupling is absolutely necessary so that the SolarDisplayConfigurator is connected via a virtual COM port.

## 4.1  Coupling via Windows 7

Establish the coupling

To open the context menu click the right mouse button on the Bluetooth symbol in the task bar. Choose "Add device" in the context menu".
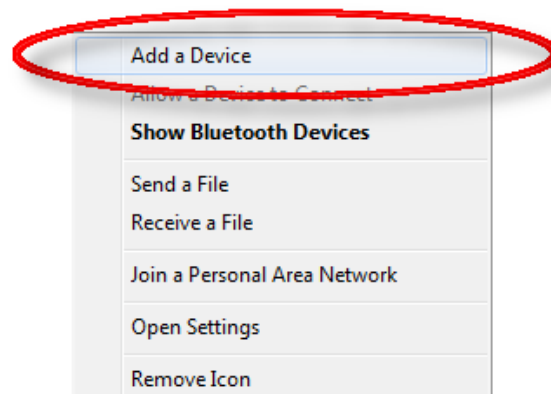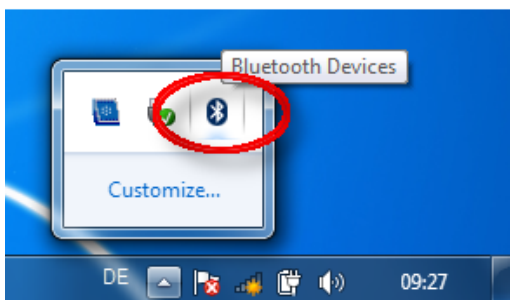
The install wizard that helps you is started. First of all, all available Bluetooth devices are searched and listed. The display reports itself as "Serial Port Device" in the device list.

Mark "Serial Port Device" in the device list and click "Next". The connection with the display is made. Next you must enter the pairing code of the display.
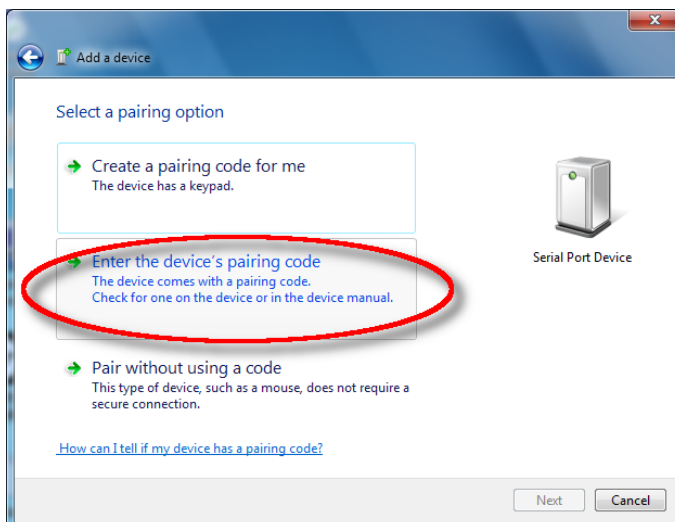


Choose the option "Enter pairing code of the display" and click "Next". Then you are asked to enter the pairing code.
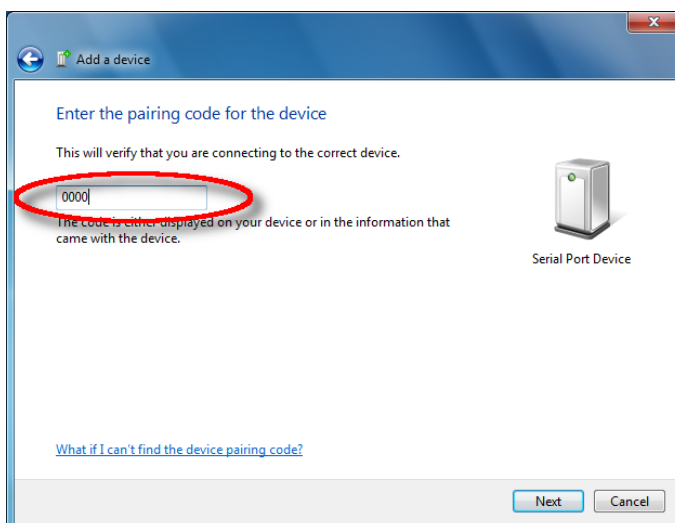


Enter pairing code "0000" and click "Next". Now the wizard is finished with a success report.

