

Selectiva 2040 2kW
Selectiva 2050 2kW
Selectiva 2060 2kW
Selectiva 2070 2kW

Selectiva 2080 3kW
Selectiva 2100 3kW
Selectiva 2120 3kW

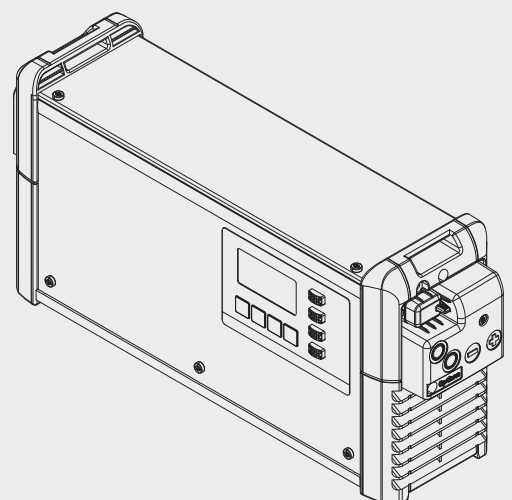
Selectiva 4020 2kW
Selectiva 4035 2kW

Selectiva 4045 3kW
Selectiva 4060 3kW

Operating Instructions

EN

Battery charging system



Dear reader,

Introduction

Thank you for the trust you have placed in our company and congratulations on buying this high-quality Fronius product. These instructions will help you familiarise yourself with the product. Reading the instructions carefully will enable you to learn about the many different features it has to offer. This will allow you to make full use of its advantages.

Please also note the safety rules to ensure greater safety when using the product. Careful handling of the product will repay you with years of safe and reliable operation. These are essential prerequisites for excellent results.

The latest version of the operating instructions can be found on the Fronius website www.fronius.com.

Explanation of safety symbols



DANGER! Indicates immediate and real danger. If it is not avoided, death or serious injury will result.



WARNING! Indicates a potentially dangerous situation. Death or serious injury may result if appropriate precautions are not taken.



CAUTION! Indicates a situation where damage or injury could occur. If it is not avoided, minor injury and/or damage to property may result.



NOTE! Indicates a risk of flawed results and possible damage to the equipment.

IMPORTANT! Indicates tips for correct operation and other particularly useful information. It does not indicate a potentially damaging or dangerous situation.

If you see any of the symbols depicted in the "Safety rules" chapter, special care is required.

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Safety rules

General



The device is manufactured using state-of-the-art technology and according to recognised safety standards. If used incorrectly or misused, however, it can cause:

- injury or death to the operator or a third party,
- damage to the device and other material assets belonging to the operating company,
- inefficient operation of the device.

All persons involved in commissioning, operating, maintaining and servicing the device must:

- be suitably qualified,
- read and follow these operating instructions carefully.

The operating instructions must always be at hand wherever the device is being used. In addition to the operating instructions, attention must also be paid to any generally applicable and local regulations regarding accident prevention and environmental protection.

All safety and danger notices on the device

- must be in a legible state,
- must not be damaged,
- must not be removed,
- must not be covered, pasted or painted over.

For the location of the safety and danger notices on the device, refer to the section headed "General information" in the operating instructions for the device.

Before switching on the device, rectify any faults that could compromise safety.

This is for your personal safety!

Proper use



The device is to be used exclusively for its intended purpose. Any use above and beyond this purpose is deemed improper. The manufacturer is not liable for any damage, or unexpected or incorrect results arising out of such misuse.

Proper use includes:

- carefully reading and obeying all operating instructions and safety and danger notices
- performing all stipulated inspection and maintenance work
- following all instructions from the battery and vehicle manufacturers

Proper handling of the device is essential for it to function correctly. The device must never be pulled around by the cable.

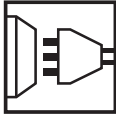
Environmental conditions



Operation or storage of the device outside the stipulated area will be deemed as not in accordance with the intended purpose. The manufacturer shall not be held liable for any damage arising from such usage.

For exact information on permitted environmental conditions, please refer to the "Technical data" section.

Mains connection



Devices with a higher rating may affect the energy quality of the mains due to their current consumption.

This may affect a number of types of device in terms of:

- connection restrictions
- criteria with regard to the maximum permissible mains impedance ^{*)}
- criteria with regard to the minimum short-circuit power requirement ^{*)}



^{*)} at the interface with the public grid
see Technical Data

In this case, the plant operator or the person using the device should check whether the device may be connected, where appropriate by discussing the matter with the power supply company.



NOTE! Ensure that the mains connection is earthed properly

Dangers from mains current and charging current



Anyone working with chargers exposes themselves to numerous dangers e.g.:

- risk of electrocution from mains current and charging current
- hazardous electromagnetic fields, which can risk the lives of those using cardiac pacemakers



An electric shock can be fatal. Every electric shock is potentially life threatening. To avoid electric shocks while using the charger:

- do not touch any live parts inside or on the outside of the charger.
- under no circumstances touch the battery poles
- do not short-circuit the charger lead or charging terminals

All cables and leads must be secured, undamaged, insulated and adequately dimensioned. Loose connections, scorched, damaged or inadequately dimensioned cables and leads must be immediately repaired by authorised personnel.

Dangers from acid, gases and vapours



Batteries contain acid which is harmful to the eyes and skin. During charging, gases and vapours are released that can harm health and are highly explosive in certain circumstances.

- Only use the chargers in well ventilated areas to prevent the accumulation of explosive gases. Battery areas are not deemed to be hazardous areas provided that a concentration of hydrogen of less than 4 % can be guaranteed by the use of natural or forced ventilation.
- Maintain a distance of at least 0.5 m (19.69 in.) between battery and charger during the charging procedure. Possible sources of ignition, such as fire and naked lights, must be kept away from the battery
- The battery connection (e.g. charging terminals) must not be disconnected for any reason during charging



- On no account inhale any of the gases and vapours released
- Make sure the area is well ventilated.
- To prevent short circuits, do not place any tools or conductive metals on the battery



- Battery acid must not get into the eyes, onto the skin or clothes. Wear protective goggles and suitable protective clothing. Rinse any acid splashes thoroughly with clean water, and seek medical advice if necessary.



