

Series XC460/XC470

Digital display for the photovoltaic

Operating instructions

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1 Safety instructions

Important information

Read these operating instructions before starting the unit. They provide you with important information on the use, safety and maintenance of the units. This helps you to protect yourself and prevent damage to the unit.

During the lifetime of the unit keep the operating instructions in an accessible place at all times. Hand over the operating instructions to any future owner of the unit. It is to be considered as part of the product.

The manufacturer is not liable if the information in these operating instructions are not complied with.

Warning notice

Information intended to help you to avoid death, bodily harm or considerable damage to property is highlighted by the warning triangle shown here; it is imperative that this information be properly heeded.



DANGER!

Disregarding this warning notice leads to death or serious bodily harm.



DANGER!

Disregarding the warning notice can lead to death or serious bodily harm.



DANGER!

Disregarding the warning notice can lead to minor physical injuries or property damage.

Intended use

The unit is intended for use in photovoltaic systems. It may only be operated within the limit values stipulated by the technical data.

During configuring, installing, testing, commissioning and maintenance of the unit, the applicable standards and safety regulations have to be observed.

Trouble-free, safety operation of the unit requires proper transport, storage, installation, mounting and careful operation and maintenance of the unit.

Special safety precautions for installation



CAUTION!

Carefully seal the electrical equipment for safety reasons after commissioning.

Devices for indoor use have 16,5 mm wide connectors (upper figure):

Spread the connectors a bit to ensure a firm connection between the profiles. Check that the connectors are pressed so tightly that extraction of the connectors without tools (lever) is not possible. The key to seal the unit is included in the mounting kit.

Devices for outdoor use have 25 mm wide connectors (lower figure):

The connectors must be secured with the enclosed screws.

Fig.1

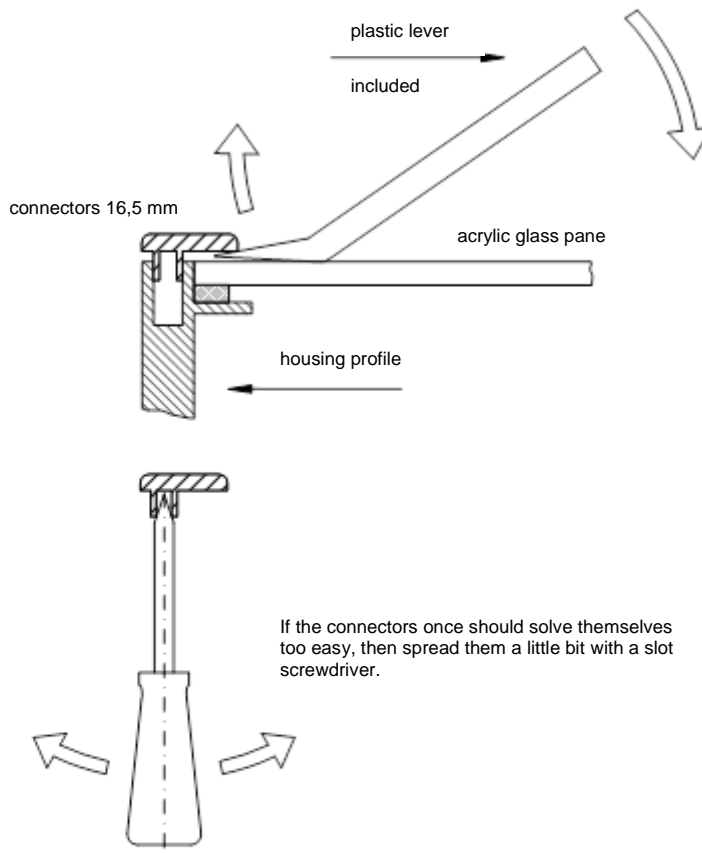
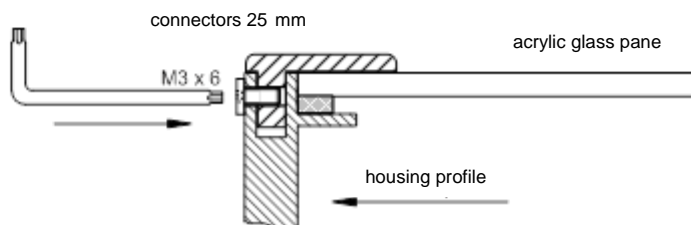


Fig. 2



Qualified staff

The operating instructions are intended for trained professional electricians, familiar with the safety standards of electrical technology and industrial electronics.

