Steca Elektronik

coolcept

coolcept-x

Installations- und Bedienungsanleitung
Installation and operating instructions

DE EN

747.431 | Z08 | 2014-01-31

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1 Preface

Thank you for choosing inverters from the *coolcept* 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_2) 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 series. This unique technology allows peak efficiencies of 98.0 % or 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 inverters. This offers many advantages. The overall surface temperature of the devices remains very low. There are also great installation advantages. The coolcept-x inverters have a sturdy metal casing that allows them to be also used outdoors.

The lightweight devices weigh only 9 or 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* for further information on accessories. Your installer can, of course, also give you more information about the options and accessories that are available.

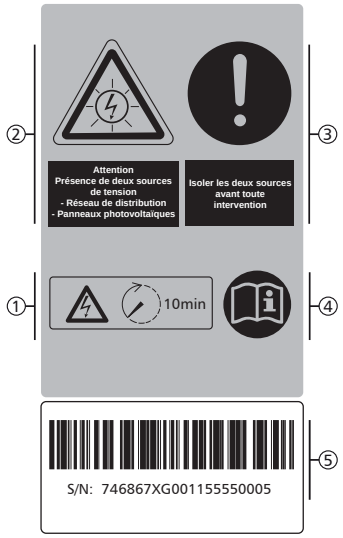
2 General information

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.
- textvar object does not exist
- textvar object does not exist
- textvar object does not exist:
  - Device (not functioning, visible damage, smoke, penetration of liquid etc.)
  - textvar object does not exist
  - textvar object does not exist

  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.
- textvar object does not exist
- Do not open the casing: Risk of death. Invalidation of the guarantee.
- Factory labels and markings must never be altered, removed or rendered unreadable.
- textvar object does not exist (e.g. external data logger). textvar object does not exist.

Safety instructions on the device

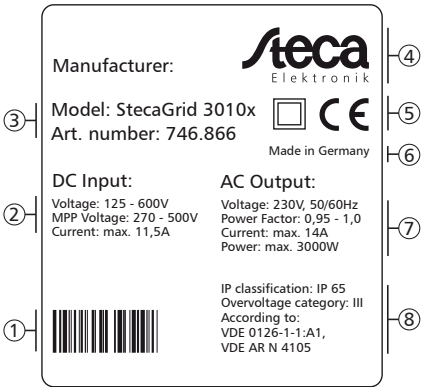


① Dangerous voltages can remain present on the components up to 10 minutes after switching off the DC circuit breaker **and** the line circuit breaker.
② Warning. There are 2 voltage sources present: power grid, solar modules.
③ Disconnect both voltage sources from the device before working on the device: the solar modules via the DC circuit breaker **and** the power grid via the line circuit breaker.
④ Read and follow the instructions!
⑤ Serial number as a barcode and in plain text

2.2 Identification

Feature	Description
Types	*coolcept* (plastic casing): StecaGrid 1800, StecaGrid 2300, StecaGrid 3000, StecaGrid 3010, StecaGrid 3600, StecaGrid 4200 *coolcept-x* (stainless steel casing): StecaGrid 1800x, StecaGrid 2300x, StecaGrid 3010x, StecaGrid 3600x, StecaGrid 4200x
Issue version of the manual	Z08
Manufacturer's address	See ↬ *Contact, p. 145*
Certificates	See Appendix ⇒ Certificates and *www.stecasolar.com* ⇒ coolcept – coolcept-x
Optional accessories	■ External data loggers: – *WEB'log* from Meteocontrol – *Solar-Log* from Solare Datensysteme ■ Opposing connectors for *Multi-Contact MC4* DC connections: – Plug: Steca order no. 719.621 – Socket: Steca order no. 719.622 ■ Safety sleeve for *Multi-Contact MC4*, Steca order no. 742.215 ■ Termination plug for RS485 bus

Type plate



① Barcode for internal use
② Technical data of the DC input
③ Item number and product designation
④ Manufacturer
⑤ *Protection Class II* and CE symbols
⑥ Country of manufacture
⑦ Technical data of the AC output
⑧ Degree of protection and grid-monitoring standard used

Notice

– *For Australia only: Mask off the Protection Class II symbol on the type plate, as described on ↬ p. 104.*
– *For the serial number, see ↬ p. 80*
– *For the position of the type plate, see ↬ 3.1, p. 86f.*

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* ⇒ PV GRID CONNECTED ⇒ Grid inverters

2.3 Scope of delivery

- Inverter ①, coolcept type (plastic casing) or coolcept-x type (stainless steel casing, IP65)
- Mounting plate ② for coolcept or coolcept-x
- AC plug ③
- 1 pair of SunClix plug connectors ④ (coolcept-x only)
- 3 sealing caps (for RJ45 sockets; coolcept-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.
- In the installation solar modules that have an IEC 61730 Class A rating are required as the inverter is non-isolated.
- If the maximum AC mains operating voltage is higher than the photovoltaic array maximum system voltage then solar modules that have a maximum system voltage rating based upon the AC mains voltage are required.

Note

An overview of suitable solar modules is available at www.stecasolar.com/matrix.

Potential curves of the plus (+) and minus (–) DC connections with respect to PE

U_{PV} = Potential between the plus (+) and minus (–) DC connections

StecaGrid 1800/2300/3010 and *1800x/2300x/3010x*

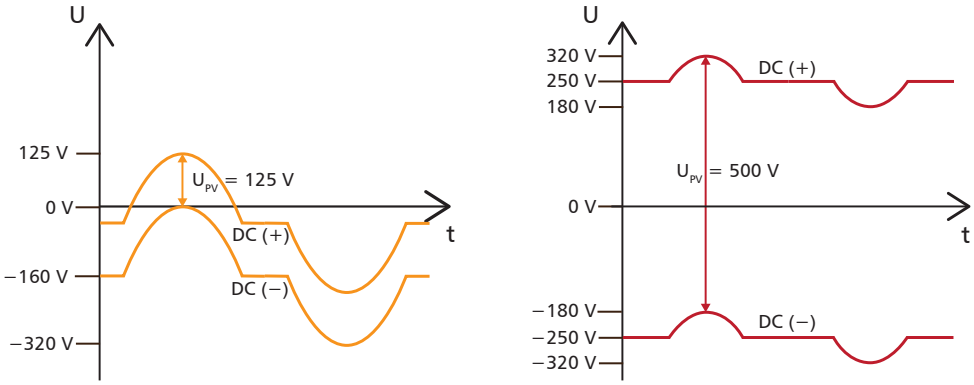


Fig. 1: Potential curves of U_{PV} at 125 V (left) and 500 V (right)

StecaGrid 3000/3600/4200 and *3600x/4200x*

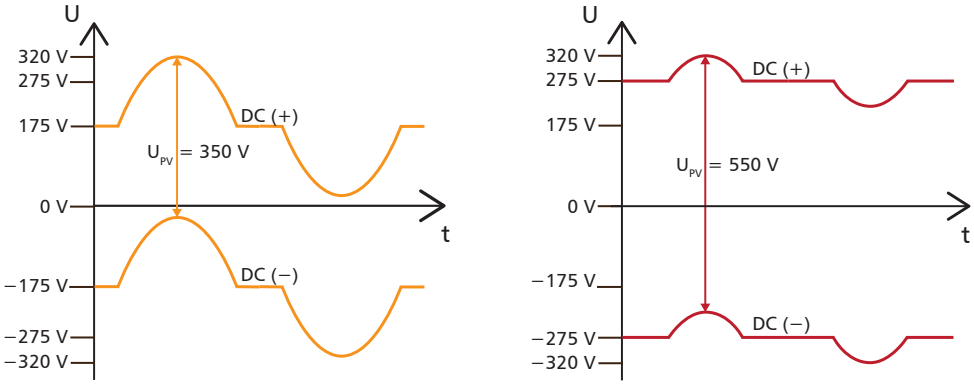


Fig. 2: Potential curves of U_{PV} at 350 V (left) and 550 V (right)

2.5 About this manual

2.5.1 Contents

These instructions describe the type coolcept and coolcept-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).

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

The following table contains the symbols used in this manual and on the device.

Symbol	Description	Location
	general danger warning	manual
	danger from electricity	manual device
	Read the manual 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

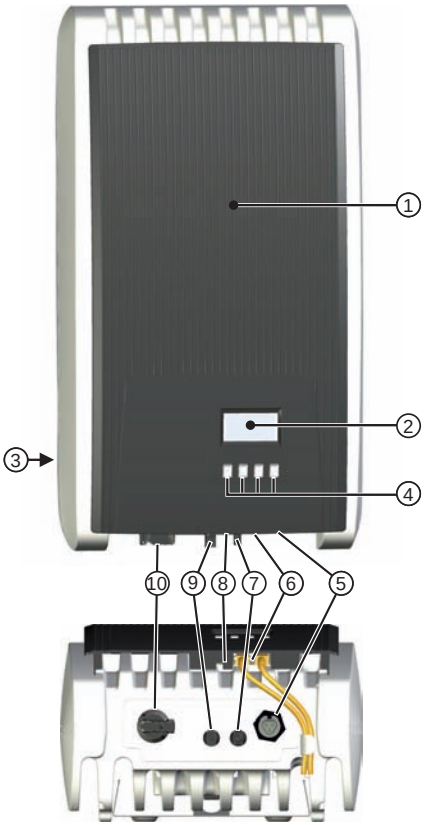
Abbreviations

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

3 Structure and function

3.1 Casing

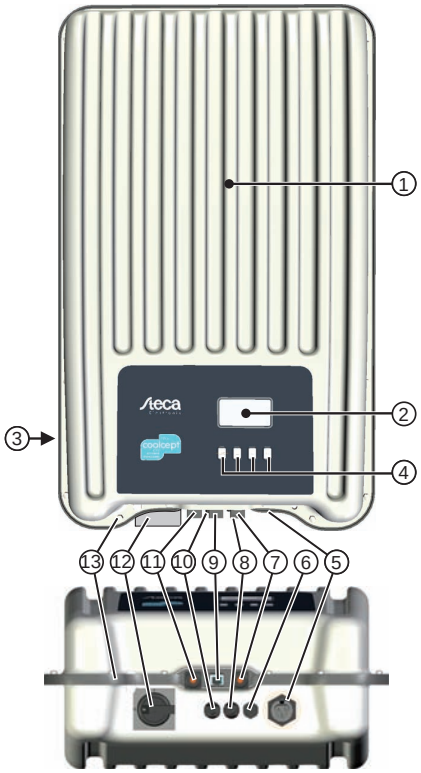
3.1.1 coolcept



① Hood
② Display (monochrome, 128 x 64 pixels)
③ Type plate, warning notices
④ Operating buttons: ESC, △, ▽, SET (from left to right)
⑤ 1x AC connection
⑥ 2x RJ45 sockets (RS485 bus)
⑦ 1x Minus DC connection (–) for solar modules (Multi-Contact MC4 DC socket, contact proof)
⑧ 1x RJ45 socket (Ethernet)
⑨ 1x Plus DC connection (+) for solar modules (Multi-Contact MC4 DC socket, contact proof)
⑩ DC circuit breaker (interrupts the plus and minus inputs simultaneously)

The casing components are described in detail below.

3.1.2 coolcept-x



① Hood
② Display (monochrome, 128 x 64 pixels)
③ Type plate, warning notices
④ Operating buttons: ESC, △, ▽, 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 padlock)
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, p. 86*) 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	■ moves the selection bar or the display content upwards ■ when performing numerical settings, moves the selection 1 position to the left ■ increases the setting value by 1 step	
▽	press briefly	■ moves the selection bar or the display content downwards ■ when performing numerical settings, moves the selection 1 position to the right ■ decreases the setting value by 1 step	
'SET'	press briefly	jumps down by one menu level	—
		■ a selected numerical value starts flashing and can be changed ■ adopts a change ■ changes the state of a control element (check box/radio button)	
	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, p. 86*) 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

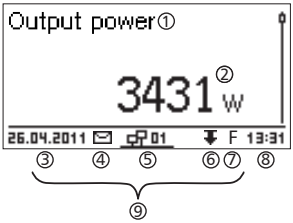
The display reacts slower at very low temperatures. This is especially applicable to coolcept-x devices that are used outdoors.

3.3.2 Information

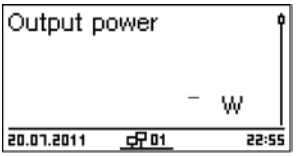
The information shown on the display is described below using illustrative examples.

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 ↳ *7, p. 128*.
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

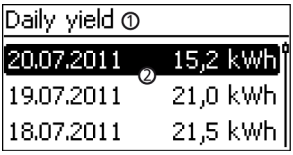


The following applies to the status display:

- 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 `CO2 saving` 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.



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[1)]

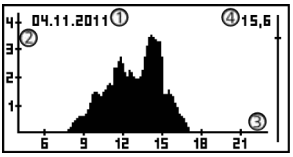
Monthly yield: Last 13 months[1)]

Annual yield: Last 30 years[1)]

[1)] 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.

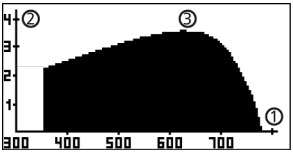
③ x-axis: time in hours/days/months/years
④ Total of all individual yields shown in the diagram, in kWh

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

Event messages

See *7, p. 128*.

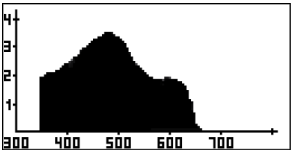
Generator characteristic curve



① x-axis: input voltage in V
② y-axis: power in kW
③ Peak = MPP

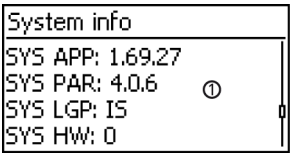
When the *'Gen. Ch. Curve'* menu item is called, the inverter records the generator characteristic curve of the inverter and then displays it (Fig. upper left). The following applies:

- 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 *9.3, p. 141*.
- `React. pwr. char. 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-Adresse`: 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

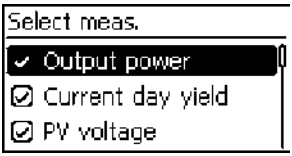
- Possible currencies: £ (Pounds), € (Euros), kr (Krones), *none*.
- The maximum value that can be set for remuneration is limited for technical reasons. The remuneration must be set using different units as required. Example: Dollars instead of Cents (set a currency of *none*).

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:

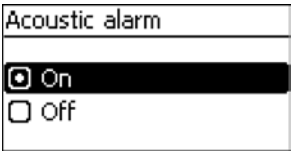
- `Output power`: output power of the inverter [1)]
- `Current day yield`: day yield since 0:00
- `PV voltage`: the voltage supplied by the solar modules
- `PV current`: the current supplied by the solar modules
- Grid voltage [1)]
- `Grid current`: the current fed into the mains grid
- `Grid frequency`
- `Internal temp.`: the internal temperature of the inverter
- `Derating`: cause for derating [2)]
- `Max. daily power`: the maximum power supplied in the current day[3)]
- `Abs. max. power`: the maximum power ever fed into the grid[3)]
- `Max. daily yield`: the maximum daily yield achieved[3)]
- `Operating hours`: The operating hours during which the device has been connected to the grid (including nighttime hours).
- `Total yield`: yield since commissioning
- CO_2 `saving`: CO_2 savings achieved since commissioning

1) Measurement is always displayed (cannot be switched off)

2) 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

3) Can be reset to 0 via `Settings` ▸ `Reset max. vals.`

Acoustic alarm

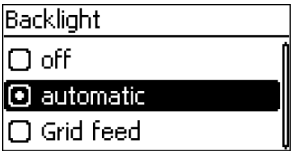


An acoustic alarm sounds (approx. 4.5 kHz) when an event message is displayed.

- 2 tones: warning
- 3 tones: error

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

Backlighting

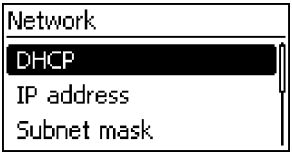


- `off`
- `automatic`: switches on for 30 seconds when a button is pushed
- `Grid feed`:
  - *Not feeding*: switches on for 30 seconds when a button is pushed; then switches off
  - *Feeding*: switches on for 30 seconds when a button is pushed; then dims

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

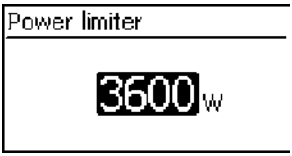
3.3.4 Service menu

The following section describes the service menu items. Some items have password protection; see also Fig. in ↳ *5.1, p. 115*. You can obtain the password from our technical support department; see ↳ *p. 145*.

ATTENTION!

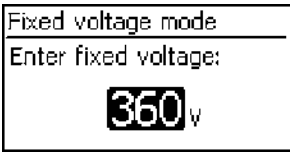
Risk of reduced yields. Inverter and grid parameters can be changed in the service menu. The service menu may only be used by technical professionals who can ensure that the changes do not contravene the applicable regulations and standards.

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



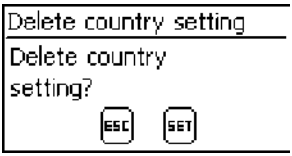
The device can regulate the input voltage to a manually adjustable value. This switches off the automatic setting of the MPP (MPP tracking). The input voltage can be adjusted over a range between the maximum and minimum input voltage.

Example of application: fuel cell

! ATTENTION!

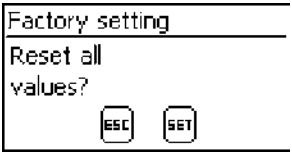
Before setting a fixed input voltage, make sure that the generator is suitable for this. Otherwise, this may result in yield losses or damage to the system.

Delete country setting



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

Factory setting

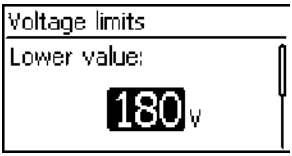


Resetting the device to the factory setting deletes the following data:

- 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)

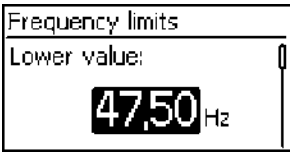


The following voltage limits can be changed:

- Upper disconnection value[1)]
- Lower disconnection value[1)] (Fig. left)

[1)] The disconnection value relates to the peak value of the voltage.

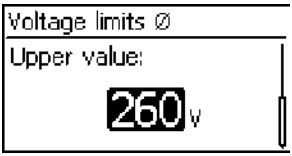
Frequency limits



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)



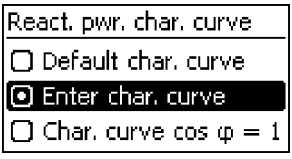
The following voltage limits can be changed:

- Upper disconnection value[1)] (Fig. left)
- Lower disconnection value[1)]

[1)] The disconnection value relates to the average value of the voltage.

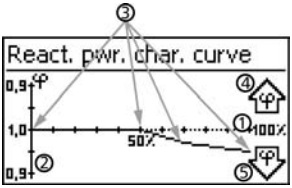
Reactive power characteristic curve

Overview



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

- 3 characteristic curves are available for selection (Fig. left):
  - `Default. char. curve` (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*

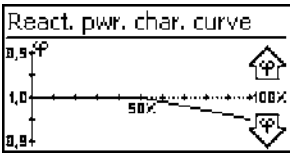


Technical details

- 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 0.95 (overexcitation) through 1.00 (no phase shift) to 0.95 (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': 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

Service technicians can use this menu item for changing additional MSD parameters.

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
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/portal* before the Internet portal can be used. More information on this is provided in *5.4, p. 118*.
- 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 *, p. 93*
- 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.

