Solarix MPPT 3020 / MPPT 5020

Installation and operating instructions

EN

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Preface

Thank you for choosing a solar charge controller from our company. Through the use of solar energy, you significantly help to protect the environment by reducing the pollution of the atmosphere by the emissions of carbon dioxide (CO_2) and other harmful gases.

Table of contents

1 General information

The solar charge controller is available in two power levels (30 A and 50 A).

The device fulfils the following tasks:

- Optimizing the power yield of the connected solar modules
- Controlling the charging process of the battery
- Monitoring the charge state of the battery
- Connecting and disconnecting the consumers connected to the load output

Characteristics

- Intelligent Maximum Power Point Tracking
- Automatic battery voltage detection
- Three-stage charging process to optimize battery performance
- Maximum efficiency up to 99 %
- Charging current configurable depending on the application
- Support of various battery types
- Backlight
- Data output via serial interface (RS-232)

The state-of-the-art device is equipped with an optimized "Maximum Power Point Tracking (MPPT)" algorithm and is, thus, able to utilise the maximum available power of the solar module at any point in time and in a wide range of environmental conditions.

The type plate with the required data related to the device and the manufacturer is attached on the bottom of the right side.

The declaration of conformity is available on the website of the manufacturer.

Scope of delivery

- 1 ea. solar charge controller
- 1 ea. installation and operating instructions

Prior to the installation, check whether the packaging and the device are intact.

2 Safety instructions

This document is part of the product.

- Read these operating instructions thoroughly and completely prior to installation and use.
- Keep these operating instructions close the device over the entire lifetime of the device.
- Pass these operating instructions on to every subsequent owner or user of the product.

The installation may only be carried out by a qualified trained electrician.

The solar module and the battery supply voltage to the device even while the device is switched off. When connecting or disconnecting the solar module or the battery, proceed precisely as described in the instructions in chapter 5.

Incorrectly connected components can damage the device.

Improper operation can reduce the yields of the solar energy system.
System components can be damaged as well.

If one of the following components is damaged, immediately take the device out of operation and disconnect it from battery and solar module:

- Device (not functioning, visible damage, smoke, penetration of liquid etc.)
- Terminals and connected cables
- Solar module

Do not switch the device on again before it has not been repaired by the dealer or manufacturer, or the damaged cables or solar modules have not been repaired by a specialist.

Do not cover the device.

Follow the following instructions to prevent any risk of fire and explosion:

- Do not use the solar charge controller in a dusty environment, in the proximity of solvents, or where flammable gases and vapours may arise.
- Avoid open fire and light in proximity of the batteries. Avoid sparking.
- Ensure that the room is adequately ventilated.
- Check the charging process regularly.
- Follow the charging instructions of the battery manufacturer.

Do not open the case: There is danger to life! Opening the case will also void any warranty. Have the device only repaired by a qualified specialist workshop or the manufacturer.

Do not change, remove, nor render illegible the signs and markings attached by the manufacturer.

If connecting an external device that is not described within this document, follow the manufacturer’s instructions. Incorrectly connected devices may cause damage to the solar charge controller.

Do not allow the following persons to operate the device:

- Children
- Persons with reduced physical, sensory or mental capabilities
- Persons that do not possess sufficient experience and knowledge (unless given instruction on proper use of the device and initial supervision by a person responsible for their safety)

Follow the safety instructions of the connected battery. The charging voltages and currents must be set on the solar charge controller in accordance with the battery documentation. The manufacturer disclaims all responsibility for damages due to solar charge controller parameters set incorrectly.

Follow the safety instructions of the connected solar module.

Follow the general and national safety and accident prevention regulations.

2.1 Labels and symbols

2.1.1 Safety marks

The following safety marks are used on the device and in these instructions:

Warning sign	Nature of the danger
	Warning of hazardous voltage
	Warning of hazardous area
	Follow the instructions

2.1.2 Keywords

The following keywords are used in these instructions:

Keyword	Meaning
DANGER	Indicates a hazardous situation which, if not avoided, leads to death or serious injuries.
WARNING	Indicates a potentially hazardous situation which, if not avoided, may lead to death or serious injuries.
NOTE	Indicates a potentially hazardous situation which, if not avoided, may lead to damage to property and/or the environment.

3 Designated use

The solar charge controller is suitable for photovoltaic (PV) systems, for charging batteries of a rated voltage of 12 VDC or 24 VDC (50 A version also 48 VDC).

The areas of use include the fields of hobbies and leisure, businesses, commerce, and small companies.

Installation, putting into operation, and removal of the device may only be carried out by trained qualified personnel complying with the applicable on-site installation regulations. The qualified personnel must be acquainted with these operating instructions and follow the instructions.

The end customer may only carry out the operating functions.

The solar charge controller works with direct current and may not be connected to the public alternating current grid.

Operation is only allowed indoors.

