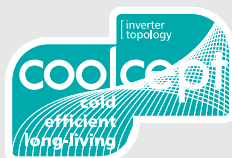




coolcept<sup>3</sup>



coolcept<sup>3</sup>-x



## Operating manual

# Table of contents

<b>1</b>	<b>Preface.....</b>	<b>4</b>
<b>2</b>	<b>General information.....</b>	<b>5</b>
	2.1 General safety instructions.....	5
	2.2 Identification.....	6
	2.3 Scope of delivery.....	7
	2.4 Proper usage.....	7
	2.5 About these operating instructions.....	7
<b>3</b>	<b>Structure and function.....</b>	<b>10</b>
	3.1 Casing.....	10
	3.2 Operating buttons.....	12
	3.3 Display.....	12
	3.4 Cooling.....	20
	3.5 Grid monitoring.....	20
	3.6 Data communication.....	20
<b>4</b>	<b>Installation.....</b>	<b>26</b>
	4.1 Safety measures during installation .....	26
	4.2 Mounting the inverter .....	27
	4.3 Preparing the AC connection .....	30
	4.4 Preparing the DC connections .....	31
	4.5 Preparing the data connection cable .....	31
	4.6 Connecting the inverter and switching on the AC power .....	31
	4.7 Initial commissioning of the inverter .....	32
	4.8 Switching on the DC supply.....	36
	4.9 Deinstalling the inverter.....	36
<b>5</b>	<b>Operation.....</b>	<b>38</b>
	5.1 Overview of operating functions.....	38
	5.2 General operating functions .....	39
	5.3 Main operating functions.....	39
	5.4 Internet portal.....	41
<b>6</b>	<b>Troubleshooting.....</b>	<b>49</b>
<b>7</b>	<b>Maintenance and disposal.....</b>	<b>53</b>
	7.1 Maintenance.....	53
	7.2 Disposal.....	53
<b>8</b>	<b>Technical data.....</b>	<b>54</b>
	8.1 Inverters.....	54
	8.2 AC cables and line circuit breakers.....	58
	8.3 Table of countries.....	59
<b>9</b>	<b>Liability, commercial guarantee, legal guarantee.....</b>	<b>61</b>
	9.1 Exclusion of liability.....	61

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9.2	Commercial and legal guarantee conditions.....	61
<b>10</b>	<b>Contact.....</b>	<b>63</b>
<b>11</b>	<b>Declaration of conformity.....</b>	<b>64</b>

# 1 Preface

Thank you for choosing inverters from the *coolcept<sup>3</sup>* range of products manufactured by Steca Elektronik GmbH. By using solar energy you make a significant contribution to environmental protection by reducing the total amount of atmospheric pollution caused by carbon dioxide (CO<sub>2</sub>) and other damaging gases.

## **Highest efficiency with longer service life**

The innovative inverter topology is based on a single-stage transformerless circuit concept and is integrated into all devices in the *coolcept<sup>3</sup>* series. This unique technology allows peak efficiencies of up to 98,6 % to be achieved. Depending on the type, the European efficiency of the devices is also significantly greater than 98 % and sets new standards in photovoltaic grid-feed systems.

A new and unique cooling concept inside the inverter ensures an even distribution of heat and a long service life.

## **Designer casing and easy installation**

For the first time, the very high efficiency allows the use of a designer casing made of plastic for the *coolcept<sup>3</sup>* inverters. This offers many advantages. The overall surface temperature of the devices remains very low. This also offers great installation advantages. The *coolcept<sup>3</sup>-x* inverters have a sturdy metal casing that allows them to be also used outdoors.

The lightweight devices weigh only approx. 12 kg and can be easily and safely mounted on a wall. The supplied wall bracket and practical recessed grips for right and left handed installers make mounting of the device simple and convenient. All connections and the DC circuit breaker are externally accessible.

## **Visualisation tools and accessories**

The devices have a graphical display for visualising the energy yield values, current performance and operating parameters of the photovoltaic system. Its innovative menu allows individual selection of the various measurements.

See [www.stecasolar.com](http://www.stecasolar.com) for further information on accessories. Your installer can, of course, also give you more information about the options and accessories that are available.

## 2 General information

### 2.1 General safety instructions

- This document is part of the product.
- Install and use the device only after reading and understanding this document.
- Always perform the measures described in this document in the sequence specified.
- Keep this document in a safe place for the entire service life of the device. Pass the document on to subsequent owners and operators of the device.
- Improper operation can reduce the yields of the photovoltaic system.
- The device must not be connected to the DC or AC cables if it has a damaged casing.
- If one of the following components is damaged, immediately take the device out of operation and disconnect it from the mains grid and solar modules:
  - Device (not functioning, visible damage, smoke, penetration of liquid etc.)
  - Cables
  - Solar modules
- Do not switch the system on again before
  - the device has been repaired by a dealer or the manufacturer,
  - damaged cables or solar modules have been repaired by a technical specialist.
- Never cover the cooling fins.
- Do not open the casing: Risk of death. Invalidation of the guarantee.
- Factory labels and markings must never be altered, removed or rendered unreadable.
- Observe the respective manufacturer's manual when connecting an external device that is not described in this document (e.g. external data logger). Incorrectly connected devices can damage the inverter.

#### Safety instructions on the device



- ① Serial number as a barcode and in plain text
- ② Read and follow the instructions!
- ③ The surfaces of the outer casing can be hot! (Only with coolcept<sup>3</sup>-x devices).

## 2.2 Identification

Feature	Description
Types	<p><i>coolcept<sup>3</sup></i> (plastic casing): StecaGrid 3203, StecaGrid 4003, StecaGrid 4803, StecaGrid 5503</p> <p><i>coolcept<sup>3</sup>-x</i> (stainless steel casing): StecaGrid 3203x, StecaGrid 4003x, StecaGrid 4803x, StecaGrid 5503x</p>
Instructions version	Z01
Manufacturer's address	For contact information see ☞ 'Europe' on page 63
Certificates	See declaration of conformity on p. 65 and on <a href="http://www.stecasolar.com">www.stecasolar.com</a> ⇒ coolcept <sup>3</sup> – coolcept <sup>3</sup> -x
Optional accessories	<ul style="list-style-type: none"> <li>■ External data loggers: <ul style="list-style-type: none"> <li>– <i>WEB'log</i> from Meteocontrol</li> <li>– <i>Solar-Log</i> from Solare Datensysteme</li> </ul> </li> <li>■ StecaGrid SEM: 747.231</li> <li>■ RS485 bus cable, 1.5 m, for coolcept<sup>3</sup>-x: 737.605</li> <li>■ RS485 bus cable, 5 m, for coolcept<sup>3</sup>-x: 737.603</li> <li>■ RS485 bus cable, 20 m, for coolcept<sup>3</sup>-x: 737.604</li> <li>■ RS485 USB adapter cable for coolcept<sup>3</sup>-x: 737.707</li> <li>■ PushPull RJ45 plug for coolcept<sup>3</sup>-x: 737.607</li> <li>■ RS485 terminating resistor for coolcept<sup>3</sup>-x: 740.864</li> </ul>

### Type plate



- ① Barcode for internal use
- ② Technical data of the DC-BAT connection (only with coolcept<sup>3</sup> devices)
- ③ Technical data of the DC-PV input
- ④ Item number and product designation
- ⑤ Manufacturer
- ⑥ *Protection Class II* and CE symbols
- ⑦ Country of manufacture
- ⑧ Technical data of the AC output
- ⑨ Degree of protection and grid-monitoring standard used



#### Notice

- For the serial number, see ☞ p. 5
- For the position of the type plate, see ☞ , p. 10f.

## Display

The correct version of the instructions matching the software is shown under the **Information ▶ System info** menu item in the display.

## EU declaration of conformity

The products described in this document comply with the applicable European directives. Certificates for the products are available on [www.stecasolar.com](http://www.stecasolar.com) ⇒ PV GRID CONNECTED ⇒ Grid inverters

## 2.3 Scope of delivery

- Inverter ①, coolcept<sup>3</sup> type (plastic casing) or coolcept<sup>3</sup>-x type (stainless steel casing, IP65)
- Mounting plate ② for coolcept<sup>3</sup> type or coolcept<sup>3</sup>-x type
- AC plug ③
- 1 pair of SunClix plug connectors ④
- 3 sealing caps (for RJ45 sockets; coolcept<sup>3</sup>-x only) ⑤
- Installation and operating instructions ⑥



## 2.4 Proper usage

- The inverter may only be used in grid-connected photovoltaic systems. The inverter is suitable for use with all solar modules whose connections do not need to be grounded.
- The inverter has no galvanic isolation and only IEC 61730 class-A solar modules may be used.
- If the maximum AC operating voltage is greater than the photovoltaic voltage, the maximum system voltage of the used solar modules must be higher than the AC grid voltage.
- Battery connector contacts are provided for an optional energy storage system. This system consists of an additional control module and an external energy storage system. **Under no circumstances** should the battery connector be connected directly to a battery.



### Notice

An overview of suitable solar modules is available at [www.stecasolar.com/matrix](http://www.stecasolar.com/matrix).

These inverters allow the solar modules' PV field to be earthed as per national requirements.

## 2.5 About these operating instructions

### 2.5.1 Contents

These instructions describe the type coolcept<sup>3</sup> and coolcept<sup>3</sup>-x inverters. The differences between the types are marked in the text.

These instructions contain all information required by a technical professional for setting up and operating the inverters. Follow the instructions of the respective manufacturers when installing other components (e.g. solar modules, cables or external energy storage system).

### 2.5.2 Target audience





Unless otherwise indicated, the target audiences of this manual are technical professionals and system operators. Technical professionals are, for example:

- Persons who have the knowledge of terminology and the skills necessary for setting up and operating photovoltaic systems.
- Persons who have the necessary training, knowledge and experience, and knowledge of the applicable regulations in order to evaluate and recognise the dangers inherent in the following work:
  - Installation of electrical equipment
  - Production and connection of data communication cables
  - Production and connection of mains grid power supply cables

### 2.5.3 Markings

#### Symbols

Symbols used in this manual and on the device:

Symbol	Description	Location
	General danger warning	Instructions
	Danger from electricity	Instructions Device
	Danger from hot surfaces	Instructions Device
	Read the instructions before using the product.	Device

#### Keywords

Keywords used in conjunction with the symbols described above:

Keyword	Description
DANGER	Immediate danger of death or serious bodily injury
WARNING	Possible danger of death or serious bodily injury
CAUTION	Possible danger of light or medium bodily injury
ATTENTION	Possible damage to property
NOTE	Note on operation or use of the instructions



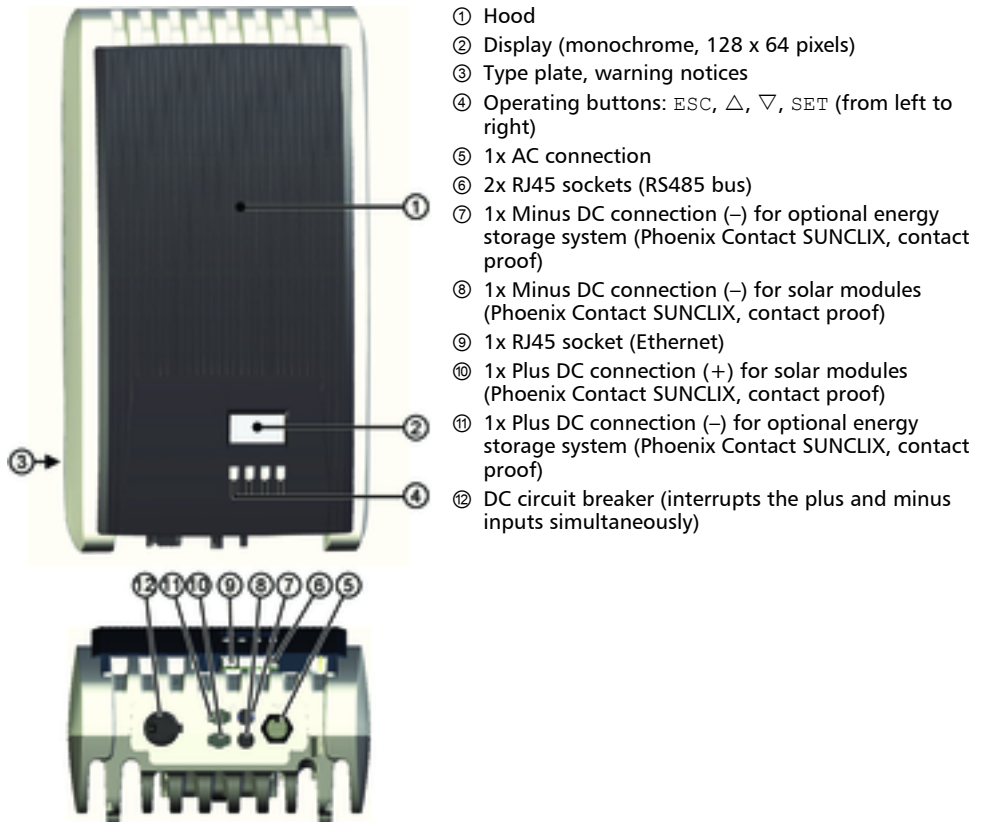
## Abbreviations

Abbreviation	Description
Derating	Derating
DHCP	The use of DHCP allows automatic integration of the device into an existing network ( <b>D</b> ynamic <b>H</b> ost <b>C</b> onfiguration <b>P</b> rotocol)
MSD	Internal grid monitoring of the inverter ( <b>M</b> ains monitoring with allocated <b>S</b> witching <b>D</b> evelopes).
MPP	Working point producing the most power ( <b>M</b> aximum <b>P</b> ower <b>P</b> oint)
MPP tracker	Controls the power of the connected module strings to match the MPP
SELV, TBTS, MBTS	<b>S</b> afety <b>E</b> xtra <b>L</b> ow <b>V</b> oltage (DE : Schutzkleinspannung; FR: Très <b>B</b> asse <b>T</b> ension de <b>S</b> écurité; ES: <b>M</b> uy <b>B</b> aja <b>T</b> ensión de <b>S</b> eguridad)
$V_{PV}$	The generator voltage present at the DC connection (photovoltaic voltage)

## 3 Structure and function

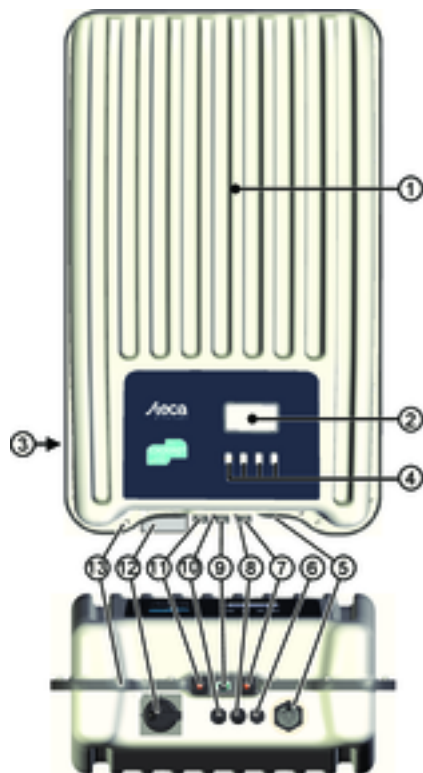
### 3.1 Casing

#### 3.1.1 coolcept<sup>3</sup>



The casing components are described in detail below.