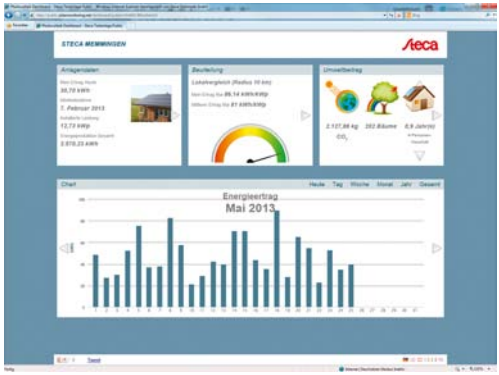


Fig. 3: Graphical representation of the yield data in the Internet portal

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, p. 101*.
- 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, p. 100*.
- 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 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[1)] and 8[1)] of the RS485 bus [2)] 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 from 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[1)] and 8[1)] of the RS485 bus[2)] 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 the Technical Data section.*

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

[1)] Pin assignments of the RJ45 plug for the RS485 bus: see Fig. 4.

[2)] See ⑥ under ☞ 3.1.1, p. 86 and ⑦ and ⑨ under ☞ 3.1.2, p. 87.

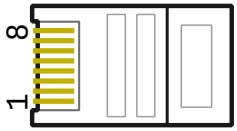


Fig. 4: Pin assignments (= wire number) of the RJ45 plug

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, for technical professionals only):
  – Load firmware updates
  – Read inverter information using Steca service software
  – An optional RS485⇔USB adapter for connecting to the inverter is also available from Steca.
- 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.

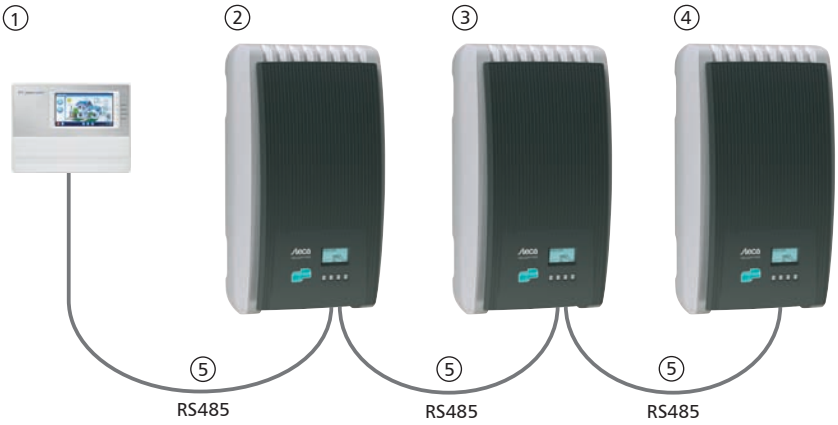


Fig. 5: Wiring diagram

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[1)]	Signal
Connection	RJ45	Terminal strip	RJ12	↓
Pin	1	1	2	Data A
	2	4	4	Data B
	3	—	—	—
	4	—	—	—

Device	Inverter	Solar-Log	WEB'log[1)]	Signal
Connection	RJ45	Terminal strip	RJ12	↓
	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 DC cable plug connectors (SunClix or Multi-Contact MC4) according to the manufacturer's instructions; see Appendix. A special tool is required for the Multi-Contact MC4.

  Warning

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

  4. Pull out the AC plug from the inverter as described in the Appendix under Mounting ⇒ AC plugs.

  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 *Inverter, p. 133* et seqq.
  - 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:

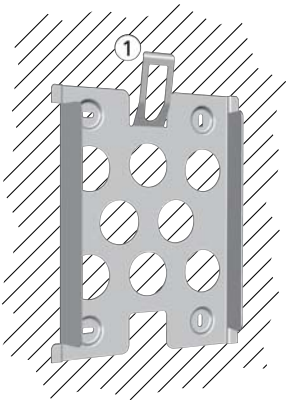
- Transmitting data over a public network can incur additional costs.
- Data transmitted over a public network is not protected from unauthorised access by third-parties.

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*.

For Australia only: Mask off the *Protection Class II* symbol on the type plate.

Note

When the inverter is used in Australia, the national regulations do not permit the Protection Class II symbol to be displayed on the type plate. The inverter is therefore supplied with a small sticker in the same bag as the AC plug.

→ Completely cover the *Protection Class II* symbol using the small sticker provided, as shown in Fig. 6.

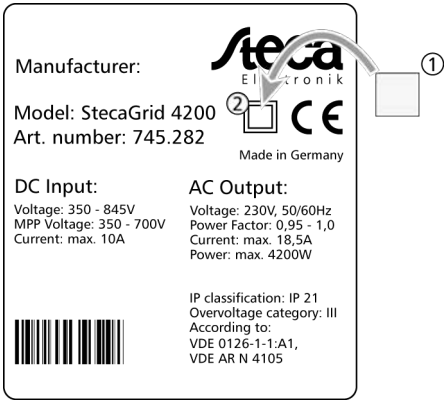
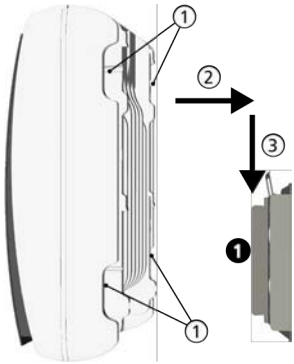


Fig. 6: Position of the sticker for covering the Protection Class II symbol

Mounting the inverter on the mounting plate



1. Grasp the inverter by the recesses ① (coolcept) or the outer edges (coolcept-x), position it ❶ 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. 113*.

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 *9.2, p. 140*.

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 *4.1, p. 102*!

Grid voltage 220 V ... 240 V

→ Wire the AC plug supplied as described in the Appendix under Mounting ⇒ AC plugs.

Grid voltage 100 V ... 127 V

DANGER!

Risk of death by electrocution! Never connect one of the phases L1, L2 or L3 to PE or N on the mains grid side.

Note

With a mains grid voltage of 100 V ... 127 V, the inverter can be connected between the L1, L2 and L3 external conductors as follows:

2-phase mains grids

– *N and L are connected between the L1 – L2 external conductors at the inverter side. See ② and ③ in Fig. 7.*
– *One of the two connected external conductors is connected to PE at the inverter side. This connection can be made within the AC plug or in an external junction box.*
  Fig. 7 shows an example of an inverter-side connection between L1 and PE:
  Above: connection ① in an AC plug ⑤
  Below: Connection ④ in an external junction box ⑥)

3-phase mains grids

– *N and L are connected between the L1 – L2 or L1 – L3 or L2 – L3 external conductors at the inverter side.*
– *Connect the external conductor on the inverter side to PE: as above.*
– *Fig. 7 as above.*

The external conductor voltages are shown in Fig. 8.

1. Wire the AC plug supplied to match the selected external conductors, as described in the Appendix under Mounting ⇒ AC plugs. Do not yet close the AC plug.

2. Connect one of the two connected phases to PE at the inverter side. Make this connection inside the AC plug or use an external junction box, as shown in Fig. 7.

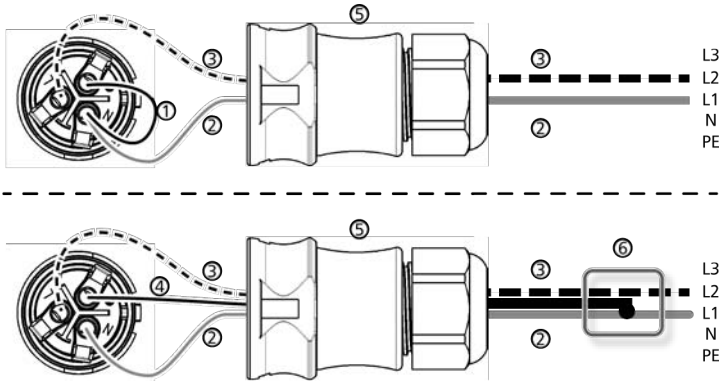


Fig. 7: Connection of N and PE in the AC plug (above) or junction box (below)

① Connection cable between N and PE with the connection point inside the AC plug
② External conductor L1
③ External conductor L2
④ Connection cable between N and PE with the connection point inside the junction box
⑤ Casing of the AC plug
⑥ Junction box

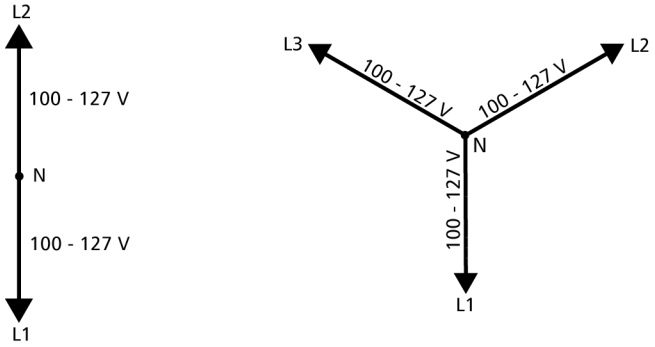


Fig. 8: External conductor voltages in 2- and 3-phase grids with 100 V ... 127 V

4.4 Preparing the DC connections

DANGER!

Risk of death by electrocution!

- Observe the warning notes in *4.1, p. 102*.
- coolcept: Opposing Multi-Contact connectors must be used for the DC cable to suit the *Multi-Contact MC4* plug connectors (opposing connectors optionally available).
- coolcept-x: Use the SunClix plug connectors provided to ensure that the specified degree of protection is maintained.

ATTENTION!

Danger of damage to the inverter and the modules. Connect the opposing connectors for the DC connections to the DC cable, observing the correct polarity.

1. Attach the connector plug counterparts to the DC cable according to the manufacturer's instructions; see Appendix.
2. If legally prescribed (e.g. France), plug in the optionally available safety sleeves, according to the manufacturer's instructions (Fig. 9).

Fig. 9: Safety sleeve unmounted (left) and mounted (right)

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 *3.6, p. 96*).

4.6 Connecting the inverter and switching on the AC power

DANGER!

Risk of death by electrocution! Observe the warning notes in *4.1, p. 102*.

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 in *4.7, p. 108* and *4.8, p. 112*.

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)

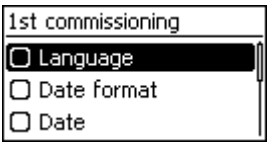
Setting the country

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`[1)]
  - `Node 1`[1)]
  - `Node 2`[1)]
  - `Node n`[1) 2)]
  - `Display char. curve`

  [1)]: Is only displayed for reactive power characteristic curve type `Enter char. curve`.

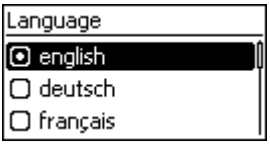
  [2)]: Is only displayed when `no. of nodes` has been set to a value > 2.
- Initial commissioning is completed by calling up the `Finish` item.
- `Finish` can only be performed when *all other* check boxes are selected.

---

1. Press △▽ to select a check list item.
2. Press `SET` to call up the item.

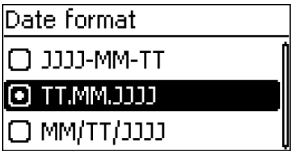
The items are described in detail below.

Language



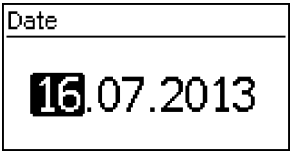
1. Press △▽ to select a display language.
2. Press SET. The language is adopted.
3. Press ESC. The check list is shown.

Date format



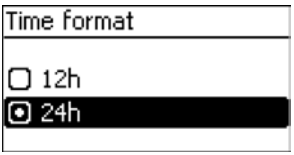
1. Press △▽ to select a date format.
2. Press SET. The date format is adopted.
3. Press ESC. The check list is shown.

Date



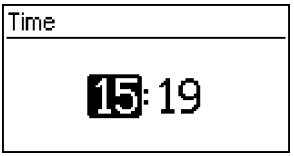
1. Press SET. The day flashes.
2. Press △▽ to change the day.
3. Press SET. The change is adopted.
4. Press ▽. The month is selected.
5. Repeat steps 1 to 3 for the month.
6. Press ▽. The year is selected.
7. Repeat steps 1 to 3 for the year.
8. Press ESC. The check list is shown.

Time format



1. Press △▽ to select a time format.
2. Press SET. The time format is adopted.
3. Press ESC. The check list is shown.

Time



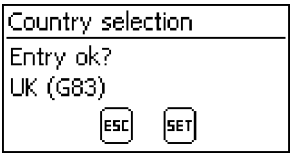
1. Press SET. The hours display flashes.
2. Press △▽ to change the hour.
3. Press SET. The change is adopted.
4. Press ▽. The minutes are selected.
5. Repeat steps 1 to 3 for the minutes.
6. Press ESC. The check list is shown.

Country selection

NOTICE

The country can only be set once!

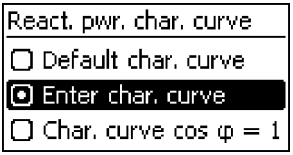
1. Press △▽ to select a country.
2. Press SET.



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

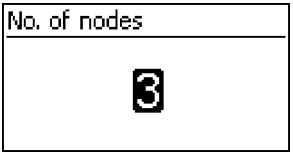
   Press SET for a longer period of time (> 1 s) to confirm the currently selected country. The check list is shown.

Reactive power characteristic curve



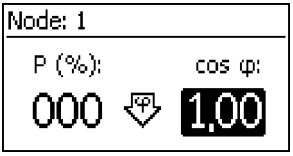
1. Press △▽ to select the type of reactive power characteristic curve corresponding to the local regulations.
2. Press SET. The reactive power characteristic curve type is adopted.
3. Press ESC. The check list is shown.

Number of nodes



1. Press SET. The value flashes.
2. Press △▽ 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 △▽ to select a parameter for the node.

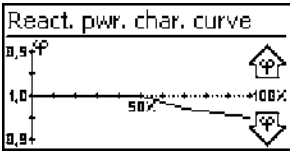
Notice

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

2. Press SET. The parameter value flashes.

3. Press △▽ 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

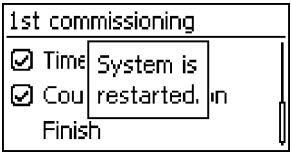


1. The previously set reactive power characteristic curve is displayed graphically (example in Fig. left).
2. Press ESC. The check list is shown.

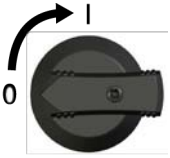
Finish

✓ 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 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

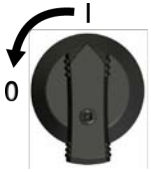
The DC circuit breaker on the coolcept-x devices can be secured with a padlock to prevent unintentional switch-on (maximum padlock size of 7 mm).

4.9 De-installing 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.

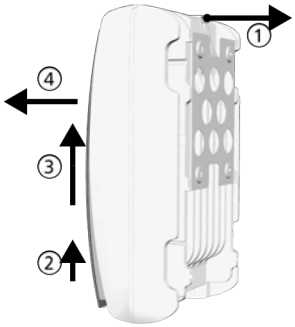
Disconnecting the AC plug from the inverter

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.

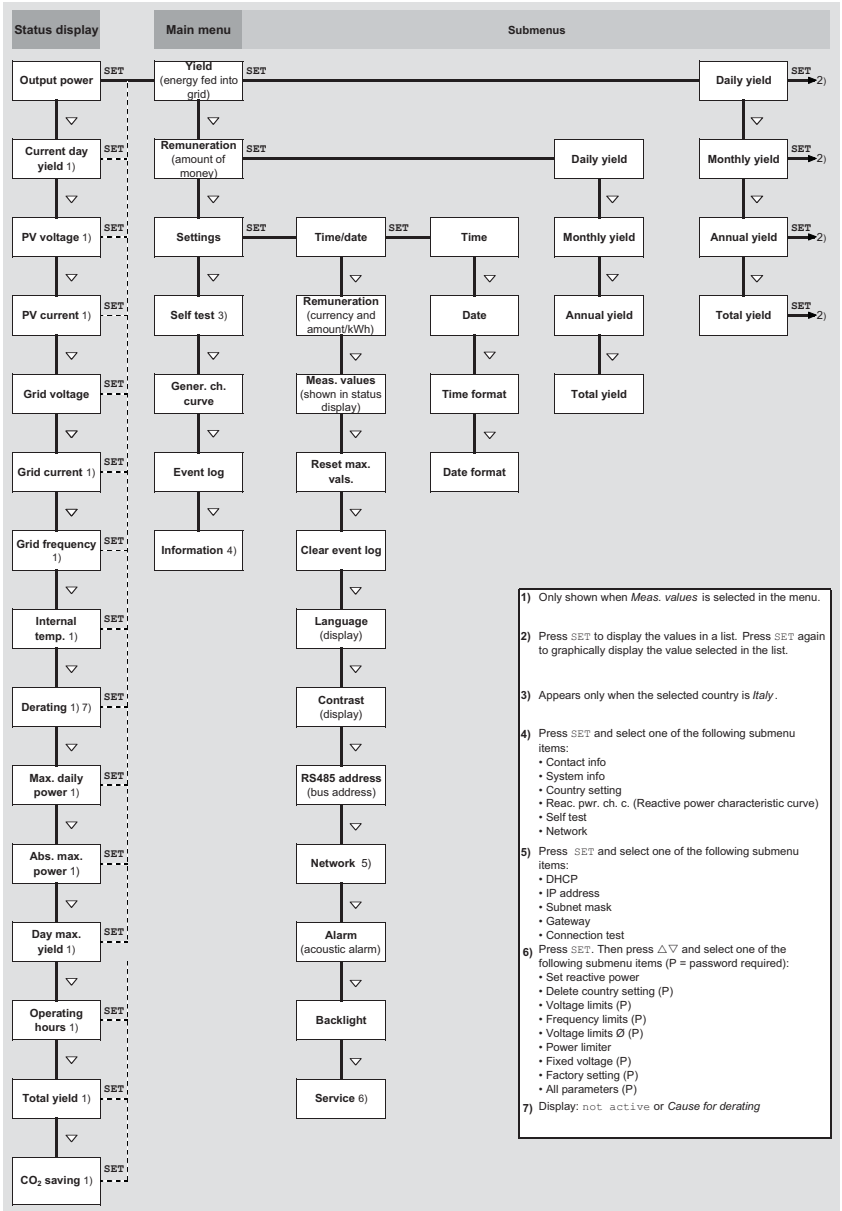
Removing the inverter from the mounting surface



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).

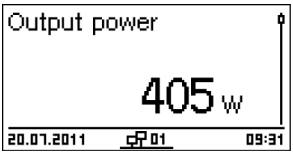
5.2 General operating functions

- 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

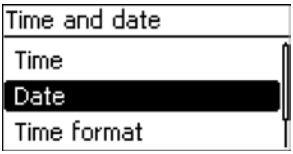
The figures in this section show examples.

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

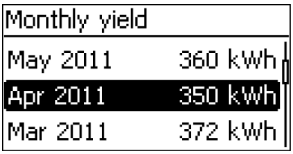


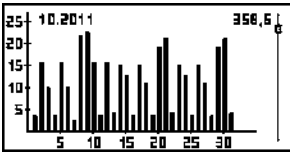
1. Press *'ESC'* for 1 second to call up the status display as required.
2. Press *'SET'*. The main menu is displayed with the top item selected.
3. Press △▽ to select a menu item.
4. Press *'SET'* to call up the submenu (Fig. left).
5. Repeat steps 3 and 4 for further submenus as required.

Event messages

See ☞ *7, p. 128*.