The solar charge controller is only suitable for controlling solar modules. Do not connect any other charging sources to the solar charge controller. Otherwise, the solar charge controller and/or the source may be destroyed.

The connected solar modules and batteries must satisfy the stated specifications (refer to chapter 10).

The solar charge controller is basically suitable for the following types of rechargeable batteries:

- Lead accumulators with liquid electrolyte
- Sealed lead accumulators; AGM, GEL
- Lithium-ion batteries

NOTE
The operator must ensure that the solar charge controller's settings match the specifications on the battery's data sheet.

Only lithium-ion batteries may be applied that are equipped with an integrated BMS (Battery Management System) and a safety protective shutdown of the battery in the event of a fault provided that no communication with the BMS is required.

The respective battery type must be set on the solar charge controller, refer to chapter 6. The default setting is lead battery GEL/AGM.

Other battery types can be configured. An erroneous configuration may damage the solar charge controller or the battery. The use of the program function is at the operator's own responsibility.

Disclaimer

Both the compliance with these instructions and the conditions and methods during installation, operation, use, and maintenance of the solar charge controller cannot be supervised by the manufacturer. Improper performance of the installation may cause property damages and, subsequently, endanger persons.

Therefore, we assume no responsibility and liability for losses, damages or costs that result due to incorrect installation, improper operation, usage, and maintenance or in any manner associated therewith.

We also do not assume any responsibility for infringements of patent rights or infringements of other third-party rights resulting from the use of this solar charge controller.

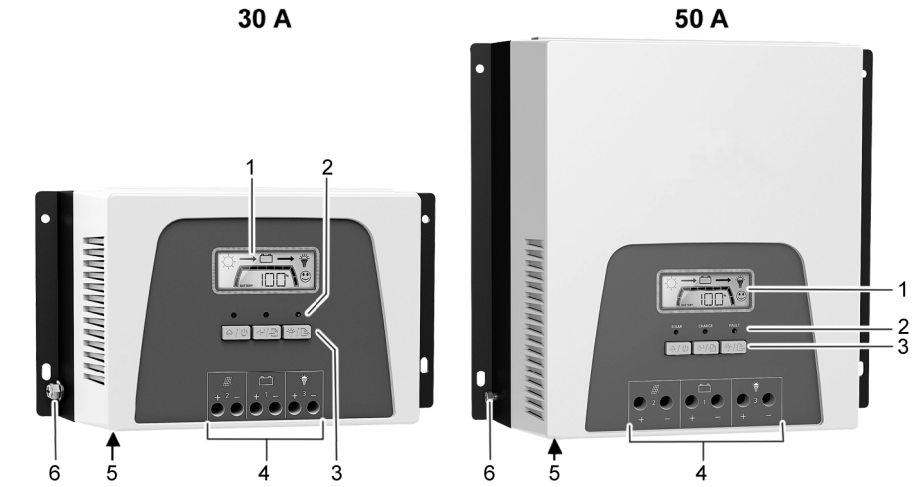
The manufacturer reserves the right to carry out modifications to the product, technical data, or installation and operating instructions without prior notice.

Attention: Opening the device, any manipulation and repair attempts, as well as any use not in accordance with the intended use result in the loss of warranty.

4 Overview

Two versions for different charging currents are available:

- Solar charge controller 30 A
- Solar charge controller 50 A



1 Display (LCD)
2 LEDs
3 Buttons
4 Electrical connections
5 Communication interface (for accessories)
6 Earth connection

The solar charge controller optimizes the charging of the battery and its lifetime by means of a three-stage charging algorithm and a configurable equalizing charge:

Charging stages	Description
Bulk charge stage	The battery is charged with the maximum power possible depending on the input by the solar modules
Absorption stage	Battery charging at a constant voltage. The duration of the absorption charge is configurable.
Float stage	Trickle charging at a constant voltage. If the battery voltage drops below the threshold voltage for the float charge, a switch to bulk charge is performed.
Equalize stage	The equalizing charge regenerates the battery to keep the capacity loss over the lifetime as low as possible. The equalizing charge function is controlled via the settings in the programs 07, 08, 09, 10, 11, 12, and 13. To use the function, it must have been activated in program 07.

Accessories (not included):

PA WiFi1: WiFi box to link the solar charge controller up with a web portal.

