



SolarDisplayConfigurator

Operating instructions

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1 Important information

Copyright

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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-group.com

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.

Installation

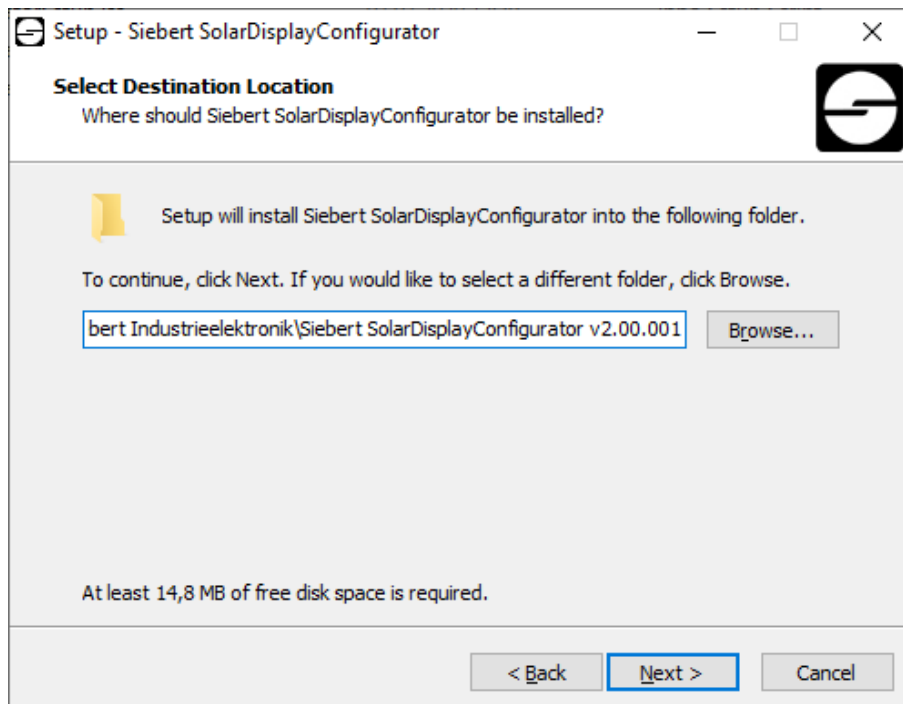
System requirements

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 10
Processor	1GHz or higher
RAM	2 GB or higher
Display resolution	VGA (800 x 600 pixels) or higher
Others	.NET Framework 4 Administrator rights during installation Network access (depending on type of display) USB interface Bluetooth (optional, depending on type of display)

Starting the installation

Start the Windows Installer package 'SolarDisplayConfiguratorSetup-x_xx_xxx.exe' from the data carrier included.



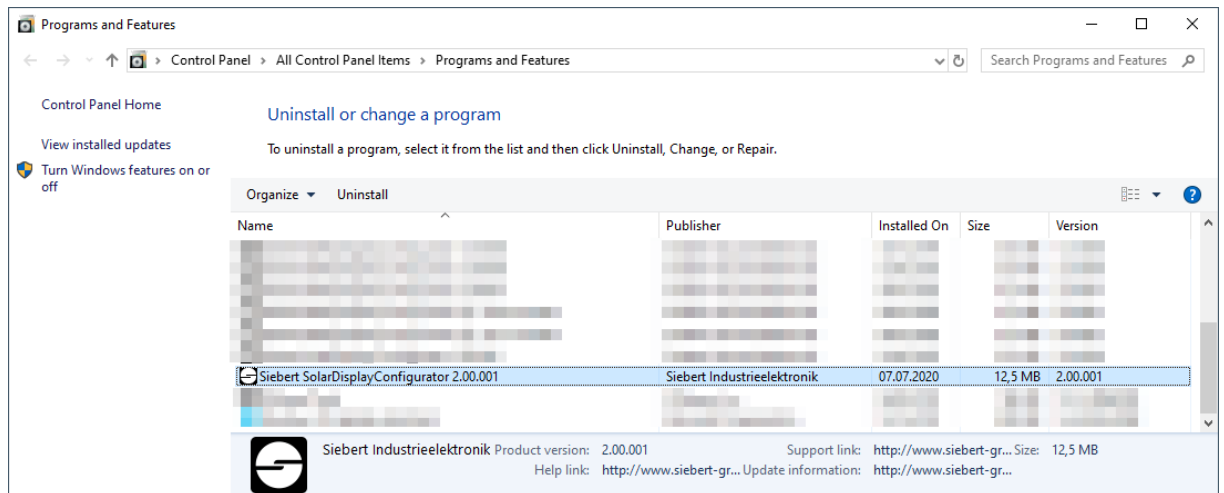
The installer guides you through the installation of Siebert 'SolarDisplayConfigurator'.

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 > Siebert > SolarDisplayConfigurator x_xx_xxx.

Deinstallation

To uninstall the Siebert 'SolarDisplayConfigurator' open 'Programmes and Features' via the Windows settings.



Choose the Siebert 'SolarDisplayConfigurator' from the list and click Uninstall.

Configuration of the display

Connecting the display

With displays of the type ...-03 with S0- or RS485 interface the configuration is done via the USB interface of the display. A matching cable is enclosed in delivery.

With displays of type ...-04 the configuration can also be carried out via Bluetooth.

For configuration via Bluetooth, you need a Bluetooth-enabled PC. If your PC does not have a Bluetooth interface, you need a USB-to-Bluetooth converter. Siebert offers such a converter. Before the configuration via Bluetooth can be carried out via Bluetooth, the Bluetooth coupling between the PC and the display must be initialized (see chapter Bluetooth connection)

With displays of the type ...-05 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, for configuration, you connect the PC over a switch or router with the display.

Control concept

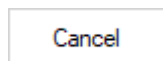
The configuration of the display is done in several steps, which you are guided through by the Siebert 'SolarDisplayConfigurator'. Here each step has an own dialog box. As the next step will not be called up before all previous entries are correct a faulty operation is almost impossible.

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

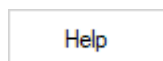
The buttons which let you navigate through the various steps are in the bottom line:



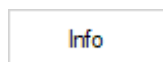
With the buttons Next and Back you go forward to the next step or backward to the last step.



With the button Cancel you can stop the configuration at any time.



With the button Help you open this operating instructions.

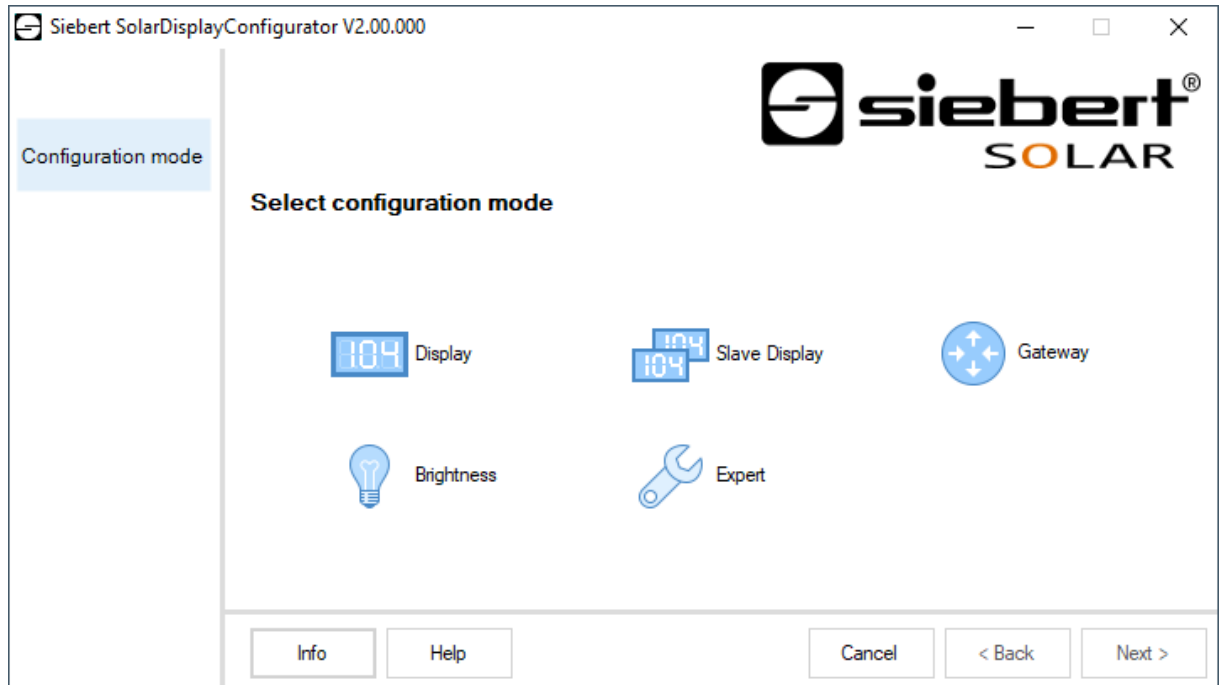


The button Info indicates the version of the software.