Displaying yields numerically (list) and graphically (chart)

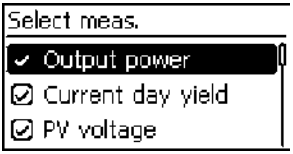




✓ The status display is shown.

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.

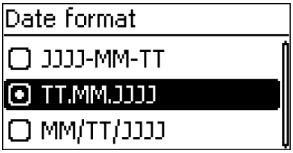
Editing selection lists containing check boxes



✓ A selection list with check boxes is displayed (Fig. left).

1. Press △▽ 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.

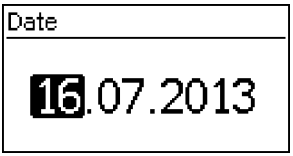
Editing selection lists containing radio buttons



✓ A selection list with radio buttons is displayed (Fig. left).

1. Press △▽ 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 △▽ to change the value.
3. Press SET. The change is adopted (value no longer flashes) *or*

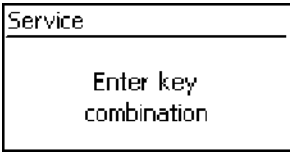
   Press ESC to cancel the change (value no longer flashes).

4. Press ▽. 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.

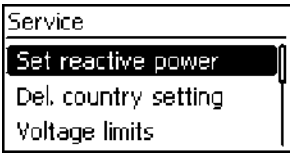
Calling up the service menu and editing the values

ATTENTION!

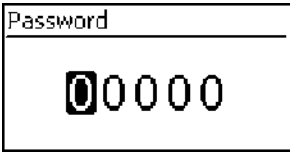
Risk of yield losses and contravention of regulations and standards. Inverter and grid parameters can be changed in the service menu. The service menu must therefore only be used by technical professionals who know the applicable regulations and standards.



1. Select the Service menu item.
2. Press SET. The fig. shown at the left appears.



3. Press △▽ simultaneously for 3 seconds. The service menu is displayed (Fig. left).
4. Press △▽ to select a menu item.



5. Press SET to edit the menu item. The following applies:
   - Enter the password if required (Fig. left); see *3.3.4, S. 93*
   - If necessary, press △▽ within a menu item to display and edit other settings (e.g. Voltage limits).
   - The menu items are described in *3.3.4, p. 93*.

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. Ensure that scripting and cookies for www.steca.com/portal are enabled in the browser.

⇨ Fig. 10 appears.

Fig. 10: Language selection and data entry form for the serial number

2. Select your language using the buttons ① (in Fig. 10). 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. 11, p. 120 appears.

Entering the user data

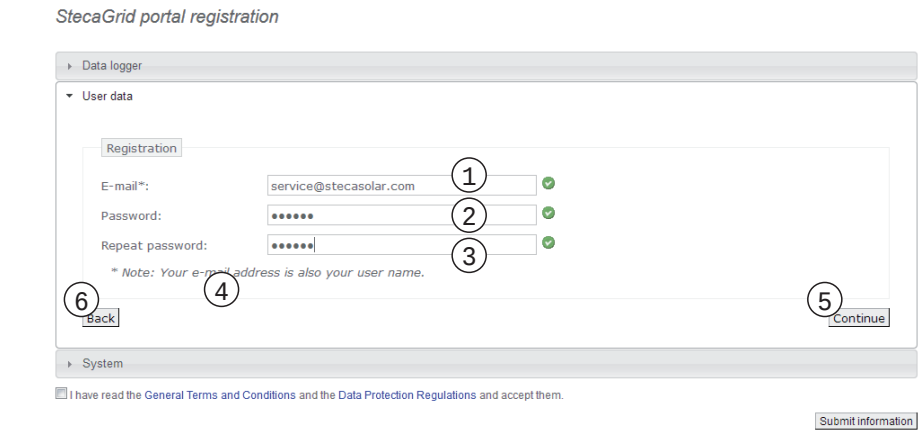


Fig. 11: Data entry form for user data

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. 17, p. 124.

1. Enter your email address into the field ① (Fig. 11). 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. 11 are discarded).

   ⇨ After ⑤ has been pressed, Fig. 12 appears.

Entering system data

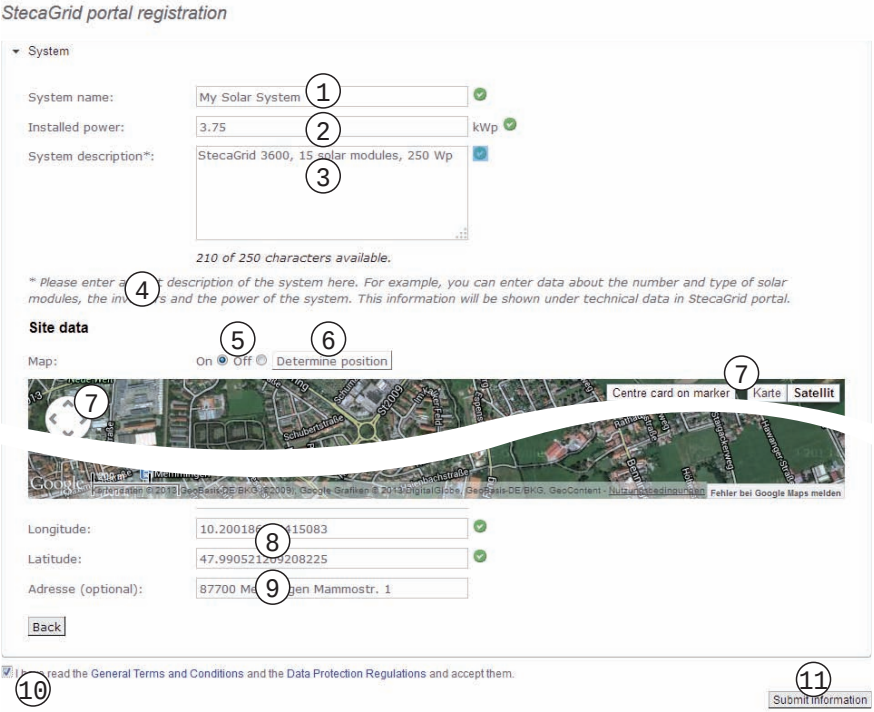
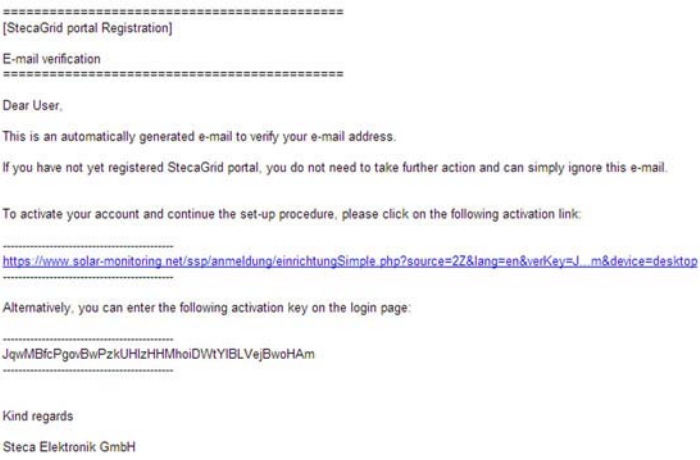


Fig. 12: Data entry form for the system data

1. Enter any desired name [A)] for your solar system into the field ① in Fig. 12.
2. Enter the installed power[A)] of the system into the field ②.
3. Enter a description[A)] 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. 14 appears, an email with the activation code, as shown in Fig. 13, is sent to the email address ① in Fig. 11.


==========
[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/ssp/anmeldung/einrichtungSimple.php?source=2Z&lang=en&verKey=J...m&device=desktop
---

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

JqwMBfcPgovBwPzkUHlzHHMhoiDWtYlBLVejBwoHAm

Kind regards

Steca Elektronik GmbH

Fig. 13: Email with the activation code

[A)] Data can be subsequently changed.

Completing registration

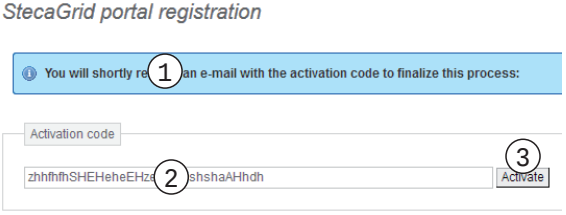


Fig. 14: Data entry form for the activation code

1. Enter the activation code that you received in the email as per Fig. 13 into the field ② in Fig. 14.

2. Confirm via the button ③.

   ⇨ If the registration was successful then Fig. 15 appears and you will receive an additional confirmation email (Fig. 16). This email contains a direct link to Fig. 18, p. 125.

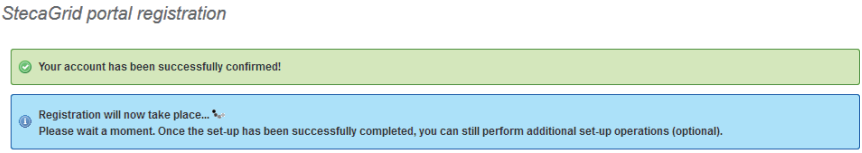


Fig. 15: Confirmation message of successful registration

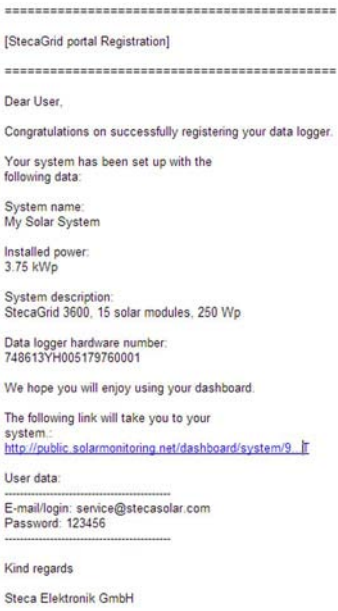


Fig. 16: Email confirming successful registration

5.4.2 Login – Displaying yield data – Changing settings

1. Enter the following address into the browser: *www.solare-energiewende.de*. Ensure that scripting and cookies for *www.solare-energiewende.de* are enabled in the browser.

   ⇨ The home page of the Internet portal as shown in Fig. 17 is displayed.

2. The functions as per the legend shown in Fig. 17 are available on the home page of the Internet portal.

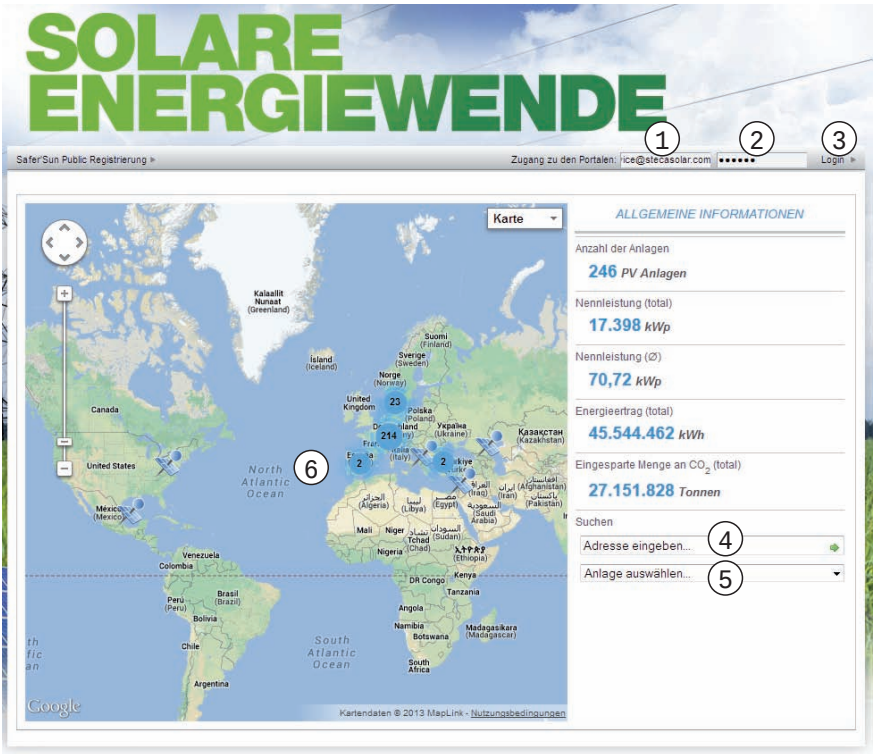


Fig. 17: Home page of the Internet portal

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. 18 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. 18: 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. 122*.
⑧ Button for selecting the language

6 Self test

The self test is mandatory for operation of inverters in Italy.

Function

The prerequisites for performing the self test are as follows:

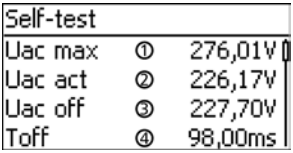
- The country *Italy* was selected during initial commissioning.
- The level of solar irradiation is high enough to ensure that the inverter can feed the grid.

During the self test, the inverter checks its switch-off behaviour with regard to too high / too low grid voltage and frequency (6 test phases, duration of approx. 40 minutes). The following applies:

- In each phase of the self test, the inverter changes its switch-off threshold, step-by-step upwards/downwards from the set lower/upper limit values.
- When the switch-off threshold reaches the actual grid voltage/frequency then the inverter stores this information.
- The data is shown on the display as follows:
  - The current values of the *first* test phase are displayed first; see the following illustration.
  - The values of the subsequent test phases are added below (initially hidden).
  - If the self test succeeded then the message `Self test passed` is added below. The message must be displayed and confirmed.
- If the self test conditions are not satisfied, one of the ↳ *Messages of errors that prevent the self test from running, p. 127* is displayed.
- If a measurement lies outside the required tolerance during the self test then the self test is cancelled and the inverter displays the message `Self test failed`. The inverter remains disconnected from the grid (relay open, no feeding) until the self test is passed successfully.

Note

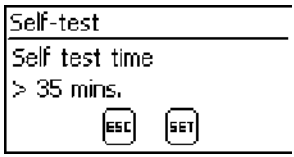
The data stored in the inverter can be read using a PC and the InverterSelftestProtocol software. More information on this is provided in the StecaGrid Service_InverterSelftestProtocol manual and at www.stecasolar.com ⇒ PV grid connected ⇒ Software.



① Lower / upper limit value according to the country setting
② Measured actual grid voltage / frequency
③ Switch-off threshold (changed in steps)
④ Switch-off time = time between following events:

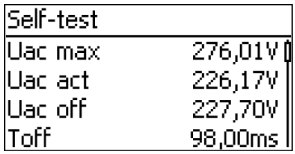
- Switch-off threshold reaches the actual grid voltage / frequency
- The inverter disconnects itself from the grid

Operation



✓ The country *Italy* is set in the inverter to be tested.

1. Check the country setting via *'Information'* ▸ *'System info'* in the main menu as required.
2. Select *'Self test'* in the main menu. The dialog shown at the left is displayed.
3. Press and hold *'SET'* for 1 second. The self test starts.

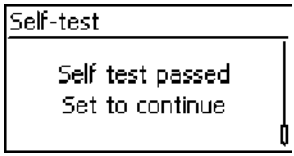


4. The values for the first test phase are displayed (Fig. left).
5. Press ▽ to display the values for the subsequent test phases (if available).
6. Only when *'Self test failed'* is displayed: Press *'SET'* to confirm the message. The status display appears.

Attention

If *'Self test failed'* is displayed then repeat the self test as soon as possible so that the inverter can resume feeding.

When the self test has finished, proceed as follows:



7. Press ▽ several times until the message *'Self test passed'* is displayed (Fig. left).
8. Press *'SET'* to confirm the result of the self test. The status display appears.

Messages of errors that prevent the self test from running

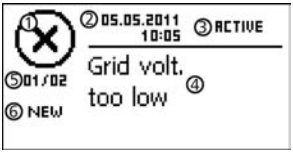
Message	Description	Remedy
'An error was detected'	An internal error prevented the self test from starting.	Contact your installer if this error occurs frequently.
'Not enough sunlight'	The self test was not started or was cancelled due to insufficient sunlight, especially in the evening / at night.	Repeat the self test during the day when the inverter is feeding the grid.
'Invalid grid conditions'	The self test was cancelled due to invalid grid conditions, e.g. due to insufficient AC voltage.	Repeat the self test later.
'MSD not ready'	The self test was not started because the inverter was not ready for operation.	Repeat the self test a few minutes later when the inverter is ready for operation and is feeding.

7 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 △▽ 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 reactivation`	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.	⊗

Event message	Description	Type
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.	⊗
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.	⊗
FE not connected	The protective earth is not 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 exceeds the 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 Settings ▸ Time/date.	⚠

Event message	Description	Type
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.	
Self test failed	An error occurred during the self test and the self test was cancelled. ▶ Contact your installer when ■ the self test is cancelled due to an error several times at different times of the day and ■ it is certain the the grid voltage and frequency were within the limit values defined by the country setting; see *9.3, p. 141*.	
Faulty country settings	An inconsistency exists between the selected country settings and those stored in memory. ▶ Contact your installer.	
BCONV overtemperature	The maximum permissible boost converter 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.	
Boost converter defective	The boost converter is defective, the inverter is not feeding into the grid or is feeding at reduced power. ▶ Contact your installer.	
Boost converter not detected	▶ Contact your installer.	

8 Maintenance and disposal

8.1 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:

- **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.

8.2 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.