Components inside the unit are voltage-carrying during operation. For this reason mounting and maintenance work may only be performed by professionally trained personnel while observing the corresponding safety regulations.

For safety reasons and due to the required compliance with the documented unit properties the repair and replacement of components and modules may only be carried out by the manufacturer or an authorized specialized company.

Grounding

The unit is equipped with a metal housing. It complies with safety class I and requires a protective earth connection. The connecting cable for the operating voltage must contain a protective earth wire of a sufficient cross section (DIN VDE 0106 part 1, DIN VDE 0411 part 1).

The unit has no power switch. It is in operation immediately after applying operating voltage.

Mounting and installation

The attachment options for the units were conceived in such a way as to ensure safe, reliable mounting. The user must ensure that the used fixing material guarantees, under the given surrounding conditions, a secure mounting.

When installing and commissioning please note the appropriate national and regional regulations.

Transport

The unit must be transported clean and dry in the original packing. The transport temperature must be between -40 °C and $+70\text{ °C}$. Temperature fluctuations of more than 20 °C per hour are non-permissible.

Disposal

The unit is made of low-emission materials and is therefore recyclable. For an environmentally safe recycling contact a certified waste management enterprise. Units or parts which are no longer needed are to be disposed of in accordance with the regulations in effect in your country.

2 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-solar.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.

Cleaning

For the care of the front panel use a scratch-free cloth. Do not push in the front pane during cleaning.

The unit must not be cleaned with a steam cleaner.

Accuracy of the display

If the digital display is connected to a data output unit (inverter, data logger, etc.) via its data interface (RS232, RS485 or Ethernet) it is purely an information output unit. It displays the data received via the data interface in readable digits. For the accuracy of information displayed, however, the data output unit is responsible. For problems or faulty display the data output unit has to be checked and to observe its operating instructions.

For problems or damages which are caused by changes of the data output unit (p. e. modified protocol structure, or modified product characteristics) no liability is assumed.

These operating instructions do not replace the operating instructions of the data output unit.

3 Important start-up instructions

During the commissioning of the display you need the following facilities for configuration:

1. PC with the software Siebert SolarDisplayConfigurator
2. A suitable cable depending on the type of display



With displays of the type ...-01 with S0, 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 cross-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.