### 3.1.2 coolcept<sup>3</sup>-x



- ① Hood
- ② Display (monochrome, 128 x 64 pixels)
- ③ Type plate, warning notices
- ④ Operating buttons: ESC, Δ, ∇, SET (from left to right)
- ⑤ 1x AC connection
- ⑥ Pressure equalisation membrane
- ⑦ 1x RJ45 socket (RS485 bus)
- ⑧ 1x Minus DC connection (–) for solar modules (Phoenix Contact SUNCLIX, contact proof)
- ⑨ 1x RJ45 socket (RS485 bus)
- ⑩ 1x Plus DC connection (+) for solar modules (Phoenix Contact SUNCLIX, contact proof)
- ⑪ 1x RJ45 socket (Ethernet)
- ⑫ DC circuit breaker (interrupts the plus and minus inputs simultaneously, can be secured with a pad-lock)
- ⑬ Hole for attaching an optional ground connection or for mechanical attachment (safety chain)

The casing components are described in detail below.

## 3.2 Operating buttons

The operating buttons (④ in 3.1.1 ☞ , on p. 10) have the following functions:

Button	Action	Function	
		General	Guided configuration process
'ESC'	press briefly	jumps up by one menu level	navigates 1 step back
		discards any changes	
	press longer (≥ 1 second)	jumps to status display	jumps to the start of the guided configuration process
△	press briefly	<div><div></div> moves the selection bar or the display content upwards</div> <div><div></div> when performing numerical settings, moves the selection 1 position to the left</div> <div><div></div> increases the setting value by 1 step</div>	
▽	press briefly	<div><div></div> moves the selection bar or the display content downwards</div> <div><div></div> when performing numerical settings, moves the selection 1 position to the right</div> <div><div></div> decreases the setting value by 1 step</div>	
'SET'	press briefly	jumps down by one menu level	—
		<div><div></div> a selected numerical value starts flashing and can be changed</div> <div><div></div> adopts a change</div> <div><div></div> changes the state of a control element (check box/radio button)</div>	
	press longer (≥ 1 second)	answers a query dialog with Yes.	navigates 1 step forward

## 3.3 Display

### 3.3.1 General information

For information shown in the display(② in 3.1.1 ☞ , on page 10) the following generally applies:

- Symbol ☞: The inverter is processing large amounts of data and is not able to process any user input at this time. The resulting waiting time is indicated by the animated sun symbol.
- Errors are indicated by a red flashing backlighting. An event message is also displayed at the same time.



#### Note

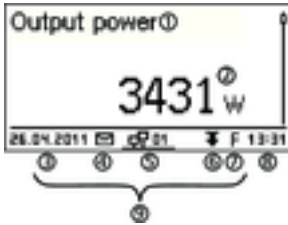
*The display reacts slower at very low temperatures. This is especially applicable to coolcept-x devices that are used outdoors.*

### 3.3.2 Information

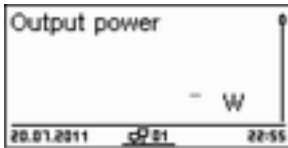
The information shown on the display is described below using illustrative examples.

#### Status display

The status display shows the following values:



- ① Measurement name
- ② Measurement with units
- ③ Date
- ④ Symbol *Non-confirmed event messages*; more information on this is provided in Section 6.4, p. 49
- ⑤ Animated *Connect* symbol with 2-digit inverter address; indicates data traffic on the RS485 bus.
- ⑥ Symbol *Derating*
- ⑦ Symbol *Fixed voltage mode activated*
- ⑧ Time
- ⑨ IP address of the device when a network connection has been established, display alternates with ③ – ⑦



The following applies to the status display:

- The measurements shown in the status display are defined under *Settings* ▶ *Meas. values*. Some measurements are always displayed (default setting).
- Current values are not displayed at night (solar irradiation too low; example in Fig. left).
- The CO<sub>2</sub> savings shown in the status display are calculated using the savings factor *508 g/kWh*.

### Numeric yield (day, month, year)

Daily, monthly and annual yields can be displayed numerically in a list.

Daily yield ①	
20.07.2011	15,2 kWh
19.07.2011	21,0 kWh
18.07.2011	21,5 kWh

- ① Yield period (day/month/year)
- ② Individual yields with period and value (1 per row)

The yield periods contain the following numbers of individual entries:

Day yield: Last 31 days<sup>1)</sup>

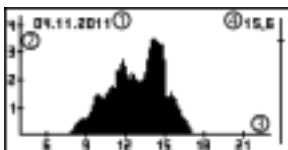
Monthly yield: Last 13 months<sup>1)</sup>

Annual yield: Last 30 years<sup>1)</sup>

<sup>1)</sup> A yield value of 0 is shown when the inverter was not yet installed at that time.

### Graphical yield (day, month, year)

Daily, monthly and annual yields can be displayed graphically in a chart.



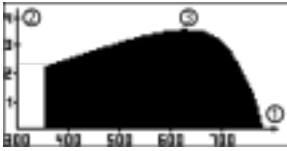
- ① Period for a single yield value (here: day yield)
- ② y-axis:
  - Yield in kWh
  - With an extra *M*: yield in MWh
  - The scaling changes depending on the maximum value.
- ③ x-axis: time in hours/days/months/years
- ④ Total of all individual yields shown in the diagram, in kWh

The graphical representation can show annual yields for the last 20 years.

## Event messages

See Section 6  on page 49

### Generator characteristic curve




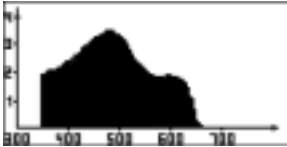
① x-axis: input voltage in V

② y-axis: power in kW

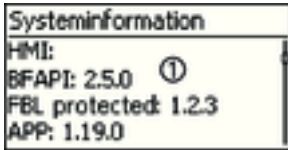
③ Peak = MPP

When the 'Gen. Ch. Curve' menu item is called, the inverter records the generator characteristic curve of the inverter and then displays it (Fig. upper left). The following applies:

- The inverter traverses the input voltage range and records the power generated over this range. Duration: a few seconds,  is displayed.
- The MPP is the peak of the generator characteristic curve.
- This peak and the generator characteristic curve change with the level of solar irradiation.
- Multiple peaks are a sign of partial shadowing (Fig. left).
- If the top of the curve is flat then the inverter can possibly no longer feed power into the grid.



## Information

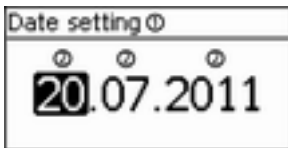


The menu item **Information** contains the following submenu items.

- **Contact info**
- **System info** (see Fig. left):
  - **Product designation**
  - **Serial number of the inverter**
  - **Information on the software and hardware versions of the inverter** (see example ① in Fig. left)
  - **Inverter address**
  - **Version of the operating instructions for the inverter**
- **Country setting**: country that is currently set and country-specific grid parameters; see also ⚡ on page 59.
- **Reactive power characteristic curve**: reactive power characteristic curve graph (only when prescribed for currently set country)
- **Network**: network parameters, partially configurable under **Settings ▶ Network**
  - **DHCP status**: DHCP on/off
  - **Link status**: network connection state
  - **IP address**: IP address of the inverter
  - **Subnet mask**: subnet mask of the inverter
  - **Gateway**: IP address of the network gateway
  - **DNS address**: IP address of the DNS server
  - **MAC address**: hardware address of the inverter
- **Result of the last self test** (only when the configured country is *Italy*)

## 3.3.3 Settings

### Numerical settings



- ① Designation of the numerical setting
- ② Value to be set; the selected value to be set is highlighted in black.

When performing numerical settings of remuneration and dates, the following applies:

#### Remuneration

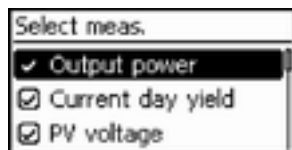
- Possible currencies: £ (Pounds), € (Euros), kr (Krones), *none*.
- The maximum value that can be set for remuneration is limited for technical reasons. The remuneration must be set using different units as required. Example: Dollars instead of Cents (set a currency of *none*).

#### Date

When setting the month/year, a check is performed to ensure that the selected day is valid. If not, then the day is automatically corrected.

Example: 31.02.2011 is corrected to 28.02.2011.

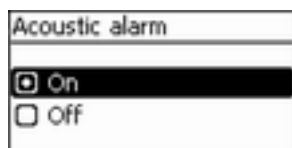
## Selection of the measurements



Selection of the measurements to be shown in the status display. The following measurements can be selected:

- Output power: output power of the inverter <sup>1)</sup>
  - Current day yield: day yield since 0:00
  - PV voltage: the voltage supplied by the solar modules
  - PV current: the current supplied by the solar modules
  - Grid voltage <sup>1)</sup>
  - Grid current: the current fed into the mains grid
  - Grid frequency
  - Internal temp.: the internal temperature of the inverter
  - Derating: cause for derating <sup>2)</sup>
  - Max. daily power: the maximum power supplied in the current day <sup>3)</sup>
  - Abs. max. power: the maximum power ever fed into the grid <sup>3)</sup>
  - Max. daily yield: the maximum daily yield achieved <sup>3)</sup>
  - Operating hours: The operating hours during which the device has been connected to the grid (including nighttime hours).
  - Total yield: yield since commissioning
  - CO<sub>2</sub> saving: CO<sub>2</sub> savings achieved since commissioning
- <sup>1)</sup> Measurement is always displayed (cannot be switched off)
- <sup>2)</sup> Possible causes:
- Internal temperature too high
  - User default *Power limiter*
  - Frequency too high
  - Controlled by grid operator (feed-in management)
  - Delayed increase in power after starting
- <sup>3)</sup> Can be reset to 0 via Settings ► Reset max. vals.

## Acoustic alarm



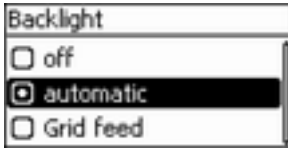
An acoustic alarm sounds (approx. 4.5 kHz) when an event message is displayed.

- 2 tones: warning
- 3 tones: error

The acoustic alarm is switched off with the factory default settings.



## Backlighting



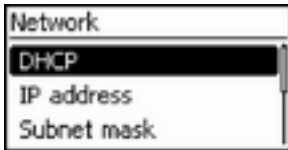
- off
- automatic: switches on for 30 seconds when a button is pushed
- Grid feed:
  - *Not feeding*: switches on for 30 seconds when a button is pushed; then switches off
  - *Feeding*: switches on for 30 seconds when a button is pushed; then dims

## TCP/IP network



### Notice

- A prerequisite for this is that you know the parameters required for setting up the TCP/IP network connection. Consult (further) technical professionals if required.
- DHCP is activated in the device ex-works. This allows automatic integration of the device in most networks.



Network settings, required for network communication, e. g. with an Internet portal:

- DHCP: Switch DHCP on/off
- IP address: IP address of the inverter
- Subnet mask: Subnet mask of the inverter
- Gateway: IP address of the network gateway
- DNS-Adresse: IP address of the DNS server
- Connection test: Tests the Internet connection and then displays the result

## 3.3.4 Service menu

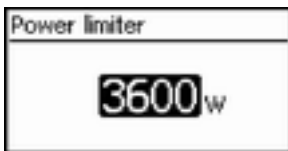
The following section describes the service menu items. Some items have password protection; see also Fig. in 5.1 Overview of operating functions. You can obtain the password from our technical support department; see ↗ *'Europe' on page 63*.



### ATTENTION!

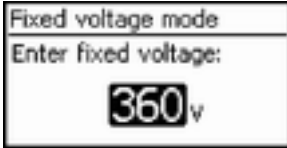
Risk of reduced yields. Inverter and grid parameters can be changed in the service menu. The service menu may only be used by technical professionals who can ensure that the changes do not contravene the applicable regulations and standards.

## Power limiting



The inverter output power can be manually limited to a minimum of 500 W. When the power is manually limited, the *Derating* symbol is shown in the status display and the *'Derating' / 'Cause: User default'* measurement is displayed.

## Fixed voltage



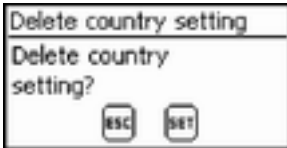
The device can regulate the input voltage to a manually adjustable value. This switches off the automatic setting of the MPP (MPP tracking). The input voltage can be adjusted over a range between the maximum and minimum input voltage.

Example of application: fuel cell

### ! ATTENTION!

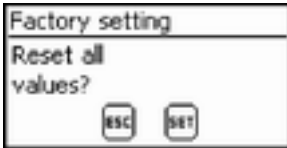
Before setting a fixed input voltage, make sure that the generator is suitable for this. Otherwise, this may result in yield losses or damage to the system.

## Delete country setting



After the country setting has been deleted the device restarts anew and displays the guided initial commissioning menu.

## Factory setting

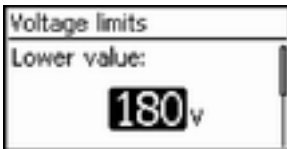


Resetting the device to the factory setting deletes the following data:

- Yield data
- Event messages
- Date and time
- Country setting
- Display language
- Network settings

After the factory setting has been deleted, the device starts anew and displays the guided initial commissioning menu.

## Voltage limits (peak value)

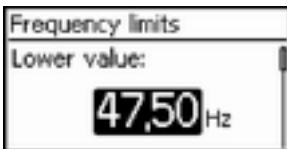


The following voltage limits can be changed:

- Upper disconnection value<sup>1)</sup>
- Lower disconnection value<sup>1)</sup> (Fig. left)

<sup>1)</sup> The disconnection value relates to the peak value of the voltage.