9 Technical data

9.1 Inverter

9.1.1 StecaGrid 1800/1800x/2300/2300x/3010/3010x

	StecaGrid 1800/x	StecaGrid 2300/x	StecaGrid 3010/x
DC input side (PV generator connection)			
Number of DC inputs	1		
Maximum start voltage	600 V		
Maximum input voltage	600 V		
Minimum input voltage for grid-feeding	125 V		
Startup input voltage	150 V		
Rated input voltage	230 V	295 V	380 V
Minimum input voltage for rated output	160 V	205 V	270 V
MPP voltage for rated output	160 V … 500 V	205 V … 500 V	270 V … 500 V
Maximum input current	11.5 A		
Rated input current	8 A		
Maximum input power at maximum active output power	1840 W	2350 W	3070 W
Rated input power (cos φ = 1)	1840 W	2350 W	3070 W
Recommended maximum PV output	2200 Wp	2900 Wp	3800 Wp
Derating / power limiting	occurs automatically when: ■ input power > max. recommended PV power ■ cooling is inadequate ■ input current too high ■ grid current too high ■ internal or external derating ■ grid frequency too high (according to country setting) ■ limiting signal received via an external interface ■ output power is limited (set at the inverter)		
AC output side (grid connection)			
Output voltage	185 V ... 276 V (depending on the country settings)		
Rated output voltage	230 V		
Maximum output current	12 A	14 A	14 A
Rated output current	8 A	10 A	13 A

	StecaGrid 1800/x	StecaGrid 2300/x	StecaGrid 3010/x
Maximum active power (cos φ = 1)	1800 W	2300 W	3000 W
Maximum active power (cos φ = 0.95)	1800 W	2300 W	3000 W
Maximum apparent power (cos φ = 0.95)	1900 VA	2420 VA	3160 VA
Rated output	1800 W	2300 W	3000 W
Rated frequency	50 Hz and 60 Hz		
Grid type	L / N / PE (protective earth)		
Grid frequency	45 Hz ... 65 Hz (depending on the country settings)		
Power losses in nighttime operation	< 1.2 W		
Feeding phases	single-phase		
Distortion factor (cos φ = 1)	< 2 %		
Power factor cos φ	0.95 capacitive ... 0.95 inductive		
Characterisation of the operating behaviour			
Maximum efficiency	98.0 %		
European efficiency	97.4 %	97.6 %	97.7 %
CEC efficiency	97.5 %	97.7 %	97.8 %
MPP efficiency	> 99.7 % (static), > 99 % (dynamic)		
Efficiency values (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of the rated power) at rated voltage	89.7 %, 94.0 %, 96.2 %, 96.5 %, 96.8 %, 97.2 %, 97.2 %, 96.9 %	91.0 %, 95.3 %, 97.0 %, 97.2 %, 97.4 %, 97.6 %, 97.4 %, 97.0 %	94.6 %, 96.9 %, 97.9 %, 98.0 %, 98.1 %, 98.0 %, 97.6 %, 97.2 %
Efficiency values (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of the rated power) at minimum MPP voltage	89.1 %, 93.8 %, 95.6 %, 96.0 %, 96.4 %, 96.7 %, 96.4 %, 95.9 %	91.6 %, 95.0 %, 96.4 %, 96.7 %, 96.9 %, 97.0 %, 96.7 %, 96.2 %	93.6 %, 95.8 %, 97.2 %, 97.3 %, 97.4 %, 97.2 %, 96.8 %, 96.1 %
Efficiency values (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of the rated power) at maximum MPP voltage	91.4 %, 95.1 %, 97.0 %, 97.3 %, 97.6 %, 97.9 %, 97.9 %, 97.8 %	92.9 %, 95.9 %, 97.4 %, 97.6 %, 97.8 %, 98.0 %, 97.8 %, 97.6 %	94.4 %, 96.6 %, 97.7 %, 97.8 %, 97.9 %, 97.9 %, 97.5 %, 97.1 %
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	< 4 W		
Derating at full power	from 50 °C (T_{amb})		from 45 °C (T_{amb})

	StecaGrid 1800/x	StecaGrid 2300/x	StecaGrid 3010/x
Switch-on power	10 W		
Switch-off power	5 W		
Standby power	6 W		
Safety			
Protection class	II		
Isolation principle	no galvanic isolation, transformerless		
Grid monitoring	yes, integrated		
Insulation monitoring	yes, integrated		
Residual current monitoring	yes, integrated [1)]		
Overvoltage protection version	Varistors		
Reverse polarity protection	Yes		
Application conditions			
Operational area	indoor rooms, with or without air conditioning		
Ambient temperature range (T_{amb})	–15 °C ... +60 °C		
Storage temperature	–30 °C ... +80 °C		
Relative humidity	0 % ... 95 %, non-condensing		
Installation elevation	≤ 2000 m above sea level		
Degree of pollution	PD3		
Noise emission (typically)	23 dBA	25 dBA	29 dBA
Impermissible ambient gases	ammonia, solvents		
Equipment and design			
Degree of protection	coolcept: IP21 (casing: IP51; display: IP21) coolcept-x: IP65		
Overvoltage category	III (AC), II (DC)		
DC connection	coolcept: Multi-Contact MC4 (1 pair) coolcept-x: Phoenix Contact SUNCLIX (1 pair)		
AC connection			
Type	Wieland RST25i3 plug		
Connection conductor cross-section	cable diameter 10 ... 14 mm², conductor cross-section ≤ 4 mm²		
Opposing connector	included in delivery		

	StecaGrid 1800/x	StecaGrid 2300/x	StecaGrid 3010/x
Dimensions (X x Y x Z)	coolcept: 340 x 608 x 222 mm coolcept-x: 399 x 657 x 227 mm		
Weight	coolcept: 9.5 kg; coolcept-x: 12 kg		
Communication interfaces	3 x RJ45 sockets (2 x RS485 for connection to Meteocontrol WEB'log or Solar-Log; 1 x Ethernet)		
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			
coolcept	CE symbol, VDE AR N 4105, G83, CEI 0-21 under preparation: UTE C 15-712-1		
coolcept-x	CE symbol, VDE AR N 4105, G83 under preparation: AS4777, CEI 0-21		

Technical data at 25 °C / 77 °F

[1] The design of the inverter prevents it from causing DC leakage current.

9.1.2 StecaGrid 3000/3600/3600x/4200/4200x

	StecaGrid 3000	StecaGrid 3600/x	StecaGrid 4200/x
DC input side (PV generator connection)			
Number of DC inputs	1		
Maximum start voltage	845 V		
Maximum input voltage	845 V		
Minimum input voltage for grid-feeding	350 V		
Startup input voltage	350 V		
Rated input voltage	380 V	455 V	540 V
Minimum input voltage for rated output	350 V		360 V
MPP voltage for rated output	350 V … 700 V		360 V … 700 V
Maximum input current	12 A		
Rated input current	8 A		

	StecaGrid 3000	StecaGrid 3600/x	StecaGrid 4200/x
Maximum input power at maximum active output power	3060 W	3690 W	4310 W
Rated input power (cos φ = 1)	3060 W	3690 W (Portugal: 3450 W)	4310 W (Portugal: 3680 W)
Recommended maximum PV output	3800 Wp	4500 Wp	5200 Wp
Derating / power limiting	occurs automatically when: ■ input power > max. recommended PV power ■ cooling is inadequate ■ input current too high ■ grid current too high ■ internal or external derating ■ grid frequency too high (according to country setting) ■ limiting signal received via an external interface ■ output power is limited (set at the inverter)		
AC output side (grid connection)			
Output voltage	185 V ... 276 V (depending on the country settings)		
Rated output voltage	230 V		
Maximum output current	16 A		18.5 A
Rated output current	13 A	15.6 A	18.3 A
Maximum active power (cos φ = 1)	3000 W	3600 W (Belgium: 3330 W)	4200 W (Belgium: 3330 W)
Maximum active power (cos φ = 0.95)	3000 W	3530 W	3990 W
Maximum apparent power (cos φ = 0.95)	3130 VA	3680 VA	4200 VA
Rated output	3000 W	3600 W (Portugal: 3450 W)	4200 W (Portugal: 3680 W)
Rated frequency	50 Hz and 60 Hz		
Grid type	L / N / PE (protective earth)		
Grid frequency	45 Hz ... 65 Hz (depending on the country settings)		
Power losses in nighttime operation	< 0.7 W		
Feeding phases	single-phase		
Distortion factor (cos φ = 1)	< 2 %		
Power factor cos φ	0.95 capacitive ... 0.95 inductive		
Characterisation of the operating behaviour			

	StecaGrid 3000	StecaGrid 3600/x	StecaGrid 4200/x
Maximum efficiency	98.6 %		
European efficiency	98.3 %	98.3 %	98.2 %
CEC efficiency	98.4 %	98.3 %	98.2 %
MPP efficiency	> 99.7 % (static), > 99 % (dynamic)		
Efficiency values (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of the rated power) at rated voltage	95.4 %, 97.3 %, 98.2 %, 98.4 %, 98.5 %, 98.5 %, 98.3 %, 98.0 %	95.8 %, 97.4 %, 98.2 %, 98.3 %, 98.4 %, 98.4 %, 98.1 %, 97.7 %	96.2 %, 97.6 %, 98.3 %, 98.3 %, 98.3 %, 98.2 %, 97.9 %, 97.4 %
Efficiency values (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of the rated power) at minimum MPP voltage	95.7 %, 97.5 %, 98.4 %, 98.5 %, 98.6 %, 98.6 %, 98.4 %, 98.1 %	96.3 %, 97.7 %, 98.5 %, 98.6 %, 98.6 %, 98.5 %, 98.3 %, 97.9 %	96.7 %, 98.0 %, 98.5 %, 98.6 %, 98.6 %, 98.4 %, 98.1 %, 97.6 %
Efficiency values (at 5 %, 10 %, 20 %, 25 %, 30 %, 50 %, 75 %, 100 % of the rated power) at maximum MPP voltage	94.6 %, 96.7 %, 97.7 %, 97.9 %, 98.0 %, 98.2 %, 97.9 %, 97.6 %	95.2 %, 97.0 %, 97.8 %, 98.0 %, 98.1 %, 98.0 %, 97.8 %, 97.5 %	95.7 %, 97.0 %, 98.0 %, 98.1 %, 98.2 %, 97.9 %, 97.6 %, 97.2 %
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	< 4 W		
Derating at full power	from 50 °C (T_{amb})		from 45 °C (T_{amb})
Switch-on power	10 W		
Switch-off power	5 W		
Standby power	6 W		
Safety			
Protection class	II		
Isolation principle	no galvanic isolation, transformerless		
Grid monitoring	yes, integrated		
Insulation monitoring	yes, integrated		
Residual current monitoring	yes, integrated [1)]		
Overvoltage protection version	Varistors		
Reverse polarity protection	Yes		
Application conditions			
Operational area	indoor rooms, with or without air conditioning		

	StecaGrid 3000	StecaGrid 3600/x	StecaGrid 4200/x
Ambient temperature range (T_{amb})	–15 °C ... +60 °C		
Storage temperature	–30 °C ... +80 °C		
Relative humidity	0 % ... 95 %, non-condensing		
Installation elevation	≤ 2000 m above sea level		
Degree of pollution	PD3		
Noise emission (typically)	26 dBA	29 dBA	31 dBA
Impermissible ambient gases	ammonia, solvents		
Equipment and design			
Degree of protection	coolcept: IP21 (casing: IP51; display: IP21) coolcept-x: IP65		
Overvoltage category	III (AC), II (DC)		
DC connection	coolcept: Multi-Contact MC4 (1 pair) coolcept-x: Phoenix Contact SUNCLIX (1 pair)		
AC connection			
Type	Wieland RST25i3 plug		
Connection conductor cross-section	cable diameter 10 ... 14 mm^2, conductor cross-section ≤ 4 mm^2		
Opposing connector	included in delivery		
Dimensions (X x Y x Z)	coolcept: 340 x 608 x 222 mm coolcept-x: 399 x 657 x 227 mm		
Weight	coolcept: 9 kg; coolcept-x: 11.5 kg		
Display	Graphical display, 128 x 64 pixels		
Communication interfaces	3 x RJ45 sockets (2 x RS485 for connection to Meteocontrol WEB'log or Solar-Log; 1 x Ethernet)		
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			

	StecaGrid 3000	StecaGrid 3600/x	StecaGrid 4200/x
coolcept	CE symbol, VDE AR N 4105, G83, UTE C 15-712-1, AS4777, CEI 0-21		CE symbol, VDE AR N 4105, G83, CEI 0-21
coolcept-x	CE symbol, VDE AR N 4105, G83 under preparation: AS4777, CEI 0-21		

Technical data at 25 °C / 77 °F

[1] The design of the inverter prevents it from causing DC leakage current.

9.2 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[1]	Line circuit breaker
StecaGrid 1800 /-x	1,5 mm²	15 W	B16
	2,5 mm²	9 W	B16
	4,0 mm²	6 W	B16
StecaGrid 2300/-x	1,5 mm²	24 W	B16
	2,5 mm²	14 W	B16
	4,0 mm²	9 W	B16
StecaGrid 3000 StecaGrid 3010/-x	2,5 mm²	25 W	B16 or B25
	4,0 mm²	15 W	B16 or B25
StecaGrid 3600/-x	2,5 mm²	35 W	B25
	4,0 mm²	22 W	B25
StecaGrid 4200/-x	2,5 mm²	48 W	B25
	4,0 mm²	30 W	B25

[1] Power loss of the AC cables at the rated power of the inverter and a cable length of 10 m

9.3 Table of countries

Country			Reconnection time	Voltage disconnection values (peak values)[2]				Voltage disconnection values ø (average values)[3]				Frequency disconnection values[4]			
				upper		lower		upper		lower		upper		lower	
Name	Display [1]		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
France	3300	France	30	15.0	0.20	-15	0.20	10	600.0	–	–	0.4	0.2	-2.5	0.2
Portugal	35100	Portugal	20	15.0	0.20	-15	1.50	10	600.0	–	–	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	3202	Belgique 2[5]	60	15.0	0.20	-20	0.20	10	600.0	–	–	1.5	0.2	-2.5	0.2
Belgium 2 unlimited	3203	Belgique 2 unl[5]	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
Italy 8	3907	Italia 8[10]	300	15.0	0.20	-60	0.20	10	600.0	-15	0.4	0.5	0.1	-0.5	0.1
Italy 9	3908	Italia 9[10]	300	15.0	0.20	-60	0.20	10	600.0	-15	0.4	0.5	0.1	-0.5	0.1
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
Australia	6100	Australia	60	17.0	2.00	-13	2.00	–	–	–	–	5.0	2.0	-5.0	2.0
Israel	9720	Israel	300	35.0	0.05	-50	0.10	10	2.0	-15	2.0	1.0	2.0	-1.0	2.0
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
United Kingdom G83	4400	United Kingdom G83	20	19.0	0.50	-20	0.50	14	1	-13	2.5	2.0	0.5	-3.0	0.5
United Kingdom G59	4401	United Kingdom G59[6]	180	15.0	0.50	-20	0.50	10	1.0	-13	2.5	1.5	0.5	-2.5	0.5
Switzerland	4100	Suisse	30	15.0	0.20	-20	0.20	10	600.0	–	–	0.2	0.2	-2.5	0.2
Hungary	3600	Magyarország	30	35.0	0.05	-50	0.10	10	2.0	-15	2.0	1.0	0.2	-1.0	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
Denmark 2	4501	Danmark[7]	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
Costa Rica	5060	Latinoamérica 60Hz[6]	20	10.0	0.20	-20	0.20	–	–	–	–	0.6	0.2	-0.6	0.2
Tahiti	6890	Tahiti 60Hz	30	15.0	0.20	-20	0.20	10	600.0	–	–	2.5	0.2	-5.0	0.2
Bulgaria	3590	Bâlgarija	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[8]	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
Thailand PEA	6600	Thailand	300	40.0	0.05	-50	0.10	9	2.0	-9	2	0.5	0.1	-0.5	0.1
Estonia	3720	Estland	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
South Africa	2700	South Africa	60	20	0.16	-50	0.20	10	2.0	-15	2	2	0.5	-2.5	5.0
Droop Mode	0007	Droop-Mode[9]	60	20.0	0.50	-20	0.50	–	–	–	–	5.0	0.5	-3.5	0.5
Droop Mode 60Hz	0008	Droop-Mode 60Hz[9]	60	20.0	0.50	-20	0.50	–	–	–	–	5.0	0.5	-3.5	0.5

Note

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

[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).

[5] StecaGrid 3600 and 4200 only:

Maximum output power Belgium 1 / Belgium 2: 3330 W

Maximum output power Belgium 1 unl. / Belgium 2 unl.: 3600 W

[6] The rated voltage is 240 V (instead of 230 V).

[7] All units except the StecaGrid 1800: maximum output power 2000 W

[8] The rated voltage is 220 V (instead of 230 V).

[9] ———————————————————————————————————————

ATTENTION

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

———————————————————————————————————————

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.

⑩ *Italy 8*: Systems smaller than 3 kW maximum output power; *Italy 9*: Systems greater than 3 kW maximum output power

Notice

The requirements for the country-specific grid parameters may change at short notice. Contact the Steca Customer Service if the parameters specified in the table below no longer correspond to the legally prescribed requirements in your country. See ↳ *Contact, p. 145.*

Information on setting the country are provided in ↳ *4.7, p. 108 et seqq.*

10 Liability, commercial guarantee, legal guarantee

10.1 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.

10.2 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*.

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 GmbHshall 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.

11 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

Mammostrasse 1

87700 Memmingen

Germany

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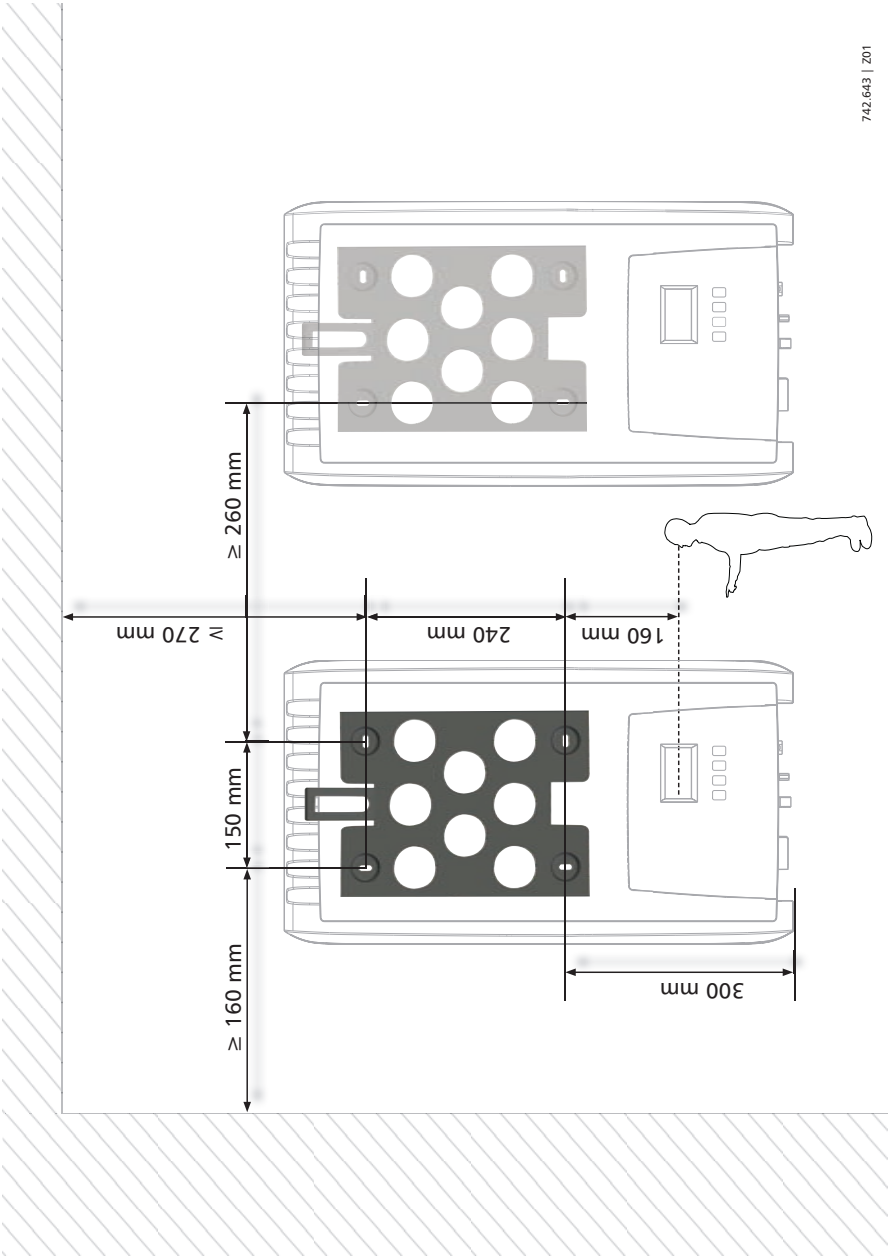
+49 700 STECAGRID
Monday to Friday from 08:00 a.m. to 4:00 p.m.
Fax +49 (0) 8331 8558 132
Email *service@stecasolar.com*
Internet *www.stecasolar.com*