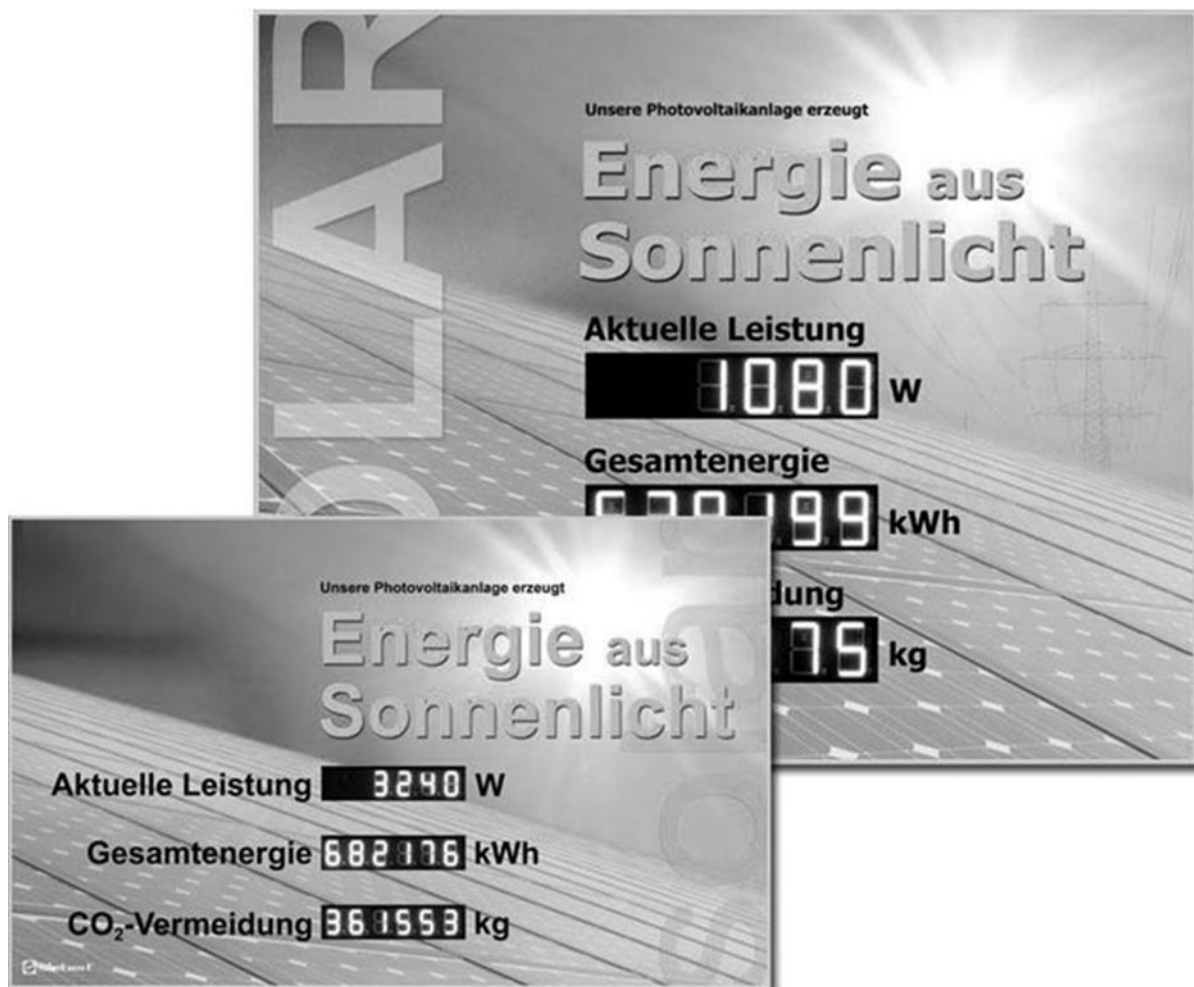
With displays of the type ...-05 with Ethernet interface the configuration is done via the Ethernet. Please have ready the following items:

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

For configuration via Bluetooth, you need a Bluetooth-enabled PC. If your PC does not have a Bluetooth interface, you need an USB-to-Bluetooth converter. Siebert offers such a converter.

4 Product description

The following figure shows the display in working condition:



The displays of the XC460/XC470 series are available for indoor or outdoor use:

Order-code	Application
XC460/XC470-xxx-N-xx	Units for indoor use, protection type IP40
XC460/XC470-xxx-A-xx	Units for outdoor use, protection type IP54

The displays of the XC460/XC470 series are differed in the following interface versions:

Order-code	Interface
XC460/XC470-xxx-x-01	S0 PULSE, RS232, RS485 (screw-type terminals)
XC460/XC470-xxx-x-05	Ethernet (RJ45)

For installation and connection of the data source you must open the display.



Open the cam locks at the bottom of the device using the included square wrench.



Hinge up the front and fix it with the prop on the right side of the device.

The following chapters describe the necessary steps for installation and commissioning.

5 Installation

Requirements to the installation site

The display is designed for wall mounting. The wall surface has to be plane and free of irregularities. The wall must have a sufficient capacity.