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.

Configuration mode

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



The complete configuration of the display resp. of the gateway is set in mode 'Configuration' or 'Gateway'. Thereby all required parameters are set.

A gateway collects data from data loggers that do not have a network interface and makes that data available in the network for the display.

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.

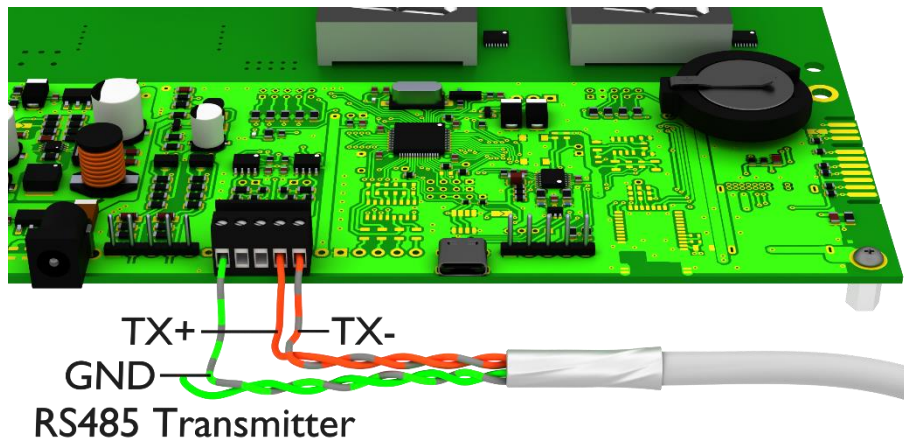
With the mode 'Expert' all individual display systems, resp. special gateway solutions are configured. A special configuration data file is not needed.

Through the 'slave display' mode, a display can be configured to not receive its data as a standard display from the data logger, but via a serial connection from the standard display itself.

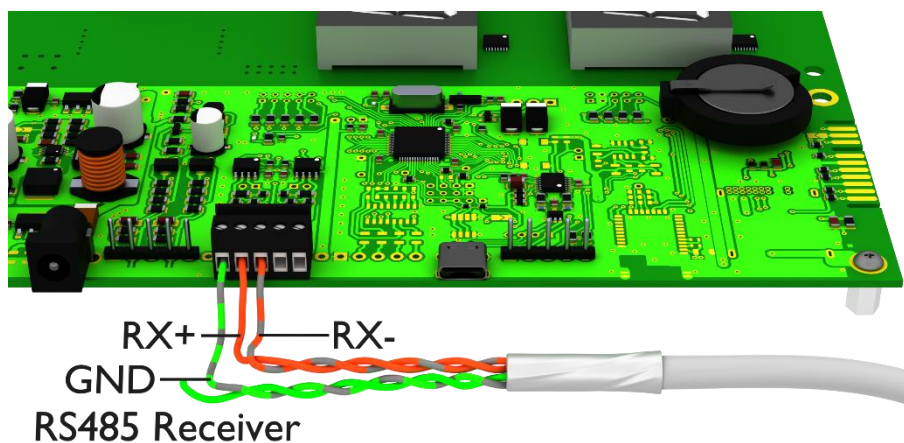
The standard display and daughter display must have the same display layout.

Daughter displays

Each standard display is automatically configured to send the displayed data via the second RS485 interface.



The daughter display can evaluate and display the data of the standard display via its first RS485 interface.



The daughter display also sends the displayed data via the RS485 interface so that several daughter displays can be cascaded.

First, the standard display must be configured via the "Display" mode. Then restart the 'SolarDisplayConfigurator' and configure the daughter display using the "Daughter Display" mode. You can configure any number of daughter displays to the standard display configured in the first step.



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'.

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 S0 interface, resp. a pulse exit, please select 'S0 Pulse'.

For displays which are connected to the converter, resp. the data logger via a serial interface select 'RS485'.

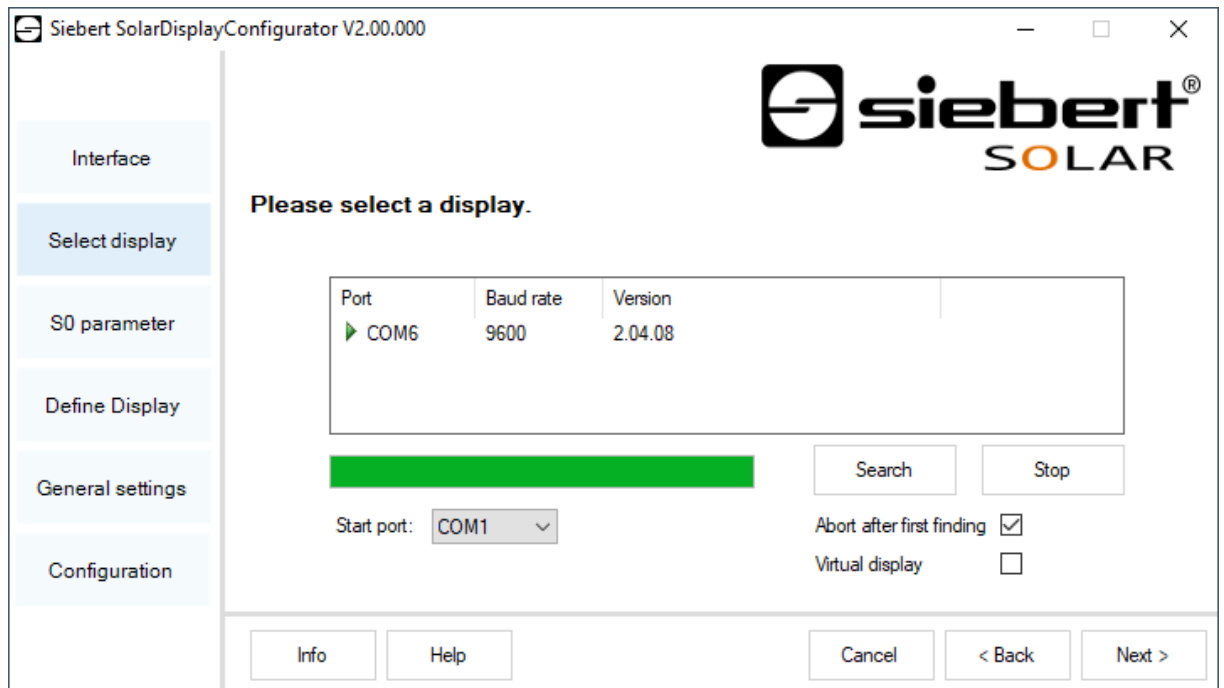
For displays which are connected to the PC via a network choose 'Ethernet'.

Selection of display or gateway

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

To select the display, double-click 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.