General information regarding the handling of batteries



- Protect batteries from dirt and mechanical damage.
- Store charged batteries in a cool place. Self discharge is kept to a minimum at approx. +2 °C (35.6 °F).
- Every week, perform a visual inspection to ensure that the acid (electrolyte) level in the battery is at the Max. mark.
- If any of the following occurs, do not start the device (or stop immediately if already in use) and have the battery checked by an authorised workshop:
 - uneven acid levels and/or high water consumption in individual cells caused by a possible fault.
 - heating of the battery over 55 °C (131 °F).

Protecting yourself and others



- While the charger is in operation, keep all persons, especially children, out of the working area. If, however, there are people in the vicinity,
- warn them about all the dangers (hazardous acids and gases, danger from mains and charging current, etc.),
 - provide suitable protective equipment.

Before leaving the work area, ensure that people or property cannot come to any harm in your absence.

Safety measures in normal operation



- Chargers with a ground conductor must only be operated on a mains supply with a ground conductor and a socket with a ground conductor contact. If the charger is operated on a mains supply without a ground conductor or in a socket without a ground conductor contact, this will be deemed gross negligence. The manufacturer shall not be held liable for any damage arising from such usage.
- Only operate the charger in accordance with the degree of protection shown on the rating plate.
 - Never operate the charger if there is any evidence of damage.
 - Arrange for the mains cable to be checked regularly by a qualified electrician to ensure the ground conductor is functioning properly.
 - Any safety devices and parts that are not functioning properly or are in imperfect condition must be repaired by a qualified technician before switching on the charger.
 - Never bypass or disable protection devices.
 - After installation, an accessible mains plug is required.

EMC Device Classifications



Devices in emission class A:

- Are only designed for use in industrial settings
- Can cause line-bound and radiated interference in other areas

Devices in emission class B:

- Satisfy the emissions criteria for residential and industrial areas. This is also true for residential areas in which the energy is supplied from the public low-voltage mains.

EMC device classification as per the rating plate or technical data.

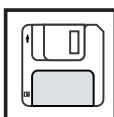
EMC measures



In certain cases, even though a device complies with the standard limit values for emissions, it may affect the application area for which it was designed (e.g. when there is sensitive equipment at the same location, or if the site where the device is installed is close to either radio or television receivers).

If this is the case, then the operating company is obliged to take appropriate action to rectify the situation.

Data protection



The user is responsible for the safekeeping of any changes made to the factory settings. The manufacturer accepts no liability for any deleted personal settings.

Maintenance and repair



Under normal operating conditions, the device requires only a minimum of care and maintenance. However, it is vital to observe some important points to ensure it remains in a usable condition for many years.

- Before switching on, always check the mains plug and cable as well as charger leads and charging terminals for any signs of damage.
- If the surface of the device housing is dirty, clean with a soft cloth and solvent-free cleaning agent only

Maintenance and repair work must only be carried out by authorised personnel. Use only original replacement and wearing parts (also applies to standard parts). It is impossible to guarantee that bought-in parts are designed and manufactured to meet the demands made on them, or that they satisfy safety requirements.

Do not carry out any modifications, alterations, etc. to the device without the manufacturer's consent.

Obligations of the operator



The operator must only allow persons to work with the device who:

- are familiar with the fundamental instructions regarding safety at work and accident prevention and have been instructed in how to use the device
- have read and understood these operating instructions, especially the section "safety rules", and have confirmed as much with their signatures
- are trained to produce the required results.

Checks must be carried out at regular intervals to ensure that operators are working in a safety-conscious manner.

Safety inspection



The manufacturer recommends that a safety inspection of the device is performed at least once every 12 months.

A safety inspection should be carried out by a qualified electrician

- after any changes are made
- after any additional parts are installed, or after any conversions
- after repair, care and maintenance has been carried out
- at least every twelve months.

For safety inspections, follow the appropriate national and international standards and directives.

Further details on safety inspections can be obtained from your service centre. They will provide you on request with any documents you may require.

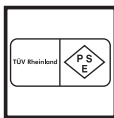
Safety symbols



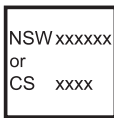
Devices with the CE mark satisfy the essential requirements of the low-voltage and electromagnetic compatibility directives.



Devices displaying this TÜV test mark satisfy the requirements of the relevant standards in Canada and USA.



Devices displaying this TÜV test mark satisfy the requirements of the relevant standards in Japan.



Devices displaying this TÜV test mark and the mark on the rating plate satisfy the requirements of the relevant standards in Australia.



Devices displaying this EAC mark of conformity satisfy the requirements of the relevant standards in Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan.

Disposal



Do not dispose of this device with normal domestic waste! To comply with the European Directive on Waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device that you no longer require must either be returned to your dealer or given to one of the approved collection and recycling facilities in your area. Ignoring this European Directive may have potentially adverse affects on the environment and your health!

Copyright



Copyright of these operating instructions remains with the manufacturer.

The text and illustrations are all technically correct at the time of printing. We reserve the right to make changes. The contents of the operating instructions shall not provide the basis for any claims whatsoever on the part of the purchaser. If you have any suggestions for improvement, or can point out any mistakes that you have found in the instructions, we will be most grateful for your comments.

General information

Device concept

The single-phase battery charging systems for 24 V and 48 V batteries are fitted with intelligent charging technology. The successful Active Inverter Technology with the revolutionary Ri charging process adapts itself to the requirements of the battery and only charges the battery with the current that it actually needs.

The technology is embedded in a robust industry-standard housing. The exceptionally compact design complies with all safety standards, requires less installation space and protects the components to ensure a long service life.

Fitted with a graphical display, an integrated datalogger, new interfaces and additional options, the device is perfectly equipped for the future.

Proper use/intended purpose



WARNING! If an unsuitable battery is connected to the charger, there is a risk of serious injury or damage from escaping gases, fire or explosion. Never connect a battery to the charger unless it is compatible in terms of its type, voltage and capacity and corresponds to the charger settings.