**CAUTION!**

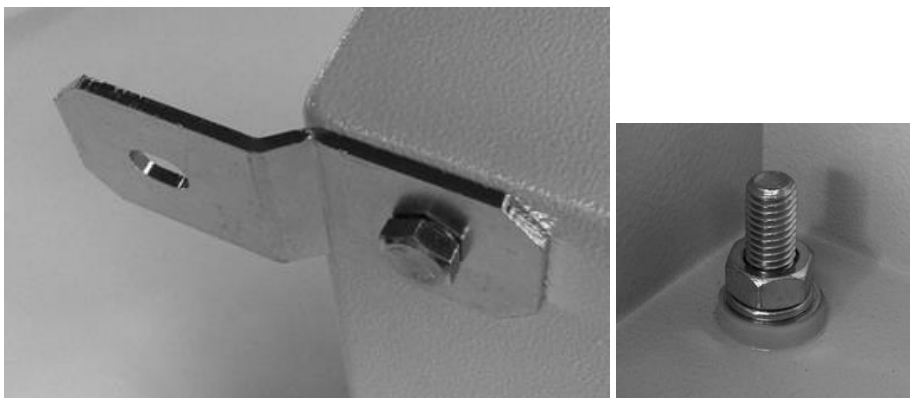
If the wall surface is uneven the housing can be distort and damaged when mounting.

Installation material

A small parts mounting kit is included in delivery.

Mounting the unit

The lines for data and power supply are fed through the guide holes in the back of the housing. For devices for outdoor use the supplied cable sleeves are to be inserted into the through-holes.



Mount the unit using the mounting holes with screws and dowels on the wall.

You can screw the display either from inside, or on the outside with the aid of the metal tabs included in the mounting kit.

Please note that at first the metal tabs are screwed with the display and that the display is mounted on the wall after that.

Instead use according proper mounting material if the screws and dowels included do not match.

Power supply connection

After mounting the device on the wall you connect the line for the power supply to the terminal. Make sure that the 230V line was damaged nowhere during insertion into the device.

The unit has a metal housing. It corresponds with protection type I and needs a protective conductor connection. The connecting cable for the power supply must contain a protective ground wire connection with sufficient cross-section (DIN VDE 0106 part 1, DIN VDE 0411 part 1).

The protective ground wire (yellow/green) can be connected either to the yellow or the green terminal.

When first powered on numbers appear on all digits. Depending on the unit version, during later power-up – after implementation of the configuration – the decimal points light up.

6 Data source connection



The digital display is purely an information output device. It converts the sent data from the inverter/data logger/power meter into visual information but does not define the content of the numerical information.

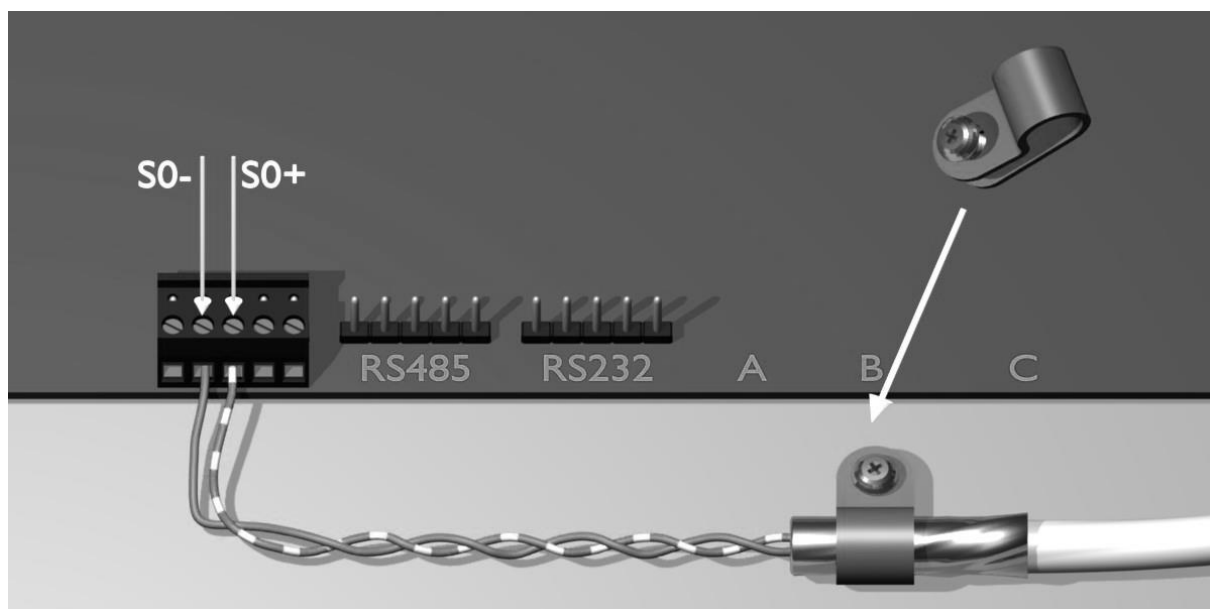
Power meter/inverter/data logger with S0 interface