1 Montage – Installation – Montage

coolcept



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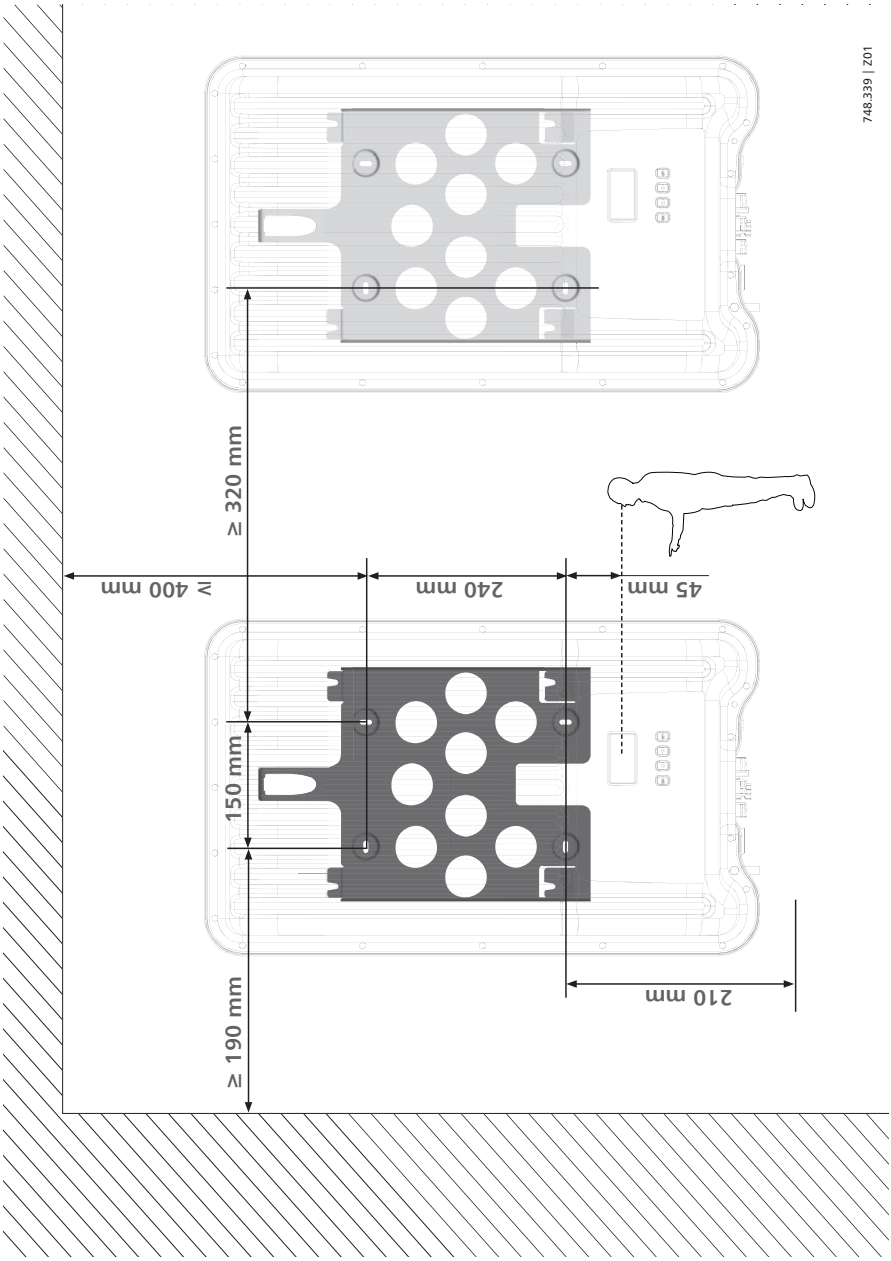

AC-Stecker – AC plug – connecteur AC

gesis RST 20i2/20i3

DEU **Gebrauchsanleitung für Steckverbinder 2-,3-polig**

ENG **Instructions for use for 2-/3-pole Connector**

gesis
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wieland

Stand/Updated: 10/2009

Wichtige Information - bitte aufmerksam lesen

Dieses Beiblatt beschreibt die Montage der zwei- und dreipoligen ***gesis*** RST-Steckverbinder. Bitte beachten Sie, daß elektrische Anschlüsse und Installationen ausschließlich von hierfür ausgebildeten Fachkräften vorgenommen werden dürfen.

Important information - please read carefully

This leaflet is intended for use by trained electricians only. It describes the mounting of the two and three pole gesis RST connectors. Please observe the warnings and notes.

Einsatzbereich und Zündschutzart

Operating conditions and type of protection

- Ⓔx II 3 G Ex nA II, 80°C (T6)
- Ⓔx II 3 D Ex tD A22 T85 °C (H05VV-F...: T70 °C; H07RN-F...: T60 °C)

Zertifikat Nr./Certificate No. SEV 07 ATEX 0110 X

Erweiterter Einsatzbereich für nachfolgende Geräte- und Erstanschlüsse in Schraubtechnik:
Extended range of application for following screw-type appliance and power connectors:

- RST20I3S(D)S1 ZR.. / ..S(D)B1 ZR..
- RST20I3S(D)S1 M.. / ..S(D)B1 M..

Siehe auch „Besondere Bedingungen X"
See also „Special conditions X"

Kabeltypen

Cable types

- H05VV-F... 1,5 mm² und 2,5 mm²
- H07RN-F... 1,5 mm² und 2,5 mm²

Technische Spezifikationen

Technical specifications

Bemessungsspannung Rated voltage	50V, 250V, 250/400V
Bemessungsquerschnitt Rated diameter	2,5 mm²
Schutzart Type of protection	IP 66/68

Bemessungsstrom/ Rated current

Geräte- und Erstanschlüsse, Schraub und Federkraftanschluss Device and mains connections, screw and spring clamp terminals		
1,5 mm² 2,5 mm²	16A 20A	
Konfektionierte Leitungen, Crimpanschluss Assembled cables, crimp connection		
Kabeltyp / Cable type	H05VV-F	H07RN-F
1,5 mm²	16A	14,5A
2,5 mm²	20A	17,5A

Anschließbare Querschnitte (mm²) / Connectable cross sections (mm²)

	min.	max.
Schraubtechnik / Screw technique	1,5	4,0
Federkrafttechnik / Spring force technique	1,5	2,5

Ein- und feindrähtige Leiter mit 0,75 mm² und 1,0 mm² sind auch klemmbar
Single-wire and fine-strand conductors with 0.75 mm² and 1.0 mm² can also be connected

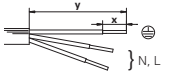
Anschließbare Leiterarten / Type of conductors which can be connected

		Leiterquerschnitt (mm²) / conductor cross section (mm²)
Schraubklemmstelle / Screw terminal	ein-/feindrähtig single-wire/fine strand	1,5...2,5
– zusätzlich / additionally	feindrähtig fine-strand	4,0
– zusätzlich / additionally	flexibel mit Aderendhülse flexible with core end sleeve	1,5...2,5
Schraubenlose Klemmstelle / Screwless terminal	eindrähtig single wire	1,5...2,5
– zusätzlich / additionally	flexibel mit ultraschallverdichteten Leiterenden flexible with ultrasonically densified lead ends	1,5; 2,5
– zusätzlich / additionally	flexibel mit Aderendhülse flexible with core end sleeve	1,5
Crimpanschluss / Crimp connection	flexibel mit ultraschallverdichteten Leiterenden flexible with ultrasonically densified lead ends	1,5; 2,5

Anzahl der Kabel pro Klemmstelle: 1 bzw. 2
Number of cables per terminal point: 1 or 2 respectively

Abmantellängen und Abisolierlängen (mm)

Dismantling and Insulation strip lengths (mm)



Preßzange für Aderendhülsen: Art.-Nr. **95.101.1300.0**
Crimping tool for ferrules Wieland order ref.-no. **95.101.1300.0**

Federkraft-Anschlüsse / Spring clamp connections

Leiter / conductor	PE	N,L	PE	N,L
	Einfach-Anschluß Single connector		Doppel-Anschluß Dual connector	
Abmantellänge y (mm) / Dismantling length y (mm)	**40**	**35**	**55**	**50**

	Abisolierlänge x (mm) / Insulation strip length x (mm)	
Leiterquerschnitt (mm²) / Conductor cross section (mm²)	1,5	2,5
eindrähtig / solid	**14,5+1**	**14,5+1**
feindrähtig (nur mit Aderendhülse) / fine stranded (ferrules required)	**13+1**	
Aderendhülse entspr. DIN 46228-E-... Ferrules acc. to DIN 46228-E-...	**12**	
Aderendhülse entspr. DIN 46228-E-... Ferrules acc. to DIN 46228-E-...	**12**	
Ultraschallverdichtet / ultrasonically compressed	**14,5+1**	**14,5+1**

Schraubanschlüsse / Screw connections

Zugentlastung / strain relief	Ø 10...14		Ø 13...18	
Leiter / conductor	PE	N,L	PE	N,L
		Einfach-Anschluß Single connector		
Abmantellänge y (mm) / Dismantling length y (mm)	**30**	**25**	**42**	**37**
		Doppel-Anschluß Dual connector		
	45	**40**		

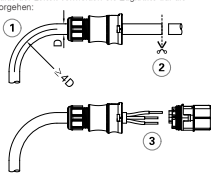
Abisolierlänge x (mm) / Insulation strip length x (mm)	**8** (Leiterquerschnitt 1,5...4 mm²) (conductor cross section 1,5...4 mm²)

Biegeradien

Beachten Sie den minimalen Biegeradius der Leiter. Vermeiden Sie Zugkräfte auf die Kontaktstellen, indem Sie wie folgt vorgehen:

Bending radius

Note the minimum bending radius for conductors. Avoid pull forces on the contact points by proceeding as follows:

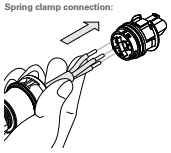


1. Leitung wie benötigt biegen
   Bend the wire as required
2. Leitung ablängen
   Cut the wire to length
3. Abmanteln, abisolieren.
   Strip the cable and wires.

Leitermontage

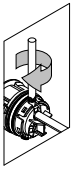
Wire connection

Federkraft-Anschluß:
Spring clamp connection:



Schraubanschluß:
Antrieb PZ1,
Anzugsmoment typ. 0.8...1 Nm

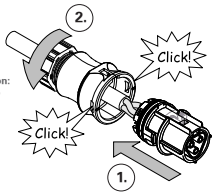
Screw connection:
Drive PZ1,
Tightening torque typ. 0.8...1 Nm



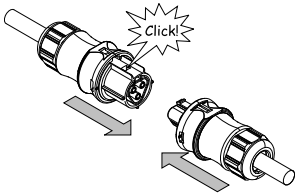
Verschließen
Closing

Verschraubung:
Anzugsmoment
typ. 4+1 Nm

Screw connection:
Tightening torque
typ. 4+1 Nm



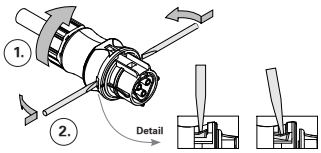
Stecken und verriegeln
Plugging and locking



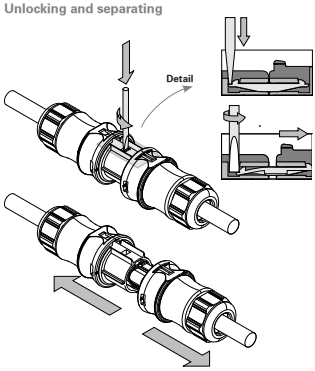
ACHTUNG / CAUTION

- Die Steckverbinder sind nicht zur Stromunterbrechung geeignet. Trennen oder stecken Sie die Verbindung niemals unter Last!
  The connectors are not for current interrupting. Never connect or disconnect under load!
- Um die Einhaltung der IP-Schutzart gewährleisten zu können, müssen an allen nicht belegten Stecker- oder Buchsenteilen Schutzkappen (Zubehör) montiert werden!
  To maintain IP 65 type of enclosure, protective caps (accessory) must be mounted on all unoccupied connectors!

Öffnen des Steckverbinders
Opening the connector



Entriegeln und Trennen
Unlocking and separating

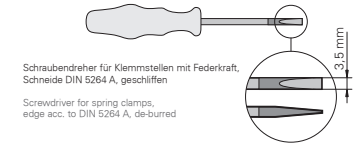


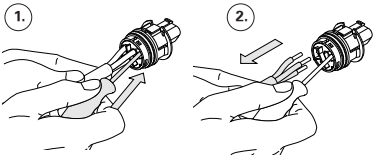
ACHTUNG / CAUTION

Die Steckverbinder sind nicht zur Stromunterbrechung geeignet. Trennen oder stecken Sie die Verbindung niemals unter Last!

The connectors are not for current interrupting. Never connect or disconnect under load!

Leiterdemontage
Unlocking

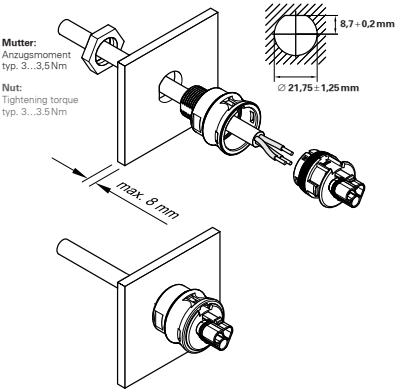




Gehäuseeinbau mit M20-Durchführung
Housing installation with M20 feedthrough

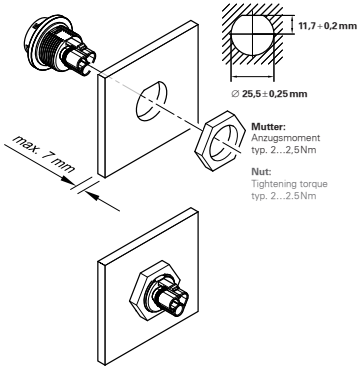
Mutter:
Anzugsmoment
typ. 3…3,5 Nm

Nut:
Tightening torque
typ. 3…3.5 Nm



Gehäuseeinbau mit M25-Durchführung

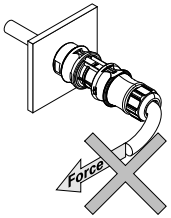
Housing installation with M25 feedthrough



ACHTUNG / CAUTION

Damit die Schutzart IP68 eingehalten wird, stellen Sie durch geeignete Maßnahmen sicher, daß die Steckverbinder vor Biegekräften geschützt sind (z.B. keine Lasten an Kabel hängen; Kabelaufwicklungen nicht freihängend etc.).

To ensure protection category IP68, do not expose the connection to bending forces (e.g. do not attach loads to the cable, no free-dangling cable windings etc.)



HINWEISE / NOTES

1. **DE** Die Installationssteckverbinder RST 20i2…-i3… sind nach RL 94/9/EG (ATEX 95) An-hang I Geräte der Gerätegruppe II Kategorie 3G die nach RL 99/92/EG (ATEX 137) in der Zone 2 sowie den Gasgruppen IIA, IIB und IIC, die durch brennbare Stoffe im Bereich der Temperaturklassen T1 bis T6 explosionsgefährdet sind, eingesetzt werden dürfen.
   Bei der Verwendung/Installation sind die Anforderungen nach EN 60079-14 einzuhalten.
   EN The installation plug connectors RST 20i2…-i3… are, according to RL 94/9/EG (ATEX 95) Appendix I, appliances of Appliance Group II, Category 3G, which, according to RL 99/92/EG (ATEX 137), may be used in Zone 2, as well as in the gas groups IIA, IIB, and IIC, which are subject to the risk of explosion due to combustible materials in the range of temperature classes T1 to T6.
   During use/installation, the requirements according to EN 60079-14 are to be respected.
2. **DE** Die Installationssteckverbinder RST 20i2…-i3… sind nach RL 94/9/EG (ATEX 95) An-hang I auch Geräte der Gerätegruppe II Kategorie 3D die nach RL 99/92/EG (ATEX 137) in der Zone 22 von brennbaren Stäuben eingesetzt werden dürfen.
   Bei der Verwendung/Installation sind die Anforderungen nach EN 61 241-14 einzuhalten.
   EN The installation plug connectors RST 20i2…-i3… are, according to RL 94/9/EG (ATEX 95) Appendix I, appliances of Appliance Group II, Category 3D, which, according to RL 99/92/EG (ATEX 137), may be used in Zone 22 of combustible dusts.
   During use/installation, the requirements according to EN 61 241-14 are to be respected.
3. **DE** Der zulässige Umgebungstemperaturbereich beträgt –20°C bis +40°C.
   EN The permissible ambient temperature range is -20 °C to + 40 °C.

BESONDERE BEDINGUNGEN X / SPECIAL CONDITIONS X

1. **DE** Die Installationssteckverbinder RST 20i2…-i3… dürfen nur dort eingebaut werden, wo diese vor Einwirkung mechanischer Gefahr geschützt sind.
   EN The installation plug connectors RST 20i2…-i3… may only be installed at locations at which they are protected from the effects of mechanical dangers.
2. **DE** Nicht benötigte Stecker- und Buchsenteile müssen mit dem jeweils zugehörigen Verschlussstück verschlossen werden.
   EN Unnecessary plug and socket parts must be closed off with the pertinent closure element which relates to them.
3. **DE** Die am Installationssteckverbinder RST 20i2…-i3… angeschlossenen Kabel und Leitungen sind vor Einwirkung mechanischen Gefahr zu schützen. Zusätzlich muss der Installateur/Betreiber eine entsprechende Zugentlastung der angeschlossenen Kabel und Lei-tungen gewährleisten.
   EN The cables and leads connected to installation plug connectors RST 20i2…-i3… are to be protected from the effect of mechanical danger. In addition to this, the installer/operator must guarantee an appropriate strain relief for the connected cables and leads.
4. **DE** Bei Verwendung eines Leiterquerschnittes ≥2,5mm² und bei einer Umgebungstemperatur bis max. 70°C dürfen die Installationssteckverbinder RST20i3 als Geräte- und Erstanschlüsse in Schraubtechnik mit einem maximalen Belastungsstrom von 9,4A eingesetzt werden.
   EN The screw-type appliance and power connectors RST20i3 may be operated with 9.4A if conductor cross section is equal or greater than 2.5mm² and ambient temperature does not exceed 70 °C.
5. **DE** Wartungs- und Reinigungsarbeiten dürfen nur durchgeführt werden, wenn keine explosive Atmosphäre vorhanden ist.
   Elektrostatische Aufladung der Installationsverbinder RST20i2...-i3..., z.B. durch Staubabwischen, muss vermieden werden.
   EN Maintenance and cleaning may only be performed in a non-explosive atmosphere.
   Electrostatic charging of installation connectors RST20i2...-i3..., e.g. by dusting, must be avoided.

Multicontact MC4 (DC-Stecker – DC plug – connecteur DC)

⇒ http://www.multi-contact.com/downloads/ma.php?cat=pv ⇒ MA231

Advanced Contact Technology

Multi-Contact MC STÄUBLI GROUP

MA231 (de_en)
Montageanleitung

PV-Kupplungsstecker PV-KST4/...-UR*
PV-Kupplungsbuchse PV-KBT4/...-UR*

MA231 (de_en)
Assembly instructions

PV male cable coupler PV-KST4/...-UR*
PV female cable coupler PV-KBT4/...-UR*

Inhalt

Content

Kupplungsbuchse / Female cable coupler

PV-KBT4/...

Kupplungsstecker / Male cable coupler

PV-KST4/...