Now the coupling between the Bluetooth module of the display and the Bluetooth USB adapter of the PC is established so that the display is available for the SolarDisplayConfigurator via Bluetooth.

<u>Testing the coupling</u>

If you wish to test the coupling between PC and display open the "Windows Control panel".Then select in category "Hardware and Sound" menu point "Devices and Printers".

In "Devices" double-click "Serial Port Device", the dialog box "Properties" opens.
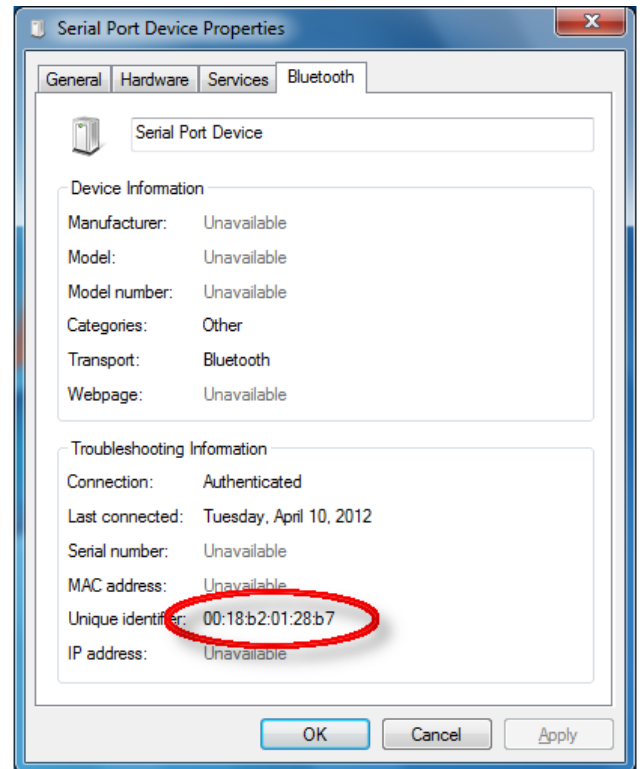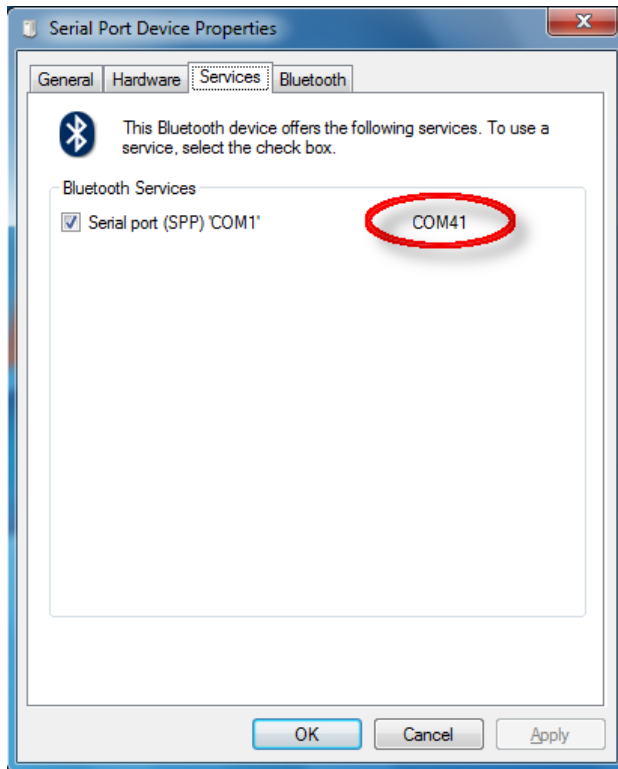


Open the "Services" tab of the Properties dialog box. The Bluetooth service "Serial Port (SPP)" must be activated for the display. The virtual COM port, which is used for communication is indicated.

Open the "Bluetooth" tab of the Properties dialog box. In line "Unique ID" you can identify the display if there are several Serial Port Devices in your Bluetooth network.