Selection of the display with USB or Bluetooth connection



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



Interfaces

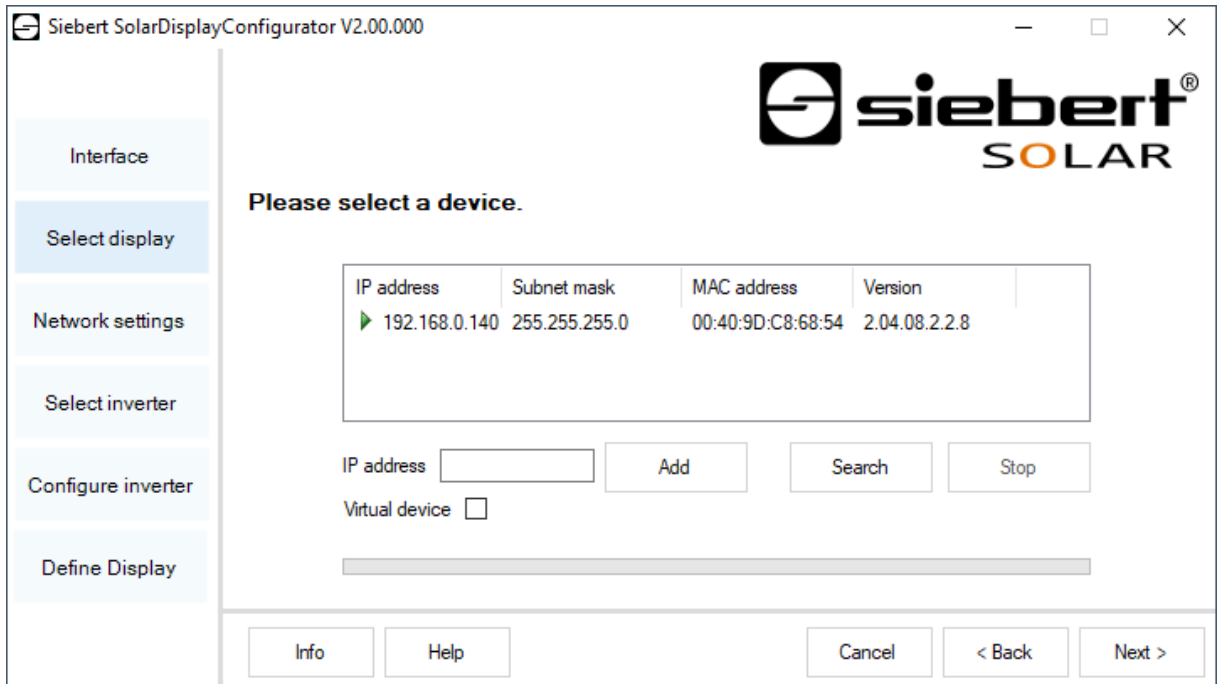
For technical reasons, both USB interfaces and Bluetooth interfaces are called COM interfaces by Windows.

The list box 'Start-Port' shows all 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. With the interface selected here the display recognition starts. If the option 'Abort after first find' is activated, the display recognition is stopped, when the first display is recognized. Displays connected to 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 display is added to the display list. If you perform the configuration of this fictional display the parameterization is saved in a file.

By clicking the button 'Next', the parameters of the selected display are read out.

Selection of the display or the gateway with Ethernet connection



By clicking the button '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 click 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 clicking the button 'Next', the parameters of the selected display are read out

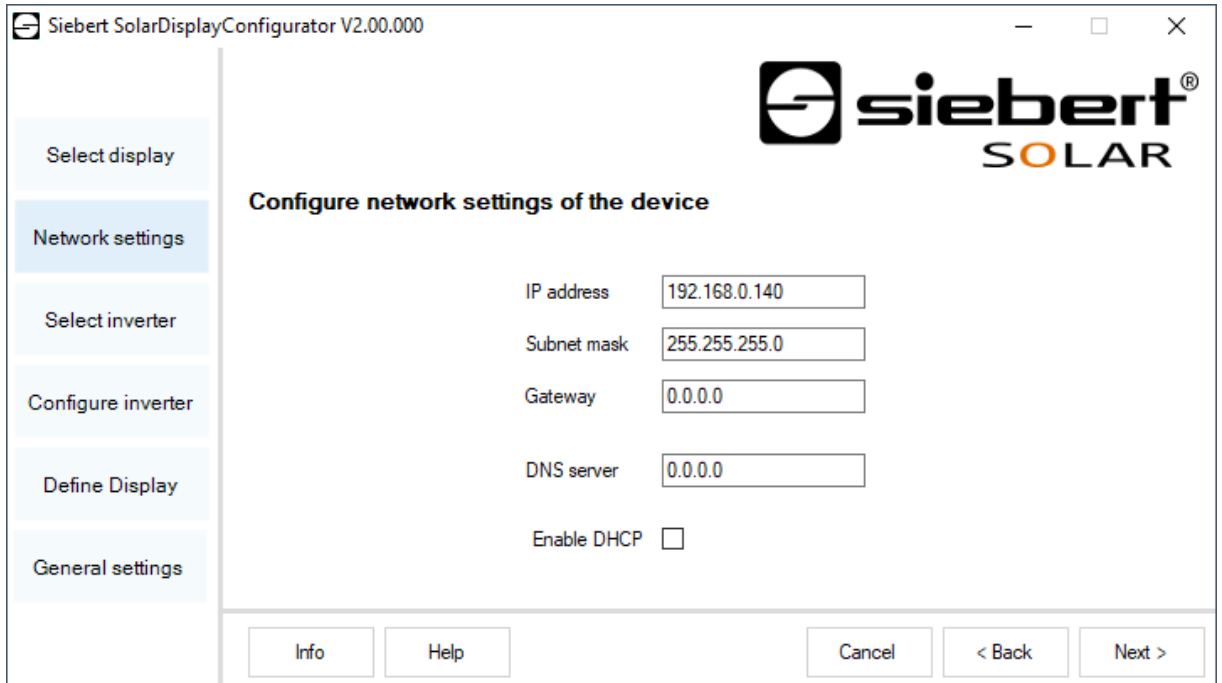


IP address

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.

Network set-up

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.



The screenshot shows the 'Siebert SolarDisplayConfigurator V2.00.000' window. On the left is a sidebar with navigation options: 'Select display', 'Network settings' (highlighted), 'Select inverter', 'Configure inverter', 'Define Display', and 'General settings'. The main area is titled 'Configure network settings of the device' and features the Siebert SOLAR logo. It contains four input fields: 'IP address' (192.168.0.140), 'Subnet mask' (255.255.255.0), 'Gateway' (0.0.0.0), and 'DNS server' (0.0.0.0). Below these is an 'Enable DHCP' checkbox, which is currently unchecked. At the bottom, there are buttons for 'Info', 'Help', 'Cancel', '< Back', and 'Next >'.

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' 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' 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' 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.

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 corresponding 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.