Optional
PV-SSH4
Sicherungshülse / Safety lock clip

* UL file E343181

(siehe / see www.multi-contact.com --> MA252)

Technische Daten	**Technical data**	
Steckverbindersystem	Connector system	**Ø 4mm**
Bemessungsspannung	Rated voltage	**1000V DC (IEC)** **600V DC (UL)**
Bemessungsstrom IEC (90°C)	Rated current IEC (90°C)	**17A (1,5mm²)** **22,5A (2,5mm², 14AWG)** **30A (4mm², 6mm², 10AWG)** **43A (10mm²)**
Bemessungsstrom IEC (85°C)	Rated current IEC (85°C)	**39A (4mm²)** **45A (6mm²)**
Prüfspannung	Test voltage	**6kV (50Hz, 1min.)**
Umgebungstemperaturbereich	Ambient temperature range	**-40°C...+90°C (IEC)** **-40°C...+75°C (UL)** **-40°C...+70°C (UL: 14AWG)**
Obere Grenztemperatur	Upper limiting temperature	**105°C (IEC)**
Schutzart, gesteckt ungesteckt	Degree of protection, mated unmated	**IP68 (1m/1h)** **IP2X**
Überspannungskat. / Verschmutzungsgrad	Overvoltage category / Pollution degree	**CATIII / 2**
Kontaktwiderstand der Steckverbinder	Contact resistance of plug connectors	**0,5mΩ**
Schutzklasse	Safety class	**II**

Sicherheitshinweise

Die Montage und Installation der Produkte darf nur durch qualifiziertes und trainiertes Fachpersonal unter Berücksichtigung aller anwendbaren gesetzlichen Sicherheitsbestimmungen und Regelungen erfolgen.
Multi-Contact (MC) lehnt jegliche Haftung infolge Nichteinhaltung dieser Warnhinweise ab.

Benutzen Sie nur die von MC angegebenen Einzelteile und Werkzeuge. Weichen Sie nicht von den hier beschriebenen Vorgängen zur Vorbereitung und Montage ab, da sonst bei der Selbstkonfektionierung weder die Sicherheit noch die Einhaltung der technischen Daten gewährleistet ist. Ändern Sie das Produkt nicht in irgend einer Weise ab.

Nicht von MC hergestellte Steckverbindungen, die mit MC-Elementen steckbar sind und von den Herstellern manchmal auch als „MC-kompatibel" bezeichnet werden, entsprechen nicht den Anforderungen für eine sichere, langzeitstabile elektrische Verbindung und dürfen aus Sicherheitsgründen nicht mit MC-Elementen gesteckt weren. MC übernimmt daher keine Haftung, falls diese von MC nicht freigegebenen Steckverbindungen mit MC-Elementen gesteckt werden und deshalb Schäden entstehen.

Die hier beschriebenen Arbeiten dürfen nicht an stromführenden oder unter Spannung stehenden Teilen durchgeführt werden.

Der Schutz vor einem elektrischen Schlag muss durch das Endprodukt gegeben sein und vom Anwender sichergestellt werden.

Die Steckverbindungen dürfen nicht unter Last getrennt werden. Das Stecken und Trennen unter Spannung ist zulässig.

Die Steckverbinder sind wasserdicht gemäss IP-Schutzart. Sie sind aber nicht geeignet für einen dauerhaften Gebrauch unter Wasser. Legen Sie die Steckverbinder nicht direkt auf die Dachhaut auf.

Nicht gesteckte Steckverbinder sind mit einer Verschlusskappe (MC4 Artikel Nr. 32.0716 für Buchsen und 32.0717 für Stecker) vor Feuchtigkeit und Schmutz zu schützen. Die Steckverbinder dürfen nicht im verschmutzten Zustand miteinander gesteckt werden.

Die Steckverbindung darf nie einer dauerhaft mechanischen Zugbelastung ausgesetzt sein. Das Kabel sollte mit Kabelbindern befestigt werden.

MC untersagt aus Sicherheitsgründen, weder PVC-Kabel noch unverzinnte Kabel vom Typ H07RN-F zu verwenden.

Weitere technische Daten entnehmen Sie bitte dem Produktkatalog.

Safety Instructions

The products may be assembled and installed only by suitably qualified and trained specialists with due observance of all applicable safety regulations.
Multi-Contact (MC) declines any liability in the event of failure to observe these warnings.

Use only the components and tools specified by MC. Do not deviate from the preparation and assembly procedures described here, since in this event, in the event of self-assembly, no guarantee can be given as to safety or conformity with the technical data. Do not modify the product in any way.

Connectors not made by MC which can be mated with MC elements and in some cases are also described as "MC-compatible" do not conform to the requirements for safe electrical connection with long-term stability, and for safety reasons must not be plugged together with MC elements. MC can therefore accept no liability for damage which occurs as a result of mating these connectors which lack MC approval with MC elements.

The work described here must not be carried out on live or load-carrying parts.

Protection from electric shock must be assured by the end product and its user.

The plug connections must not be disconnected under load. Plugging and unplugging when live is permitted.

The plug connectors are watertight in accordance with IP protection class. However, they are not suitable for continuous operation under water. Do not place the plug connectors directly on the roof membrane.

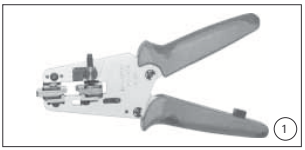
Unmated plug connectors must be protected from moisture and dirt with a sealing cap (MC4 Article No. 32.0716 for sockets and 32.0717 for plugs). The male and female parts must not be plugged together when soiled.

The plug connection must not be subjected to continuous mechanical tension. The cable should be fixed with cable binders.

For safety reasons MC prohibits the use of either PVC cables or untinned cables of type H07RN-F.

For further technical data please see the product catalogue.

Erklärung der Symbole	Explanation of the symbols
Warnung vor gefährlicher elektrischer Spannung	Warning of dangerous voltages
Warnung vor einer Gefahrenstelle	Warning of a hazard area
Nützlicher Hinweis oder Tipp	Useful hint or tip



Erforderliches Werkzeug

(ill. 1)
Abisolierzange **PV-AZM...** inkl. eingebauten Abisolier-Messern sowie Sechskantschlüssel SW2,5.

Leiterquerschnitt: 1,5/2,5/4/6mm²
Typ: **PV-AZM-1.5/6**
Bestell-Nr. **32.6029-156**

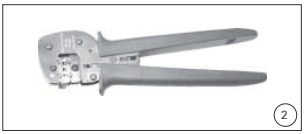
Leiterquerschnitt: 4/6/10mm²
Typ: **PV-AZM-4/10**
Bestell-Nr. **32.6027-410**

Tools required

(ill. 1)
Stripping pliers **PV-AZM...** incl. built-in blade as well as hexagonal screwdriver A/F 2,5mm.

Cable cross section: 1,5/2,5/4/6mm²
Type: **PV-AZM-1.5/6**
Order No. **32.6029-156**

Cable cross section: 4/6/10mm²
Type: **PV-AZM-4/10**
Order No. **32.6027-410**



(ill. 2)
Crimpzange **PV-CZM...** inkl. Locator und eingebautem Crimpeinsatz.

Crimpbereich:
1,5/2,5/4mm² (14/12AWG)
Typ: **PV-CZM-18100**
Bestell-Nr. **32.6020-18100**

Crimpbereich:
2,5/4/6mm² (12/10AWG)
Typ: **PV-CZM-19100**
Bestell-Nr. **32.6020-19100**

Crimpbereich: 4/10mm² (12AWG)
Typ: **PV-CZM-20100**
Bestell-Nr. **32.6020-20100**

(ill. 2)
Crimping pliers **PV-CZM...** incl. Locator and built-in crimping insert.

Crimping range:
1,5/2,5/4mm² (14/12AWG)
Type: **PV-CZM-18100**
Order No. **32.6020-18100**

Crimping range:
2,5/4/6mm² (12/10AWG)
Type: **PV-CZM-19100**
Order No. **32.6020-19100**

Crimping range: 4/10mm² (12AWG)
Type: **PV-CZM-20100**
Order No. **32.6020-20100**

(ill. 3)
PV-MS Montageschlüssel,
1 Set = 2 Stück
Bestell-Nr.: **32.6024**

(ill. 3)
Open-end spanner **PV-MS**,
1 Set = 2 pieces
Order No.: **32.6024**

(ill. 4)
PV-WZ-AD/GWD Steckschlüssel zum Anziehen
Bestell-Nr. **32.6006**

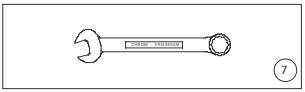
(ill. 4)
PV-WZ-AD/GWD socket wrench insert to tighten
Order No. **32.6006**

(ill. 5)
PV-SSE-AD4 Steckschlüssel zum Kontern
Bestell-Nr. **32.6026**

(ill. 5)
PV-SSE-AD4 socket wrench insert to secure
Order No. **32.6026**

(ill. 6)
PV-PST Prüfstift
Bestell-Nr. **32.6028**

(ill. 6)
Test plug **PV-PST**
Order No. **32.6028**

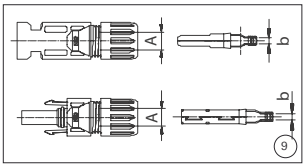


(ill. 7)
SW15 Gabelschlüssel

(ill. 7)
Open-end spanner A/F 15mm

(ill. 8)
SW12 Drehmomentschlüssel

(ill. 8)
Torque screwdriver A/F 12mm



Vorbereitung der Leitung

Anschlussleitungen mit einem Litzenaufbau der Klassen 5 und 6 können angeschlossen werden.

⚠ Achtung:
Verwenden Sie keine blanken oder bereits oxidierten Leiter. Verzinnte Leiter sind vorteilhaft. Sämtliche Solarkabel von MC haben hochwertige, verzinnte Leiter.

(ill. 9, Tab. 1)
Kontrollieren Sie die Masse A und b gemäss Illustration 9 und Tabelle 1.

Cable preparation

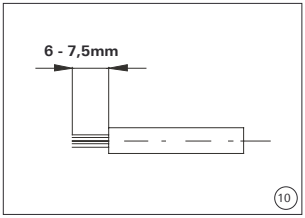
Cables with a strand construction of classes 5 and 6 can be connected.

⚠ Attention:
Use no uncoated or already oxidised conductors. It is recommended to use tinned conductors. All MC solar cables have high-quality, tinned conductors.

(ill. 9, Tab. 1)
Check dimensions A and b in accordance with illustration 9 and table 1.

Tab. 1

b: Kontrollmass b: Control dimension	Leiterquerschnitt Conductor cross section		A: Ø-Bereich Leitung mm A: Ø range of cable mm	
			3 – 6	5,5 – 9
mm	mm²	AWG	Typ/Type	
~ 3	1,5 – 2,5	14	PV-K...T4/...2,5I	PV-K...T4/...2,5II
~ 5	4 – 6	12/10	PV-K...T4/...6I	PV-K...T4/...6II
~ 7,2	10	–	–	PV-K...T4/...10II



(ill. 10)
Leitung abisolieren.
Entfernen Sie die Isolation des Kabels auf einer Länge von 6mm bis 7,5mm.

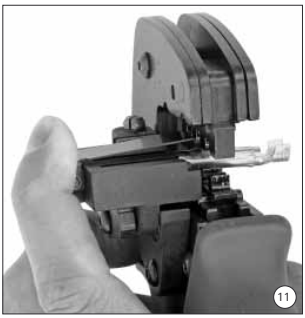
⚠ Achtung:
Schneiden Sie beim Abisolieren keine Einzeldrähte ab!

ℹ Hinweis:
Die Bedienung der Abisolierzange PV-AZM... sowie das Auswechseln von Messersätzen entnehmen Sie bitte der Bedienungsanleitung MA267 auf www.multi-contact.com

(ill. 10)
Strip cable insulation.
Remove 6mm to 7,5mm of insulation from the end of the cable.

⚠ Attention:
Do not cut individual strands at stripping

ℹ Note:
For directions on the operation of stripping pliers PV-AZM... and changing blade sets, see operating instruction MA267 at www.multi-contact.com

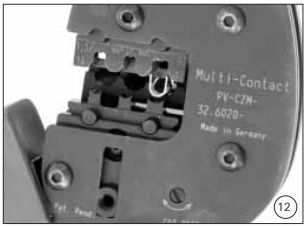


Crimpen

(ill. 11)
Öffnen Sie den Klemmbügel (K) und halten Sie ihn fest. Legen Sie den Kontakt in den passenden Querschnittsbereich. Drehen Sie die Crimplaschen nach oben. Lassen Sie den Klemmbügel (K) los. Der Kontakt ist fixiert.

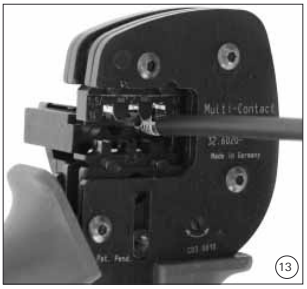
Crimping

(ill. 11)
Open the clamp (K) and hold. Place the contact in the appropriate cross-section range.
Turn the crimp lugs upwards. Release the clamp (K). The contact is fixed.



(ill. 12)
Drücken Sie die Zange leicht zusammen, bis die Crimplaschen sicher innerhalb der Crimp-Matritze liegen.

(ill. 12)
Press the pliers gently together until the crimp lugs are properly located within the crimping die.



(ill. 13)
Führen Sie das abisolierte Kabel ein, bis die Isolation am Crimp-Einsatz anschlägt. Schliessen Sie die Crimpzange ganz.

(ill. 13)
Insert the stripped cable end until the insulation comes up against the crimp insert. Completely close the crimping pliers.

(ill. 14)
Kontrollieren Sie die Vercrimpung visuell.

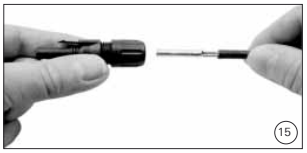
Hinweis:
Die Handhabung der Crimpzange entnehmen Sie bitte der Bedienungsanleitung MA251 auf www.multi-contact.com

(ill. 14)
Visually check the crimp.

Note:
For directions on the operation of the crimping tool, please see operating instructions MA251 at www.multi-contact.com

Montage-Prüfung

Assembly check

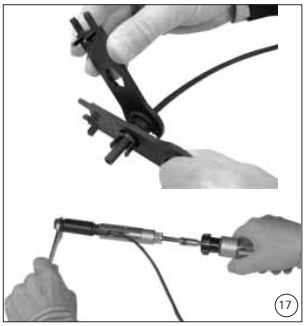


(ill. 15)
Führen Sie den angecrimpten Kontakt von hinten in die Stecker- bzw. Buchsenisolation ein bis zum Einrasten. Prüfen Sie durch leichtes Ziehen an der Leitung, ob das Metallteil richtig eingerastet ist.

(ill. 15)
Insert the crimped-on contact into the insulator of the male or female coupler until it clicks into place. Pull gently on the lead to check that the metal part is correctly engaged.

(ill. 16)
Stecken Sie den Prüfstift mit der entsprechenden Seite in die Buchse bzw. in den Stecker bis zum Anschlag. Bei richtig montiertem Kontakt muss die weisse Markierung am Prüfstift noch sichtbar sein.

(ill. 16)
Insert the appropriate end of the test pin into the male or female coupler as far as it will go. If the contact is correctly located, the white mark on the test pin must still be visible.



(ill. 17)
Ziehen Sie die Leitungsverschraubung mit den Werkzeugen **PV-MS** handfest an

oder

ziehen Sie die Leitungsverschraubung mit den Werkzeugen **PV-WZ-AD/GWD** und **PV-SSE-AD4** an.

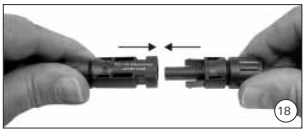
In beiden Fällen gilt:
Das Anzugsdrehmoment muss auf die konkret verwendeten Solarleitungen abgestimmt werden. Typische Werte liegen im Bereich von 2,5Nm bis 3Nm.

(ill. 17)
Screw up the cable gland hand-tight with the tools **PV-MS**

or

tighten the cable gland with the tools **PV-WZ-AD/GWD** and **PV-SSE-AD4**.

In both cases:
The tightening torque must be appropriate for the solar cables used. Typical values are between 2,5Nm and 3Nm.



Stecken und Trennen der Kabelkupplung ohne Sicherungshülse PV-SSH4

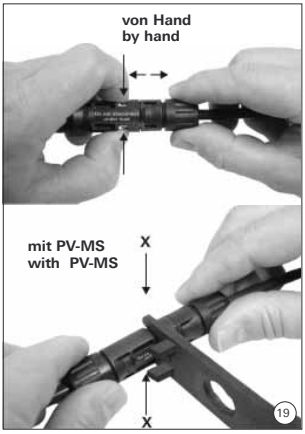
Stecken
(ill. 18)
Stecken Sie die Kabelkupplung zusammen bis zum Einrasten. Kontrollieren Sie das korrekte Einrasten durch Ziehen an der Kabelkupplung.

Trennen
(ill. 19)
Zum Trennen der Kontakte drücken Sie die Einrastlaschen (X) entweder von Hand oder mit dem Werkzeug PV-MS zusammen und ziehen Sie die Kabelkupplung auseinander.

Plugging and unplugging the cable coupler without safety lock clip PV-SSH4

Plugging
(ill. 18)
Plug the parts of the cable coupler together until they click in place. Check that they have engaged properly by pulling on the cable coupler.

Unplugging
(ill. 19)
To disconnect the contacts, press the latches (X) together either by hand or with the tool PV-MS and pull the halves of the cable coupler apaart.



Stecken und Trennen der Kabelkupplung mit Sicherungshülse PV-SSH4

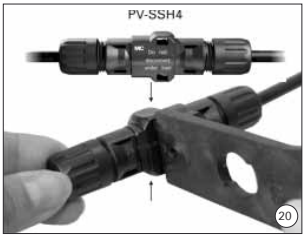
Stecken
(ill. 20)
Stecken Sie die Kabelkupplung zusammen bis zum Einrasten. Kontrollieren Sie das korrekte Einrasten durch Ziehen an der Kabelkupplung.

Trennen
Die Kabelkupplung kann nur noch mit dem Werkzeug PV-MS getrennt werden. Drücken Sie die Einrastlaschen (X) mit dem Werkzeug PV-MS zusammen und ziehen Sie die Kabelkupplung auseinander.

Plugging and unplugging the cable coupler with safety lock clip V-SSH4

Plugging
(ill. 20)
Plug the parts of the cable coupler together until they click in place. Check that they have engaged properly by pulling on the cable coupler.

Unplugging
The cable coupler can be disconnected only with the tool PV-MS. Press the latches (X) together with the tool PV-MS and pull the halves of the coupler apart.

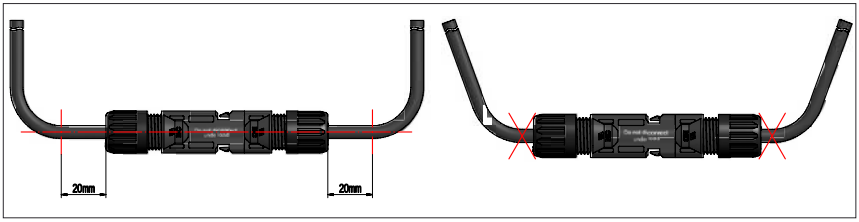


Leitungsführung

Die Kräfte dürfen keine sichtbare Verformung im Dichtbereich der Isolation aufweisen.
Beachten Sie die Spezifikationen des Leitungsherstellers betreffend Biegeradius.

Cable routing

The forces must not create a visible deformation in the sealing portion of the insulation.
Refer to cable manufacturers specification for minimum bending radius.



Italiano

Connettore fotovoltaico SUNCLIX per l'utilizzo in impianti fotovoltaici per cavo solare da 2,5-6 mm² del tipo PV1-F o cavo solare certificato UL (ZKLA), AWG 10 – 14

1 Avvertenze di sicurezza

AVVERTENZA: I connettori SUNCLIX devono essere collegati solo da persone che operano sotto la supervisione di elettricisti specializzati.