Each power meter, data logger or inverter with impulse interface according to IEC/EN 62053-31 or DIN 43864 is suitable for the use with the large size displays.

The connection of the counter is at the designated S0- und S0+ terminals.

As connecting cable type J-Y(St)-Y, 2 x 0,6 mm² or similar is used. The maximum length is 200 meters.

1. When connecting pay attention to the correct polarity of the two signals.
2. Clamp down the shield of the data cable to the grounding clamp.



The picture shows a schematic representation

To configure the device via the RS232 interface an additional connection via the RS232 port is required. After the configuration has been done this connection is no longer needed.

The RS232 pin assignment is described in chapter Inverter/data logger with RS232 interface.

Continue chapter "Start-up and configuration".

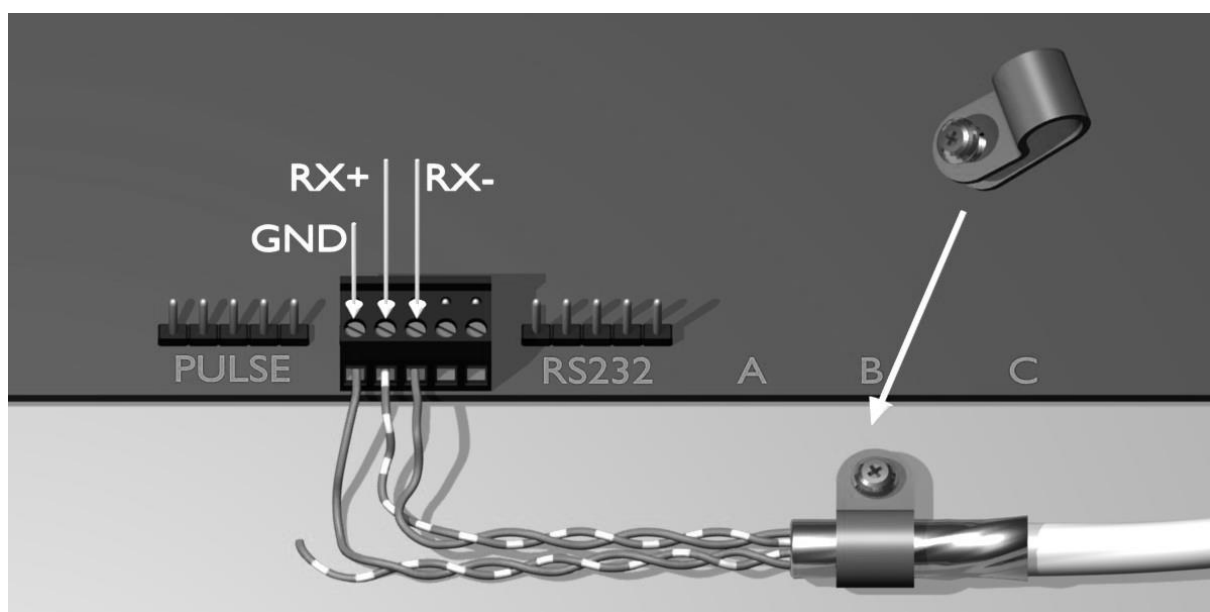
Inverter/data logger with RS485 interface

The connection of the inverter/data logger is at the point marked RS485 terminal as shown below.