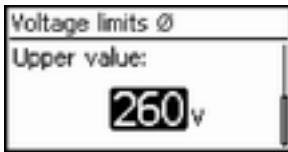
## Frequency limits



The following frequency limits can be changed:

- Upper disconnection value
- Lower disconnection value (Fig. left)
- Derating switch-on threshold (because frequency is too high)
- Frequency threshold when switching on again

## Voltage limits Ø (average value)



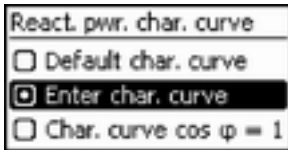
The following voltage limits can be changed:

- Upper disconnection value<sup>1)</sup> (Fig. left)
- Lower disconnection value<sup>1)</sup>

<sup>1)</sup> The disconnection value relates to the average value of the voltage.

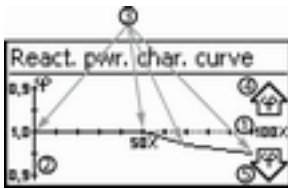
## Reactive power characteristic curve

### Overview



The reactive power characteristic curve must be set during initial commissioning if this is prescribed for the previously selected country. The following applies:

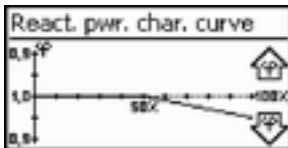
- 4 characteristic curves are available for selection (Fig. left):
  - Default char. curve < 13.8 kW<sup>1)</sup> (pre-defined)
  - Default char. curve > 13.8 kW<sup>1)</sup> (pre-defined)
  - Enter char. curve (manually adjustable)
  - Char. curve cos φ = 1 (pre-defined)
- After configuration, the characteristic curve is displayed as a graph (example in Fig. left).
  - ① x-axis, output power P in %
  - ② y-axis, phase shift cos φ
  - ③ Nodes (in example: 4 nodes)
  - ④ Arrow symbol *Overexcitation*
  - ⑤ Arrow symbol *Underexcitation*



<sup>1)</sup> This means the maximum overall apparent output power of all inverters present in the system.

### Technical details

- Each characteristic curve is defined by 2 to 8 nodes.
- A node is defined by the output power P of the inverter (x-axis) and the associated phase shift (y-axis).
- The phase shift can be set over a range of 0.80 (overexcitation) through 1.00 (no phase shift) to 0.80 (underexcitation).
- The type of phase shift is shown in the graph using arrow symbols defined as follows (defined from the point of view of the inverter):
  - ⬆ Overexcitation, inductive
  - ⬇ Underexcitation, capacitive
- The 3 characteristic curves available for selection have the following properties:



Default. char. curve < 13.8 kW and

Default. char. curve > 13.8 kW: pre-defined according to the selected country (example in Fig. left).

Char. curve φ = 1: pre-defined with cos φ = constantly 1.00. This characteristic curve must be selected if no reactive power control is to be performed on the device.

Enter char. curve: the number of nodes and their x/y values can be configured. Exceptions: the first node is always located at x (P %) = 0 % and the last node is always located at x (P %) = 100 %.

**All parameters**

In addition to the network parameters described above (voltage and frequency limits), this menu can also be used to change other regional settings. Please contact our technical support for further information.

**3.4 Cooling**

The internal temperature control system prevents excessive operating temperatures. When the internal temperature is too high, the inverter adjusts the power consumption from the solar modules to reduce the heat dissipation and operating temperature.

The inverter is convection cooled via fins on the front and rear side. A maintenance-free fan circulates the heat within the closed casing evenly over the entire surface of the casing.

**3.5 Grid monitoring**

The inverter constantly monitors the mains grid parameters while feeding the grid. If the grid deviates from the legally prescribed specifications then the inverter automatically switches off. When the grid conforms to the legally prescribed specifications then the inverter automatically switches on again.

**3.6 Data communication**

The device has the following communication interfaces:

- 1x RJ45 socket (Ethernet for TCP/IP network) for communication, e. g. with a central data server
- 2x RJ45 sockets (RS485 bus) for communication with external devices, e. g. a data logger

**3.6.1 Data**

The inverter can transmit a wide range of data to other devices. Some of this data is shown on the display and certain data is stored in the internal memory (EEPROM) as described below.

**Displayed data**

- Voltage and current of the solar generator
- Power and current fed into the grid
- Voltage and frequency of the power grid
- Energy yields on a daily, monthly and annual basis
- Error conditions, notes
- Version information

**Logged data (EEPROM)**

- Event messages with date
- Energy yields on a daily, monthly and annual basis

The storage resolution of the energy yield data is as follows:

Energy yield data	Storage resolution/period
10-minute values	31 days
Daily values	13 months
Monthly values	30 years

Energy yield data	Storage resolution/period
Annual values	30 years
Total yield	Permanent

### 3.6.2 Network (TCP/IP)

The device can transfer yield data and event messages via the TCP/IP interface to the Internet portal server at <http://www.solare-energiewende.de>. The yield data can be displayed graphically in the Internet portal as illustrated below. This service is free of charge for a period of 2 years from the time of registration. The following applies:

- The user must first register at [www.steca.com/porta/](http://www.steca.com/porta/) before the Internet portal can be used. More information on this is provided in 5.4 ☞ on page 41
- The local network settings must be set at the inverter in order to establish a connection to the Internet portal server. This can be performed automatically or manually:  
**Automatically:** If IP addresses are automatically assigned in your network (DHCP), then no settings need to be made at the inverter.  
**Manually:** If IP addresses are not automatically assigned in your network, then you must manually set the inverter network settings via Settings ► Network; see Einstellungen ► Network; see ☞, page 17
- The address of the Internet portal server is permanently stored in the inverter and cannot be changed.
- Once the network connection is established, the inverter automatically starts non-encrypted transmission of data to the server.



#### Notice

*The network cable must be disconnected in order to prevent transmission of the data.*




Fig. 1: Graphical representation of the yield data in the Internet portal

### 3.6.3 RS485 bus

The inverter communicates with other devices via an RS485 bus. The following applies:

- The inverter has two RS485 interfaces (RJ45 sockets) on the lower side of the casing.
- The beginning and end of the RS485 bus must be terminated; see 3.6.5 ☞ on page 24

- Standard RJ45 cables can be used as bus cables (Cat-5 patch cables, not supplied). Use an alternative data connection cable for longer connections; see 3.6.4  on page 23.
- The inverters connected to the RS485 bus operate as *slaves*.



### Notice

The following inverters have compatible data interfaces and can be connected to the RS485 bus as slaves:

- StecaGrid 2020
- StecaGrid 1800, 2300, 3010, 3000, 3600, 4200 and StecaGrid 1800x, 2300x, 3010x, 3600x, 4200x
- StecaGrid 3203, 4003, 4803, 5503 and StecaGrid 3203x, 4003x, 4803x, 5503x
- StecaGrid 8000 3ph, StecaGrid 10000 3ph
- StecaGrid 8000+ 3ph, StecaGrid 10000+ 3ph

Observe the manuals of these devices concerning the definition of addresses, termination and permissible data cables.



### Notice

If a country setting of Italy is set then the RS485 bus must be wired as follows in order to allow control via an external device as per CEI 0-21.

- External fast disconnection (Ital.: Teledistacco): If wires 3<sup>1)</sup> and 8<sup>1)</sup> of the RS485 bus <sup>2)</sup> are connected, e. g. via an external relay, then the following applies:

**Relay closes:** The inverters connected to the bus disconnect themselves from the grid.

**Relay opens:** The inverters connected to the bus connect themselves to the grid (normal operation).

- Switch-over of the grid frequency disconnection thresholds (ital.: Modalità definitiva di funzionamento del sistema di protezione di interfaccia (impiego del SPI sulla base di letture locali e di informazioni/comandi esterni)): If wires 5<sup>1)</sup> and 8<sup>1)</sup> of the RS485 bus <sup>2)</sup> are connected, e. g. via an external relay, then the following applies:

**Relay closes:** The inverters connected to the bus set the switch-off thresholds as per CEI 0-21 to 47.5 Hz and 51.5 Hz.

**Relay opens:** The inverters connected to the bus set the switch-off thresholds as per the Italy country setting; see Section Technical Data.

We recommend integrating the interconnection of wires 3, 5 and 8 into the bus termination.

<sup>1)</sup> Pin assignments of the RJ45 plug for the RS485 bus: see Fig. 2.

<sup>2)</sup> See  in 3.1.1, p.10 and  and  in 3.1.2, p.11.



Fig. 2: Pin assignments (= wire number) of the RJ45 plug

One (!) of the following *master* devices can be connected to the RS485 bus. The devices support the transfer protocol used by the inverter.

- Energy management unit StecaGrid SEM: Interface to a ripple control receiver for EEG compliant feed-in management
- PC or notebook (with suitable software):
  - Read inverter information using the "StecaGrid User" software available on our home page: [http://www.steca.com/index.php?StecaGrid\\_User\\_de](http://www.steca.com/index.php?StecaGrid_User_de)
  - An optional RS485⇌USB adapter for connecting to the inverter is also available from Steca.
  - Load firmware updates (for technical professionals only)
- External data loggers, recommended by Steca for professional system monitoring:
  - WEB'log (Meteocontrol)
  - Solar-Log (Solare Datensysteme)



### Notice

*The correct settings must be made in external data loggers, according to the manufacturer's instructions, before connecting them to the bus.*

The wiring diagram of the RS485 bus is shown below.

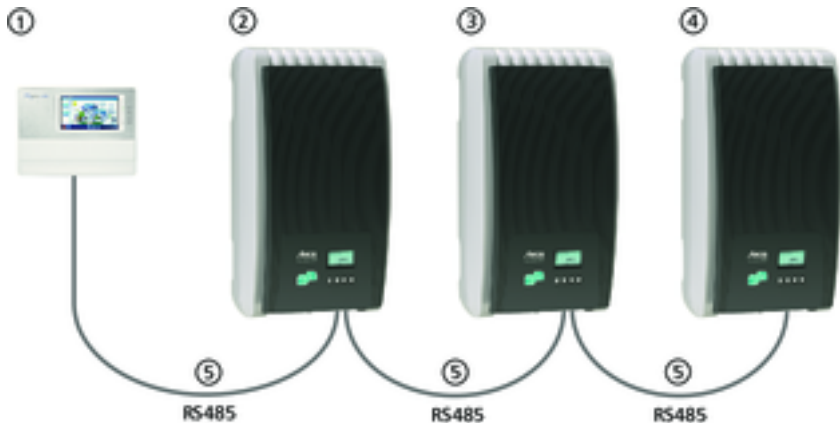


Fig. 3: Wiring diagram

- ① External data logger
- ② First inverter
- ③ Inverter
- ④ Last inverter, terminated
- ⑤ Standard RJ45 cable (patch cable)

### 3.6.4 Alternative data connection cable



#### ATTENTION!

Material damage caused by electrical voltage! The alternative data connection cable may only be manufactured by professional personnel.

The alternative data connection cable is a Cat-5 cable for long data connections. The following applies to the alternative data connection cable:

- The total length of the RS485 bus must not exceed 1,000 m (Master/first inverter to last inverter).
- Use the pin assignment according to the table below if the alternative data connection cable is connected to the RJ45 socket of the first inverter or to the connector of an external data logger.

**Pin assignments of the alternative data cable**

Device	Inverter	Solar-Log	WEB'log <sup>1)</sup>	Signal
Connection	RJ45	Terminal strip	RJ12	↓
<b>Pin</b>	1	1	2	Data A
	2	4	4	Data B
	3	—	—	—
	4	—	—	—
	5	—	—	—
	6	—	—	—
	7	—	—	—
	8	3	6	Ground

1)



**ATTENTION!**

Danger of destroying the RS485 input of the inverter. Pin 1 of the RJ12 socket of the Web'log data logger carries 24 V DC. Never connect the alternative data connection cable to pin 1!

### 3.6.5 Termination

To prevent data transmission errors, the start and end of the RS485 bus should be terminated:

- The external data logger (at the start of the data connection) must be terminated according to the manufacturer's specifications.
- The last inverter (at the end of the data connection) is terminated by plugging the optionally available termination plug into the free RJ45 socket (for RS485 bus).

### 3.6.6 Addressing

Every inverter must be assigned its own unique address for communication between the bus master and the slaves.

Every inverter is set with an address of 1 at the factory. This means that the addresses must be adjusted in systems having more than 1 inverter. The following applies:

- The address is changed at the inverter via the menu items *'Settings' ► 'Address'*.
- Only addresses ranging from 1 – 99 may be set.
- The bus master devices usually support less than 99 addresses. Consult the respective operating instructions for these devices before setting the addresses of the inverters.
- We recommend starting with address 1 for the first inverter on the bus and then incrementing the address by 1 for each subsequent inverter on the bus, in the same order as they are physically installed. This makes it easier to identify the relevant inverters when their address is displayed in messages shown on the remote display.



### 3.6.7 Feed-in management

Depending on the country, the active power fed into the grid by a photovoltaic system must be able to be reduced by the grid operator. The following products are recommended for implementing this legally prescribed specification:

- StecaGrid SEM
- WEB'log from Meteocontrol
- Solar-Log from Solare Datensysteme

## 4 Installation

### 4.1 Safety measures during installation

Observe the following safety notes when performing the work described in Section *Installation*.



#### **DANGER!**


Risk of death by electrocution!

- Only technical professionals may perform the work described in Section *Installation*.
- **Always** disconnect all DC and AC cables as follows before starting work on the inverter:
  1. Turn the AC circuit breaker to off. Take measures to prevent the system from being unintentionally switched on again.
  2. Set the DC circuit breaker on the inverter to position 0. Take measures to prevent the system from being unintentionally switched on again.
  3. Disconnect the plug connectors (SunClix) of the DC cables according to the manufacturer's instructions. (Overcome the safety clip by gently pressing the sides of the plug casing together and removing the plug.)
- ▲▲ **Warning**

DC cables carry voltage when the solar modules are subjected to sunlight.
- 4. Disconnect AC plug from inverter: ⇒ Release safety clip at the front of the AC plug by depressing it with a suitable object, then pull the plug out.
- 5. Check that all pins of the AC plug are free of voltage. Use a suitable voltmeter for this (do not use a simple neon phase checker).
- Do not connect cables to the inverter until explicitly asked to do so in the instructions.
- Do not open the casing of the inverter.
- Connect only SELV circuits to the RJ45 sockets.
- Lay the cables such that the connection cannot come loose accidentally.
- When laying cables, ensure that no damage occurs to any of the constructional fire safety measures in the building.
- Make sure that no inflammable gases are present.
- Observe all applicable installation regulations and standards, national laws and connection values specified by the regional power supply company.