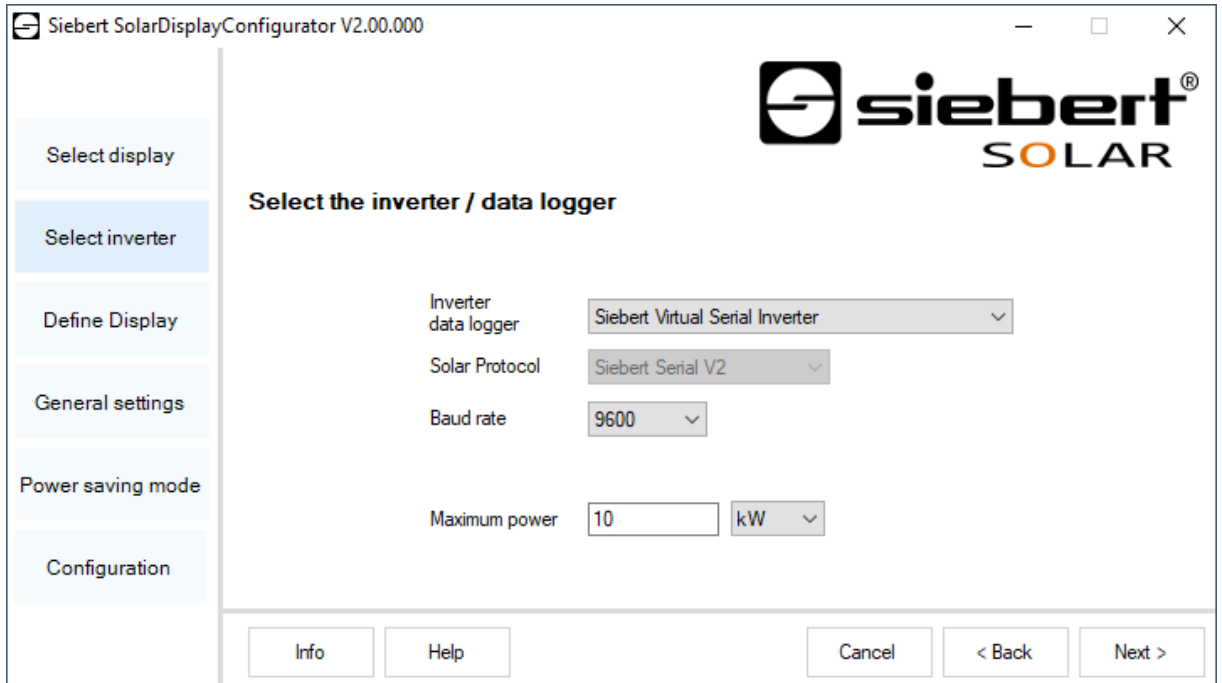
In the input field 'Generated Energy' you can enter the energy of the solar system before installation of the display. Select the appropriate value unit in the drop-down list. This energy is included in the calculation of the total performance or of total CO₂ reduction.

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

Certain electric meters do not transmit the S0 pulses equidistant, but the pulses are collected and transmitted as pulse accumulations. This can lead to variations in the displayed performance value. These variations can be suppressed by increasing the 'Update time'.

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 dropdown list 'Inverter/Data logger'.

In the dropdown 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 dropdown list 'Baud rate' you select 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' enter the peak performance of your solar system and select the corresponding unit value in the dropdown list.



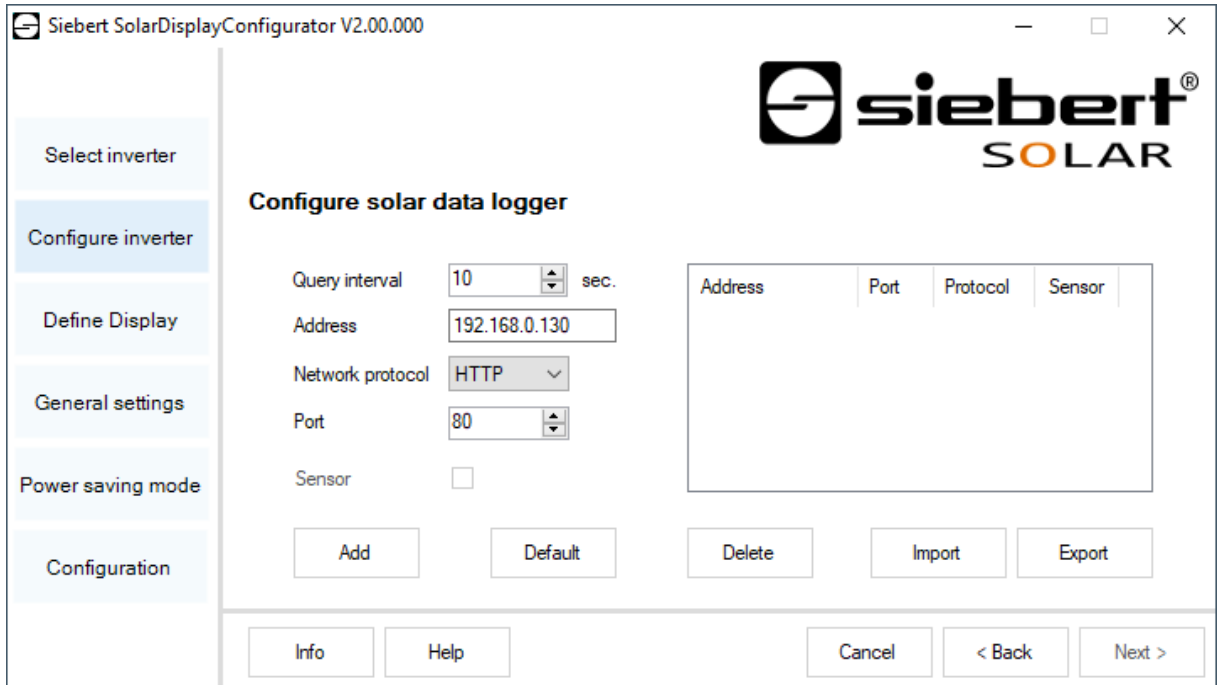
Inverter is not in the list?

If your 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.

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 'Address' you enter the IP-address of the data logger in the network.

If the data logger supports multiple network protocols select the desired protocol in the dropdown 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 predefined. Then click 'Add' 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.

Some data loggers can be equipped with separate sensors, which enable the data logger to provide further measured values. The 'Sensor' option can be selected for these data loggers so that the additional measured values for user-defined displays are available and can be displayed.

Using the button 'Export', the data logger list can be stored in a csv file.
The data logger list can be created from a csv file using the button 'Import'.

An entry in the data logger csv file has the following syntax:

```
<IP-Addr Byte1>;<IP-Addr Byte2>;<IP-Addr Byte3>;<IP-Addr Byte4>;<Port>
```

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 'Delete'.

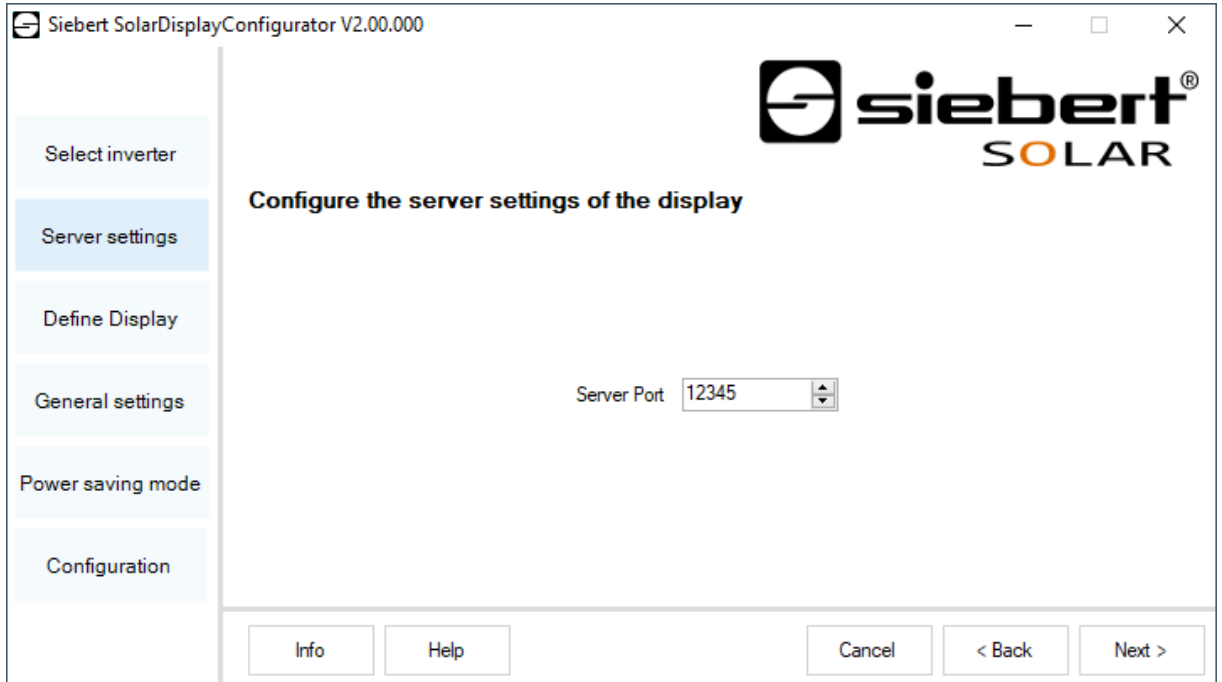
By clicking 'Standard' in the fields 'Query interval', 'IP address', 'Network protocol' and 'Port' the standard values are set for the selected type of data logger.