The battery charging system is only suitable for charging the following batteries:

Power category	Cell type	Minimum number of cells	Maximum number of cells	Minimum nominal capacity [Ah]	Maximum nominal capacity [Ah]
Selectiva 2040 2 kW	Pb-Wet/GEL	1	12	10	800
	NiCd	2	20	10	800
Selectiva 2050 2 kW	Pb-Wet/GEL	1	12	10	1000
	NiCd	2	20	10	1000
Selectiva 2060 2 kW	Pb-Wet/GEL	1	12	10	1200
	NiCd	2	20	10	1200
Selectiva 2070 2 kW	Pb-Wet/GEL	1	12	10	1400
	NiCd	2	20	10	1400
Selectiva 4020 2 kW	Pb-Wet/GEL	1	24	10	400
	NiCd	2	40	10	400
Selectiva 4035 2 kW	Pb-Wet/GEL	1	24	10	700
	NiCd	2	40	10	700
Selectiva 2080 3 kW	Pb-Wet/GEL	1	12	20	1600
	NiCd	2	20	20	1600
Selectiva 2100 3 kW	Pb-Wet/GEL	1	12	20	2000
	NiCd	2	20	20	2000
Selectiva 2120 3 kW	Pb-Wet/GEL	1	12	20	2000
	NiCd	2	20	20	2000
Selectiva 4045 3 kW	Pb-Wet/GEL	1	24	20	900
	NiCd	2	40	20	900
Selectiva 4060 3 kW	Pb-Wet/GEL	1	24	20	1000
	NiCd	2	40	20	1000

Any use above and beyond this purpose is deemed improper. The manufacturer shall not be liable for any damage resulting from such use.

Proper use also includes:

- Carefully reading and following all Operating Instructions, safety and danger notices
- Performing all stipulated inspection and maintenance work
- Following all instructions from the battery and vehicle manufacturers

Mains connection



WARNING! Operating the equipment incorrectly can cause serious damage and injury. Do not use the functions described here until you have fully read and understood the following documents:

- Operating instructions
- All the operating instructions for the system components, especially the safety rules
- Battery and vehicle manufacturer's operating instructions and safety rules



WARNING! Risk of serious injury and damage due to faulty or insufficient power supply. The power supply requirements detailed in "Technical data" must be met.

Charging leads



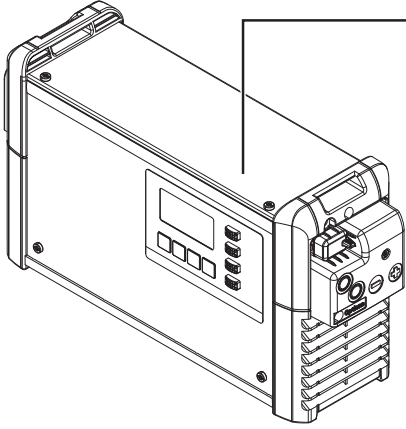






WARNING! There is a risk of very serious injury and damage if charging leads are left lying around. People may become entangled in or trip over loose, unwound cables. Lay the charging leads so that no one can trip over or become entangled in them.

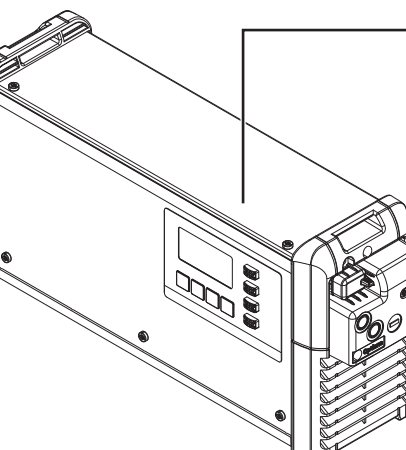








WARNING! There is a high risk of very serious injury and damage if the charging plug is pulled out during the charging process. The sparks caused by this can ignite the charging gases that build up during the charging process, causing a fire or an explosion. After the charging process has completed, wind up the charging leads, or if available, place them on the cable holder.

Warning notices on the device

A number of safety symbols can be seen on the charger's rating plate. The safety symbols must not be removed or painted over.

 <p>2 kW</p>	 www.fronius.com	 Selectiva xxxx	
	 xxxxxxxx	Part No.: 4,010,xxx Ser. No.: xxxxxxxx	
	 OVC III	U _{AC} nom. 1~ NPE 230V 50/60Hz I _{AC} max. xxA P _{AC} max. xxxxW	
	 IP21	U _{DC} nom. xxV I _{DC} max. xxA Protective class I	
			
	<p>WARNING Explosive gases. Prevent flames and sparks. Provide adequate ventilation during charge! Always stop charging before you disconnect the charging cable!</p>		XXX XXX

 <p>3 kW</p>	 www.fronius.com	 Selectiva xxxx	
	 xxxxxxxx	Part No.: 4,010,xxx Ser. No.: xxxxxxxx	
	 OVC III	U _{AC} nom. 1~ NPE 230V 50/60Hz I _{AC} max. xxA P _{AC} max. xxxxW	
	 IP21	U _{DC} nom. xxV I _{DC} max. xxA Protective class I	
			
	<p>WARNING Explosive gases. Prevent flames and sparks. Provide adequate ventilation during charge! Always stop charging before you disconnect the charging cable!</p>		XXX XXX



Do not dispose of used devices with domestic waste. Dispose of them according to the safety rules.



Possible sources of ignition, such as fire, sparks and naked flames, must be kept away from the battery.



Risk of explosion! Oxyhydrogen is generated in the battery during charging.



Battery acid is corrosive and MUST be kept away from eyes, skin and clothes.



Ensure an adequate supply of fresh air during charging.

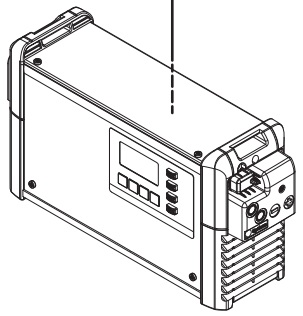


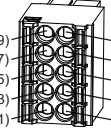
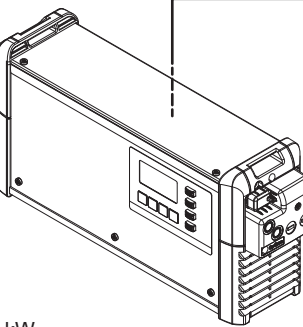

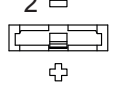
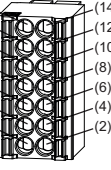


Do not use the functions until you have read all the Operating Instructions.

Warning notices inside the device

WARNING! An electric shock can be fatal. The housing must never be opened by anyone other than a service technician trained by the manufacturer. The device must be disconnected from the mains before starting any work with the housing open. A suitable measuring instrument must be used to ensure that electrically charged components (e.g. capacitors) are fully discharged. Use an easily legible and understandable warning sign to ensure that the charger is not reconnected to the mains supply before all the work has been completed.