As connecting cable type J-Y(St)-Y, 2 x 2 x 0,6 mm² or similar is used. The maximum length is 1.000 meters.

- 1- Clamp down the shield of the data cable to the grounding clamp.
2. Connect RX+ of the display with TX+ of the data logger/inverter.
3. Connect RX- of the display with TX- of the data logger/inverter. For this use a twisted pair of conductors.
4. Connect the GND of the display with the GND of the data logger/inverter. The last wire in the cable is not needed. Cut this last wire off or use it as an additional GND wire.

Between RX+ and RX- a 120 Ω terminating resistor is installed.



The picture shows a schematic representation

To configure the device via the RS232 interface an additional connection via the RS232 port is required. After the configuration has been done this connection is no longer needed.

The RS232 pin assignment is described in chapter Inverter/data logger with RS232 interface.

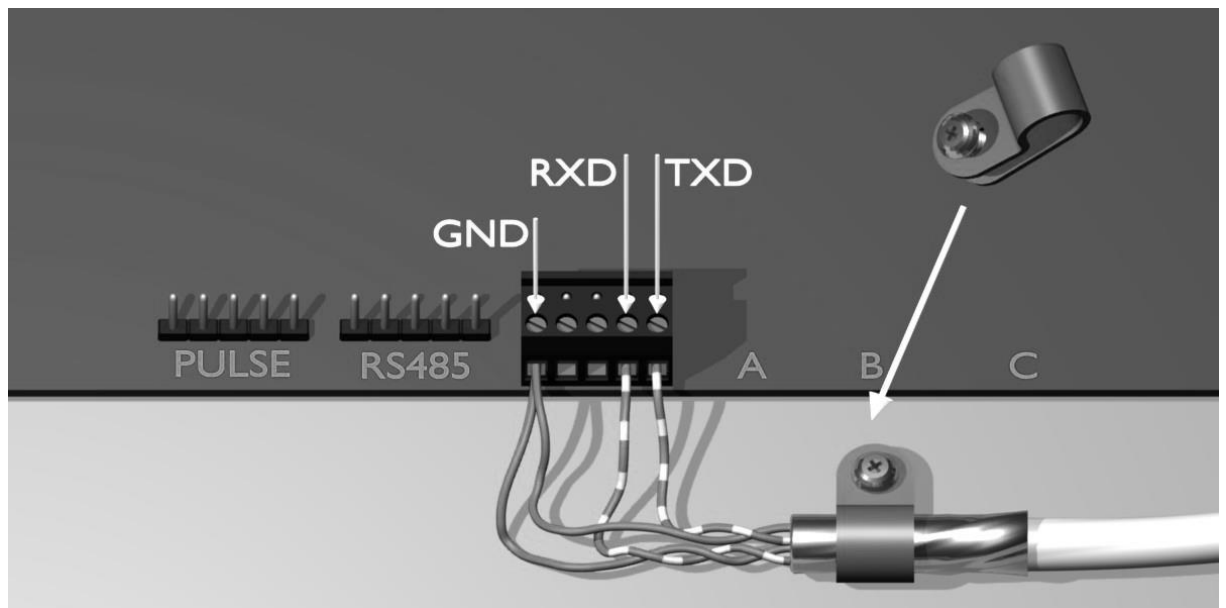
Continue chapter "Start-up and configuration".

Inverter/data logger with RS232 interface

The connection of the inverter/data logger is at the point marked RS232 terminal as shown below.

As connecting cable type J-Y(St)-Y, 2 x 2 x 0,6 mm² or similar is used. The maximum length is 10 meters.

1. Clamp down the shield of the data cable to the grounding clamp.
2. Connect RXD of the display with TXD of the data logger/inverter. For this use together with the GND signal a twisted pair of conductors of the cable.
3. Connect the TXD of the display with the RXD of the data logger/inverter. For this use together with the GND signal a twisted pair of conductors of the cable.



The picture shows a schematic representation

To configure the device via the RS232 interface an additional connection via the RS232 port is required. After the configuration has been done this connection is no longer needed.