5 Installation

DANGER
Voltage

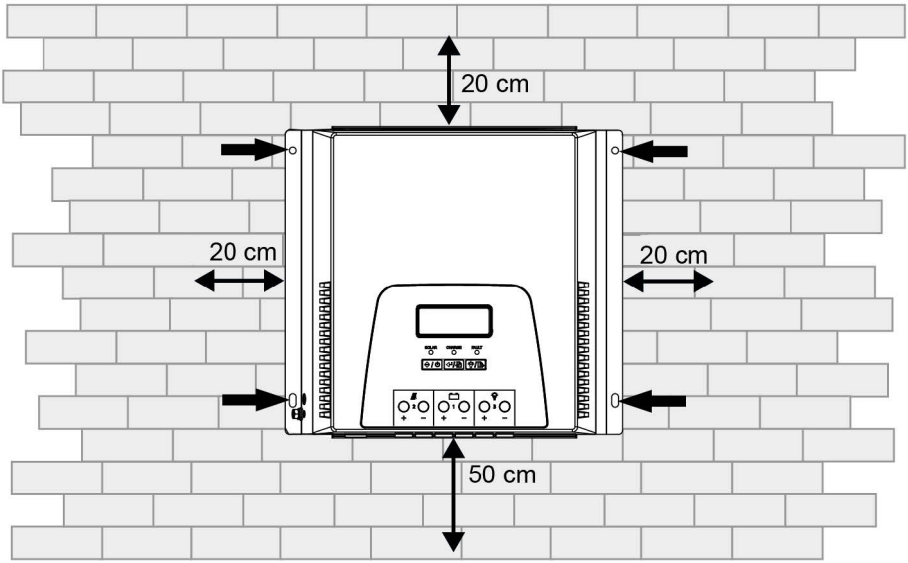
Under solar radiation, the solar modules and cables may be energised. There is the risk of injuries and fire due electrocution and electric discharge.

- Disconnect the connections from the power sources prior to any work on the device.
- Only have specialists carry out any installation work.
- Only connect the cables to the solar charge controller when it is requested by the instructions.

Mounting location:

- Mount only indoors.
- Mount in vertical position on the wall, on concrete or another non-flammable surface. Mounting materials such as screws and dowels depend on the mounting surface and are, therefore, not included in the scope of delivery.
- Observe the free space specified below to ensure ventilation of the device.
- Observe the ambient temperature and air humidity specified in the technical data (refer to chapter 10).
- To allow a clear view of the display, mount the device at about eye level.
- Select mounting location such that the lengths of the cables to the solar module, the battery, and the consumer are kept as short as possible.

Mounting location with free space for ventilation



1. Place the device in mounting position.
2. Mark the position of the mounting bores through the four fixing holes on the device frame.
3. Drill the four mounting bores in the mounting surface (Ø 5 mm).
4. Fix the device with fixing materials suitable for the type of mounting surface.

Electrical connection

The connections to the solar modules must be realised with circuit breakers or disconnectors. The connections to the batteries must be realised with a fuse or a circuit breaker. It is not allowed to connect inverters to the load output.

Recommended core cross-sections, tightening torques, and battery circuit breakers:

Device version	System voltage	Core cross-section	Tightening torque	Battery circuit breaker
30 A	12 V	Battery: 16 mm² Solar module: 16 mm² Load: 16 mm²	1.2 Nm	40 A
	24 V	Battery: 6 mm² Solar module: 6 mm² Load: 6 mm²		
50 A	12 V	Battery: 16 mm² Solar module: 25 mm² Load: 16 mm²	2 Nm	60 A
	24 V	Battery: 6 mm² Solar module: 6 mm² Load: 6 mm²		
	48 V	Battery: 6 mm² Solar module: 6 mm² Load: 2.5 mm²		

The recommended core cross-sections apply to the following presumed distances to the device:

- 2 m to the battery
- 10 m to the solar module
- 5 m to the load

In the case of considerably different distances, the core cross-sections must be adapted.

The following solar module voltages are assumed:

- 30 V for 12 V system voltage
- 60 V for 24 V system voltage
- 90 V for 48 V system voltage

The tightening torques apply to the terminal screws of all electrical connections on the device. The values specified for the battery circuit breaker are calculated maximum values. This means that the battery circuit breaker used must trigger no later than when reaching this amperage.

It is recommended to use a two-pole circuit breaker between solar module and solar charge controller.

In this way, the solar modules can be connected to or disconnected from the solar charge controller without voltage, and no electric arcs will form at the terminals.

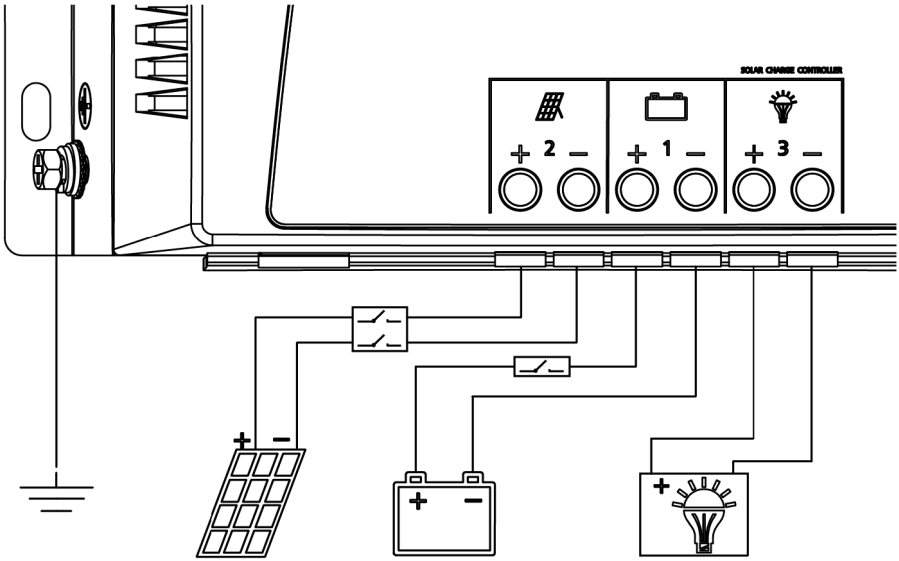
NOTE
If the solar module is connected to the battery connections, the solar charge controller may be damaged.