## 4.2 Coupling via Windows XP
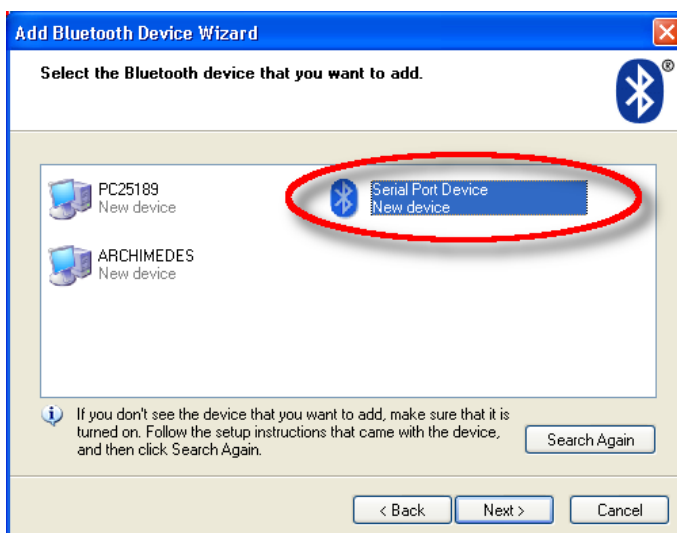
Establish the coupling
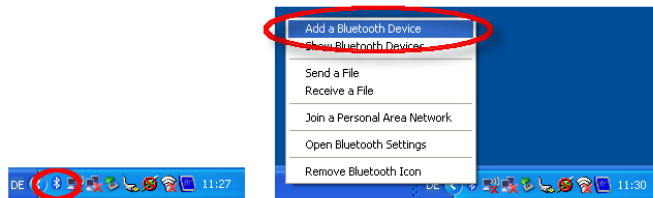
To open the context menu click the right mouse button on the Bluetooth symbol in the taskbar. Choose "Add Bluetooth device" in the context menu.

The install wizard that helps you is started. Activate the option "Device is set up and can be identified" in the welcome dialog.

Click "Next" and and wait the search for Bluetooth devices to be up.

Afer completing the seach all available Bluetooth devices are listet.The display reports itself as "Serial Port Device" in the device list.

Mark "Serial Port Device" in the device list and click "Next".
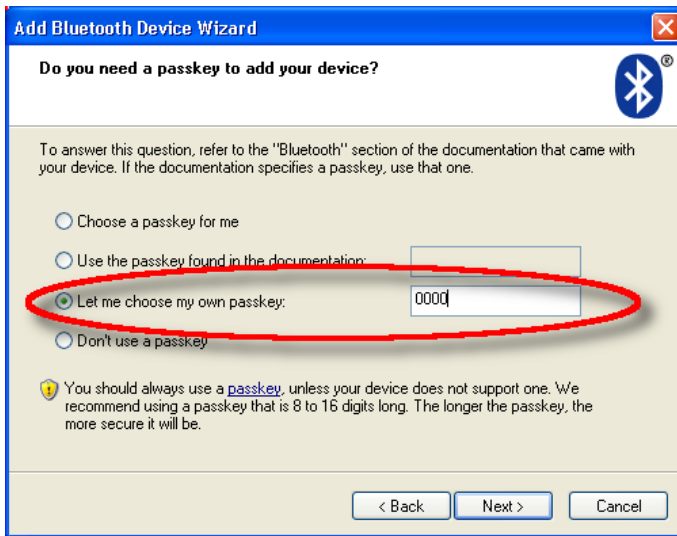
Now you must enter the master key so that the coupling between Bluetooth USB adapter and Bluetooth modul of the display can be established.