## ! ATTENTION!

Danger of damage to the inverter or derating!

- The mounting location must satisfy the following conditions:
  - The mounting location and immediate environment are permanently fixed, vertical, flat, non-inflammable and not subject to constant vibration.
  - The permissible ambient conditions are conformed to; see Technical data  on page 54 ff.
  - The following free spaces must be present around the inverter:  
Above/below: at least 200 mm  
At the sides/in front: at least 60 mm
- Do not install the inverter in areas where animals are kept.
- Observe the connection ratings specified on the type plate.
- The DC cables must not be connected to an earth potential (DC inputs and AC output are not galvanically isolated).

## ! ATTENTION!

When transmitting data over a public network:

- Transmitting data over a public network can incur additional costs.
- Data transmitted over a public network is not protected from unauthorised access by third-parties.

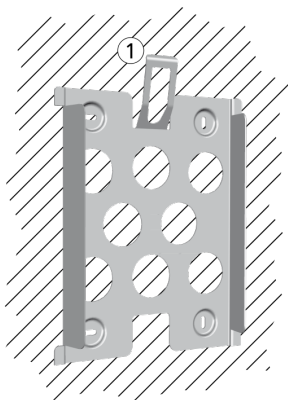


### Note

- *Avoid exposing the inverter to direct sunlight.*
- *The display must be readable on the installed device.*

## 4.2 Mounting the inverter

### Fastening the mounting plate



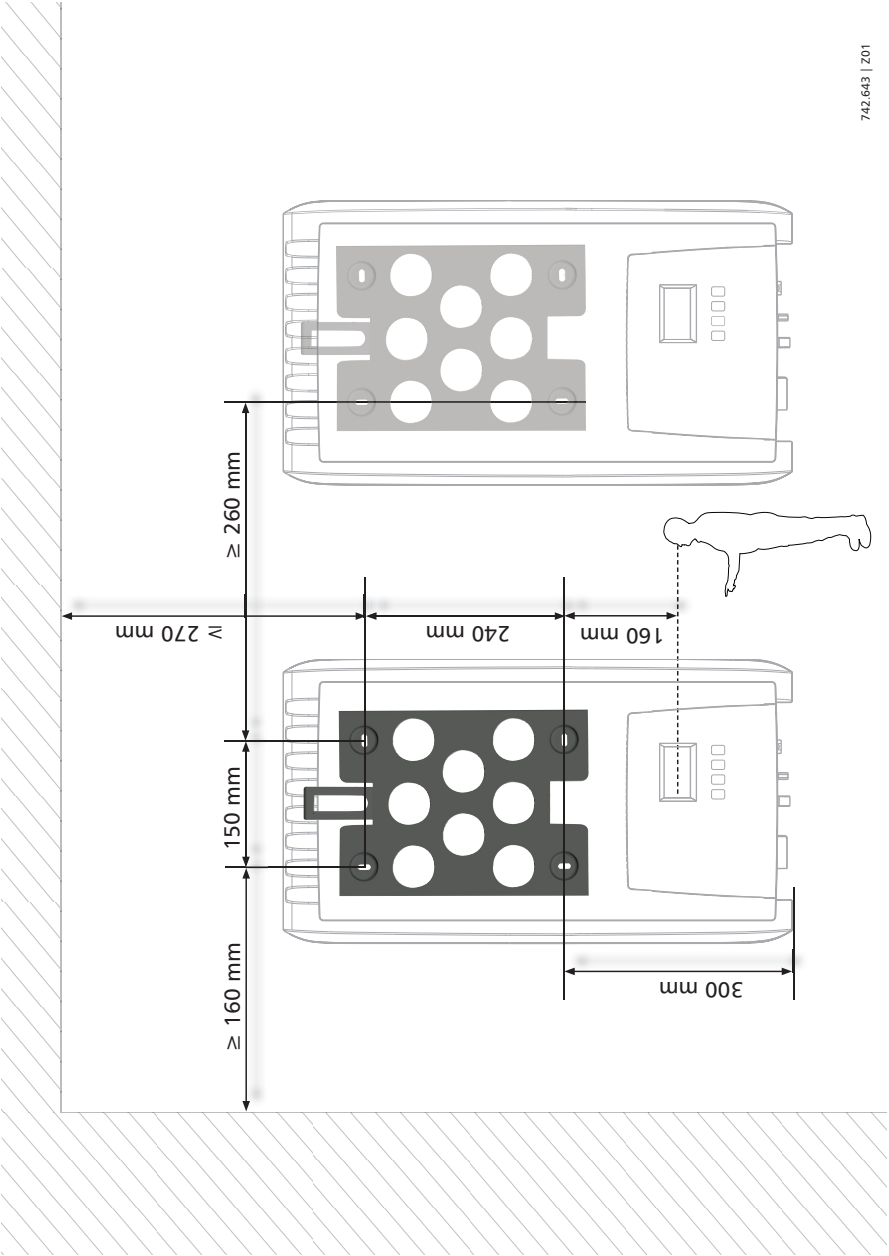
- Screw the mounting plate to the mounting surface using 4 screws:

- Use screws (and dowels etc.) appropriate for the weight of the inverter.
- The mounting plate must lie flat on the mounting surface and the metal strips at the sides must point forwards (Fig. left).
- Install the mounting plate vertically with the retaining plate ① at the top (example in Fig. left).

### Notice

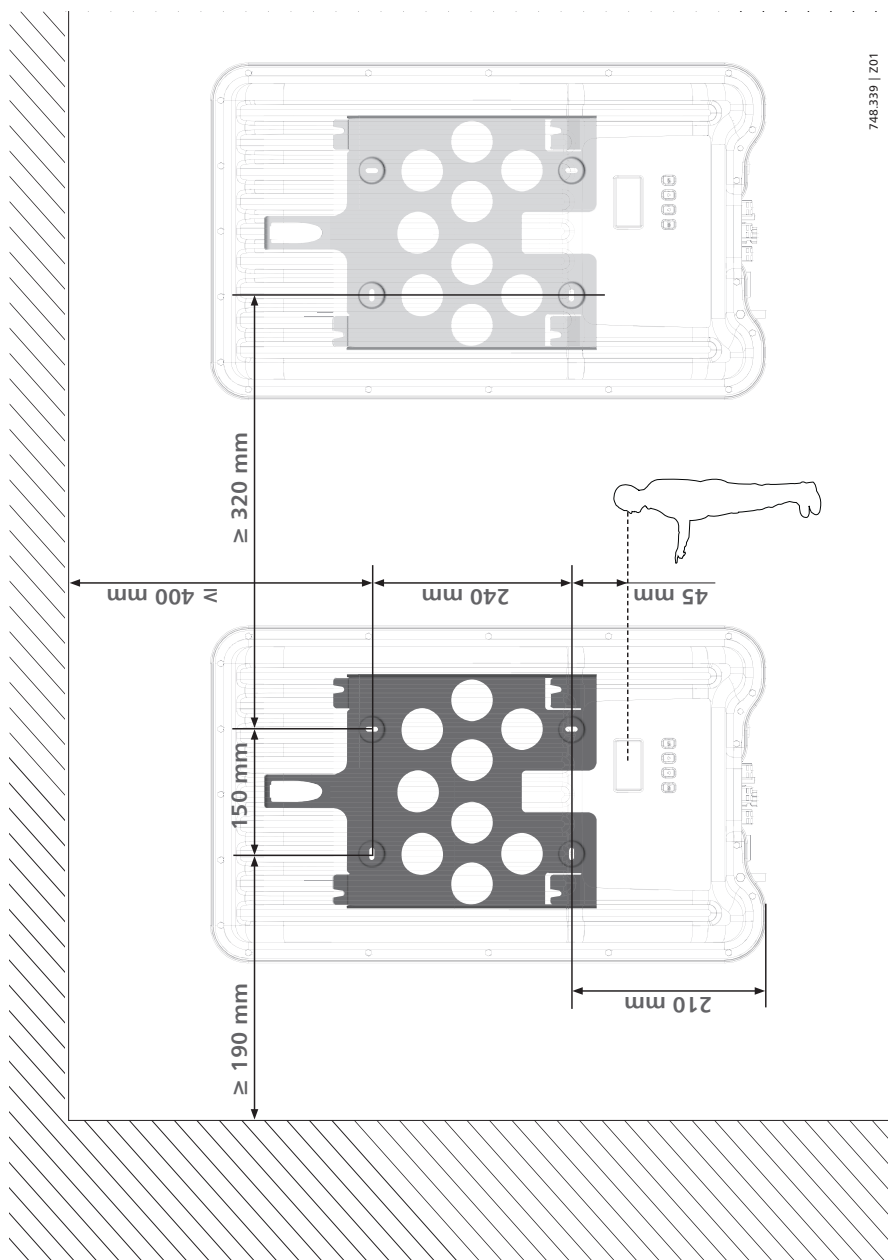
More information on determining the optimum position for the mounting plate is provided in the attached information sheet and in the Appendix under *Mounting*.

Plan of drill dimensions for coolcept devices



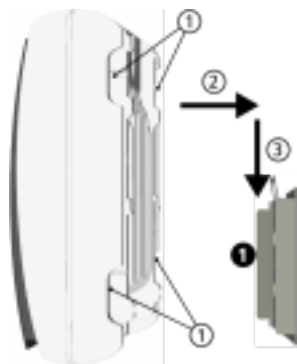
742.643 | Z01

# Plan of drill dimensions for coolcept-x devices



748.339 | Z01

## Mounting the inverter on the mounting plate



1. Grasp the inverter by the recesses ① (coolcept<sup>3</sup>) or the outer edges (coolcept<sup>3</sup>-x) position it ② in the middle of the mounting plate ② and press lightly (example in Fig. left).
2. Lower the inverter into place ③ until the retaining plate on the mounting plate clicks audibly into place. The hooks on the rear side of the inverter must slide over matching protrusions on the mounting plate.
3. The inverter must now sit securely on the mounting plate and can no longer be slid upwards.

### Notice

The procedure for removing the inverter from the mounting plate is described in ☞ 4.9, p. 36.

## 4.3 Preparing the AC connection

### 4.3.1 Line circuit breaker

Information on the required line circuit breaker and the cables to be used between the inverter and the line circuit breaker is provided in ☞ , p. 58

### 4.3.2 Residual current circuit breaker

If the local installation regulations require the installation of an external residual current circuit breaker, then a Type A residual current circuit breaker as per IEC 62109-1, § 7.3.8. is sufficient.

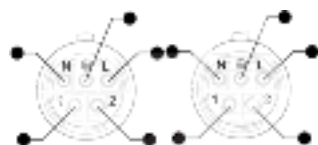
### 4.3.3 Wiring the AC plug



#### DANGER!

Risk of death by electrocution! Observe the warning notes in ☞ , p. 26!

➞ Wire the AC plug provided as described in the following Figure.



- ① Phase 1
- ② Phase 2
- ③ Phase 3
- ④ As the inverter is protection class II, the PE protective conductor has no function and need not be connected.
- ⑤ Neutral conductor

## 4.4 Preparing the DC connections



### DANGER!

Risk of death by electrocution!

- Observe the warning notes in ☞ , p. 26.
- Use the SunClix plug connectors provided to ensure that the specified degree of protection is maintained.



### ATTENTION!

Counterparts for DC connectors must be connected to the correct pole of the DC cable and in accordance with manufacturer's specifications.

Only Steca-approved energy storage systems may be connected to the battery connections.

Connecting other systems could damage the inverter and modules.

## 4.5 Preparing the data connection cable

- ☞ If a data connection is required, use a standard RJ45 cable (patch cable, Cat5) or construct an alternative data connection cable (see ☞ on page 23)

## 4.6 Connecting the inverter and switching on the AC power



### DANGER!

Risk of death by electrocution! Observe the warning notes in ☞ on page 26



### ATTENTION!

- Maintain a minimum clearance of 200 mm between the data connection cables (RS485/ Ethernet) and the DC-/AC cables to prevent data transmission interference.
- IP65 protection for type coolcept-x is only guaranteed when the AC and DC plugs are inserted and the open RJ45 sockets are closed with sealing caps.

1. ☞ If necessary, establish a data connection:
  - Connect the inverter and master using the data connection cable.
  - Switch on the termination (slide switch) at the last inverter.
2. ☞ Close any open RJ45 sockets with sealing caps.
3. ☞ Push the opposing connector (DC cable) firmly into the DC connection of the inverter until it audibly clicks into place.
4. ☞ Insert the AC plug into the socket on the inverter until it audibly clicks into place.
5. ☞ Switch on the AC line circuit breaker. The start page for initial commissioning is shown on the display.
6. ☞ Perform initial commissioning and switch on the DC supply, as described sequencing.

## 4.7 Initial commissioning of the inverter

### 4.7.1 Function

#### Conditions for starting initial commissioning

Initial commissioning starts automatically when at least the AC connector has been installed and switched on as described previously. If initial commissioning is not fully completed then it starts again anew the next time the device is switched on.

#### Guided initial commissioning

Initial commissioning is a guided procedure that sets the following information:

- Display language
- Date / Time
- Country
- Reactive power characteristic curve (if prescribed for the selected country)

#### Setting the country

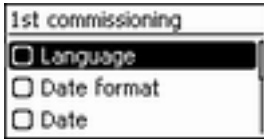
The following applies when setting the country:

- The country set must always be the same as the country where the inverter is installed. This causes the inverter to load the prescribed grid parameters for the selected country; more information on this is provided in the *country table* below.
- **The country can only be set once!**  
Contact your installer if you have set the wrong country.
- Contact your installer if you cannot select the country where your inverter is installed.
- The country setting does not affect the language used on the display. The display language is set separately.



## 4.7.2 Operation

### Starting initial commissioning



✓ The check list for initial commissioning is displayed:

- The default display language is English.
- The `Language` entry is selected.
- The check boxes are not selected.

---

#### NOTICES

- When a check list item is called up the corresponding check box is automatically selected.
  - The following items are only displayed when the use of a reactive power characteristic curve is prescribed for the country currently selected in the `Country` item:
    - `Reac. pwr. ch. c.` (type of reactive power characteristic curve)
    - `No. of nodes`<sup>1)</sup>
    - `Node 1`<sup>1)</sup>
    - `Node 2`<sup>1)</sup>
    - `Node n`<sup>1) 2)</sup>
    - `Display char. curve`
- <sup>1)</sup>: Is only displayed for reactive power characteristic curve type `Enter char. curve`.
- <sup>2)</sup>: Is only displayed when `no. of nodes` has been set to a value > 2.
- Initial commissioning is completed by calling up the `Finish` item.
  - `Finish` can only be performed when *all other* check boxes are selected.