The RS232 pin assignment is described in chapter Inverter/data logger with RS232 interface.

Continue chapter "Start-up and configuration".

Ethernet connection

Devices with the ending number -05 are intended for use in an Ethernet network. The connection to a network is limited to plug in the network connector.

If you connect the device to the network via a switch or a hub, then you need an Ethernet patch cable CAT5 or higher.

If you connect the device directly to the remote station, e.g. with a PC for configuration or with the inverter/data logger, you need a cross cable CAT5 or higher.

All other settings (network addresses, protocols, etc.) will be set with the SolarDisplayConfigurator.

7 Start-up and configuration

Configuration of the display



For configuration of the display you need a PC with serial interface. The necessary steps required for configuration are described in detail in the documentation of the program SolarDisplayConfigurator.

After you successfully completed the configuration the PC is no longer needed.

Start-up and test

Expediently perform a functional test before you close the device permanently.

Controls

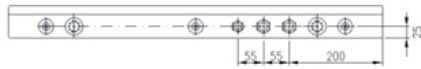
With the button on the printed circuit board the system can be reset to its basic configuration. Turn off the power supply of the display and keep the button pressed while the power supply is turned back on.

On the printed circuit board there is an LED that flashes quickly after starting. After a few minutes the LED turns off.

8 Technical data

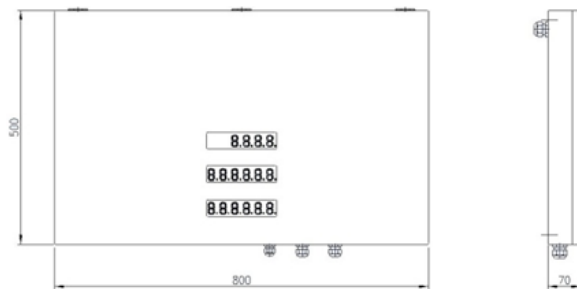
The following figures show the housing dimensions and the holes for wall mounting.

View from below



Front view

Side view

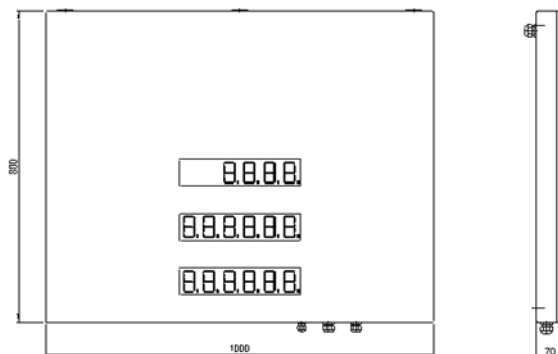


View from below

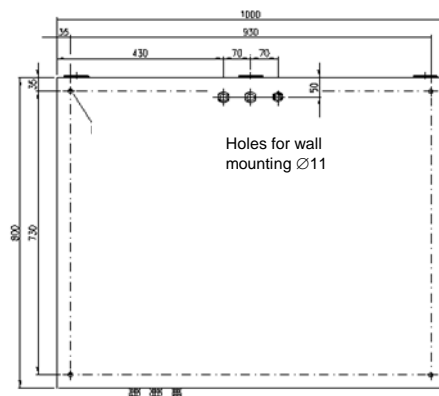


Front view

Side view



Rear view



	Series XC460	Series XC470
Dimensions (W x H x DT)	800 x 500 x 70 mm	800 x 1000 x 70 mm
LED display digit height	25 mm	55 mm
Upper LED display	6 digits	6 digits
Middle LED display	6 digits	6 digits
Lower LED display	6 digits	6 digits
Power supply	100...240 V AC, 50/60 Hz	100...240 V AC, 50/60 Hz
Power consumption	25 W max	50 W max
Protection type	IP54	IP54
Weight	approx. 18 kg	approx. 32 kg
Operating temperature	0...40 °C (-20...50 °C)	0...40 °C (-20...50 °C)
Storage temperature	-25...85 °C	-25...85 °C

() Values in brackets are valid for units with equipment package for outdoor use.

9 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
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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