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.

Server settings of the display



Siebert SolarDisplayConfigurator V2.00.000

Configure the server settings of the display

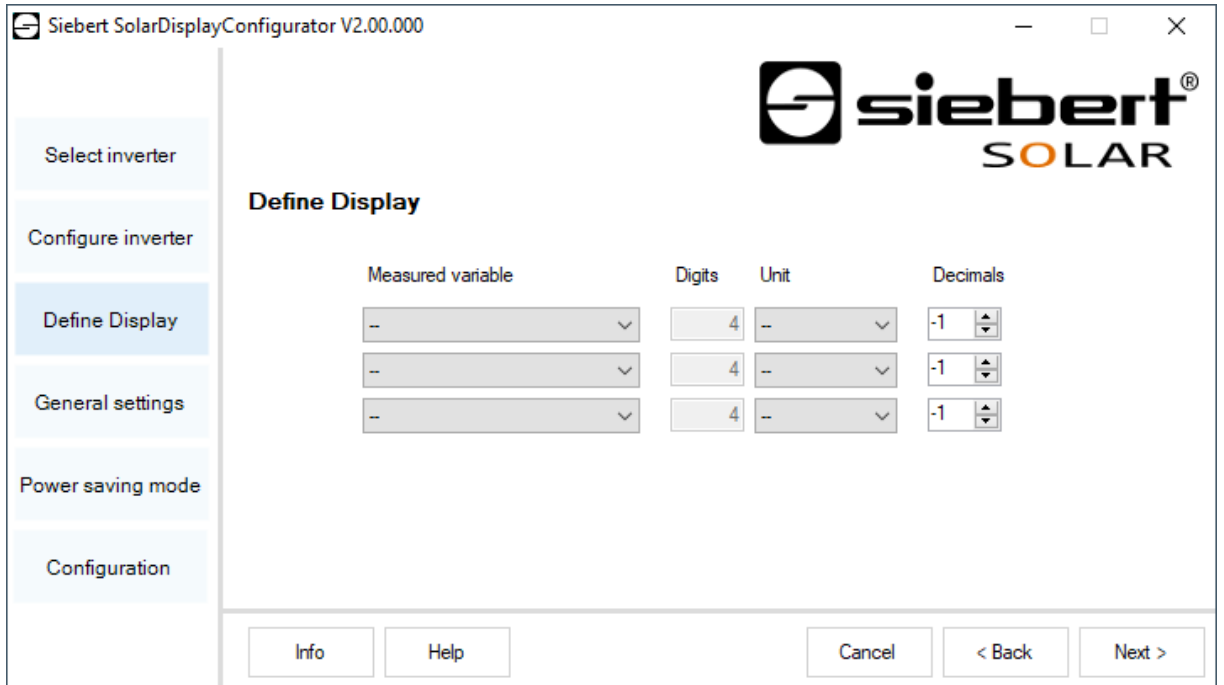
Server Port 12345

Info Help Cancel < Back Next >

For some Ethernet data loggers, the display must act as a server, and the data logger connects to the display as a client. 'Server Port' specifies the network port via which the client can connect to the display. In order for the data logger to connect to the display, the IP address of the display and the server port of the display must be entered in the configuration on the data logger.

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.



The screenshot shows the 'Define Display' window of the Siebert SolarDisplayConfigurator. The window title is 'Siebert SolarDisplayConfigurator V2.00.000'. The sidebar on the left contains the following options: 'Select inverter', 'Configure inverter', 'Define Display' (highlighted), 'General settings', 'Power saving mode', and 'Configuration'. The main area is titled 'Define Display' and contains a table with four columns: 'Measured variable', 'Digits', 'Unit', and 'Decimals'. Each row in the table has a dropdown menu for 'Measured variable', a text input field for 'Digits' (all set to '4'), a dropdown menu for 'Unit', and a spinner control for 'Decimals' (all set to '-1'). At the bottom of the window, there are buttons for 'Info', 'Help', 'Cancel', '< Back', and 'Next >'.

Measured variable	Digits	Unit	Decimals
--	4	--	-1
--	4	--	-1
--	4	--	-1

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 'Decimals' 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'.

General settings



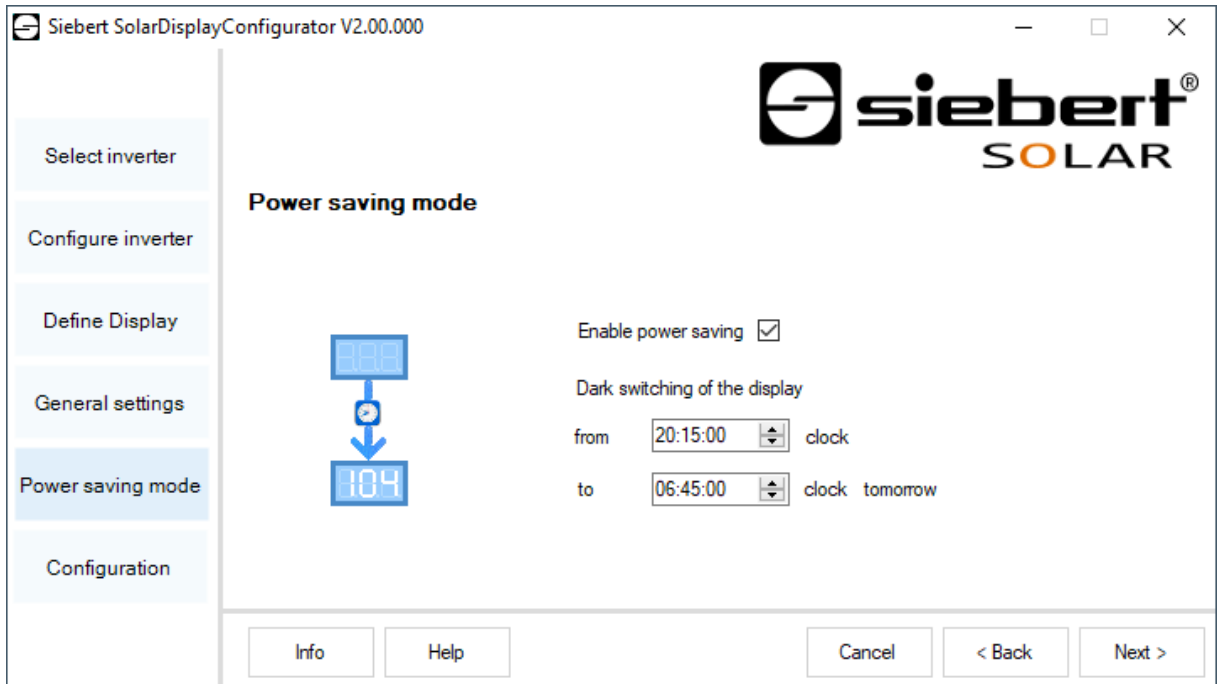
In the field 'CO2 factor', the conversion factor, which is needed to calculate the CO2 reduction out of the total energy, is determined.



Note

The CO2 reduction is a measure for the contribution of climate protection. The CO2 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 CO2 factor of the electricity supplied to you.


Power saving mode



The screenshot shows the 'Power saving mode' configuration window in the Siebert SolarDisplayConfigurator V2.00.000. The window has a sidebar on the left with navigation options: 'Select inverter', 'Configure inverter', 'Define Display', 'General settings', 'Power saving mode' (highlighted), and 'Configuration'. The main area is titled 'Power saving mode' and features the Siebert SOLAR logo in the top right. A central graphic shows a blue LED display with '104' and a downward arrow, indicating the display's state. To the right, there are settings for 'Enable power saving' (checked), 'Dark switching of the display' (from 20:15:00 clock to 06:45:00 clock tomorrow), and buttons for 'Info', 'Help', 'Cancel', '< Back', and 'Next >'.