- 
1. Press  $\Delta \nabla$  to select a check list item.
  2. Press `SET` to call up the item.

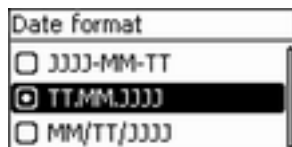
The items are described in detail below.

#### Language



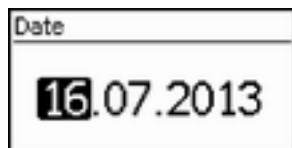
1. Press  $\Delta \nabla$  to select a display language.
2. Press `SET`. The language is adopted.
3. Press `ESC`. The check list is shown.

## Date format



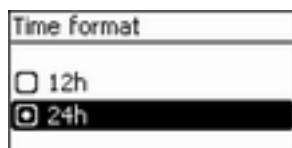
1. Press  $\triangle \nabla$  to select a date format.
2. Press **SET**. The date format is adopted.
3. Press **ESC**. The check list is shown.

## Date



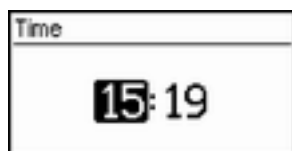
1. Press **SET**. The day flashes.
2. Press  $\triangle \nabla$  to change the day.
3. Press **SET**. The change is adopted.
4. Press  $\nabla$ . The month is selected.
5. Repeat steps 1 to 3 for the month.
6. Press  $\nabla$ . The year is selected.
7. Repeat steps 1 to 3 for the year.
8. Press **ESC**. The check list is shown.

## Time format



1. Press  $\triangle \nabla$  to select a time format.
2. Press **SET**. The time format is adopted.
3. Press **ESC**. The check list is shown.

## Time



1. Press **SET**. The hours display flashes.
2. Press  $\triangle \nabla$  to change the hour.
3. Press **SET**. The change is adopted.
4. Press  $\nabla$ . The minutes are selected.
5. Repeat steps 1 to 3 for the minutes.
6. Press **ESC**. The check list is shown.

## Country selection

---

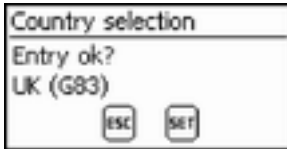
### NOTICE

The country can only be set once!

---



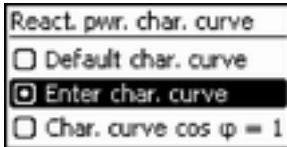
1. Press  $\triangle \nabla$  to select a country.
2. Press **SET**.



3. Press **ESC**; the dialogue shown at the left is displayed.
4. Press **ESC** to select a different country by performing step 1 and step 2, or

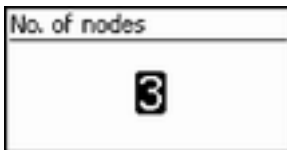
Press **SET** for a longer period of time ( $> 1$  s) to confirm the currently selected country. The check list is shown.

### Reactive power characteristic curve



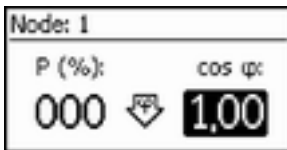
1. Press  $\Delta \nabla$  to select the type of reactive power characteristic curve corresponding to the local regulations.
2. Press **SET**. The reactive power characteristic curve type is adopted.
3. Press **ESC**. The check list is shown.

### Number of nodes



1. Press **SET**. The value flashes.
2. Press  $\Delta \nabla$  to change the number of nodes.
3. Press **SET**. The value is adopted.
4. Press **ESC**. The check list is shown.

### Node $n$



1. Press  $\Delta \nabla$  to select a parameter for the node.

---

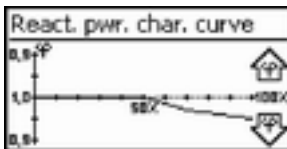
#### Notice

P % cannot be changed at the first and last nodes (000 %, 100 %).

---

2. Press **SET**. The parameter value flashes.
3. Press  $\Delta \nabla$  to change the value.
4. Press **SET**. The change is adopted.
5. Repeat steps 1 to 4 for the other parameters.
6. Press **ESC**. The check list is shown.

### Display characteristic curve



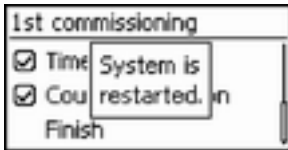
1. The previously set reactive power characteristic curve is displayed graphically (example in Fig. left).
2. Press **ESC**. The check list is shown.

## Finish

✓ **Finish** has been selected in the check list and **SET** has been pressed. One of 2 possible dialogues is displayed.

1. Proceed as follows, depending on the respective dialogue:

- Dialogue **Settings are incomplete: Press SET** and work through the open items in the check list.
- Dialogue **Are all settings correct?:**  
Press **ESC** to correct settings or  
Press and hold **SET** (> 1 s) to finish initial commissioning.



2. If **SET** was pressed for a longer time then the inverter starts anew and synchronises itself with the grid (Fig. left).

## 4.8 Switching on the DC supply



- Set the DC circuit breaker on the inverter to position **I** (Fig. left). After testing via the internal MSD (approx. 2 minutes), the power fed into the grid can be shown on the display (assuming that sunlight is present).

### Notice

The DC circuit breaker on the coolcept<sup>3</sup>-x devices can be secured with a padlock to prevent unintentional switch-on (maximum padlock size of 7 mm).

## 4.9 Deinstalling the inverter



### DANGER!

Risk of death by electrocution! Only technical professionals may perform the work described in this section. Follow the safety instructions at the beginning of the Section "Installation".

### Switching off the AC and DC supplies



1. Turn the AC circuit breaker to off.
2. Set the DC circuit breaker on the inverter to position **0** (Fig. left).

## Disconnecting the DC connections from the inverter

- Disconnect the DC cable plug connectors according to the manufacturer's instructions; see Appendix. A special tool is required for Multi-Contact MC4.

### ▲▲ Warning

DC cables carry voltage when the solar modules are subjected to sunlight.

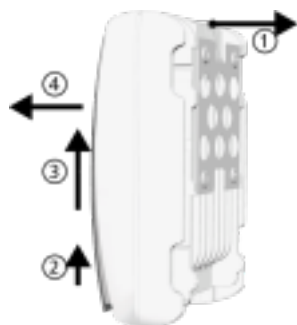
## Disconnecting the AC plug from the inverter

1. Remove the AC plug from the socket on the inverter as described in the Appendix under Mounting ⇒ AC plugs.
2. Check that all pins of the AC plug are free of voltage. Use a suitable voltmeter for this (do not use a simple neon phase checker).

## Opening the AC plug (only if required)

- Open the AC plug as described in the Appendix under Mounting ⇒ AC plugs.

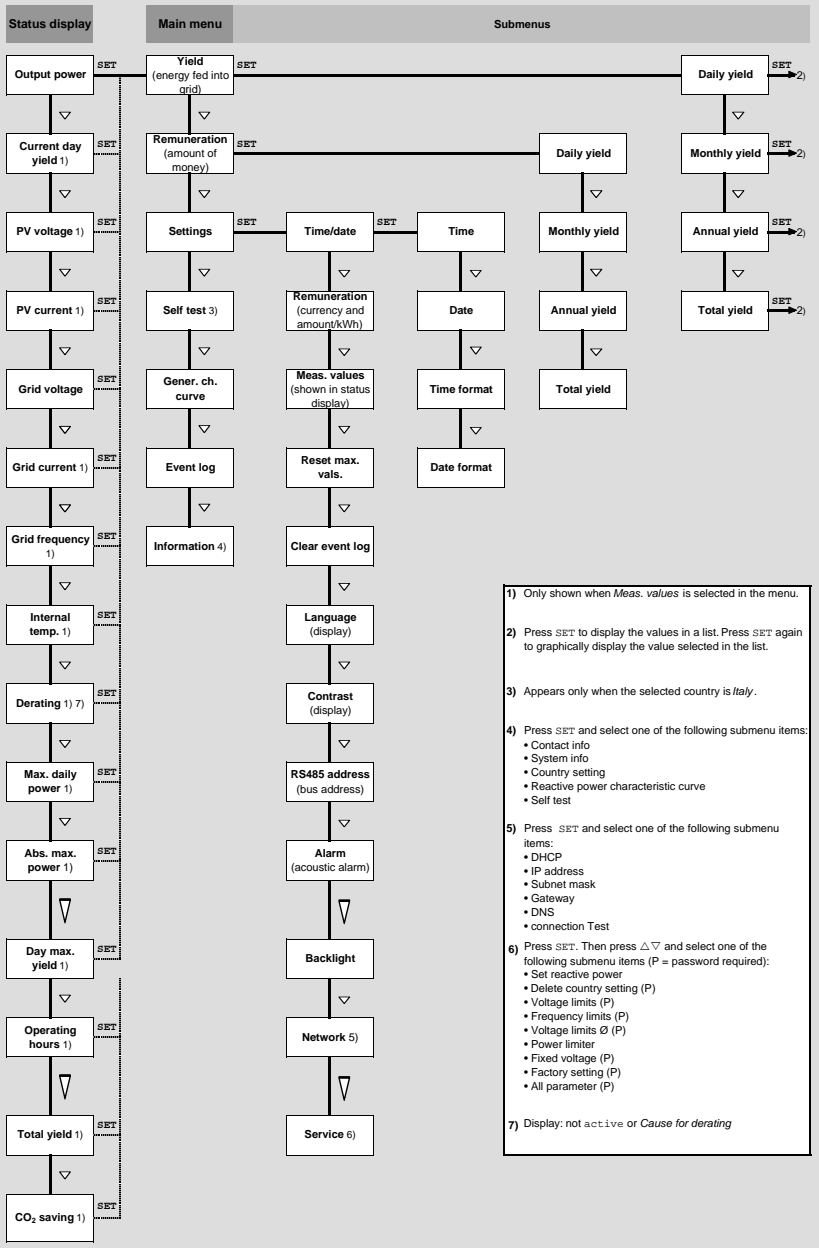
## Removing the inverter from the mounting surface



1. Use one hand to press the retaining plate on the mounting plate approx. 5 mm towards the mounting surface ① (Fig. left).
2. Use the other hand to push the inverter upwards, far enough so that the retaining plate no longer latches ②. Release the retaining plate.
3. Lift the inverter with both hands until the hooks on the rear side of the inverter are free ③.
4. Remove the inverter from the mounting surface ④.

# 5 Operation

## 5.1 Overview of operating functions



Only the ▽ and SET operating buttons are illustrated (for the sake of clarity).

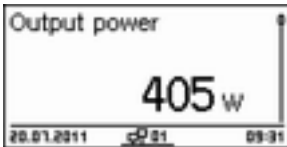
## 5.2 General operating functions

- Hidden content is shown using the △ and ▽ buttons.
- Repeated button presses: If △▽ need to be pressed repeatedly, you can alternatively hold these buttons pressed for a *long* time. The rate of repetition increases the longer the button is held.
- Pressing any button switches on the display backlighting

## 5.3 Main operating functions

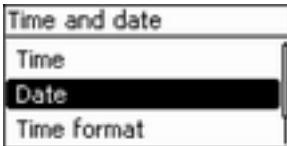
The figures in this section show examples.

### Status display



1. If necessary, press 'ESC' for 1 second to call up the status display (Fig. left).
2. Press △▽ to display a different parameter.

### Menu navigation

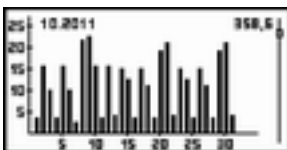
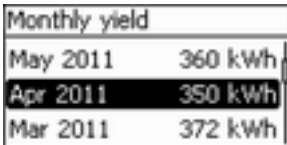


1. Press 'ESC' for 1 second to call up the status display as required.
2. Press 'SET'. The main menu is displayed with the top item selected.
3. Press △▽ to select a menu item.
4. Press 'SET' to call up the submenu (Fig. left).
5. Repeat steps 3 and 4 for further submenus as required.

### Ereignismeldungen

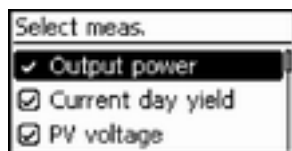
See 📖 'Event messages' on page 50

### Displaying yields numerically (list) and graphically (chart)



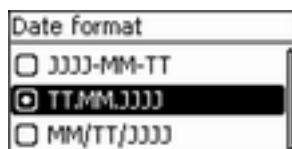
- ✓ The status display is shown.
1. Press 'SET'. The main menu is displayed with 'Yield' selected.
2. Press 'SET'. The list with yield time periods is shown.
3. Press △▽ to select a yield time period.
4. Press 'SET'. The individual yields for the yield time period are shown in a list (Fig. left).
5. Press △▽ to select an individual yield value.
6. Press 'SET'. The selected individual yield is shown in a chart (Fig. left).
7. Press △▽ to page through the charts.
8. Press 'SET' to return to the list.

## Editing selection lists containing check boxes



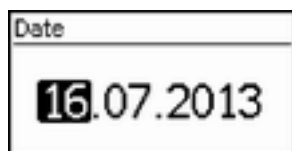
- ✓ A selection list with check boxes is displayed (Fig. left).
- 1. Press  $\Delta \nabla$  to select a check box.
- 2. Press 'SET'. The state of the check box changes from *on* to *off* and vice-versa (preset check boxes cannot be changed).
- 3. Repeat steps 1 and 2 for further check boxes as required.
- 4. Press 'ESC'. The changes are adopted and the next higher menu level is displayed.

## Editing selection lists containing radio buttons



- ✓ A selection list with radio buttons is displayed (Fig. left).
- 1. Press  $\Delta \nabla$  to select a radio button that is currently switched off.
- 2. Press 'SET'. The selected radio button is switched on and the previously switched on radio button is switched off.
- 3. Press 'ESC'. The changes are adopted and the next higher menu level is displayed.

## Changing numeric settings



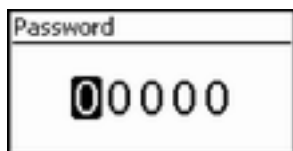
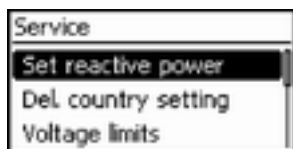
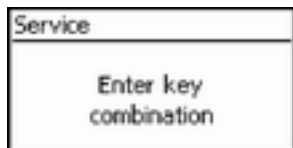
- ✓ A numeric setting is displayed (example *Date* in Fig. left).
- 1. Press SET. The selected value flashes (*Day* in Fig. left).
- 2. Press  $\Delta \nabla$  to change the value.
- 3. Press SET. The change is adopted (value no longer flashes) *or* Press ESC to cancel the change (value no longer flashes).
- 4. Press  $\nabla$ . The next value is selected.
- 5. Repeat steps 1 to 4 for the remaining values.
- 6. Press ESC. The next higher menu level is displayed.