AVVERTENZA: Collegare o scollegare i connettori SUNCLIX soltanto in assenza di carico.

IMPORTANTE: Utilizzare questi connettori soltanto insieme a un cavo solare da 2,5-6 mm² del tipo PV1-F o un cavo solare certificato UL (cavo di rame ZKLA, AWG 10 – 14). Solo con questo cavo si garantisce il collegamento elettrico sicuro. Altri tipi di cavo sono possibili su richiesta. Per la posa del cavo rispettare i raggi di curvatura prescritti dal produttore.

IMPORTANTE: Collegare questi connettori soltanto con altri connettori SUNCLIX. Per il collegamento rispettare assolutamente le indicazioni sulla tensione nominale e la corrente nominale. È permesso il più piccolo valore comune.

IMPORTANTE: Proteggere dalla polvere e dall'umidità i connettori.
Non immergere in acqua i connettori.
– Non posare il connettore direttamente sul manto di copertura del tetto.
– Applicare un cappuccio di sicurezza (ad es. PV-C PROTECTION CAP, codice 1785430) ai connettori non collegati.

2 Collegamento del connettore

2.1 Collegamento del cavo (figura 1)
- Spelare il cavo di 15 mm con un utensile adatto. Eseguendo questa operazione, fare attenzione a non tagliare un singolo filo.

1 Inserire con cura il conduttore spelato con i cavetti intrecciati fino a battuta. Le estremità dei cavetti devono essere visibili nell'elemento di bloccaggio a molla.
2 Chiudere l'elemento di bloccaggio a molla. Verificare che scatti.
3 Infilare l'inserto nel capocorda.
4 Serrare la connessione a vite per cavo con una coppia di 2 Nm.

2.2 Unione dei connettori
- Congiungere assieme connettore maschio e connettore femmina. Il collegamento viene così inserito.
- Tirare il giunto per verificare che il collegamento sia corretto.

3 Separazione dei connettori (Fig. 2)
È necessario un cacciavite pervit a taglio con una punta larga 3 mm (ad es. SZF 1-0,6X3,5; 1204517).
1 Inserire il cacciavite come indicato in figura 2.
2 Lasciare inserito il cacciavite e scollegare il connettore femmina dal connettore maschio.

3.1 Scollegamento del cavo (Fig. 3)
1 Svitare la connessione a vite per cavo.
2 Inserire il cacciavite come indicato in figura 3.
3 Fare leva con forza sul collegamento e staccare il connettore femmina dall'inserto.
4 Aprire l'elemento di bloccaggio a molla con il cacciavite. Rimuovere il cavo.

Français

Connecteur photovoltaïque SUNCLIX destiné aux câbles pour systèmes à énergie solaire de 2,5-6 mm², type PV1-F ou homologués UL (ZKLA), AWG 10 – 14

1 Consignes de sécurité

AVERTISSEMENT : Seuls des personnes dûment formées en électrotechnique sont autorisées à installer les connecteurs mâles SUNCLIX.

AVERTISSEMENT : Les connecteurs SUNCLIX ne doivent jamais être déconnectés en charge.

IMPORTANT : Utiliser ces connecteurs exclusivement avec un câble pour système à énergie solaire de 2,5-6 mm², de type PV1-F ou un câble homologué UL (fil de cuivre ZKLA, AWG 10 – 14). Seul ce câble est en mesure de garantir la sécurité électrique du raccordement. Autres types de câble possibles sur demande. Lors de la pose du câble, respecter les rayons de courbure prescrits par le fabricant.

IMPORTANT : Raccorder ces connecteurs mâles uniquement avec d'autres connecteurs SUNCLIX. Lors du raccordement, respecter impérativement les valeurs données pour la tension nominale et pour l'intensité nominale. Le plus petit dénominateur commun est autorisé.

IMPORTANT : Protéger les connecteurs mâles de l'humidité et de la saleté.
Ne jamais plonger les connecteurs mâles dans l'eau.
– Ne jamais poser directement le connecteur sur la peau du toit.
– Equiper les connecteurs mâles non enfichés d'un capuchon de protection (par ex. PV-C PROTECTION CAP, 1785430).

2 Raccordement du connecteur

2.1 Raccordement du câble (Figure 1)
- Dénuder le câble sur 15 mm avec un outil approprié. Veiller à ne sectionner aucun fil du câble.

1 Introduire avec prudence le fil dénudé aux brins torsadés jusqu'en butée. Les extrémités des cordons doivent apparaître dans le « tiroir » à ressort.
2 Refermer le « tiroir » à ressort. Vérifier qu'il est bien encliqueté.
3 Enfiler le raccord dans le manchon.
4 Serrer le presse-étoupe à 2 Nm.

2.2 Assemblage du connecteur mâle
- Assembler le connecteur et le connecteur femelle. Veiller à ce que la connexion s'encliquète.
- Exercer une traction des deux côtés du raccordement pour en vérifier la solidité.

3 Déconnexion du connecteur mâle 2
Un tournevis à fente à lame large de 3 mm est requis (par ex. SZF 1-0,6X3,5 ; référence 1204517).
1 Introduire un tournevis com. indiqué à la Fig. 2.
2 Laisser le tournevis en place et séparer les connecteurs mâle et femelle l'un de l'autre.

3.1 Séparation du câble (Fig. 3)
1 Dévisser le raccord vissé du câble.
2 Introduire un tournevis com. indiqué à la Fig. 3.
3 Soulever la liaison puis séparer le manchon du raccord.
4 Ouvrir le « tiroir » à ressort avec le tournevis. Extraire le câble du connecteur.

English

SUNCLIX photovoltaic I/O connector for installation in photovoltaic systems for 2,5-6 mm² solar cables, type PV1-F or for solar cables with UL certification (ZKLA), AWG 10–14

1 Safety notes

WARNING: The SUNCLIX plug-in connectors may be connected only by trained electricians.

WARNING: Never plug in or disconnect the SUNCLIX plug-in connectors under load.

NOTE: Use these plug-in connectors only together with a 2,5-6 mm² PV1-F type solar cable or a UL-certified solar cable (ZKLA copper litz wires, 10-14 AWG). A safe electrical connection is only possible with this cable. Other cable types are available on request.
When laying out the cable, observe the bending radiuses that the manufacturer specifies.

NOTE: Connect this plug-in connector only with other SUNCLIX plug-in connector. When making the connections, be sure to observe the specifications on nominal voltage and nominal current. The smallest common value is permissible.

NOTE: Protect the plug-in connectors from humidity and dirt.
– Do not immerse the plug-in connector in water.
– Never lay out the plug directly on the roofing.
– Attach a protective cap (e.g. PV-C PROTECTION CAP, order number 1785430) to plug-in connectors that are not plugged in.

2 Connecting connectors

2.1 Connecting the cable (Fig. 1)
- Strip the cable with a suitable tool by 15 mm. Make sure that no individual wires are cut off.

1 Carefully insert the stripped wire with twisted litz wires all the way in. The litz wire ends have to be visible in the spring.
2 Close the spring. Make sure that the spring is snapped in.
3 Push the insert into the sleeve.
4 Tighten the cable gland to 2 Nm.

2.2 Assemble the connector
- Bring the plug and the socket together. The connection snaps close thereby.
- Pull on the coupling to check the proper connection.

3 Separating the connector (Fig. 2)
You need a slot screwdriver with a 3-mm wide blade (e.g. SZF 1-0,6X3,5; item no. 1204517).
1 Insert the screwdriver as shown in Fig. 2.
2 Leave screwdriver inserted and disconnect the plug and the socket from each other.

3.1 Loosen the cable (Fig. 3)
1 Screw open the cable gland.
2 Insert the screwdriver as shown in Fig. 3
3 Pry the connection open and pull the sleeve and the insert apart.
4 Open the spring with the screwdriver. Remove the cable.

Deutsch

SUNCLIX-Photovoltaik-Steckverbinder zum Einsatz in Photovoltaik-Anlagen für 2,5-6 mm²-Solarkabel vom Typ PV1-F oder für UL-zertifizierten Solarkabel (ZKLA), AWG 10–14

1 Sicherheitshinweise

WARNUNG: Die SUNCLIX-Steckverbinder dürfen ausschließlich durch elektrotechnisch unterwiesene Personen angeschlossen werden.

WARNUNG: Stecken oder trennen Sie die SUNCLIX-Steckverbinder niemals unter Last.

ACHTUNG: Verwenden Sie diese Steckverbinder nur zusammen mit einem 2,5-6 mm²-Solarkabel vom Typ PV1-F oder UL-zertifiziertem Solarkabel (ZKLA Kupferlitze, AWG 10 – 14). Nur mit diesem Kabel ist der sichere elektrische Anschluss gewährleistet. Weitere Kabeltypen sind auf Anfrage möglich. Beachten Sie beim Verlegen des Kabels die Biegeradien, die der Hersteller vorgibt.

ACHTUNG: Verbinden Sie diese Steckverbinder nur mit anderen SUNCLIX-Steckverbindern. Beachten Sie bei dem Verbinden unbedingt die Angaben zu Nennspannung und Nennstrom. Der kleinste gemeinsame Wert ist zulässig.

ACHTUNG: Schützen Sie die Steckverbinder vor Feuchtigkeit und Schmutz.
– Tauchen Sie die Steckverbinder nicht unter Wasser.
– Verlegen Sie den Stecker nicht direkt auf der Dachhaut.
– Versehen Sie die Steckverbinder, die nicht gesteckt sind, mit einer Schutzkappe (z. B. PV-C PROTECTION CAP, 1785430).

2 Steckverbinder anschließen

2.1 Kabel anschließen (Bild 1)
- Isolieren Sie das Kabel mit einem geeigneten Werkzeug um 15 mm ab. Achten Sie darauf, dabei keine Einzeldrähte abzuschneiden.

1 Führen Sie die abisolierte Ader mit verdrillten Litzen sorgfältig bis zum Anschlag ein. Die Litzenenden müssen in der Federsichtbar sein.
2 Schließen Sie die Feder. Stellen Sie sicher, dass die Feder eingerastet ist.
3 Schieben Sie den Einsatz in die Hülse.
4 Ziehen Sie die Kabelverschraubung mit 2 Nm an.

2.2 Steckverbinder zusammen fügen
- Führen Sie Stecker und Buchse zusammen. Dabei rastet die Verbindung ein.
- Ziehen Sie an der Kupplung, um die korrekte Verbindung zu prüfen.

3 Steckverbinder trennen (Bild 2)
Sie benötigen einen Schlitz-Schraubendreher mit 3-mm-breiter Klinge (z. B. SZF 1-0,6X3,5, 1204517).
1 Führen Sie den Schraubendreher ein, wie in Bild 2 gezeigt.
2 Lassen Sie den Schraubendreher stecken und trennen Sie Buchse und Stecker voneinander.

3.1 Kabel lösen (Bild 3)
1 Drehen Sie die Kabelverschraubung auf.
2 Führen Sie den Schraubendreher ein, wie in Bild 3 gezeigt.
3 Heben Sie die Verbindung auf und ziehen Sie Hülse und Einsatz auseinander.
4 Öffnen Sie die Feder mit dem Schraubendreher. Entfernen Sie das Kabel.

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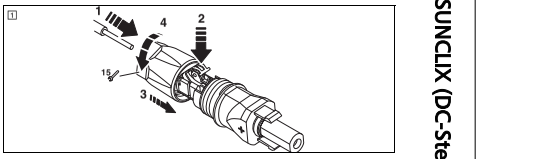
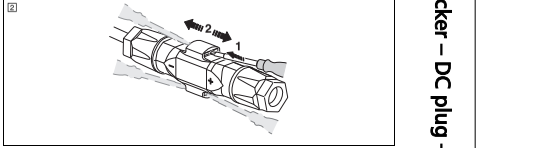
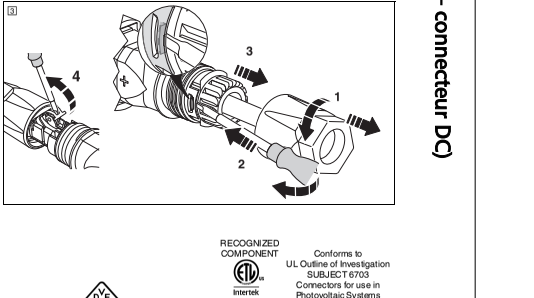
MNR 0140682 - 03 2013-04-18

DE Einbauanweisung
EN Installation notes
FR Instructions d'installation
IT Istruzioni di installazione
ES Instrucciones de montaje
PT Instruções de instalação
RU Инструкция по установке
TR Montaj talimatı
ZH 安装说明
JA 組立説明

PV-CF-S 2,5-6 (+) 1774674
PV-CM-S 2,5-6 (-) 1774687







RECOGNIZED COMPONENT
Intertek 4007180

Conforms to UL Outline of Investigation SUBJECT 6703 Connectors for use in Photovoltaic Systems

EN 50521 | UL SUBJECT 6703

Italiano	Français	English	Deutsch
Dati tecnici a norma	Caractéristiques techniques selon la norme	Technical data according to the standard	Technische Daten nach Norm
Temperatura ambiente	Température ambiante	Ambient temperature	Umgebungstemperatur
Tensione nominale, max.	Tension nominale, max.	Nominal voltage, max.	Nennspannung, max.
Corrente nominale, max.	Intensité nominale, max.	Nominal current max.	Nennstrom, max.
Diametro cavo	Diamètre de câble	Cable diameter	Kabeldurchmesser
-40 °C...+85 °C	-40 °C ...+70 °C		
1100 V DC	600 V DC		
2,5 mm² - 27 A; 4 mm² - 40 A; 6 mm² - 40 A	AWG 14 - 15 A, AWG 12 - 20 A, AWG 10 - 30 A		
5 ... 8 mm	5 ... 8 mm		

Español

Conector enchufable fotovoltaico SUNCLIX para su empleo en instalaciones fotovoltaicas para cable solar de 2,5-6 mm² del tipo PV1-F o para cable solar certificado por UL (ZKLA), AWG 10-14

1 Indicaciones de seguridad

ADVERTENCIA: Los conectores enchufables SUNCLIX deben ser conectados únicamente por personas con formación electrotécnica.

ADVERTENCIA: Los conectores enchufables SUNCLIX nunca se deben enchufar o desenchufar bajo carga.

IMPORTANTE: Use estos conectores enchufables solamente en combinación con un cable solar de 2,5-6 mm² del tipo PV1-F o un cable solar certificado por UL (hilos de cobre trenzados ZKLA, AWG 10–14). Únicamente con este cable es posible garantizar la conexión eléctrica segura. Otros tipos de cable son posibles, bajo consulta. Al tender el cable, tenga en cuenta los radios de flexión especificados por el fabricante.

IMPORTANTE: Conecte estos conectores enchufables únicamente con otros conectores enchufables fotovoltaicos SUNCLIX. Para su conexión, es indispensable tener en cuenta las indicaciones referentes a la tensión y la corriente nominales. Se admite el valor mínimo común.

IMPORTANTE: Proteja los conectores enchufables de la humedad y la suciedad.
- No sumerja los conectores enchufables en agua.
- No coloque el conector directamente sobre la cubierta del tejado.
- Proteja los conectores enchufables que no están conectados con un capuchón (p. ej., PV-C PROTECTION CAP, 1785430).

2 Conectar conector enchufable

2.1 Conectar cable (figura 1)
- Pele el cable con una herramienta adecuada unos 15 mm. Al hacerlo, tenga cuidado de no cortar hilos sueltos.

1 Introduzca cuidadosamente los conductores pelados con hilos trenzados hasta el tope. Las puntas de los conductores deben ser visibles en el compartimento del resorte.
2 Cierre el compartimento del resorte. Asegúrese de que el resorte está bien encajado.
3 Introduzca el inserto en el manguito.
4 Apriete el prensaestopas con 2 Nm.

2.2 Acoplar los conectores enchufables
- Introduzca el conector macho en el conector hembra. Al hacerlo, la conexión encastra.
- Tire del acoplamiento para comprobar que la conexión es correcta.

3 Separar los conectores enchufables (2)

Se necesita un destornillador plano con hoja de 3 mm de anchura (p. ej., SZF 1-0,6X3,5; 1204517).

1 Introduzca el destornillador como se muestra en la figura 2.
2 Deje insertado el destornillador y separe el conector hembra del conector macho.

3.1 Soltar el cable (figura 3)

1 Desenrosque el prensaestopas.
2 Introduzca el destornillador como se muestra en la figura 3.
3 Haga palanca hacia arriba para abrir la conexión y separe el manguito del inserto.
4 Abra el compartimento del resorte con el destornillador. Retire el cable.

Português

Conectores de encaixe fotovoltáicos SUNCLIX para aplicação em sistemas fotovoltáicos para cabos solares de 2,5-6 mm² do tipo PV1-F ou para cabos solares com certificação UL (ZKLA), AWG 10 – 14

1 Avisos de segurança

ATENÇÃO: Os conectores de encaixe SUNCLIX apenas podem ser conectados por pessoas treinadas em eletrotécnica.

ATENÇÃO: Nunca conectar ou separar os conectores de encaixe SUNCLIX sob carga.

IMPORTANTE: Utilizar os conectores de encaixe apenas em conjunto com um cabo solar de 2,5-6 mm² do tipo PV1-F ou um cabo solar com certificação UL (ZKLA com malha de cobre, AWG 10 – 14). Apenas com este cabo a conexão elétrica segura está garantida. Outros tipos de cabos podem ser obtidos sob consulta. Ao instalar o cabo, respeitar os raios de curva definidos pelo fabricante.

IMPORTANTE: Apenas conectar estes conectores de encaixe com outros conectores de encaixe fotovoltáicos SUNCLIX. Ao conectar, sempre observar os dados sobre tensão nominal e corrente nominal. É admissível o menor valor em comum.

IMPORTANTE: Proteger os conectores de encaixe de umidade e sujeira.
- Não submergir os conectores de encaixe na água.
- Não instalar os conectores diretamente na camada externa do telhado.
- Instalar uma tampa de proteção nos conectores de encaixe não conectados (p. ex., PV-C PROTECTION CAP, 1785430).

2 Conectar os conectores de encaixe

2.1 Conectar o cabo (Figura 1)
- Decapar o cabo com uma ferramenta adequada em 15 mm. Prestar atenção para não cortar fios individuais.

1 Inserir o fio decapado com os fios trançados cuidadosamente até o final. As pontas dos fios devem aparecer no compartimento de mola.
2 Fechar o compartimento de mola. Garantir que esteja travado.
3 Deslizar o inserto para dentro da luva.
4 Apertar o aparafusamento do cabo com 2 Nm.

2.2 Unir os conectores de encaixe
- Unir o conector macho e fêmea. A conexão deve engatar e travar.
- Puxar na união para verificar a conexão correta.

3 Separar os conectores de encaixe (Figura 2)

É necessário usar uma chave de fenda com ponta de 3 mm de largura (p. ex., SZF 1-0,6X3,5; Cód. 1204517).

1 Inserir a chave de fenda como mostrado na Figura 2.
2 Manter a chave de fenda inserida e separar conector macho e fêmea.

3.1 Soltar o cabo (Figura 3)

1 Desparafusar a conexão roscada do cabo.
2 Inserir a chave de fenda como mostrado na Figura 3.
3 Usar a chave de fenda como alavanca para abrir a união e puxar para separar inserto e luva.
4 Abrir o compartimento de mola com a chave de fenda. Remover o cabo.