Inside the device:

 <p>2 kW</p>	<p>XXXX</p> <p>U_{DC} nom. xxV Part No.: 4,010,xxx Ser. No.: xxxxxxxx</p>	<p>WARNING Hazardous Voltage</p> <p>Kondensator Entladezeit < 2 min. Capacitor discharge time < 2 min. Décharge de condensateur < 2 min. Condensador tiempo de descarga < 2 min. Condensatore tempo di scaricamento < 2 min.</p>
	<p>1 </p> <p>2 </p> <p>1 Display 2 Battery CR2032</p>	<p></p> <p>CAN GND (9) (10) +13V CAN Low (7) (8) CAN Termination CAN High (5) (6) CAN Termination Not connected (3) (4) Not connected Ext. Start Stopp (1) Temperature controlled charging (2) Ext. Start Stopp Temperature controlled charging</p>
 <p>3 kW</p>	<p>XXXX</p> <p>U_{DC} nom. xxV Part No.: 4,010,xxx Ser. No.: xxxxxxxx</p>	<p>WARNING Hazardous Voltage</p> <p>Kondensator Entladezeit < 2 min. Capacitor discharge time < 2 min. Décharge de condensateur < 2 min. Condensador tiempo de descarga < 2 min. Condensatore tempo di scaricamento < 2 min.</p>
	<p>1 </p> <p>2 </p> <p>1 Display 2 Battery CR2032</p>	<p></p> <p>Status 3 (13) (14) Status 4 Status 1 (11) (12) Status 2 / CAN2 GND CAN1 GND (9) (10) +13V CAN1 Low (7) (8) CAN2 Low CAN1 High (5) (6) CAN2 High Not connected (3) (4) Not connected Ext. Start Stopp (1) Temperature controlled charging (2) Ext. Start Stopp Temperature controlled charging</p>

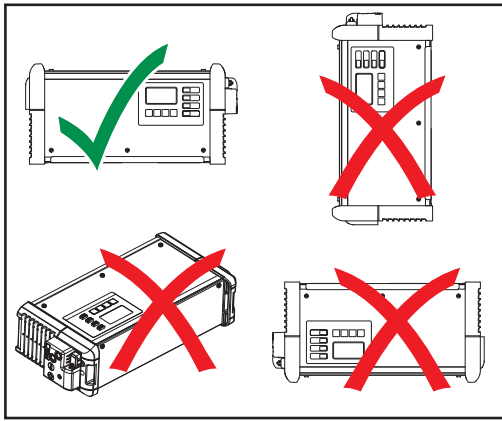
Setup regulations

WARNING! Toppling or falling devices can cause life-threatening injuries. Make sure that all system components are securely in position when setting them up. If using a floor bracket or wall bracket, always make sure that all the securing elements are seated securely.

WARNING! Toppling or falling devices can cause life-threatening injuries. Due to the heavy weight of the 3-kW version, the device must be secured using suitable fittings to prevent it from toppling or falling over. The wall and floor brackets provided by the manufacturer must be used.

- The device is tested to IP 21 protection, meaning:
- Protection against penetration by solid foreign bodies with diameters exceeding 12.5 mm (0.49 in.)
 - Protection against vertically falling drops of water

The device can be set up and operated in dry, closed areas that comply with degree of protection IP21. Exposure to wet conditions should be avoided.



The device may only be operated in a horizontal position.

The air surrounding the charger must be kept free from battery acid vapour as far as possible. You should therefore avoid mounting the device directly above the battery that is to be charged.

Cooling air

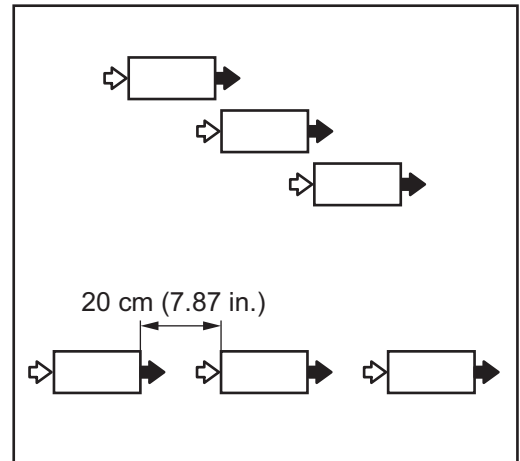
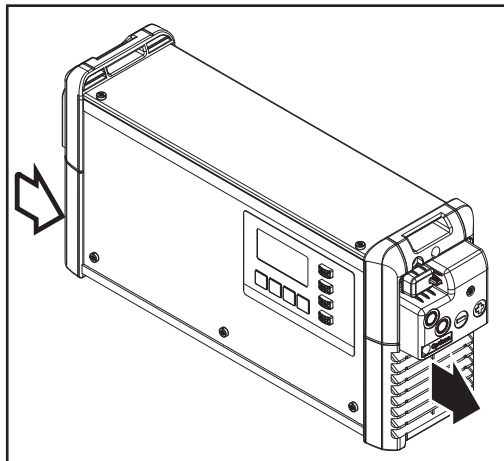
The charger must be set up in such a way that the cooling air can flow unimpeded through the vents in the housing that are provided for that purpose. Ensure that there is always a minimum clearance of 20 cm (7.87 in.) around the air inlets and outlets. The surrounding air must be free from

- excessive dust
- electrically conductive particles (carbon black or swarf)
- heat sources

Cooling air is drawn in and flows out as indicated by the arrows in the following illustrations.



NOTE! Air inlets and outlets must never be covered, not even partially. If several chargers are set up one behind the other, they should be offset.



If the chargers are arranged in a line one behind the other without being offset, the space between the chargers must be as follows:

- Minimum distance 20 cm (7.87 in)

Wall and floor bracket

WARNING! Work that is carried out incorrectly and falling chargers can cause serious injury and damage. This installation must only be carried out by trained and qualified personnel. Take note of the safety rules in the charger Operating Instructions.