## Calling up the service menu and editing the values

### ! ATTENTION!

Risk of yield losses and contravention of regulations and standards. Inverter and grid parameters can be changed in the service menu. The service menu must therefore only be used by technical professionals who know the applicable regulations and standards.



1. Select the **Service** menu item.
2. Press **SET**. The fig. shown at the left appears.
3. Press  $\Delta \nabla$  simultaneously for 3 seconds. The service menu is displayed (Fig. left).
4. Press  $\Delta \nabla$  to select a menu item.
5. Press **SET** to edit the menu item. The following applies:
  - Enter the password if required (Fig. left); see  $\S$  on page 17
  - If necessary, press  $\Delta \nabla$  within a menu item to display and edit other settings (e.g. *Voltage limits*).
  - The menu items are described in  $\S$  on page 17.

## 5.4 Internet portal



### Notice

- The Internet portal only supports inverters in the *coolcept* product line.
- The following illustrations show examples in English.

## 5.4.1 Registration

Call up the Internet portal, enter the language and serial number

1. ➤ Enter the following address into the Internet browser (or click the address if you are reading this document as a PDF on a computer monitor): [www.steca.com/portal](http://www.steca.com/portal). Ensure that scripting and cookies for [www.steca.com/portal](http://www.steca.com/portal) are enabled in the browser.

⇒ Fig. 4 appears.

Fig. 4: Language selection and data entry form for the serial number

2. ➤ Select your language using the buttons ① (in Fig. 4). The language is set immediately.
3. ➤ Enter the serial number of the device into the field ②.



### Notice

- The serial number always consists of a sequence with 6 numbers – 2 letters – 12 numbers, e. g. 123456AB123456789012.
- If you enter an invalid serial number, an error message is displayed and the login process is cancelled.
- Press the green button "+" (at the left next to the field ②), to enter the serial numbers of further inverters (a maximum of 5 inverters are possible).

4. ➤ After entering the last serial number, press the button ③.

⇒ Fig. 5, p. 43 appears.

## Entering the user data

Fig. 5: Data entry form for user data



### ATTENTION!

The email address can only be entered once and cannot be subsequently changed! The email address is also the user name; see also ① in Fig. 11, p. 47.

1. Enter your email address into the field ① (Fig. 5). Observe the note ④.
2. Enter any desired password into the field ② and repeat the entry of this password in the field ③ (safety check).
3. Confirm via the button ⑤ *or* use the ⑥ button to return to the previous page if necessary (entries in Fig. 5 are discarded).  
⇒ After ⑤ has been pressed, Fig. 6 appears.

## Entering system data

StecaGrid portal registration

**System**

System name:  ① ✓

Installed power:  ② ktp ✓

System description\*:  ③ ✓

210 of 250 characters available.

\* Please enter ④ description of the system here. For example, you can enter data about the number and type of solar modules, the installed power and the power of the system. This information will be shown under technical data in StecaGrid portal.

**Site data**

Map: On ☐ Off ☒ Determine position ⑤ ⑥

⑦ ⑦ Centre card on map | Scale | Satellite

Longitude:  ⑧ ✓

Latitude:  ⑧ ✓

Address (optional):  ⑨

⑩ I agree to the General Terms and Conditions and the Data Protection Regulations and accept them.

⑪

Fig. 6: Data entry form for the system data

1. Enter any desired name <sup>A)</sup> for your solar system into the field ① in Fig. 6.
2. Enter the installed power <sup>A)</sup> of the system into the field ②.
3. Enter a description <sup>A)</sup> of the system into the field ③. Observe the note ④.
4. Use the Google Maps buttons ⑤ to ⑦ to navigate to the location of the system.
  - ⇒ The location data is displayed in the fields ⑧.
5. Enter an optional address of the system into the field ⑨.
6. Select the check box ⑩ and confirm via the button ⑪.
  - ⇒ Fig. 8 appears, an email with the activation code, as shown in Fig. 7, is sent to the email address ① in Fig. 5.

```

*****
[StecaGrid portal Registration]
*****
E-mail verification
*****

Dear User,

This is an automatically generated e-mail to verify your e-mail address.

If you have not yet registered StecaGrid portal, you do not need to take further action and can simply ignore this e-mail.

To activate your account and continue the set-up procedure, please click on the following activation link:

https://www.solar-monitoring.net/solar-monitoring/steckhangSimple.php?source=22&login=&userKey=1...m&device=desktop

Alternatively, you can enter the following activation key on the login page:

JqWMEkPgoBwPzKUHtZ9H6tbaZVWYEBLVoBwHAm

Kind regards

Steca Elektronik GmbH

```

Fig. 7: Email with the activation code

<sup>A)</sup> Data can be subsequently changed.

## Completing registration

Fig. 8: Data entry form for the activation code

1. ➤ Enter the activation code that you received in the email as per Fig. 7 into the field ② in Fig. 8.
2. ➤ Confirm via the button ③.
  - ⇒ If the registration was successful then Fig. 9 appears and you will receive an additional confirmation email (Fig. 10). This email contains a direct link to Fig. 12, p. 48.

#### StecaGrid portal registration



Fig. 9: Confirmation message of successful registration

```

=====
[StecaGrid portal Registration]
=====

Dear User,

Congratulations on successfully registering your data logger.

Your system has been set up with the
following data:

System name:
My Solar System

Installed power:
3.75 kWp

System description:
StecaGrid 3608, 15 solar modules, 258 Wp

Data logger hardware number:
T458137m80517976001

We hope you will enjoy using your dashboard.

The following link will take you to your
system:
http://public.solarmonitoring.net/dashboard/system/5\_3

User data:
-----
E-mail/login: service@stecastar.com
Password: 123456
-----

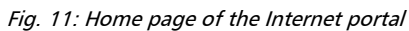
Kind regards

Steca Elektronik GmbH
  
```

Fig. 10: Email confirming successful registration

## 5.4.2 Login – Displaying yield data – Changing settings

1. ➤ Enter the following address into the browser: [www.solare-energiewende.de](http://www.solare-energiewende.de). Ensure that scripting and cookies for [www.solare-energiewende.de](http://www.solare-energiewende.de) are enabled in the browser.
  - ⇒ The home page of the Internet portal as shown in Fig. 11 is displayed.
2. ➤ The functions as per the legend shown in Fig. 11 are available on the home page of the Internet portal.



- ① *Username* data entry field (= email address)
- ② *Password* data entry field
- ③ Button for logging in after ① and ② have been entered. After logging in, the functions as per the legend shown in Fig. 12 are available.
- ④ Data entry field for the postal address of the system that is to be displayed (login not required).
- ⑤ Data entry field for the name of the system that is to be displayed.
- ⑥ Map for searching for systems.



Fig. 12: Yield display

- ① System data display
- ② Performance data display
- ③ Environmentally related data display
- ④ Buttons for changing the display
- ⑤ Yield charts display
- ⑥ Buttons for setting the period shown in ⑤
- ⑦ Button for changing the system data, as described in § , p. 45.
- ⑧ Button for selecting the language

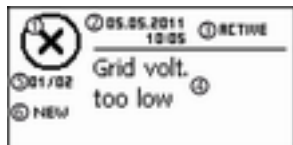


## 6 Troubleshooting

Faults are indicated by event messages as described below. The display flashes red. The *list of event messages* below contains information on troubleshooting and fault correction.

### Structure

Event messages contain the following information:



- ① Symbol for the type of event message
- ② Date/time when the event occurred
- ③ ACTIVE = cause of the event message is still present *or*

Date/time at which the cause of the event message was corrected.

- ④ Cause of the event message
- ⑤ Counter: *No. of the displayed event messages / Total number of event messages,*

Max number of all event messages = 30

- ⑥ NEW is displayed until the event message has been manually confirmed via the `ESC` or `△/▽` button.

### Function

#### Event message types

- Type **Information** (symbol ⓘ)  
The inverter has detected an error that does not affect the feed-in process. The user does not need to intervene.
- Type **Warning** (symbol ⚠)  
The inverter has detected an error that may result in reduced yields. It is highly recommended that you correct the cause of the error.
- Type **Error** (symbol ⊗)  
The inverter has detected a serious error. The inverter will not feed into the grid while this error is present. Please contact your installer. More information is provided in the table below.

#### Display behaviour

New event messages are displayed immediately. The messages disappear after they have been confirmed or their causes have been corrected.



#### Note

*When an event message is confirmed, the user thereby simply confirms that he/she has seen the message. This does not correct the error that caused the event message to be shown!*

If messages exist whose cause has been corrected but have not been confirmed then ⓘ is shown in the status display. If an already confirmed error recurs then it is displayed again.

### Operation

#### Confirming event messages












- ✓ An event message with the comment 'NEW' is displayed.
- ▶ Press '`ESC`'/`△/▽`. The event message is confirmed.



## Displaying event messages

1. Select '*Event log*' in the main menu.
2. Press '*SET*'. The event messages are displayed in chronological order (latest message first).
3. Press  $\Delta \nabla$  to page through the event messages.

## Event messages

Event message	Description	Type
Grid frequency too low	The grid frequency at the inverter is less than the minimum permissible value. Due to legal requirements, the inverter switches automatically off while the error state is present.  ► Contact your installer if this error occurs frequently.	⊗
Grid frequency too high	The grid frequency at the inverter is greater than the maximum permissible value. Due to legal requirements, the inverter switches automatically off while the error state is present.  ► Contact your installer if this error occurs frequently.	⊗
Grid voltage too low	The grid voltage at the inverter is less than the minimum permissible value. Due to legal requirements, the inverter switches automatically off while the error state is present.  ► Contact your installer if this error occurs frequently.	⊗
Grid voltage too high	The grid voltage at the inverter is greater than the maximum permissible value. Due to legal requirements, the inverter switches automatically off while the error state is present.  ► Contact your installer if this error occurs frequently.	⊗
Grid voltage too high for re-activation	After switching off, the inverter cannot resume feeding because the grid voltage exceeds the legally prescribed switch-on value.  ► Contact your installer if this error occurs frequently.	⊗
Grid voltage Ø too low	The output voltage averaged over the legally prescribed period of time falls below the permissible tolerance range. The inverter switches automatically off while the error state is present.  ► Contact your installer if this error occurs frequently.	⊗
Grid voltage Ø too high	The output voltage averaged over the legally prescribed period of time exceeds the permissible tolerance range. The inverter switches automatically off while the error state is present.  ► Contact your installer if this error occurs frequently.	⊗
Grid current DC offset too high	The DC current portion fed into the grid by the inverter exceeds the maximum permissible value. Due to legal requirements, the inverter switches automatically off while the error state is present.  ► Contact your installer.	⊗
Residual current too high	The residual current flowing from the positive or negative inputs to earth via the solar modules exceeds the maximum permissible value. Due to legal requirements, the inverter switches automatically off while the error state is present.  ► Contact your installer.	⊗

Event message	Description	Type
L and N swapped	The live and neutral conductors are wrongly connected. For safety reasons the inverter must not feed into the grid. ► Contact your installer.	
Insulation error	The insulation resistance between the positive or negative input and earth is less than the permissible value. For safety reasons the inverter must not feed into the grid. ► Contact your installer.	
Fan faulty	The internal fan of the inverter is faulty. In certain situations the inverter will feed less power into the grid. ► Contact your installer.	
Device overheated	Despite power reduction, the maximum permissible temperature has been exceeded. The inverter feeds no power into the grid until the maximum permissible temperature is no longer exceeded. 1. Check that the installation conditions are satisfied. 2. Contact your installer if this message occurs frequently.	
PV voltage too high	The input voltage at the inverter is greater than the maximum permissible value. ► Switch off the DC circuit breaker at the inverter and contact your installer.	
PV current too high	The input current at the inverter exceeds the permissible value. The inverter limits the current to the permissible value. ► Contact your installer if this message occurs frequently.	
Grid islanding detected	There is no grid voltage present (inverter running independently). For safety reasons the inverter must not feed into the grid. The inverter switches off while the error is present (dark display). ► Contact your installer if this error occurs frequently.	
Time/date lost	The inverter has lost the time settings because it was disconnected from the grid for too long. Yields cannot be stored and event messages will have the wrong date. ► Correct the time under <b>Settings</b> ► <b>Time/date</b> .	
Intern. info	► Contact your installer if this message occurs frequently.	
Intern. warning	► Contact your installer if this message occurs frequently.	
Intern. error	► Contact your installer if this message occurs frequently.	

Event message	Description	Type
Self test failed	<p>An error occurred during the self test and the self test was cancelled.</p> <ul style="list-style-type: none"> <li>▶ Contact your installer when               <ul style="list-style-type: none"> <li>■ the self test is cancelled due to an error several times at different times of the day and</li> <li>■ it is certain the the grid voltage and frequency were within the limit values defined by the country setting; see <i>⚙</i>, p. 59.</li> </ul> </li> </ul>	
Faulty country settings	<p>An inconsistency exists between the selected country settings and those stored in memory.</p> <ul style="list-style-type: none"> <li>▶ Contact your installer.</li> </ul>	

## 7 Maintenance and disposal

### 7.1 Maintenance

The inverter is basically maintenance-free. Despite this, it is a good idea to regularly check that the cooling fins on the front and rear sides of the device are free of dust. Clean the inverter when necessary as described below.

#### **ATTENTION!**

Danger of destruction of components in devices of type coolcept<sup>3</sup>:

- **Do not** allow cleaning agents and devices to penetrate between the cooling fins at the front of the inverter (under the grey hood).
- **Do not** use especially the following cleaning agents:
  - Solvent-based cleaning agents
  - Disinfection agents
  - Coarse or sharp-edged cleaning agents

#### Removing dust



 Dust should be removed using compressed air (max. 2 bar).

#### Removing heavy soiling



#### **DANGER!**

Risk of death by electrocution! Use cleaning agents only with a slightly damp cloth.

1.  Remove heavy soiling with a slightly damp cloth (use clear water). If necessary, use a 2 % hard soap solution instead of water.
2.  After cleaning, remove any soap residue using a slightly damp cloth.

### 7.2 Disposal

Do not dispose of the device in the normal household waste. At the end of its service life, return the device to Steca Customer Service with a note stating *Zur Entsorgung (For disposal)*.

The device packaging consists of recyclable materials.