Connect the cables correctly.

Ensure correct polarity by measurement of voltage on the cables prior to connection.

Observe the connection order described below to ensure correct operation of the solar charge controller.

Proceed in inverse order for uninstalling.



1. Ensure that all cables to the solar charge controller are without voltage due to the open isolating device (solar module circuit breaker or battery fuse).
2. Strip all cables on the connection side and provide with ferrules if necessary:
   - 30 A version: 10 mm
   - 50 A version: 18 mm

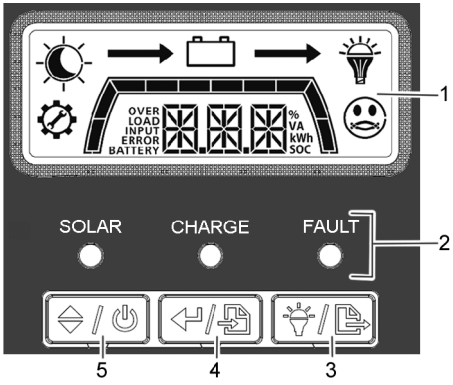
3. Successively introduce the conductors into the screw-type terminals of the solar charge controller and tighten the terminal screws.
4. Connect positive cable (+) of the battery to the battery positive input of the solar charge controller.
5. Connect negative cable (-) of the battery to the battery negative input of the solar charge controller.
6. Connect positive cable (+) of the solar module to the solar module positive input of the solar charge controller.
7. Connect negative cable (-) of the solar module to the solar module negative input of the solar charge controller.
8. Connect positive cable (+) of the consumer to the consumers circuit positive input of the solar charge controller.
9. Connect negative cable (-) of the consumer to the consumers circuit negative input of the solar charge controller.
10. Connect earth cable (at least AWG 8/10 mm²) to the earth connection of the solar charge controller.

NOTE
No more than one of the negative terminals or one of the positive terminals of the connections of the solar modules, of the battery, or of the load output may be connected to earth.

6 Operation

NOTE
A battery must have been connected prior to switching on. The solar charge controller does not work if a solar module but no battery is connected.

The operating panel consists of the display, three LEDs and three buttons:



1 Display
2 LEDs
3 "Load on/off & ESC" button
4 "Enter & Call settings menu" button
5 "Up/down & On/off" button

Meaning of the LEDs:

LED	Colour	Status	Meaning
SOLAR	Green	Permanently lit	Input Solar module normal
		Off	Input Solar module without voltage or defective
CHARGE	Green	Permanently lit	Battery is fully charged
		Flashing	Battery is being charged
FAULT	Red	Flashing	Error
		Off	Solar charge controller is working normally

Function of the buttons:

Button	Function	Meaning
	Up/down & On/off	Selecting next visualization
		Switching solar charge controller on and off if there is no input from the solar module present
	Enter & Call settings menu	Confirming selection in the program mode
		Going to program mode or jumping to main page
		Acknowledging errors
	Load on/off & ESC	Switching load circuit on and off manually
		Leaving settings menu

Symbols on the display:

Symbol	Meaning
	Display mode Program entry
	Day/night indicator The moon symbol is shown while there is no input coming from the solar module
	Indicates current flow

Symbol	Meaning
	Battery
	Consumer
	Normal operation / fault
	Level of battery charge When all segments are black, the battery is fully charged
	Text display / values / unit
Display during program entry and fault	
	Shows the program numbers
ERROR XX	Flashing with the code for warning Permanently lit with code for fault

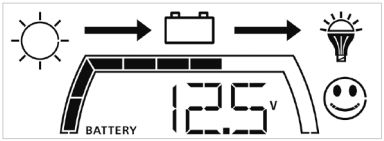
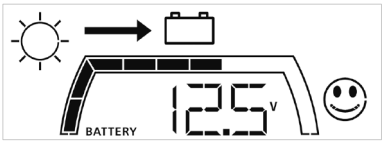
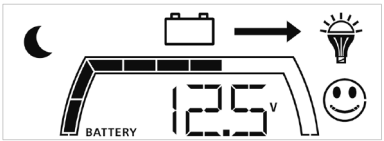
6.1 Switching on / switching off

NOTE
The solar charge controller starts automatically when a sufficiently high voltage from the solar module is present and a battery is connected.