Türkçe

Fotovoltaik sistemlerde kullanım için SUNCLIX-Photovoltaik konnektör, Tip PV1-F 2,5-6 mm²-solar kablo ceya UL sertifikalı solar kablo (ZKLA), AWG 10 – 14 için

1 Güvenlik uyarıları

UYARI: SUNCLIX konnektörleri yalnızca elektroteknik alanda eğitimli kişiler tarafından bağlanabilir.

UYARI: SUNCLIX konnektörleri asla yük altındayken takmayın veya ayırmayın.

NOT: Bu konnektörleri sadece, Tip PV1-F bir 2,5-6 mm² solar kablo ile veya UL sertifikasına sahip bir solar kablo ile birlikte kullanın (ZKLA bakır kablo, AWG 10-14). Sadece bu kablo ile güvenli bir bağlantı sağlanmış olur. Sormanız üzerine başka kablo tipleri de teslim edilebilir. Kabloyu döşerken üretici tarafından belirtilen bükme yarıçaplarını dikkate alın.

NOT: Bu konnektörleri sadece başka SUNCLIX-fotovoltaik konnektörlerle bağlayın. Bağlarken mutlaka nominal gerilim ve nominal akım bilgilerini dikkate alın. En küçük ortak değere izin verilir.

NOT: Konnektörleri neme ve kirlere karşı koruyun.
Konnektörleri asla suya daldırmayın.
- Konnektörü doğrudan tavan paneline döşemeyin.
- Takılı olmayan konnektörlere koruyucu bir kapak takın (örn. PV-C PROTECTION CAP, Ürün No. 1785430).

2 Konnektörün bağlanması

2.1 Kablonun bağlanması (Resim 1)
- Kablonun ucunu uygun bir aletle 15 mm soyın. Bu esnada münferit telleri kesmemeye dikkat edin.

1 Döndürülmüş örgülü, izolasyonu soyılmış damarı dikkatlice dayanağa kadar itin. Örgülü tel uçları yay cebinde görünmelidir.
2 Yay cebini kapatın. Yerine tam oturduğundan emin olun.
3 İlave elemanı kovana itin.
4 Kablo vidasını 2 Nm ile sıkın.

2.2 Konnektörü birleştirme
- Fişi ve soketi birleştirin. Bağlantı yerine oturur.
- Bağlantının doğru olduğunu kontrol etmek için kavramayı çekin.

3 Konnektörü ayırma (Resim 2)

3 mm-kalınlığında ucu olan yank başlı bir tornavida gereklidir (örn. SZF 1-0,6X3,5; 1204517).

1 Tornavidayı Resim 2'de gösterildiği gibi takın.
2 Tornavidayı takılı olarak bırakın ve fişi soketten ayırın.

3.1 Kabloyu ayırma (Resim 3)

1 Kablonun vidasını açın.
2 Tornavidayı Resim 3'de gösterildiği gibi takın.
3 Bağlantıyı kaldırın ve kovanla ilave elemanı birbirinden ayırın.
4 Yay cebini tornavida ile açın. Kabloyu çıkarın.

Русский

Фотогальванический соединитель SUNCLIX для применения в фотогальванических установках для 2,5-6 мм²-солнечного кабеля типа PV1-F или сертифицированного UL солнечного кабеля (ZKLA), AWG 10 – 14

1 Указания по технике безопасности

ОСТОРОЖНО: Соединители SUNCLIX могут подключать только лица, проинструктированные в области электротехники.

ОСТОРОЖНО: Штекерные соединители SUNCLIX ни в коем случае не соединять или разъединять, если токоведущие части находятся под напряжением.

ПРЕДУПРЕЖДЕНИЕ: Штекерные соединители использовать только вместе с 2,5-6 мм² солнечным кабелем типа PV1-F или сертифицированным UL солнечным кабелем (ZKLA, медный провод, AWG 10-14). Только этот кабель обеспечивает надежное электрическое подключение. Другие типы кабелей поставляются по запросу. При прокладке кабеля соблюдать предписания изготовителя в отношении радиусов изгибов.

ПРЕДУПРЕЖДЕНИЕ: Эти штекерные соединители соединять только с другими соединителями для фотогальванической системы SUNCLIX. При соединении обязательно учитывать данные для номинального напряжения и номинального тока. Допустимо наименьшее общее значение.

ПРЕДУПРЕЖДЕНИЕ: Для штекерных соединителей обеспечить защиту от влаги и загрязнений.
- Не погружать штекерные соединители в воду.
- Не устанавливать штекерные соединители непосредственно на кровельном покрытии.
- На неподключенные штекерные соединители надевать защитные колпачки (например, PV-C PROTECTION CAP, арт. № 1785430).

2 Подключение штекерных соединителей

2.1 Подключение кабеля (рис. 1)
- Изолировать кабель соответствующим инструментом на 15 мм. При этом следить за тем, чтобы не отрезать единичные проводники.

1 Осторожно до упора вставить проводник со скрученными литцами, предварительно сняв изоляцию. Концы гибкого проводника должны быть видимы в пазу пружины.
2 Закрыть пружину. Убедиться, что пружина надежно зафиксирована защелкой.
3 Накончники вставить в гильзу.
4 Резьбовой кабельный ввод затянуть с усилием 2 Нм.

2.2 Соединить штекерные соединители
- Соединить штекер с розеткой. При этом соединение фиксируется щелчком защелки.
- Потянуть за соединительный зажим, чтобы проверить правильность соединения.

3 Разъединить штекерные соединители (рис. 2)

Требуется отвертка с прямым шлицем шириной 3 мм (например, SZF 1-0,6X3,5; арт. № 1204517).

1 Ввести отвертку, как показано на рис. 2.
2 Отвертку оставить вставленной в отверстии, и извлечь штекер из розетки.

3.1 Отпустить кабель (рис. 3)

1 Открутить резьбовой кабельный разъем.
2 Ввести отвертку, как показано на рис. 3.
3 Приподнять соединение и отсоединить гильзу от наконечника.
4 Отверткой открыть пазы пружины. Удалить кабель.

中文

用于太阳能光伏设备的 SUNCLIX 光伏连接器，适用于 2,5-6 mm² 的 PV1-F 型太阳能电缆或经 UL 认证的太阳能电缆 (ZKLA) AWG 10–14

1 安全注意事项

警告： SUNCLIX 连接器只允许由受过电气工程方面培训的人员进行连接。

警告： 不允许在有负载的情况下插入或断开 SUNCLIX 连接器。

注意： 该连接器请只允许与 2,5-6 mm² 的 PV1-F 型太阳能电缆或经 UL 认证的太阳能电缆（ZKLA 铜绞线，AWG 10-14）一起使用。只有使用该电缆，才能确保安全的电气连接。可根据需要提供其它电缆类型。铺设电缆时请注意制造商规定的弯曲半径。

注意： 请只将该连接器与其它 SUNCLIX 光伏连接器连接。连接时请务必注意额定电压和额定电流的说明。适用最小的公共值。

注意： 保护好连接器以防潮和防尘。
- 绝不能将连接器浸入水中。
- 不允许将连接器直接铺设于屋顶之上。
- 在未插入的连接器上装上一个保护帽（例如 PVC PROTECTION CAP，产品编号 1785430）。

2 连接连接器

2.1 连接电缆 （图 1）
- 用合适的工具剥去 15 mm 的电缆外皮。请注意不要切断任何单条芯线。

1 小心地将已剥去外皮的电缆连同绞合的绞线引入到底，必须要能在弹簧扣中看到绞线的末端。
2 关上弹簧扣。请确保弹簧扣确实卡入。
3 将插入件推入套筒内。
4 以 2 Nm 拧紧导线连接螺钉。

2.2 接合连接器
- 将插头 和）插槽 连接在一起。此时连接会卡接上。
- 拉动接合处以检查是否已正确连接上。

3 断开连接器 （图 2）

您需要一把刀口宽度为 3 mm 的一字形螺丝刀 （例如 SZF 1-0.6X3.5; 1204517）。

1 如图 2 所示导入螺丝刀。
2 插入螺丝刀并将插头与插槽相互断开。

3.1 松开电缆 （图 3）

1 拧开导线连接螺钉。
2 如图 3 所示导入螺丝刀。
3 撬起连接并将套筒和插入件拉开。
4 用螺丝刀打开弹簧扣。取出电缆。

日本語

太陽光発電システム施工用 SUNCLIX 太陽光発電 I/O コネクタ、2,5–6 mm² ソーラーケーブル PV1-F タイプまたは UL 認証（ZKLA）ソーラーケーブル AWG 10–14 に対応

1 安全上の注意

警告： SUNCLIX プラグインコネクタは、訓練を受けた電気技術者のみが接続して下さい。

警告： 通電中に SUNCLIX プラグインコネクタを決して抜き挿ししないで下さい。

注意： プラグインコネクタは 2,5 – 6 mm² ソーラーケーブル PV1-F タイプまたは UL 認証ソーラーケーブル （ZKLA 銅燃線、AWG 10 – 14）との組み合わせでのみ使用して下さい。安全な電気的接続はこれらのケーブルを使用する場合においてのみ可能となります。その他のケーブルタイプについてはお問い合わせください。安全な電気的接続はこれらのケーブルを使用する場合においてのみ可能となります。
ケーブル引き回しの際は、ケーブル製造者が指定する曲げ半径に注意して下さい。

注意： このプラグインコネクタには他の SUNCLIX プラグインコネクタでのみ接続して下さい。接続を行う際は、定格電圧と定格電流の仕様を必ず確認して下さい。最小の共通の値が許可されます。

注意： 湿気と汚染からプラグインコネクタを保護して下さい。
プラグインコネクタを水没させないで下さい。
- 直接屋根の上にプラグインコネクタを決して置かないで下さい。
- プラグインコネクタが接続されていない時は、保護キャップ （例：PV-C PROTECTION CAP、注文番号 1785430）を取り付けて下さい。

2 コネクタの接続

2.1 コネクタの接続 （図 1）
- 適切な工具を使用して剥き線長さを 15 mm にして下さい。この際、個々の芯線が切れていないことを確認して下さい。

1 被覆を剥いたケーブルの燃線を慎重に奥まで挿入して下さい （注：燃線の扱りは不要です）。燃線の先端はスプリング内に見えている必要があります。
2 スプリングを閉じて下さい。この際、スプリングのロック部が掛かっている事を確認して下さい。
3 インサートをコネクタ本体 （スリーブ） に押し込んで下さい。
4 2 Nm のトルクでケーブルグランドを締め付けて下さい。

2.2 コネクタの嵌合
- コネクタ同士 （プラグとソケット） の嵌合面を合わせて下さい。この際、フックが嵌かるまで押し込みます。
- コネクタ （嵌合部） を引っ張り、しっかりと接続されている確認して下さい。

3 コネクタの取り外し （図 2）

ブレード先端幅 3 mm （例：SZF 1-0.6X3.5、製品番号 1204517） のマイナスドライバーが必要です。
1 図 2 に示すようにマイナスドライバーを挿入します。
2 ドライバーを挿入した状態のまま、コネクタ （プラグとソケット） を引き抜いて下さい。

3.1 ケーブルの取り外し （図 3）
1 ケーブルグランドを回し緩めて外して下さい。
2 図 3 に示すようにマイナスドライバーを挿入して下さい。
3 嵌合部を解除してコネクタ本体 （スリーブ） からインサートを引き抜いて下さい。
4 マイナスドライバーでスプリングを開放して下さい。ケーブルを取り外して下さい。

Español	Português	Türkçe	Русский	中文	日本語		
Datos técnicos según la norma	Dados técnicos de acordo com a norma	Standarda göre Teknik Özellikler	Технические спецификации согласно стандарту	技术数据符合标准要求	規格に準じた技術仕様	EN 50521	UL SUBJECT 6703
Temperatura ambiente	Temperatura ambiente	Ortam sıcaklığı	Температура окружающей среды	环境温度	周囲温度	-40 °C...+85 °C	-40 °C...+70 °C
Tensión nominal, máx.	Tensão nominal, máx.	Nominal gerilim, maks.	Номинальное напряжение, макс.	额定电压，最大	定格電圧 （最大）	1100 V DC	600 V DC
Corriente nominal, máx.	Corrente nominal, máx.	Nominal akım, maks.	Номинальный ток, макс.	额定电流，最大	定格電流 （最大）	2,5 mm² - 27 A; 4 mm² - 40 A; 6 mm² - 40 A	AWG 14 - 15 A, AWG 12 - 20 A, AWG 10 - 30 A
Diámetro de cable	Diâmetro do cabo	Kablo çapı:	Диаметр кабеля	电缆直径	ケーブル外径	5 ... 8 mm	5 ... 8 mm

MNR 0140682 - 03 10520503

2 Zertifikate – Certificates – Certificats

CE

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

Zertifikat/ Certificat/ Certificat Nr. 006-0313

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 1800, StecaGrid 1800x
StecaGrid 2300, StecaGrid 2300x
StecaGrid 3010, StecaGrid 3010x
StecaGrid 3000, StecaGrid 3000x
StecaGrid 3600, StecaGrid 3600x
StecaGrid 4200, StecaGrid 4200x

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 Compability – Directive
Compatibilité éléctromagnetique – Directive
2004/108/EG

Niederspannungsrichtlinie
Low Voltage Directive
Directive de basse tension
2006/95/EG

Europäische Normen 1) (2 / 2)
European Standard
Norme européenne

EN 55 014-1	EN 55 014-2	EN 61 000-6-2
EN 61 000-6-3	EN 62 109-1	EN 62 109-2

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, 27.03.2013

Ralf Griepentrog, Entwicklungsleiter

1 / 2

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

Netzwechselrichter
StecaGrid 3010
StecaGrid 3010x
StecaGrid 3600
StecaGrid 4200x

StecaGrid 1800
StecaGrid 2300x
StecaGrid 3000
StecaGrid 3600x

StecaGrid 1800x
StecaGrid 3010
StecaGrid 3000x
StecaGrid 4200

BG
Декларация за съответствие на европейските норми
С настоящето декларираме, че посочените на страница 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: [1)]

CZ
Prohlášení o shodě EU
Prohlašujeme tímto, že tento agregát v dodaném provedení odpovídá následujícím příslušným ustanovením:

Směrnicím EU-EMV 2004/108/EG,

Směrnicím EU-nízké napětí 2006/95/EG.

Použité harmonizační normy, zejména: [1)]

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: [1)]

EE
EL vastavusavaldus
Käesolevaga avaldame, et nimetatud toode on kooskõlas järgmiste direktiivide ja standarditega:

Elektromagnetilise ühilduvuse direktiiv 2004/108/EG,

Madalpingedirektiiv 2006/95/EG

Kohaldatud Euroopa standardid, eelkõige: [1)]

ES
Declaración de conformidad CE
Por la presente declaramos la conformidad del producto en su estado de suministra con las disposiciones pertinentes siguientes:

Compatibilidad electromagnética 2004/108/EG,

Directiva sobre equipos de baja tensión 2006/95/EG.

Normas armonizadas adoptadas, especialmente: [1)]

FI
CE-standardinmukaisuusseloste
Ilmoitamme täten, että tämä laite vastaa seuraavia asiaankuuluvia määräyksiä:

Sähkömagneettinen soveltuvuus 2004/108/EG,

Matalajännite direktiivit: 2006/95/EG

Käytetyt yhteensovitetut standardit, erityisest: [1)]

GR
Δήλωση προσαρμογής στις προδιαφές της Ε.Ε. (Ευρωπαϊκής Ένωσης)
Δηλώνουμε ότι το προϊόν αυτο ο' αυτή την κατάσταση παράδοσης ικανοποιεί τις ακόλουθες διατάξεις:

ΗΛΕκτρομαγνητική συμβατότητο 2004/108/EG,

Οδηγία χαμηλής τάσης 2006/95/EG.

Εναρμονισμένα χρησιμοποιούμενα πρότυπα, ιδιαίτερα: [1)]

HU
EK. Azonossági nyilatkozat
Ezennel kijelentjük, hogy az berendezés az alábbiaknak megfelel:

Elektromágneses zavarás/türés: 2004/108/EG,

Kisfeszültségü berendezések irány-Elve: 2006/95/EG.

Felhasznált harmonizált szabványok, különösen: [1)]

IT
Dichiarazione di conformità CE
Con la presente si dichiara che i presenti prodotti sono conformi alle sguenti disposizioni e direttive rilevanti:

Compatibilità elettromagnetica 2004/108/EG,

Direttiva bassa tensione 2006/95/EG.

Norme armonizzate applicate, in particolare: [1)]

LT
Atitikties pareiškimas su Europos Sąjungoje galiojančiomis normomis
Šiuo mes pareiškiame, kad nurodytas gaminys atitinka sekančias direktyvas bei normas:

Elektromagnetinio suderinamumo direktyvą 2004/108/EG,

Žemosios įtampos direktyvą 2006/95/EG.

Naudojamas Europoje normas, ypač: [1)]

LV
ES Atbilstības deklarācija
Paziņojam, ka minētais izstrādājums atbilst sekojošām direktīvām jeb normām:

2004/108/EG Par elektromagnētisko panesamību,

2006/95/EG Direktīvai par zemspriegumu.

Izmantotās Eiropas normas, īpaši: [1)]

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: [1)]

NO
EU-Overensstemmelseserkæring
Vi erklærer hermed at denne enheten i utføreise 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: [1)]

PL
Deklaracja Zgodności CE
Niniejszym deklarujemy z pełną odpowiedzialnością że dostarczony wyrób jest zgdony z następującymi dokumentami:

Odpowiedniść elektromagnetyczna

2004/108/EG,

Normie niskich napięć 2006/95/EG.

Wyroby są zgodne ze szczególowymi normami zharmonizowanymi: [1)]

PT
Declaração de Conformidade CE
Pela presente, declaramos que esta unidada 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: [1)]

RO
Declarație de conformitate UE
Prin prezenta se declară că produsul mai sus menționat este în conformitate cu următoarele directive, respectiv norme:

Compatibilitate electromagnetică 2004/108/EG,
Directiva CE referitoare la tensiunile joase 2006/95/EG.

Norme europene utilizate, în special: [1)]

RU
Декларация о соответствии Европейским нормам
Настоящим документом заявляем, что данный агрегат в его объеме поставки соответствует следующим нормативным документам:

Электромагнитная устойчивость 2004/108/EG,
Директивы по низковольтному напряжению 2006/95/EG.

Используемые согласованные стандарты и нормы в частности: [1)]

SE
CE-försäkran
Härmed förklarar via tt denna maskin i levererat utförande motsvarar följande tillämpliga bestämmelser:

EG-Elektromagnetisk kompatibilitet 2004/108/EG,

EG-Lägspänningsdirektive 2006/95/EG.

Tilämpada harmoniserade normer, i synnerhet: [1)]

SI
EU-izjava o skladnosti
Izjavljamo, da je navedeni izdelek skladen z

naslednjimi direktivami oz. standardi:

Direktiva o elektromagnetni združljivost 2004/108/EG,

Direktiva o nizkonapetostni opremi 2006/95/EG.

Uporabljene evropski standardi, še posebej: [1)]

SK
Prehlásenie o zhode ES
Týmto prehlasujeme, že sa uvedený produkt zhoduje s nasledovnými smernicami príp. normami:

Elektromagnetická zlučiteľnosť 2004/108/EG,

Smernica o nízkom napätí 2006/95/EG.

Použité európske normy, predovšetkým: [1)]

TR
EC Uygunluk Teyid Belgesi
Bu cihazın teslim edildiği şekliyle aşağıdaki standartlara uygun olduğunu teyid ederiz:

Elektromanyetik Uyumluluk 2004/108/EG,

Alçak gerilim direktifi 2006/95/EG.

Kısmen kullanılan standartlar: [1)]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