At this point, the energy saving mode can be switched on and off. When the energy saving mode is activated, the display is darkened for the defined period of time. This means that the LED display of the display is switched off and on at a specific time.

Brightness



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

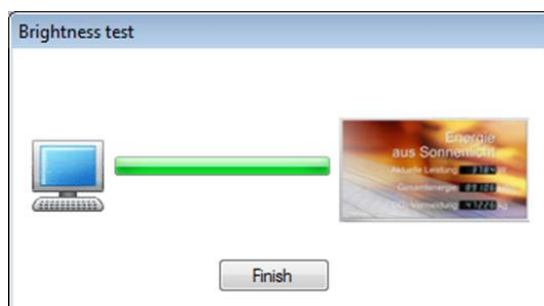
If the display has a light sensor, you can activate this sensor via the 'Brightness control'. The brightness of the display varies, depending on the ambient brightness, between the values given in the entry fields 'Min. brightness' and 'Max. brightness'. Since the LEDs of the display shine even brighter,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



Automatic brightness control

If the display has no light sensor this function is not supported.

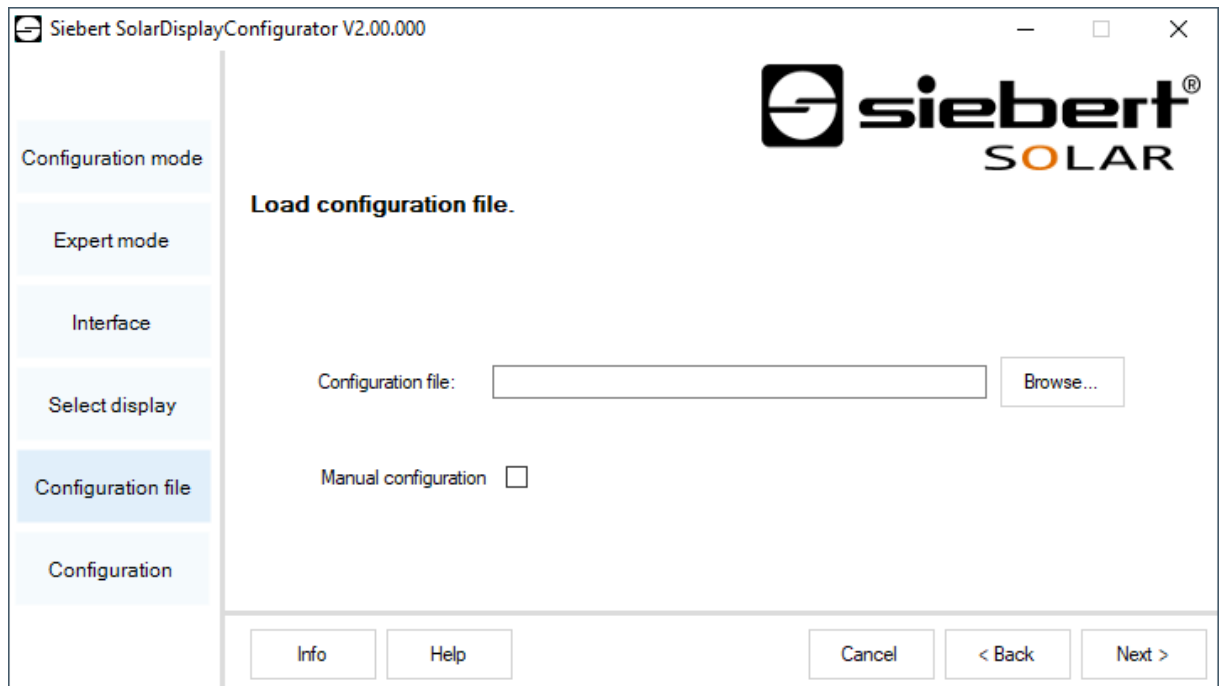
Click on 'Test' to check the set brightness values of the display.



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

Then click the 'Finish' button to complete the test. The original settings are transmitted back to the display.

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 'Browse' to select the desired configuration file and then click 'Next'.

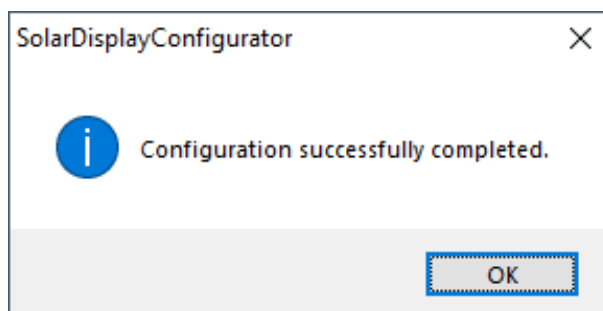
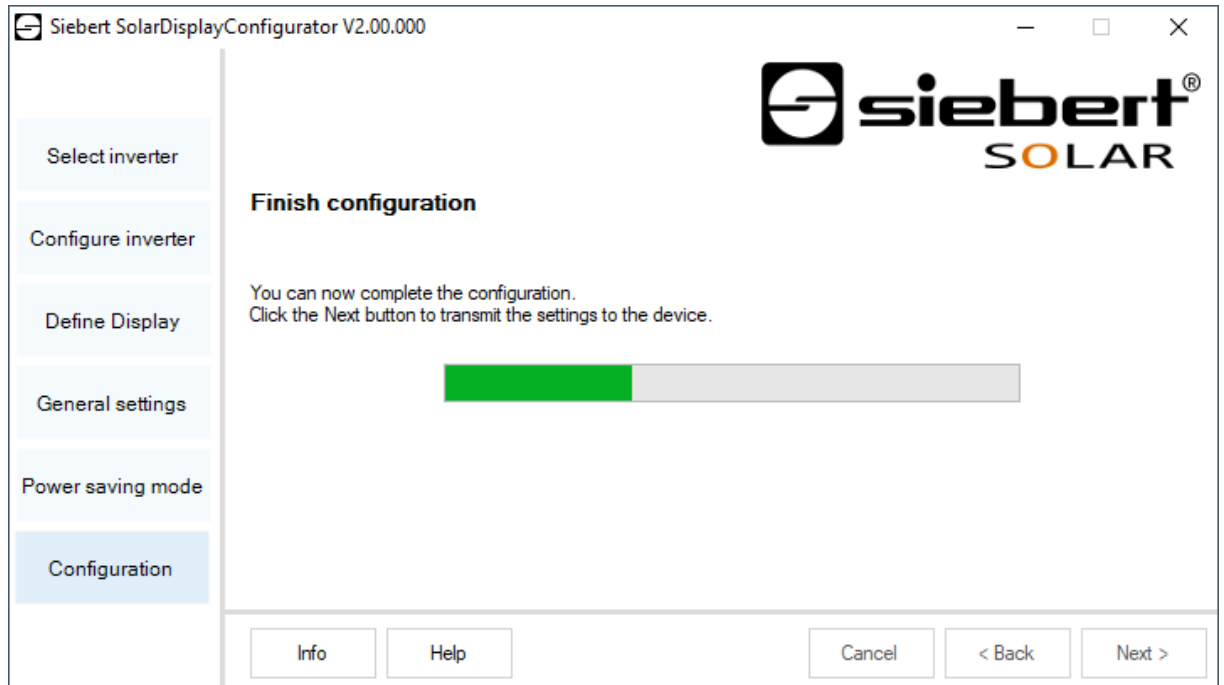
Inverter Interface Gateway



If you are in 'Gateway' mode, you must select the interface of the inverter to be connected to the Siebert Ethernet Gateway. The data of the inverter can then be queried and displayed by a Siebert solar display with an Ethernet interface from the Siebert Ethernet Gateway.