The solar charge controller can also be switched on and off manually independently of the solar power.

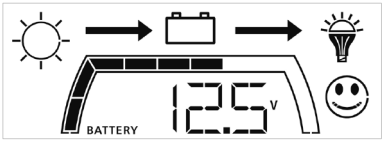
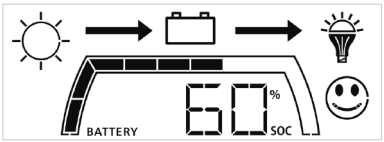
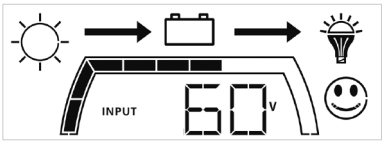
1. Switch fuse to the battery on.
2. Press "Up/down & On/off" button. The main page appears on the display. The main page alternates between displaying the battery voltage and displaying the charge state of the battery.
3. Switch on the disconnector to the solar module. If the sun is shining, the solar charge controller starts charging the battery.

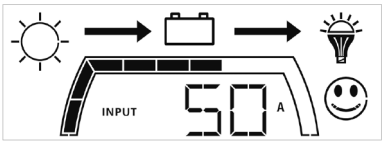
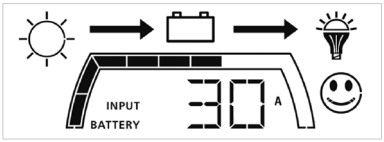
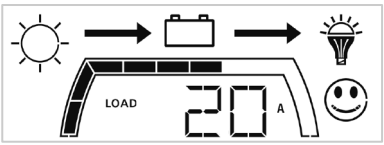
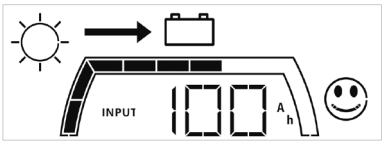
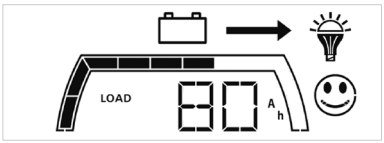
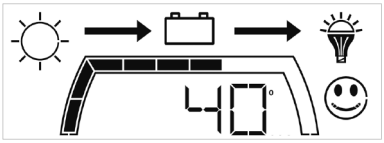
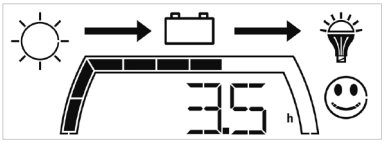
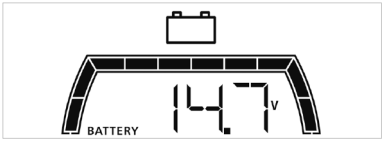
Examples for operating states:

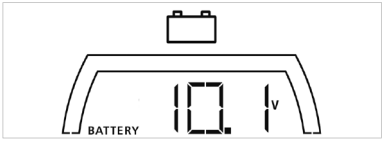
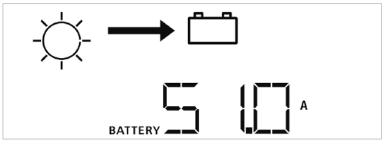
Display	Meaning
	Solar modules are working, battery is being charged Consumer is switched on
	Solar modules are working, battery is being charged No consumer is switched on
	No input from the solar module The consumer is operated with battery current

6.2 Changing the display:

Press "Up/down & On/off" button repeatedly. The following information is displayed successively (the values in the figures are examples):

Display	Meaning
	Battery voltage (main page) (here: 12.5 V)
	Battery charge state (here: 60 %)
	Solar module voltage (here: 60 V)

Display	Meaning
	Input current from the solar module (here: 50 A)
	Charging current or discharging current (negative), battery (here: 30 A)
	Load current, consumer (here: 20 A)
	Total input power (here: 100 Ah)
	Total output power (here: 80 Ah)
	Device temperature (internal) (here: 40 °C)
	Operating hours (here: 3.5 h)
	Maximum occurred battery voltage (here: 14.7 V)

Display	Meaning
	Minimum occurred battery voltage (here: 10.1 V)
	Maximum occurred charging current (here: 51.0 A)
	Minimum occurred discharging current (= load current) (here: 20.8 A)
	Firmware version (here: 1.00)

Then, the main page is displayed again.