## 8 Technical data

### 8.1 Inverters

	StecaGrid3203 StecaGrid3203-x	StecaGrid4003 StecaGrid4003-x	StecaGrid4803 StecaGrid4803-x	StecaGrid5503 StecaGrid5503-x
DC input side (PV generator connection)				
Number of DC inputs	1			
Maximum start voltage	1000 V			
Maximum input voltage	1000 V			
Minimum input voltage for grid-feeding	250 V			
Startup input voltage	250 V			
Rated input voltage	410 V	510 V	615 V	700 V
Minimum input voltage for rated output	300 V	375 V	450 V	510 V
MPP voltage for rated output	300 V ... 800 V	375 V ... 800 V	450 V ... 800 V	510 V ... 800 V
Maximum input current	11 A			
Maximum short-circuit current	15 A			
Rated input current	8 A			
Maximum input power at maximum active output power	3300 W	4100 W	4920 W	5620 W
Rated input power (cos φ = 1)	3300 W	4100 W	4920 W	5620 W
Recommended maximum PV output	4000 Wp	4900 Wp	5900 Wp	6700 Wp
Derating / power limiting	occurs automatically when: <ul style="list-style-type: none"><li>■ input power &gt; max. recommended PV power</li><li>■ cooling is inadequate</li><li>■ input current too high</li><li>■ grid current too high</li><li>■ internal or external derating</li><li>■ grid frequency too high (according to country setting)</li><li>■ limiting signal received via an external interface</li><li>■ output power is limited (set at the inverter)</li></ul>			
DC side (storage system connection) <sup>1)</sup>				
Voltage	680 V to 1000 V			
Max. current	10 A			

	StecaGrid3203 StecaGrid3203-x	StecaGrid4003 StecaGrid4003-x	StecaGrid4803 StecaGrid4803-x	StecaGrid5503 StecaGrid5503-x
AC output side (grid connection)				
Output voltage	320 V to 480 V (depending on the country settings selected)			
Rated output voltage	400 V			
Maximum output current	7 A		10 A	
Maximum inrush current (switch-on current)	16 A (for 10 ms)			
RMS short-circuit current	3,82 A <sub>RMS</sub> (for 60 ms)			
Rated output current	2.7 A	3.3 A	4 A	4.6 A
Maximum active power (cos φ = 1)	3200 W	4000 W	4800 W	5500 W
Maximum active power (cos φ = 0.95)	3040 W	3800 W	4560 W	5225 W
Maximum active power (cos φ = 0.90)	2880 W	3600 W	4320 W	4950 W
Maximum apparent power (cos φ = 0.95)	3200 W	4000 W	4800 W	5500 W
Maximum apparent power (cos φ = 0.90)	3200 W	4000 W	4800 W	5500 W
Rated output	3200 W	4000 W	4800 W	5500 W
Rated frequency	50 Hz and 60 Hz			
Grid type	L <sub>1</sub> / L <sub>2</sub> / L <sub>3</sub> / N / FE			
Grid frequency	45 Hz ... 65 Hz (depending on the country settings selected)			
Power losses in night- time operation	< 3 W			
Feeding phases	three-phase			
Distortion factor (cos φ = 1)	< 1 %			
Power factor cos φ	0.80 capacitive ... 0.80 inductive			
Characterisation of the operating behaviour				
Maximum efficiency	98.6 %		98.7 %	
European efficiency	97.9 %	98.1 %	98.2 %	98.3 %
CEC efficiency	98.3 %	98.4 %	98.5 %	98.5 %
MPP efficiency	> 99.8 % (static), > 99 % (dynamic)			

	StecaGrid3203 StecaGrid3203-x	StecaGrid4003 StecaGrid4003-x	StecaGrid4803 StecaGrid4803-x	StecaGrid5503 StecaGrid5503-x
Efficiency values (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of the rated power) at rated voltage	82 %, 91,7 %, 95,6 %, 96,2 %, 96,8 %, 97,5 %, 97,7 %, 97,1 %	87,3 %, 93,7 %, 96,5 %, 97,1 %, 97,4 %, 97,9 %, 98 %, 97,7 %	92,8 %, 96,2 %, 97,9 %, 98,2 %, 98,4 %, 98,7 %, 98,6 %, 98,4 %	92,9 %, 95,8 %, 97,7 %, 98 %, 98,2 %, 98,5 %, 98,4 %, 98,2 %
Operating efficiency (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of rated power) at minimum MPP voltage	81,6 %, 91,2 %, 95,1 %, 95,9 %, 96,3 %, 97 %, 97,1 %, 96,7 %	85,4 %, 92,8 %, 96,1 %, 96,7 %, 97 %, 97,5 %, 97,4 %, 97,1 %	87,8 %, 94,2 %, 96,8 %, 97,3 %, 97,6 %, 97,9 %, 97,8 %, 97,7 %	90,2 %, 95,1 %, 97,3 %, 97,6 %, 97,8 %, 98,2 %, 98,1 %, 97,7 %
Operating efficiency (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of rated power) at maximum MPP voltage	86,4 %, 93,2 %, 96,2 %, 96,8 %, 97,3 %, 98 %, 98,2 %, 98,3 %	89,1 %, 94,5 %, 96,8 %, 97,3 %, 97,7 %, 98,2 %, 98,2 %, 98,1 %	89,6 %, 94,5 %, 97 %, 97,4 %, 97,7 %, 98,3 %, 98,4 %, 98,2 %	90,5 %, 95,1 %, 97,2 %, 97,6 %, 97,8 %, 98,2 %, 98,2 %, 98 %
Efficiency reduction in the case of a rise in ambient temperature (at temperatures > 40 °C)	0.005 %/°C			
Efficiency change in the case of deviation from the DC rated voltage	0.002 %/V			
Own consumption	< 8 W			
Derating at full power	from 50 °C (T <sub>amb</sub> )			
Switch-on power	10 W			
Switch-off power	8 W			
Safety				
Protection class	II			
Isolation principle	no galvanic isolation, transformerless			
Grid monitoring	yes, integrated			
Insulation monitoring	yes, integrated			
Residual current monitoring	yes, integrated <sup>2)</sup>			
Overvoltage protection version	varistors			
Reverse polarity protection	yes			
Application conditions				
Operational area	coolcept <sup>3</sup> : indoor rooms, with or without air conditioning coolcept <sup>3</sup> -x: indoor rooms with or without air conditioning, outdoors with or without protection			



	StecaGrid3203 StecaGrid3203-x	StecaGrid4003 StecaGrid4003-x	StecaGrid4803 StecaGrid4803-x	StecaGrid5503 StecaGrid5503-x
Ambient temperature range (T <sub>amb</sub> )	-15 °C ... +60 °C			
Storage temperature	-30 °C ... +70 °C			
Relative humidity	0 % ... 95 % for all coolcept <sup>3</sup> (IP21) devices; 0% ... 100 % for all coolcept <sup>3</sup> -x (IP65) devices			
Installation elevation	≤ 2000 m above sea level			
Degree of pollution	PD3			
Noise emission (typically)	29 dBA			
Impermissible ambient gases	ammonia, solvents			
Equipment and design				
Degree of protection	coolcept <sup>3</sup> : IP21 (casing: IP51; display: IP21) coolcept <sup>3</sup> -x: IP65			
Overvoltage category	III (AC), II (DC)			
DC connection	coolcept <sup>3</sup> : Phoenix Contact SUNCLIX (2 pairs) coolcept <sup>3</sup> -x: Phoenix Contact SUNCLIX (1 pair)			
AC connection				
Type	Wieland RST25i5 plug			
Connection conductor cross-section	cable diameter 10 ... 14 mm <sup>2</sup> , conductor cross-section ≤ 4 mm <sup>2</sup>			
Opposing connector	included in delivery			
Dimensions (X x Y x Z)	coolcept <sup>3</sup> 340 x 608 x 222 mm; coolcept <sup>3</sup> -x 399 x 657 x 227 mm			
Weight	coolcept <sup>3</sup> : 10 kg; coolcept <sup>3</sup> -x: 12 kg			
Communication inter- faces	1x RJ45 socket (RS485), 2x RJ45 socket (Meteocontrol WEB'log or Solar-Log; Ethernet interface)			
Feed-in management as per EEG 2012	EinsMan-ready, via RS485 interface			
Integrated DC circuit breaker	yes, compliant with VDE 0100-712			
Cooling principle	temperature-controlled fan, variable speed, internal (dust protected)			
Test certificate	CE symbol, VDE AR N 4105; further certificates under preparation			

Technical data at 25 °C / 77 °F

<sup>1)</sup> Only connect Steca storage-ready devices to the storage connections. Direct battery connection is **not** possible.

<sup>2)</sup> The design of the inverter prevents it from causing DC leakage current.

## 8.2 AC cables and line circuit breakers

Conductor cross-sections of the AC cables and suitable line circuit breakers

Inverter	AC-cable conductor cross-section	Power loss <sup>1)</sup>	Line circuit breaker
StecaGrid 3203/3203-x	2.5 mm <sup>2</sup>	4 W	B16
	4.0 mm <sup>2</sup>	3 W	B16
StecaGrid 4003/4003-x	2.5 mm <sup>2</sup>	7 W	B16
	4.0 mm <sup>2</sup>	4 W	B16
StecaGrid 4803/4803-x	2.5 mm <sup>2</sup>	10 W	B16
	4.0 mm <sup>2</sup>	7 W	B16
StecaGrid 5503/5503-x	2.5 mm <sup>2</sup>	13 W	B16
	4.0 mm <sup>2</sup>	8 W	B16

<sup>1)</sup> Power loss of the AC cables at the rated power of the inverter and a cable length of 10 m

### 8.3 Table of countries

Country		Reconnection time	Voltage disconnection values (peak values) <sup>2)</sup>				Voltage disconnection values Ø (average values) <sup>3)</sup>				Frequency disconnection values <sup>4)</sup>			
			upper		lower		upper		lower		upper		lower	
Name	Display <sup>1)</sup>	s	%	s	%	s	%	s	%	s	Hz	s	Hz	s
Germany	4900 Deutschland	60	15.0	0.20	-20	0.20	10	600.0	–	–	1.5	0.2	-2.5	0.2
Sweden	4600 Sverige	30	15.0	0.20	-15	0.20	11	60.0	-10	60.0	1.0	0.5	-3.0	0.5
Spain	3400 España	180	15.0	0.20	-15	1.50	10	1.5	–	–	1.0	0.5	-2.0	3.0
Netherlands	3100 Nederland	30	10.0	2.00	-20	2.00	–	–	–	–	1.0	2.0	-2.0	2.0
Belgium 2 unlimited	3203 Belgique 2 unl	60	15.0	0.20	-20	0.20	10	600.0	–	–	1.5	0.2	-2.5	0.2
Austria	4300 Österreich	30	15.0	0.20	-20	0.20	12	600.0	–	–	1.0	0.2	-3.0	0.2
Italy 3	3902 Italia 3	30	22.0	0.10	-25	0.20	–	–	–	–	5.0	0.2	-5.0	0.2
Slovenia	38600 Slovenija	30	15.0	0.20	-30	0.20	10	1.5	-15	1.5	1.0	0.2	-3.0	0.2
Czech Republic	42000 Česko	30	15.0	0.20	-15	0.20	10	600.0	–	–	0.5	0.2	-0.5	0.2
Greek Islands	3001 Greece islands	180	15.0	0.50	-20	0.50	10	600.0	–	–	1.0	0.5	-2.5	0.5
Greek Mainland	3000 Greece continent	180	15.0	0.50	-20	0.50	10	600.0	–	–	0.5	0.5	-0.5	0.5
Turkey	9000 Türkiye	30	15.0	0.20	-20	0.20	10	600.0	–	–	0.2	0.2	-2.5	0.2
Ireland	35300 Éire	30	10.0	0.50	-10	0.50	–	–	–	–	0.5	0.5	-2.0	0.5
Switzerland	4100 Suisse	30	15.0	0.20	-20	0.20	10	600.0	–	–	0.2	0.2	-2.5	0.2
Denmark unlimited	4500 Danmark unl.	60	15.0	0.20	-20	0.20	10	600.0	–	–	1.5	0.2	-2.5	0.2
Cyprus	35700 Cyprus	30	10.0	0.50	-10	0.50	–	–	–	–	2.0	0.5	-3.0	0.5
Finland	35800 Suomi	30	10.0	0.20	-15	0.20	–	–	–	–	1.0	0.2	-2.0	0.2
Poland	4800 Polska	20	15.0	0.20	-15	1.50	10	600.0	–	–	1.0	0.5	-3.0	0.5
EN 50438	50438 EN 50438	20	15.0	0.20	-15	1.50	–	–	–	–	1.0	0.5	-3.0	0.5
Bulgaria	3590 Bǎlgarija	30	15.0	0.20	-20	0.20	10	600.0	–	–	0.2	0.2	-2.5	0.2
Mauritius	23000 Mauritius	180	10.0	0.20	-6	1.50	6	1.5	–	–	1.0	0.5	-3.0	0.5
Brazil 220	5500 Brasil 220V 60Hz <sup>®)</sup>	300	10.0	0.20	-20	0.40	–	–	–	–	2.0	0.2	-2.5	0.2
Brazil 230	5501 Brasil 230V 60Hz	300	10.0	0.20	-20	0.40	–	–	–	–	2.0	0.2	-2.5	0.2
Estonia	3720 Eestland	30	15.0	0.20	-15	1.50	–	–	–	–	1.0	0.5	-3.0	0.5
Malaysia	6000 Malaysia	60	17.4	2.00	-13	2.00	–	–	–	–	5.0	2.0	-5.0	2.0
India	9100 India	300	35	0.05	-50	0.10	10	2.0	-15	2	1.0	2.0	-1.0	2.0
Droop Mode	0007 Droop-Mode <sup>®)</sup>	60	20.0	0.50	-20	0.50	–	–	–	–	5.0	0.5	-3.5	0.5



#### Hinweis

Due to legal requirements, the values in the table above may change at short notice. For current values, see <http://www.stecasolar.com>.

Information on setting the country are provided in ⚙ 'Setting the country' on page 32

- 1) Country code and name as shown on the display.
- 2) Disconnection values are upper and lower deviations from the peak values of the rated voltage (in %) and the associated switch-off time (in s).
- 3) Disconnection values are upper and lower deviations from the average values of the rated voltage (in %) and the associated switch-off time (in s).
- 4) Disconnection values are upper and lower deviations from the rated frequency (in Hz) and the associated switch-off time (in s).

<sup>8)</sup> The rated voltage is 220 V (instead of 230 V).

<sup>9)</sup> 

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### **ATTENTION**

Danger of yield losses. Activation of the *Droop Mode* is not permitted in systems connected to the public electricity grid.