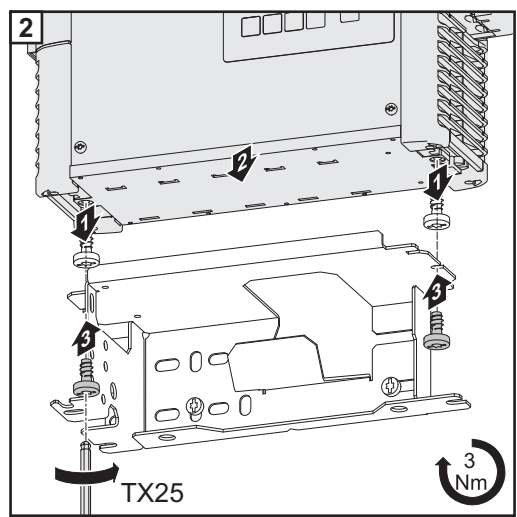
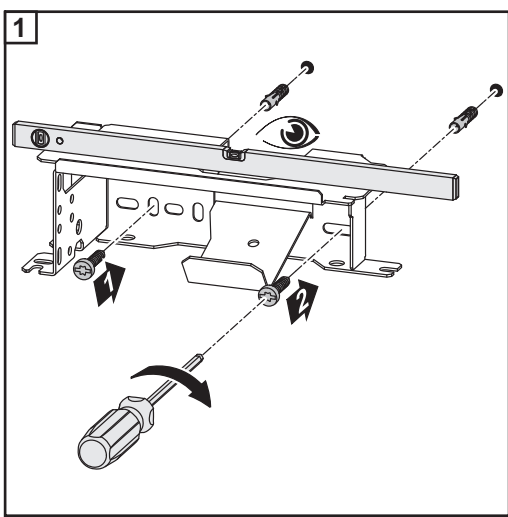
Different wall plugs and screws will be required depending on the supporting surface. Wall plugs and screws are therefore not included in the scope of supply. The installer is responsible for selecting the right wall plugs and screws.

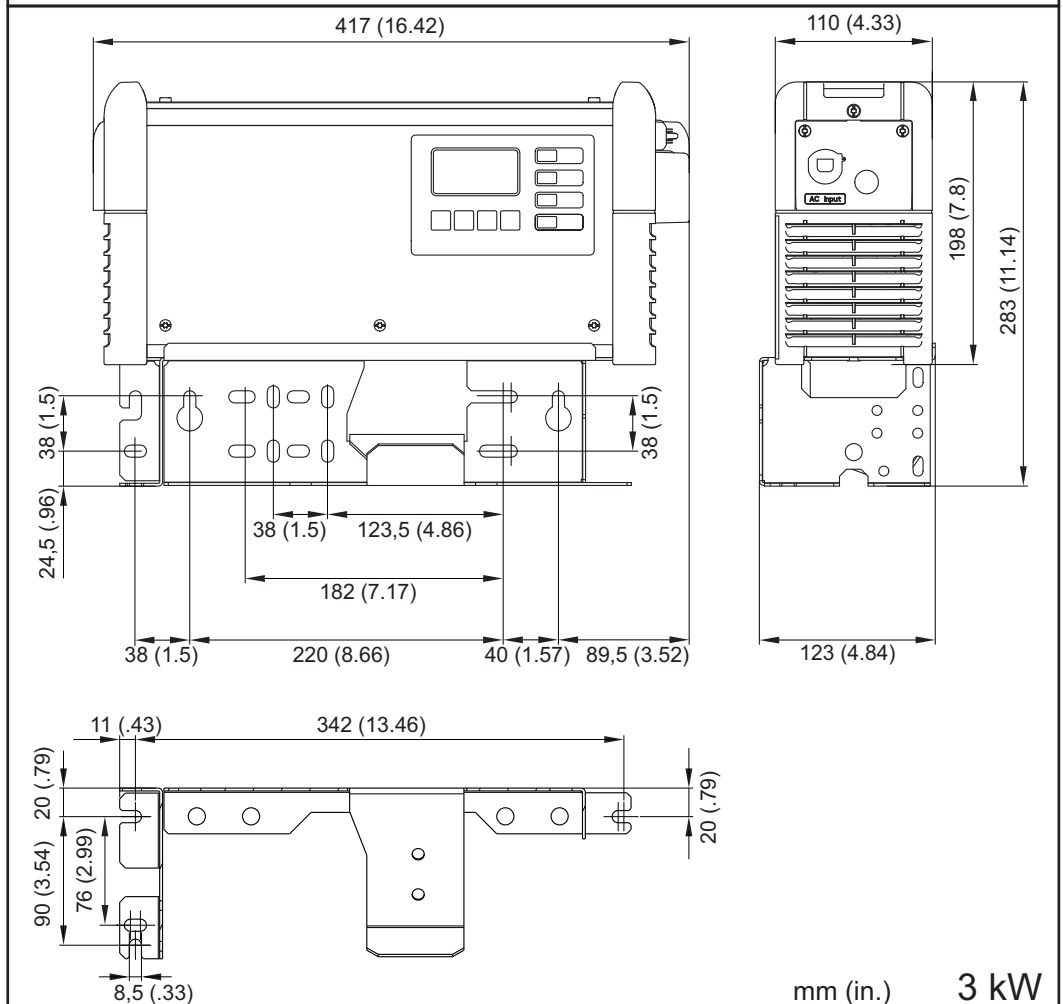
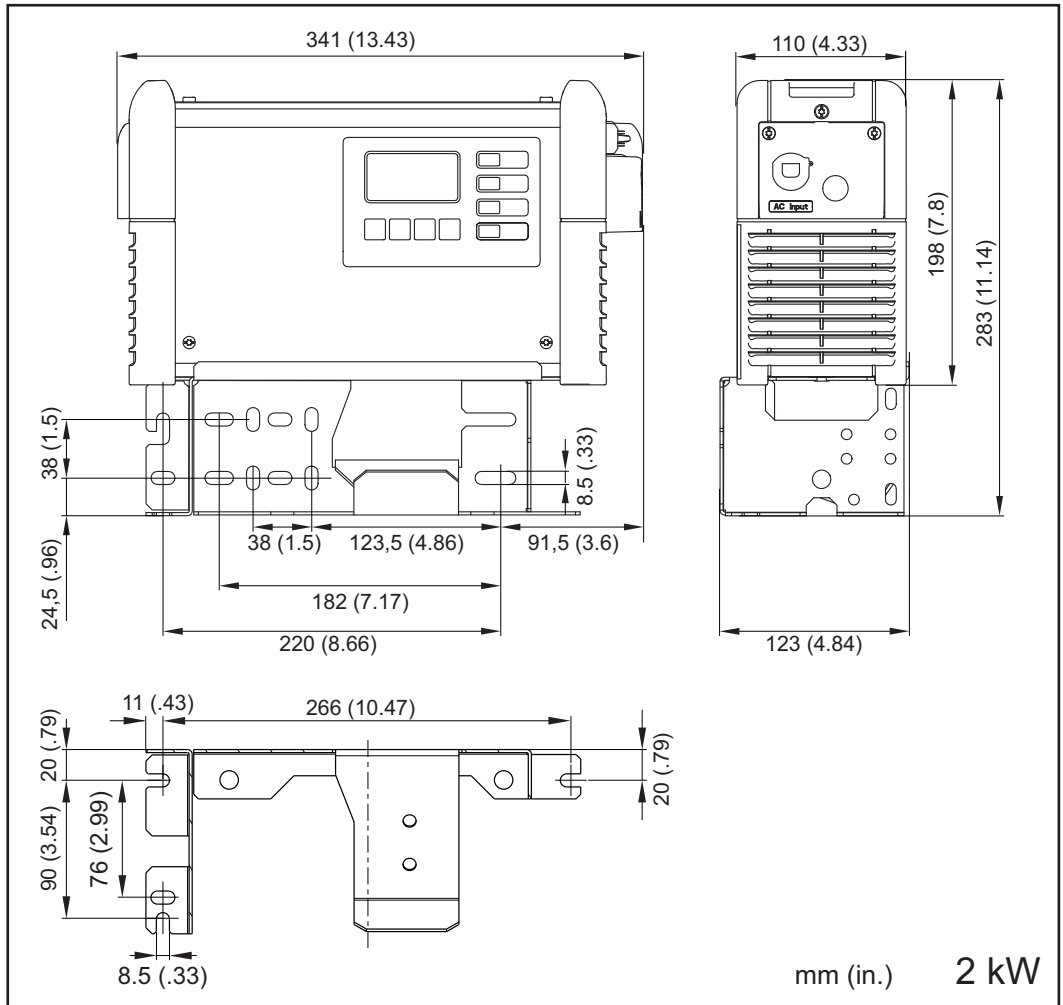
WARNING! Risk of serious damage or injury from objects being dropped or falling over.