6.3 Settings menu

1. Press "Enter & Call settings menu" button and hold for 3 seconds. The solar charge controller switches to the display mode Settings menu.
   If no entry is made during approx. 20 seconds, the display returns to the main page.
2. Press "Up/down & On/off" button repeatedly to select a program. The currently selected menu item is flashing.
3. Press "Enter & Call settings menu" button to go to the selected program.
4. Press "Up/down & On/off" button to select the desired setting value (the displayed value is flashing).
5. Press "Enter & Call settings menu" button to confirm the desired value (the displayed value is no longer flashing).
   Alternatively, press "Load on/off & ESC" button to **not** accept the value and return to the settings menu.
6. Press "Load on/off & ESC" button to return to the settings menu.

Program selection	Name	Option	Meaning
 01	Setting battery voltage	AUT	The battery voltage is detected automatically
		12.0	Setting battery voltage 12 V
		24.0	Setting battery voltage 24 V
		48.0	Setting battery voltage 48 V (only for 50 A version)
 02	Selection of battery type	GEL	Lead battery GEL/AGM (standard) The voltage values are automatically set for this battery type Programs 04 and 06 cannot be used when this setting is selected
		FLD	Lead-acid battery (standard) The voltage values are automatically set for this battery type Programs 04 and 06 cannot be used when this setting is selected.
		LIO	Lithium-ion battery When this setting is selected, programs 04 and 06 must be adapted
		USE	User-defined values When this setting is selected, programs 04 and 06 must be adapted
 03	Maximum charging current	50 A	Only for the 50 A version: Maximum charging current 50 A, can be set from 5 A to 50 A in increments of 5 A
		30 A	Only for the 30 A version: Maximum charging current 30 A, can be set from 5 A to 30 A in increments of 5 A

Program selection	Name	Option	Meaning
 04	Voltage of the absorption charge	If "USE" has been selected in program 01, this program can be used	
		14.4 V	12 V rated voltage: Can be set from 12.0 V to 16.0 V (default setting: 14.4 V)
		28.8 V	24 V rated voltage: Can be set from 24.0 V to 32.0 V (default setting: 28.8 V)
		57.6 V	48 V rated voltage: Can be set from 48.0 V to 64.0 V (default setting: 57.6 V)
		If "LIO" has been selected in program 01, this program can be used	
		28.8 V	30 A version: Can be set from 9.0 V to 32.0 V
		57.6 V	50 A version: Can be set from 9.0 V to 64.0 V
 05	Duration of the absorption charge	120	Can be set from 10 min to 900 min in increments of 5 min (default setting: 120 min)
 06	Voltage for float charge	If "USE" has been selected in program 01, this program can be used	
		14.1 V	12 V rated voltage: Can be set from 12.0 V to 16.0 V (default setting: 14.1 V)
		28.2 V	24 V rated voltage: Can be set from 24.0 V to 32.0 V (default setting: 28.2 V)
		56.4 V	48 V rated voltage: Can be set from 48.0 V to 64.0 V (default setting: 56.4 V)
		If "LIO" has been selected in program 01, this program can be used	
		28.2 V	30 A version: Can be set from 9.0 V to 32.0 V
		56.4 V	50 A version: Can be set from 9.0 V to 32.0 V

Program selection	Name	Option	Meaning
 07	Equalizing charge function	EQE	Activating equalizing charge function
		EQD	Deactivating equalizing charge function
 08	Voltage for equalizing charge	If "USE" has been selected in program 01, this program can be used	
		15.0 V	12 V rated voltage: Can be set from 12.0 V to 16.0 V (default setting: 14.1 V)
		30.0 V	24 V rated voltage: Can be set from 24.0 V to 32.0 V (default setting: 28.2 V)
		60.0 V	48 V rated voltage: Can be set from 48.0 V to 64.0 V (default setting: 56.4 V)
		If "LIO" has been selected in program 01, this program can be used	
		30.0 V	30 A version: Can be set from 9.0 V to 32.0 V
		60.0 V	50 A version: Can be set from 9.0 V to 64.0 V
 09	Charging current for equalizing charge	50 A	Only for the 50 A version: Maximum charging current 50 A, can be set from 5 A to 50 A in increments of 5 A
		30 A	Only for the 30 A version: Maximum charging current 30 A, can be set from 5 A to 30 A in increments of 5 A
 10	Duration of the equalizing charge	240	Can be set from 5 min to 900 min in increments of 5 min (default setting: 240 min)

Program selection	Name	Option	Meaning
 11	Maximum duration of the equalizing charge in case the voltage of the equalizing charge is not reached permanently	300	Can be set from 5 min to 900 min in increments of 5 min (default setting: 300 min)
 12	Interval of the equalizing charge	30d	Can be set from 1 day to 90 days in increments of 1 day (default setting: 30 days)
 13	Starting/stopping equalizing charge	EEN	Starting equalizing charge immediately
		EDE	Stopping equalizing charge immediately
 14	Undervoltage for disconnecting load current (under-voltage cutoff)	11.5 V	12 V rated voltage: Can be set from 9.0 V to 12.5 V in increments of 0.1 V (default setting: 11.5 V)
		23.0	24 V rated voltage: Can be set from 18.0 V to 25.0 V in increments of 0.2 V (default setting: 23.0 V)
		46.0	48 V rated voltage: Can be set from 36.0 V to 50.0 V in increments of 0.4 V (default setting: 46.0 V)
 15	Voltage for switching load current on again after under-voltage cutoff	12.5 V	12 V rated voltage: Can be set from 9.0 V to 12.5 V in increments of 0.1 V (default setting: 12.5 V)
		25.0	24 V rated voltage: Can be set from 18.0 V to 25.0 V in increments of 0.2 V (default setting: 25.0 V)
		50.0	48 V rated voltage: Can be set from 36.0 V to 50.0 V in increments of 0.4 V (default setting: 50.0 V)