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 shown in a display box.



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.

Bluetooth-connection

For displays of type ...-04 the configuration can additionally be done via Bluetooth.

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.

Installation

Plug the Bluetooth USB adapter into an available USB port of your PCs 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 taskbar.

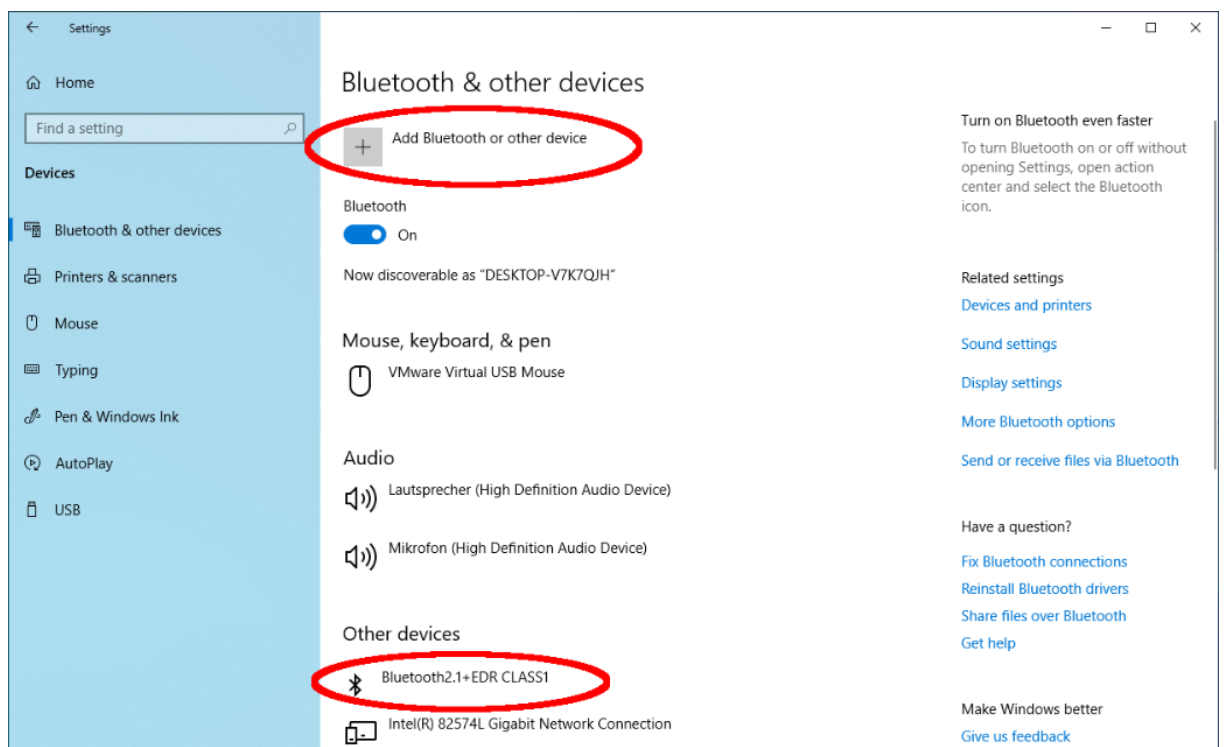
Once the Bluetooth USB adapter is successfully installed the coupling (pairing) between the Bluetooth module of the display and the Bluetooth USB adapter has to be established.

The coupling is absolutely necessary so that the 'SolarDisplayConfigurator' is connected via a virtual COM port.

Coupling via Windows 10

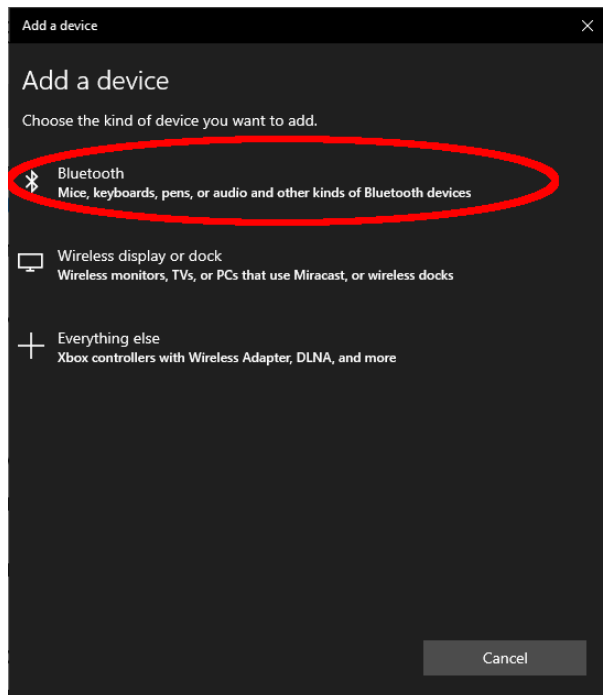
Establish the coupling

Open the Windows settings (p.e.: Windows-button + i) and after select the point 'devices'.

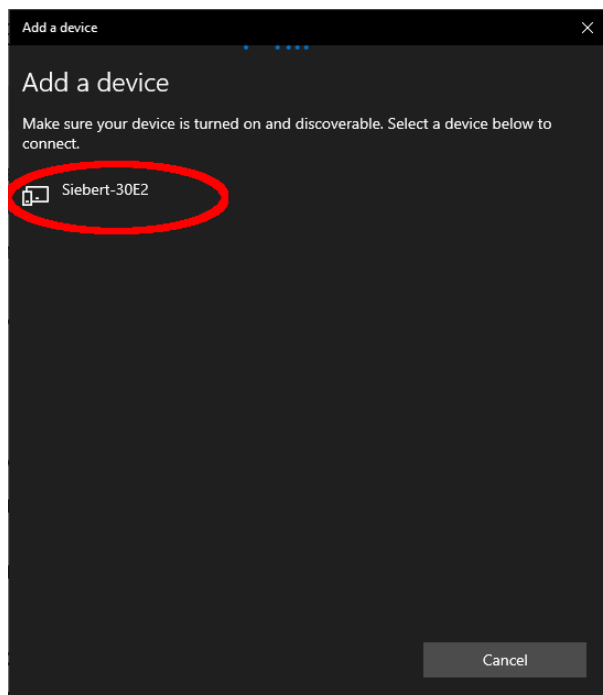


Find your Bluetooth adapter under 'Other devices'.

To connect the Bluetooth adapter to the display, click on 'Add Bluetooth or other device'.



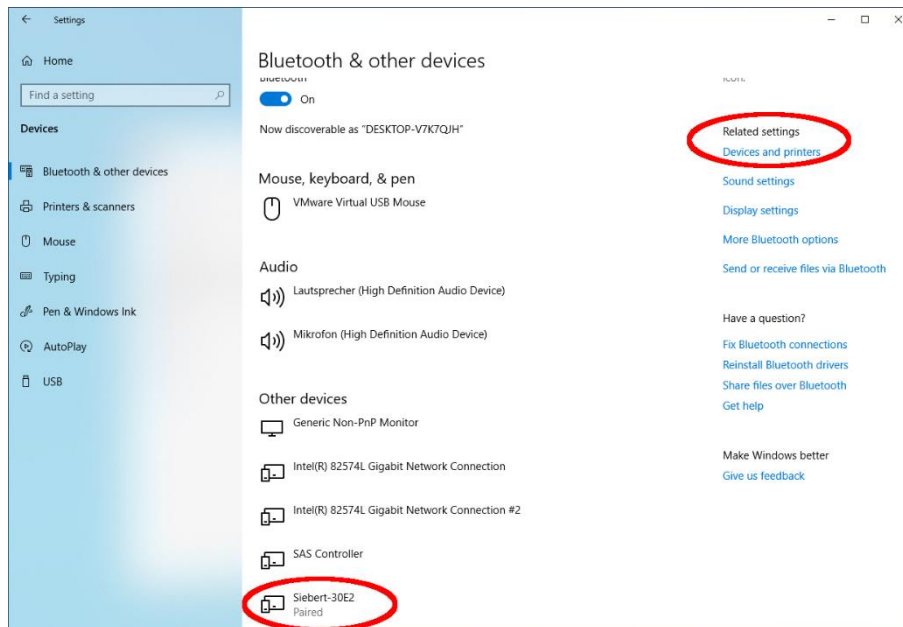
Under 'Add Device', select 'Bluetooth'. Windows will search and display Bluetooth devices.