- Ensure that all screw connections are secure
- Use only with the charger provided by the manufacturer
- Ensure the device is level when mounting
- If the device is mounted on the wall, ensure the wall is capable of supporting the weight of the device

Weight of wall bracket:

2 kW	1.10 kg (2.43 lb)
3 kW	1.35 kg (2.98 lb)





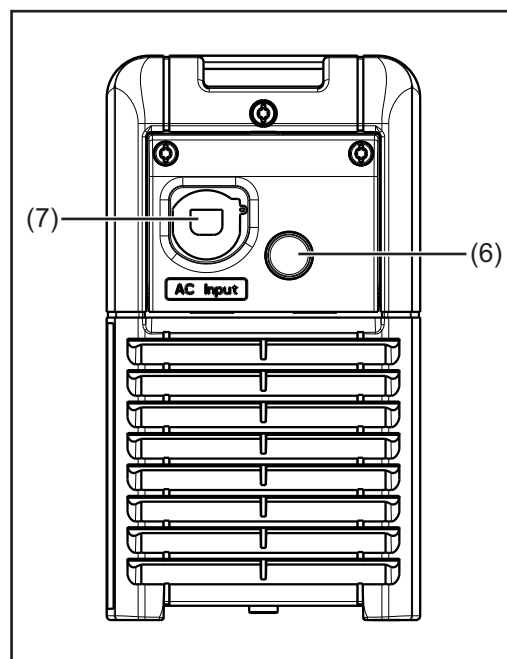
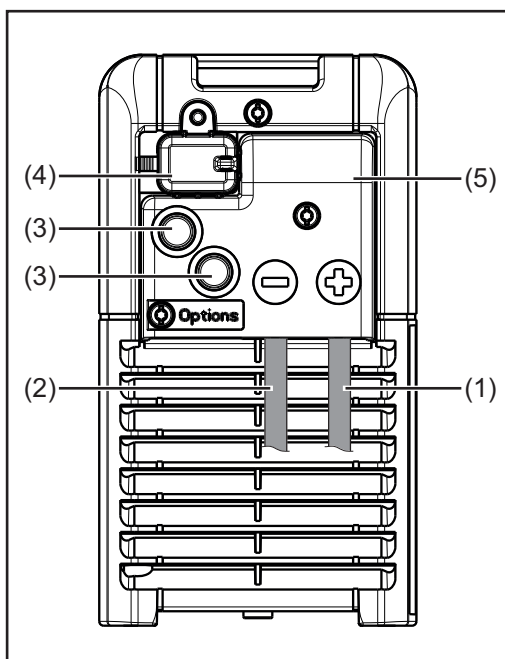
Control elements and connections

General

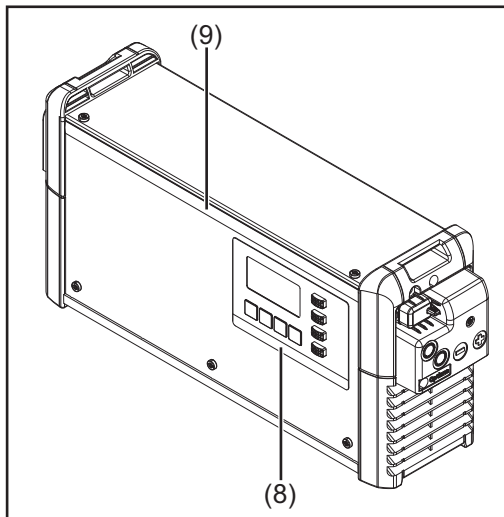


NOTE! As a result of firmware updates, you may find that there are functions available on your device that are not described in these operating instructions or vice versa. Certain illustrations may also differ slightly from the actual controls on your device, but these controls function in exactly the same way.