Program selection	Name	Option	Meaning
 16	Control of load output	ON	On (default setting) Load output is always switched on, except in the event of under-voltage cutoff Switching off by pressing the "Load on/off & ESC" button for one second
		OFF	Load output is always switched off Switching on by pressing the "Load on/ switching & ESC" button
		LIG	Power-on time of the load output is controlled by the settings in program 18
The light function refers to the time of dusk and dawn, called sunset time and sunrise time. If the detected PV input voltage is lower than the set value in program 19, this is considered as dusk and the time is recorded as sunset time. If the detected PV input voltage is 5 V higher than the set value in program 19, this is considered as dawn and the time is recorded as sunrise time.			
 17	Mode for load control	EVN	Evening light If selected, the load output is switched on after sunset and remains switched on for the duration set in program 19
		MOR	Morning light If selected, the load output is switched on before sunrise and remains switched on for the duration set in program 19
		NIT	Night light (standard) If selected, the load output is switched on for the entire night, from the sunset time to the sunrise time independently of the setting in program 19

Program selection	Name	Option	Meaning
 18	Power-on duration for load output	480	Can be set from 0 min to 480 min in increments of 5 min (default setting: 480 min) Can only be set if "LIG" is set in program 16
 19	PV voltage to define sunrise and sunset time	15.0	12 V rated voltage: Can be set from 10 V to 80 V in increments of 1 V (default setting: 15.0 V)
		30.0	24 V rated voltage: Can be set from 20 V to 80 V in increments of 1 V (default setting: 30.0 V)
		60.0	48 V rated voltage: Can be set from 40 V to 80 V in increments of 0.1 V (default setting: 60.0 V)
 20	Temperature compensation for battery voltage	4	Can be set from 0 mV to 10 mV in increments of 1 mV (default setting: 4 mV)
 21	Performance compensation for battery voltage	0	Can be set from 0 mV to 30 mV in increments of 1 mV (default setting: 0 mV) The cables between solar charge controller and battery cause losses. This value compensates the losses by shifting the voltage. If, for example, 10 mV are specified, the charging end voltage is increased by 10 mV per ampere of charging current. At the same time, this value is deducted per ampere from the under-voltage cutoff (program 14)

Program selection	Name	Option	Meaning
 22	Display backlight	ON	Backlight is always switched on
		OFF	Backlight is always switched off
		AUT	Backlight is switched on when pressing a button The backlight will go out after 30 second of inactivity
 23	Reset to factory setting	RST	-
 24	Reset of total input power	RST	-
 25	Reset of total output power	RST	-
 26	Reset of saved maximum voltage of the battery	RST	-
 27	Reset of saved minimum voltage of the battery	RST	-
 28	Reset of saved maximum charging current of the battery	RST	-
 29	Reset of saved maximum load current	RST	-

7 Maintenance and care

The device is maintenance-free.

DANGER
Voltage.
There is a risk of death by electrocution.
Only clean device with a slightly moist cloth.

The care of the device is limited to the following measures:

- Removing dust
- Cleaning

Remove dust from the cooling fins of the device by using compressed air of a maximum of 2 bar.

Light soiling:

Clean surface of the case with a slightly moist cloth (use clear water).

Heavy soiling:

Clean surface of the case with a slightly moist cloth. In addition, use a cleaning agent without solvents or disinfectants, that does not contain any granular or sharp-edged substances.

Remove any residues of the cleaning agent.

8 Disposal

- ▸ Do not dispose of the device in the normal household waste.
- ▸ Dispose of the device in accordance with the local guidelines for disposal of electrical equipment.

9 Fault correction

DANGER
Voltage.
In the case of improper repairs, risks for the user and the system may arise. Any claim to warranty will also be cancelled.

- Do not open the device fro troubleshooting and do not try to replace components by yourself.

If the device detects faults or impermissible operating states, error codes appear on the display. The "FAULT" LED is flashing.

You can generally differentiate whether there is a temporary malfunction, e.g. due to overload of the device, or if there is a sustained fault.