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Activation of the *Droop Mode* is recommended when the inverter is operated in conjunction with a stand-alone inverter in a system that is not connected to the public electricity grid. *Droop Mode*: 50 Hz; *Droop Mode 60 Hz*: 60 Hz.

## 9 Liability, commercial guarantee, legal guarantee

### 9.1 Exclusion of liability

The manufacturer can neither monitor compliance with this manual nor the conditions and methods during the installation, operation, usage and maintenance of the inverter. Improper installation of the system may result in damage to property and, as a result, to bodily injury.

Therefore, we assume no responsibility or liability for loss, damage or costs which result from, or are in any way related to, incorrect installation, improper operation, or incorrect use and maintenance.

Similarly, we assume no responsibility for patent right or other right infringements of third parties caused by usage of this inverter.

The manufacturer reserves the right to make changes to the product, technical data or installation and operating instructions without prior notice.

As soon as it becomes evident that safe operation is no longer possible (e.g. visible damage), remove the device from the grid and the photovoltaic generator immediately.

### 9.2 Commercial and legal guarantee conditions

Commercial guarantee conditions for products from Steca Elektronik GmbH

#### 1. Defects in materials and workmanship

The guarantee only applies to defects in materials and workmanship, insofar as these can be attributed to inadequate professional ability on the part of Steca.

Steca reserves the right at its own discretion to repair, adapt or replace the faulty products.

#### 2. General information

In accordance with statutory regulations, there is a 2 year legal guarantee on all products for the customer.

For this Stecaproduct, we provide a voluntary 5-year commercial guarantee to the specialist dealer from the date of invoice or receipt. The commercial guarantee applies to products purchased and operated in EU countries or Switzerland. The commercial guarantee is also available in some countries outside the EU. Ask Steca about the commercial guarantee available in your country.

It is also possible to extend the guarantee period from 5 to 7 years, free of charge. This requires registration at [www.stecasolar.com/service](http://www.stecasolar.com/service).

The legal guarantee entitlements are not restricted by the voluntary guarantee.

To be able to make a claim under the guarantee the customer must provide proof of purchase (payment receipt).

If the customer discovers a problem they must contact their installer or Steca Elektronik GmbH.

#### 3. Guarantee exclusion clause

The guarantees on products from Steca Elektronik GmbH described under point 1 are not valid in the event that the fault is attributable to: (1) specifications, designs, accessories, or components added to the product by the customer or at the wish of the customer, or special instructions from the customer relating to the production of the product, the connection (of Steca products) with other products that are not explicitly approved by Steca Elektronik GmbH; (2) modifications or adjustments to the product by the customer, or other causes due to the customer; (3) incorrect arrangement or installation, incorrect or careless handling, accident, transport, overvoltage, storage or damage caused by the customer or other third party; (4) unavoidable accident, fire, explosion, construction or new construction of any kind in the environment where the product is located, due to natural phenomena such as earthquakes, flooding, or storms, or any other cause outside the control of Steca Elektronik GmbH; (5) any other cause that could not be foreseen or avoided with the

technology used in manufacturing the product; (6) if the serial number and/or the type number has been manipulated or rendered unreadable; (7) the use of the solar products in a movable object, for example ships, mobile homes, or others; (8) failure to conform to the instructions on care and maintenance of the product, as recommended by Steca in the operating instructions; (9) damage, soiling or painting of the casing so that cleaning or repair is no longer possible.

The guarantee stated in these operating instructions only applies to consumers who are customers of Steca Elektronik GmbH or of resellers authorised by Steca Elektronik GmbH. The guarantee mentioned here is not transferable to a third party. The customer shall not transfer the rights and duties resulting from this guarantee in any way, without the prior written approval of Steca Elektronik GmbH. Furthermore, Steca Elektronik GmbH shall in no case be liable for indirect damage or loss of profit. Unless otherwise specified by any applicable compulsory legislative regulations, Steca Elektronik GmbH shall also not be liable for any other damages other than those for which Steca Elektronik GmbH has hereby explicitly accepted liability.

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## 10 Contact

In the case of complaints or faults, please contact the local dealer from whom you purchased the product. They will help you with any issues you may have.

### Europe

Steca Elektronik GmbH

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87700 Memmingen

Germany

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# 11 Declaration of conformity



EU – KONFORMITÄTSERKLÄRUNG  
EC – DECLARATION OF CONFORMITY  
DECLARATION DE CONFORMITE DE LA CE

Zertifikat/ Certificat/ Certificat Nr.

001-0114

Die Firma  
The company  
La société



Steca Elektronik GmbH  
Mammostraße 1  
87700 Memmingen  
Germany  
www.steca.com

erklärt in alleiniger Verantwortung, dass folgendes Produkt  
hereby certifies on its responsibility that the following product  
se déclare seule responsable du fait que le produit suivant

Netzwechselrichter  
StecaGrid 3203, StecaGrid 3203x  
StecaGrid 4003, StecaGrid 4003x  
StecaGrid 4803, StecaGrid 4803x  
StecaGrid 5503, StecaGrid 5503x

auf das sich diese Erklärung bezieht, mit folgenden Richtlinien bzw. Normen übereinstimmt.  
which is explicitly referred to by this Declaration meet the following directives and standard(s).  
qui est l'objet de la présente déclaration correspondent aux directives et normes suivantes.

Elektromagnetische Verträglichkeit – Richtlinie  
Electromagnetic Compatibility – Directive  
Compatibilité électromagnétique – Directive

2004/108/EG

Niederspannungsrichtlinie  
Low Voltage Directive  
Directive de basse tension

2006/95/EG

Europäische Normen <sup>1) (2/2)</sup>  
European Standard  
Norme européenne

EN 62 109-1

EN 62 109-2

EN 61 000-6-2

EN 61 000-6-3

EN 61 000-3-2

EN 61 000-3-3

EN 55 014-1

EN 55 014-2

Die oben genannte Firma hält Dokumentationen als Nachweis der Erfüllung der Sicherheitsziele und die wesentlichen Schutzanforderungen zur Einsicht bereit.

Documentation evidencing conformity with the requirements of the Directives is kept available for inspection at the above company.

En tant que preuve de la satisfaction des demandes de sécurité la documentation peut être consultée chez la société sousmentionnée.

Memmingen, 22.01.2014

Ralf Griesentrog, Entwicklungsleiter

1 / 2





# EU – KONFORMITÄTSERLÄRUNG EC – DECLARATION OF CONFIRMITY DECLARATION DE CONFORMITE DE LA CE

**Netzwechsellrichter**  
**StecaGrid 4003**  
**StecaGrid 4803x**

## BG

**Декларация за съответствие на европейските норми**  
С настоящото декларираме, че посочените на страницата 1 продукти, отговарят на следните норми и директиви:  
Електромагнитна устойчивост 2004/108/EG,  
директива за ниско напрежение – 2006/95/EG.  
Приложими съгласувани стандарти и норми в частност: <sup>1)</sup>

## EE

**El vastavusavaldus**  
Käesolevaga avaldame, et nimetatud toode on kooskõlas järgmistele direktiivide ja standarditele:  
Elektromagnetilise ühilduvuse direktiiv 2004/108/EG,  
Madalpingedirektiiv 2006/95/EG  
Kohaldatud Euroopa standardid, eelkõige: <sup>1)</sup>

## GR

**Απόφαση προσαρμογής στις προδιαγραφές της Ε.Ε. (Ευρωπαϊκές Ένωσης)**  
Ανέκουμε ότι το προϊόν αυτό ο αυτή την κατάσταση παράβουλος κανονιστεί της ακόλουθες διατάξεις:  
Ηλεκτρομαγνητική συμβατότητα 2004/108/EG,  
Οδηγία χαμηλής τάσης 2006/95/EG.  
Ευρωπαϊκά χρησιμοποιούμενα πρότυπα, ιδιαιτέρως: <sup>1)</sup>

## LT

**Aktibitisk pareiskikšas su Eiropas Savienojas galtojanšomies normoms**  
Šuo mes pariskikšame, kad nurodytas gaminyis atitinka sekandias direktyvas bei normas:  
Elektromagnetinio suderinamumo direktyvą 2004/108/EG,  
Žemosios įtampos direktyvą 2006/95/EG.  
Naudojamos Europoje normos, ypač: <sup>1)</sup>

## NO

**EU-Overensstemmelseserklæring**  
Vi erklærer hermed at denne enheten i utførelse som levert er i overensstemmelse med følgende relevante bestemmelser:  
EG-EMV-Elektromagnetisk kompatibilitet 2004/108/EG,  
EG-Lavspenningsdirektiv 2006/95/EG.  
Anvendte harmoniserte standarder, særlig: <sup>1)</sup>

## RO

**Declarație de conformitate UE**  
Prin prezenta se declară că produsul mai sus menționat este în conformitate cu următoarele directive, respectiv norme:  
Compatibilitate electromagnetă 2004/108/EG,  
Directiva CE referitoare la tensiunile joase 2006/95/EG.  
Norme europene utilizate, în special: <sup>1)</sup>

## SI

**EU-izjava o skladnosti**  
Izjavljujem, da je navedeni izdelek skladen z naslednjimi direktivami oz. standardi:  
Direktiva o elektromagnetni združljivosti 2004/108/EG,  
Direktiva o nizkonapetostni opremi 2006/95/EG.  
Uporabljene evropski standardi, še posebej: <sup>1)</sup>

**StecaGrid 3203**  
**StecaGrid 4003x**  
**StecaGrid 5503**

## CZ

**Prohlášení o shodě EU**  
Prohláškujeme tímto, že tento agregát v dodaném provedení odpovídá následujícím příslušným ustanovením:  
Směrnici EM-EMV 2004/108/EG,  
Směrnici EU-nízké napětí 2006/95/EG.  
Použité harmonizační normy, zejména: <sup>1)</sup>

## ES

**Declaración de conformidad CE**  
Por la presente declaramos la conformidad del producto en su estado de suministro con las disposiciones pertinentes siguientes:  
Compatibilidad electromagnética 2004/108/EG,  
Directiva sobre equipos de baja tensión 2006/95/EG.  
Normas armonizadas adoptadas, especialmente: <sup>1)</sup>

## HU

**EK. Azonossági nyilatkozat**  
Ezzel nyilatkojum, hogy az berendezés az alábbiakkal megfelel:  
Elektromágneses zavarásfűrés: 2004/108/EG,  
Kisfeszűlűsgű berendezések irány-Elve: 2006/95/EG.  
Felhasznált harmonizált szabványok, különösen: <sup>1)</sup>

## LV

**ES Atbilstības deklarācija**  
Pazkojam, ka minētais izstrādājums atbilst sekojošām direktīvām jeb normām:  
2004/108/EG Par elektromagnētisko pasesamību,  
2006/95/EG Direktīvai par zemsprriegumu.  
Izmantotās Eiropas normas, īpaši: <sup>1)</sup>

## PL

**Deklaracja Zgodności CE**  
Niniejszym deklarujemy z pełną odpowiedzialnością że dostarczony wyrób jest zgodny z następującymi dokumentami:  
Odpowiedniśc elektromagnetyczna 2004/108/EG,  
Normie niskich napięć 2006/95/EG.  
Wyroby są zgodne ze szczegółowymi normami zharmonizowanymi: <sup>1)</sup>

## RU

**Декларация о соответствии Европейским нормам**  
Настоящим документом заявляем, что данный агрегат в его объеме поставки соответствует следующим нормативным документам:  
Электромгнитная устоячивость 2004/108/EG,  
Директивы по низковольтному напряжению 2006/95/EG.  
Используемые согласованные стандарты и нормы в частности: <sup>1)</sup>

## SK

**Prehlásenie o zhode ES**  
Tímto prehláškujeme, že sa uvedený produkt zhoduje s nasledujúcimi smernicami príp. normami:  
Elektromagnetická zlučiteľnosť 2004/108/EG,  
Smernica o nízkom napätí 2006/95/EG.  
Používané európske normy, predovšetkým: <sup>1)</sup>

**StecaGrid 3203x**  
**StecaGrid 4803**  
**StecaGrid 5503x**

## DK

**EF-overensstemmelseserklæring**  
Vi erklærer hermed, at denne enhed ved levering overholder følgende relevante bestemmelser:  
Elektromagnetisk kompatibilitet: 2004/108/EG,  
Lavvolts-direktiv 2006/95/EG.  
Anvendte harmoniserede standarder, særligt: <sup>1)</sup>

## FI

**CE-standardmukaisuuslausele**  
Ilmoittamme täten, että tämä laite vastaa seuraavia asiaankuuluvia määräyksiä:  
Sähkömagneettinen soveluvuus 2004/108/EG,  
Matalajännitte direktiivi: 2006/95/EG  
Käytetyt yhteensovitetut standardit, erityisesti: <sup>1)</sup>

## IT

**Dichiarazione di conformità CE**  
Con la presente si dichiara che i presenti prodotti sono conformi alle seguenti disposizioni e direttive rilevanti:  
Compatibilità elettromagnetica 2004/108/EG,  
Direttiva bassa tensione 2006/95/EG.  
Norme armonizzate applicate, in particolare: <sup>1)</sup>

## NL

**EU-verklaring van overeenstemming**  
Hiermede verklaren wij dat dit aggregaat in die geleverde uitvoering voldoet aan de volgende bepalingen:  
Elektromagnetische compatibiliteit 2004/108/EG,  
EG-laagspanningsrichtlijn 2006/95/EG.  
Gebruikte geharmoniseerde normen, in het bijzonder: <sup>1)</sup>

## PT

**Declaração de Conformidade CE**  
Pela presente, declaramos que esta unidade no seu estado original, está conforme os seguintes requisitos:  
Compatibilidade electromagnética 2004/108/EG,  
Directiva de baixa voltagem 2006/95/EG.  
Normas harmonizadas aplicadas, especialmente: <sup>1)</sup>

## SE

**CE-försäkran**  
Härmed förklarar vi att denna maskin i levererat utförande motsvarar följande tillämpliga bestämmelser:  
EG-Elektromagnetisk kompatibilitet 2004/108/EG,  
EG-Lågspänningsdirektivet 2006/95/EG.  
Tillämpada harmoniserade normer, i synnerhet: <sup>1)</sup>

## TR

**EC Uygunluk Teyid Belgesi**  
Bu cihaz teslim edildiği şekilde aşağıdaki standartlara uygun olduğunu teyid ederiz:  
Elektromanyetik Uyumluluk 2004/108/EG,  
Alçak gerilim direktifi 2006/95/EG.  
Kısmen kulanılan standartlar: <sup>1)</sup>







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