Controls and connections

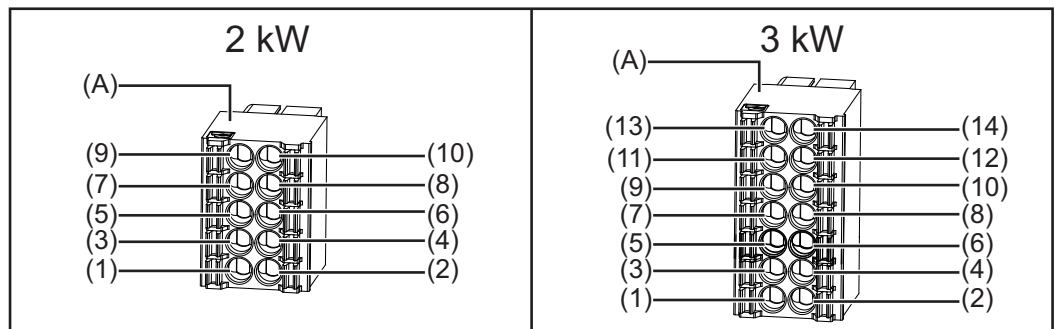


No.	Function
(1)	(+) Charging lead
(2)	(-) Charging lead
(3)	Position for options - External start/stop option - Temperature-controlled charging option
(4)	USB port The USB port allows a USB flash drive to be used to update the device and also to log the charging parameters while charging is in progress.
(5)	Cover for option connector and charging leads * The option connector can only be accessed by removing the cover (4). The warning notices in the "Safety" section of the "Options" chapter must be obeyed.
(6)	Position for electrolyte circulation option
(7)	Mains cable

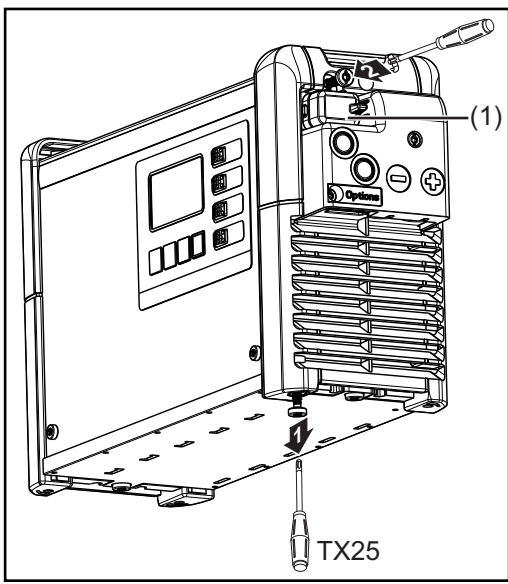


No.	Function
(8)	Control panel
(9)	Optional LED strip lights up in different colours depending on the state of charge, as explained in the "Control panel" section

The option plug (A) is located behind the cover on the front of the device, upon which the charging leads can be found. For the CAN connection area, the warning notices in the "Safety" section of the "Options" chapter apply.

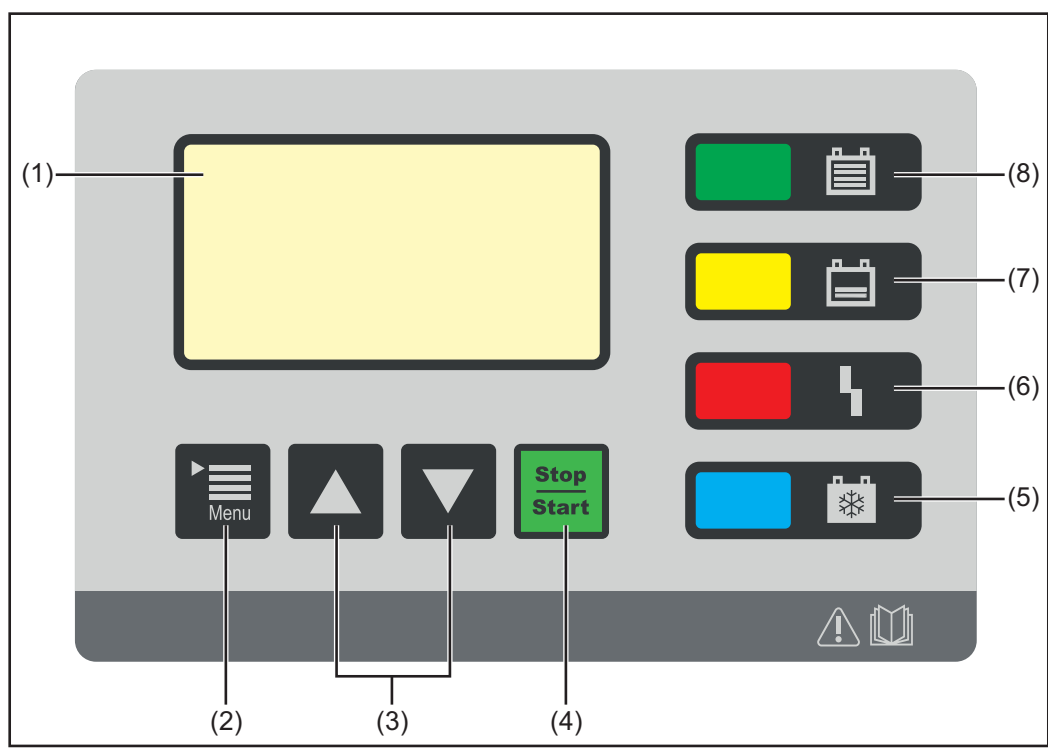


2 kW		3 kW	
		(13) Status 3	(14) Status 4
		(11) Status 1	(12) Status 2 / CAN 2 GND
(9) CAN GND	(10) + 13 V	(9) CAN 1 GND	(10) + 13 V
(7) CAN Low	(8) CAN termination	(7) CAN 1 Low	(8) CAN 2 Low
(5) CAN High	(6) CAN termination	(5) CAN 1 High	(6) CAN 2 High
(3) Not assigned	(4) Not assigned	(3) Not assigned	(4) Not assigned
(1) External start/ stop or temper- ature-con- trolled charging	(2) External start/ stop or temper- ature-con- trolled charging	(1) External start/ stop or temper- ature-con- trolled charging	(2) External start/ stop or temper- ature-con- trolled charging



The cover (1) for the USB port can be secured with a screw.