In the event of temporary malfunctions, the following symbols and error codes are flashing:

Symbol and error code	Meaning
ERROR *01*	Solar input power is too high
ERROR *03*	Charging current is too high
ERROR *05*	Device temperature is too high
ERROR *07*	Battery voltage is too low
ERROR *08*	Battery voltage is too high
ERROR *09*	Overload

In the event of sustained faults, the following symbols and error codes are lit:

Symbol and error code	Meaning
ERROR *02*	Internal memory error
ERROR *04*	Internal temperature sensor defective
ERROR *10*	Short circuit at the load output
ERROR *26*	System or battery voltage not detected

9.1 Measures in the event of faults

Displayed error code	Cause	Remedy
01	PV overvoltage	Check voltage of the solar modules The voltage must be lower than 100 V for the 30 A version, and smaller than 150 V for the 50 A version If the voltage of the solar modules is within the permitted range, contact the service
02	Internal memory error	Restart the device If the problem persists, contact the service
03	Charging current too high	Restart the device If the problem persists, contact the service
04	Temperature sensor defective	Restart the device If the problem persists, contact the service
05	Excessive temperature	Switch device off and restart after some time If the problem persists, contact the service
07	Battery voltage too low	Measure battery voltage and check setting in program 01: - If a 12 V battery is connected, "AUT" or 12.0 V must be set in program 01 - If a 24 V battery is connected, "AUT" or 24.0 V must be set in program 01 Compare the measured value for the battery voltage and the display on the device. In the event of discrepancy, contact the service
08	Battery voltage too high	Measure battery voltage and check setting in program 01: - If a 24 V battery is connected, "AUT" or 24.0 V must be set in program 01 - If a 48 V battery is connected, "AUT" or 48.0 V must be set in program 01 (only applies to the 50 A version) Compare the measured value for the battery voltage and the display on the device. In the event of discrepancy, contact the service

Displayed error code	Cause	Remedy
09	Load output overloaded	Check if the load output is overloaded Inverters must be connected directly to the battery, they must not be operated via the load output If the load output is overloaded, disconnect consumers from the load output If the problem persists, contact the service
10	Short circuit at the load output	Check if a short circuit is present at the load output Disconnect consumers from the load output Eliminate short circuit If the problem persists, contact the service
26	System voltage not detected	Check if the rated voltage of the battery matches the set value in program 01; adapt value in program 01 if necessary Restart the device. If the problem persists, contact the service
-	No display	Press "Up/down & On/off" button Check battery connection If the problem persists, contact the service

10 Technical data

Version	30 A	50 A
Mechanics and surrounding		
Dimensions (W x H x D)	230 x 130 x 80 mm	250 x 230 x 85 mm
Weight	1.4 kg	3.2 kg
Ambient temperature range	0 °C to 55 °C	
Storage temperature	-40 °C to 75 °C	
Air humidity (relative)	0 % to 90 % RH, non-condensing	
Degree of protection	IP 20	
Electrical system		
Rated voltage	12 VDC or 24 VDC (automatic detection)	12 VDC, 24 VDC, or 48 VDC (automatic detection)
Internal consumption	< 2 W	< 3 W
Max. charging efficiency	> 96 %	> 98 %
Input, solar modules		
Max. voltage of the solar modules (under all temperature conditions at the installation site)	100 V_{OC}	150 V_{OC}
Max. output current, solar modules	30 A (MPP)	50 A (MPP)
Solar module MPPT voltage range	12 V: 15 VDC to 80 VDC 24 V: 30 VDC to 80 VDC	12 V: 15 VDC to 120 VDC 24 V: 30 VDC to 120 VDC 48 V: 60 VDC to 120 VDC
Max. useful charging power (recommendation: select maximally 20 % more than this power as solar power input)	900 W	3000 W

Version	30 A	50 A
Battery charging		
Max. charging current	30 A	50 A
Required battery capacity	Min. 60 Ah	Min. 100 Ah
Charging stages	3-stage, plus periodical equalizing charge: Bulk-Absorption-Float	
Charging voltage, absorption charge (rated value)	14.4 V / 28.8 V	14.4 V / 28.8 V / 57.6 V
Charging voltage, float charge (rated value)	13.9 V / 27.8 V	13.9 V / 27.8 V / 55.6 V
Load disconnect in the event of undervoltage (rated value)	11.5 V / 23.0 V	11.5 V / 23.0 V / 46.0 V
Switch-on after undervoltage	12.5 V / 25.0 V	12.5 V / 25.0 V / 50.0 V
Load disconnect in the event of overvoltage	16.5 V / 33.0 V	16.5 V / 33.0 V / 66.0 V
Switch-on after overvoltage	16.0 V / 32.0 V	16.0 V / 32.0 V / 64.0 V
Consumers circuit		
Max. load current for consumers	20 A	
Voltage at the load output	Corresponds to the battery voltage	

Consumers that require more than 20 A must be connected directly to the battery. Inverters must not be connected to the load output.

11 Commercial and legal guarantee conditions

Find the warranty terms on internet at:

www.steca.com/pv-off-grid/warranties

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