Select the option "Select own master key" and enter master key "0000". Click "Next". The master keys of the devices are exchanged and compared.
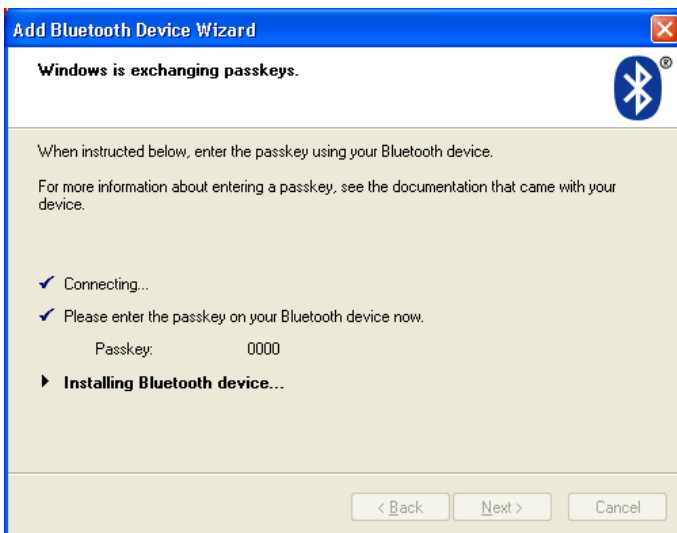


After successful comparison of the master keys the coupling between Bluetooth USB adapter and the display is established. Click "Next".
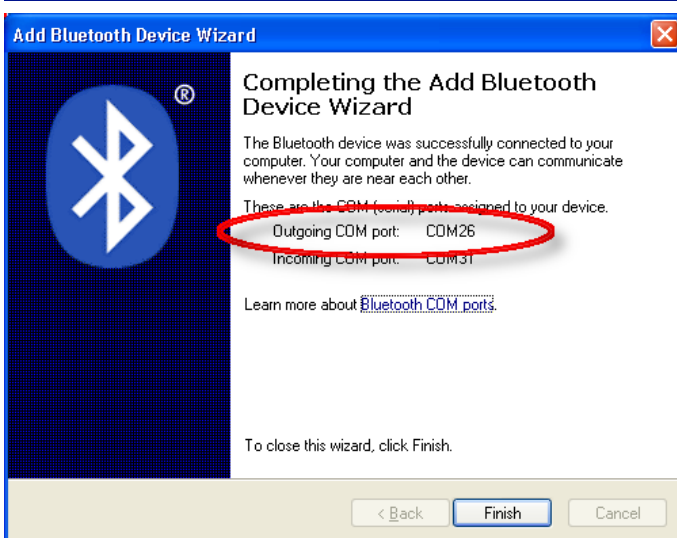


The wizard displays a dialog box with the virtual COM ports, that are used for communication between PC and the display.

The display is now reachable for the SolarDisplayConfigurator under the virtual COM port "Outgoing COM port" via Bluetooth. The virtual COM ports that are established for Bluetooth connection are system-dependent and can vary from installation to installation.
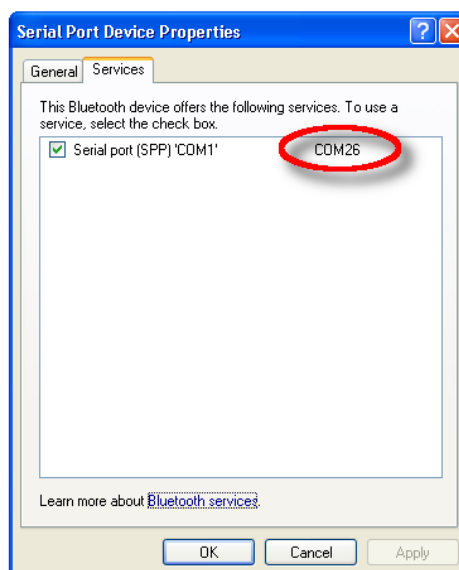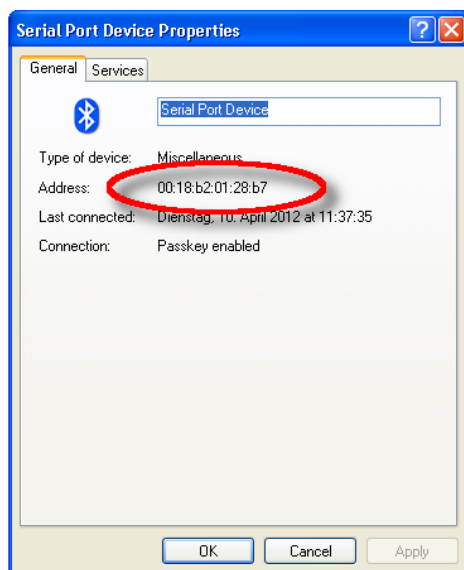
Click "Finish" to exit the wizard.