Select the Siebert-xxxx device. Several displays are distinguished by the last four digits of the Bluetooth ID (xxxx).

Testing the coupling

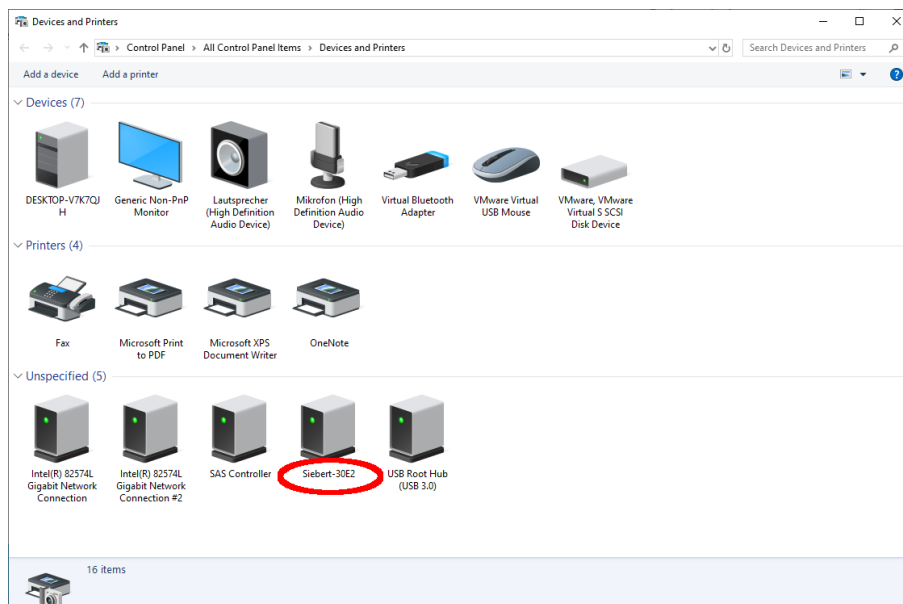
Open the Windows settings (p.e.: Windows-button + i) and after select the point 'devices'.



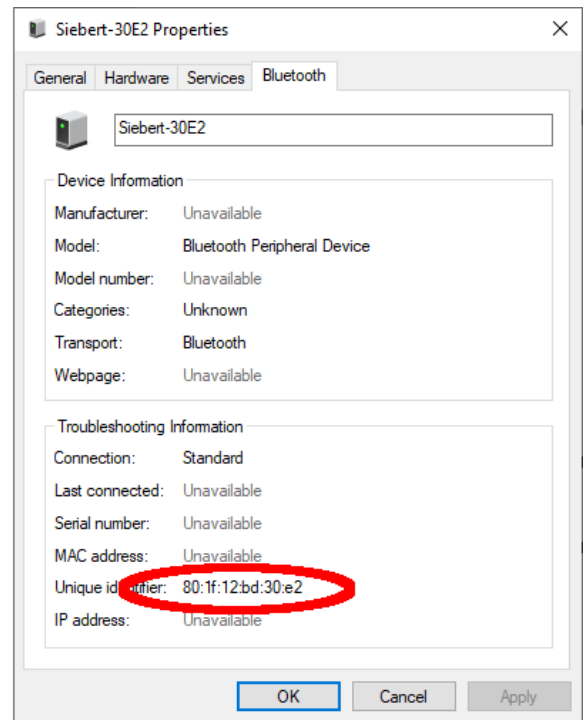
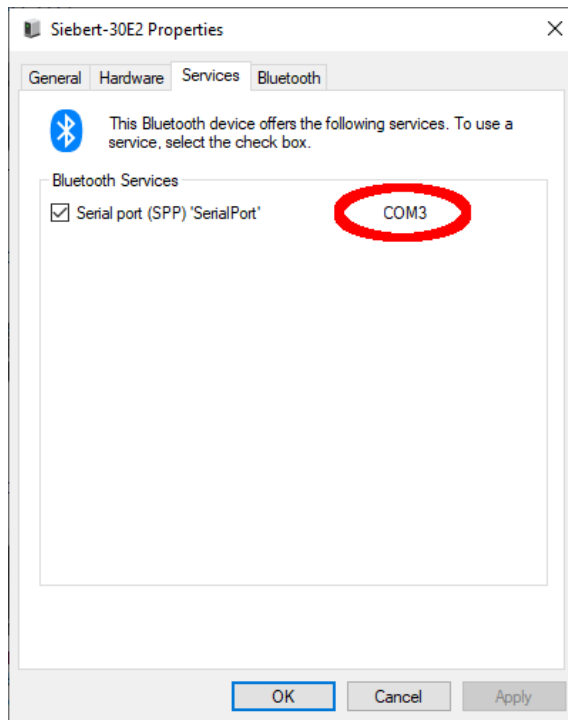
The connected display appears under 'Other devices'.

For communication, the display uses the Bluetooth profile 'Serial Port Device'.
For this purpose a virtual COM port is created.

To get detailed information about Bluetooth communication, select 'Devices and Printers' under 'Related Settings'.



Select the display by double-clicking on it.



Open the tab 'Services' of the properties dialogue box. The Bluetooth feature 'serial connection (SPP)' has to be activated for the display. The virtual COM port that is used for communication is specified thereafter.

Open the 'Bluetooth tab' of the Properties dialog box. In the line 'Unique ID' you can identify the display.

Bug fixing

Error description	Solution
The software can not be installed.	<ul style="list-style-type: none"> ▪ Make sure that you have admin rights on your PC. ▪ Make sure that .NET Framework 4 is installed on your PC.
The display is not recognized over the network interface.	<ul style="list-style-type: none"> ▪ The display is turned off. Turn on the power supply of your display. ▪ The network connector is plugged in incorrectly. Check all network connectors. One of the two build in LEDs in each network connector must light permanently. ▪ An unsuitable network cable is used. Check if your display needs a cross patch cable or a straight patch cable. ▪ The required network ports are blocked by a firewall. Deactivate or configure the firewall.
The display is not recognized via USB (with displays of type ...-03) or Bluetooth (with displays of type ...-04)	<ul style="list-style-type: none"> ▪ The display is off. Turn on the power supply of the display. ▪ Check if the Bluetooth coupling between the PC and the 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).	<ul style="list-style-type: none"> ▪ The TCP-connection is blocked by a firewall. Deactivate or configure the firewall. Ports 8000 and 8100 must be unlocked. ▪ Your PC is in a different network segment than the display. Modify the IP-adress of your PC for configuration.
Error message 'The display does not answer' (displays with serial interface and Bluetooth).	<ul style="list-style-type: none"> ▪ Check the serial connection between PC and display. ▪ Install the Bluetooth coupling between PC and display.

2 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 Phone +49 (0)6806 980-0 Fax +49 (0)6806 980-999 info.de@siebert-solar.com
France	Siebert France Sarl 4 rue de l'Abbé Louis Verdet, F-57200 Sarreguemines 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
Italy	Siebert Italia Srl Via Galileo Galilei 2A, I-39100 Bolzano (BZ) Phone +39 (0)471 053753 Fax +39 (0)471 053754 info.it@siebert-group.com
The Netherlands	Siebert Nederland B.V. Jadedreef 26, NL-7828 BH Emmen Phone +31 (0)591-633444 Fax +31 (0)591-633125 info.nl@siebert-solar.com
Austria	Siebert Österreich GmbH Mooslackengasse 17, A-1190 Wien 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 Phone +41 (0)62 922 20 43 (German) 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 queries