## Testing the coupling

If you wish to test the coupling between PC and display open the the "Windows Control panel".Then select "Bluetooth Devices". The dialog box Bluetooth devices is opened in tab "Devices".
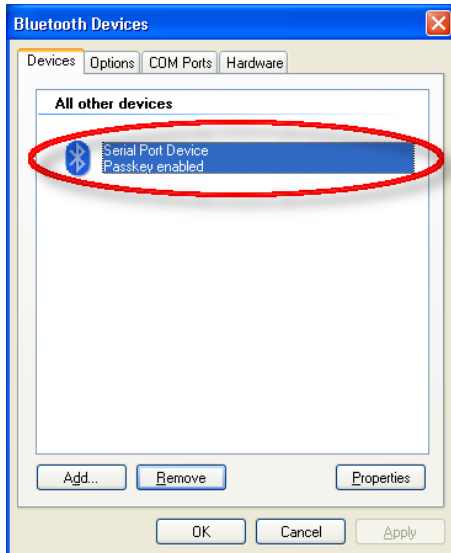


Mark "Serial Port Device" under "Devices" and click tab "Properties".

The dialog box "Properties" opens".





Open "General" tab. In line "Address" you find the unique hardware device address for identification of the display if there are several Serial Port devices in your Bluetooth network.

Open "Services". The Bluetooth service "Serial Port (SPP)" must be activated for the display. The virtual COM port, which is used for communication is indicated.

# 5  Bug fixing

| Error description | Solution |
|---|---|
| The software can not be installed.. | ▪ Make sure that you have admin rights on your PC.<br>▪ Make sure that NET Framework 4 is installed on your PC. |
| The display is not recognized over the network interface. | ▪ Die display is off. Turn on the power supply of the display.<br>▪ The network connector is plugged in incorrectly. Check all network connectors. One of the two built in LEDs in each network connectors must light permanently.<br>▪ An unsuitable network cable is used. Check if your display needs a cross patch cable or a straight patch cable.<br>▪ The required network ports are blocked by a firewall. Deactivate or configure the firewall. |
| The display is not recognized by the serial interface. | ▪ The display is off. Turn on the power supply of the display.<br>▪ Make sure that a cross null-modem cable is used. Check the allocation on the terminal strip of the display.<br>▪ Check if the Bluetooth coupling between PC and display is initialized correctly. Please note the limited range of Bluetooth. |
| Error message „Connection with the display can not be established". (Displays with network interface).. | ▪ The TCP connection is blocked by a firewall. Deactivate or configure the firewall. Ports 8000 and 8100 must be unlocked.<br>▪ Your PC is in a different network segment than the display. Modify the IP address of your PC for configuration. |
| Error message „The display does not answer." (Displays with serial interface or Bluetooth). | ▪ Check the serial connection between PC and display.<br>▪ Initialize the Bluetooth coupling between PC and display new. |

# 6 Service and Support

If you have any questions or want to take advantages of our services, please contact one of the following addresses:

**Germany**  Siebert Industrieelektronik GmbH
Siebertstrasse, D-66571 Eppelborn
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Fax +49 (0)6806 980-999
info.de@siebert-solar.com

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BP 90 334, F-57203 Sarreguemines Cédex
Phone +33 (0)3 87 98 63 68
Fax +33 (0)3 87 98 63 94
info.fr@siebert-solar.com

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Fax +31 (0)591-633125
info.nl@siebert-solar.com

**Austria**  Siebert Österreich GmbH
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Phone +43 (0)1 890 63 86-0
Fax +43 (0)1 890 63 86-99
info.at@siebert-solar.com

**Switzerland**  Siebert AG
Bützbergstrasse 2, Postfach 91, CH-4912 Aarwangen
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Phone +41 (0)62 922 20 44 (french)
Fax +41 (0)62 922 33 37
info.ch@siebert-solar.com

**Other countries**  Please find the addresses as follows:
www.siebert-solar.com

So that we can help you quickly and efficiently please have the following information ready on demand:

1. Information on the type plate, in particular type and serial number

2. Detailed description of the problem and the circumstances

3. Telephone and fax number and email address under which you can be contracted for inquiries.