Control panel



No.	Function
(1)	Display Displays the current charging parameters Displays settings
(2)	"Menu" key Selects the desired menu Selects the appropriate symbol to return to the previous display
(3)	Up/down keys Select the desired menu item Set the desired value

-
- (4) **Stop/Start key**
For interrupting and resuming the charging process
Confirms a menu item or setting
-
- (5) **"Battery cooled down" indicator (blue)**
Indicates that a battery has cooled down and is ready for use
On steady: After charging has finished, the set cooling time or optionally the battery temperature has been reached.
Flashes every second: The water refill indicator has also tripped. More information can be found under "Additional functions" in the "Display" section.
-
- (6) **"Fault" indicator (red)**
On steady: The charger outputs an error. The current conditions do not allow proper charge. While the red indicator is on, charging cannot take place (charging interrupted). The relevant status code appears in the display.
Flashes briefly every 3 seconds: The charger outputs a warning. Charging is continued despite the adverse charging parameters. The relevant status code and the state of charge appear alternately on the display.
-
- (7) **"Charge" indicator (yellow)**
On: During charging
Flashes: If charging has been interrupted
-
- (8) **"Battery charged" indicator (green)**
On steady: Charging ended.
Flashes every second: Charging ended. The water refill indicator has also tripped.
-

Charging the battery

Charging



WARNING! Risk of serious injury or damage from escaping battery acid or explosion if faulty batteries are charged. Before charging, ensure that the battery to be charged is fully functional.

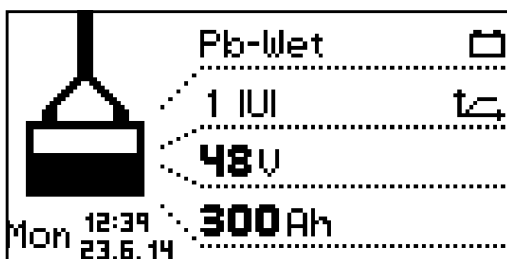


WARNING! Risk of serious injury and damage from incorrect charging settings or a defective battery. Before beginning the charging process, ensure that the settings on the charger for the battery to be charged are correct and that the battery is functioning properly.



NOTE! The device may be damaged if the charging plug contacts are very dirty. The resulting increase in contact resistance can lead to overheating and subsequent destruction of the charging plug. Keep the charging plug contacts free from impurities and clean them if necessary.

- 1 Plug the charger into the electrical mains supply



The display appears in standard mode. The display shows the charger parameters:

- Type of battery (e.g. wet)
- Charging characteristic (e.g. IUI)
- Nominal voltage (e.g. 48 V)
- Capacity (e.g. 300 Ah)
- Day of the week, date and time

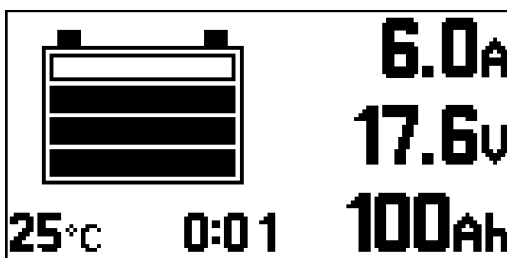
The charger parameters can be set individually. More information on the charger parameters can be found under "Configuration mode" in the "Display functions" chapter. Ensure that the battery to be charged matches the configuration of the battery charging system.

- 2 Connect the charging plug or connect the
 - (+) charging lead to the positive pole of the battery and the
 - (-) charging lead to the negative pole of the battery

The charger detects that the battery is connected and starts charging. If start-up delay is activated, then charging will start at the end of the set delay time. For more information, see "Configuration mode" in the "Display" section.

During the charging process the display shows the following values:

- Current charging current (A)
- Current charging voltage (V)
- The charge already input (Ah)
- Battery temperature with the "temperature-controlled charging" option
- The time (hh:mm) since charging started

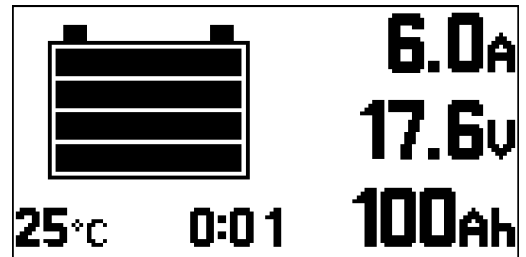


The battery symbol indicates the current state of charge. The greater the number of bars that are displayed, the further advanced the charging process is. As soon as the battery is fully charged, a minute counter will appear (see figure on right). This counts the minutes since the end of charging; when a number of chargers are being used, this makes it easier to decide which battery will have already cooled down most.

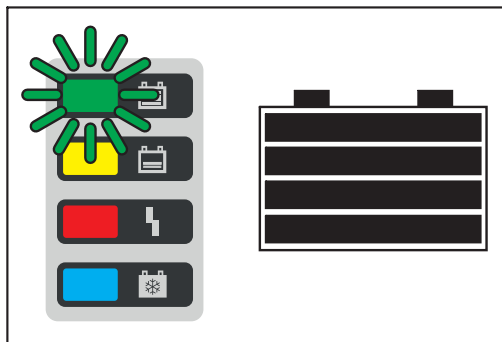
If, however, the standard display is still to be shown rather than the minute counter:



1 Use the "Up/Down" keys to toggle between the minute counter and standard display



When the battery is fully charged all 4 bars of the battery symbol appear black. As soon as the battery is fully charged, the charger begins conservation charging.



- All bars are displayed
- The green "Battery charged" indicator is on
- The battery is always ready to use
- The battery can remain connected to the charger for as long as required
- Conservation charging counteracts battery self-discharge

Interrupting charging

To interrupt the charging process:



1 Press the "Stop/Start" key

While the charging progress is interrupted:



The "Charge" indicator (yellow) flashes

To resume the charging process:



2 Press the "Stop/Start" key again

As long as a battery is connected to the charger, only the charging process can be interrupted and resumed using the "Stop/Start" key. Display modes can be changed using the "Menu" key as described in the "Display" section, but this is only possible when there is no battery connected to the charger.

Stopping charging

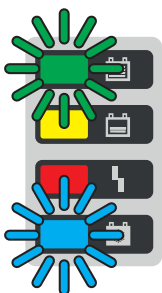


WARNING! Risk of serious injury or damage from ignition of oxyhydrogen through sparks generated when the charging leads are disconnected. Before disconnecting or unplugging the charging plug, first stop the charging process by pressing the "Stop/Start" key.

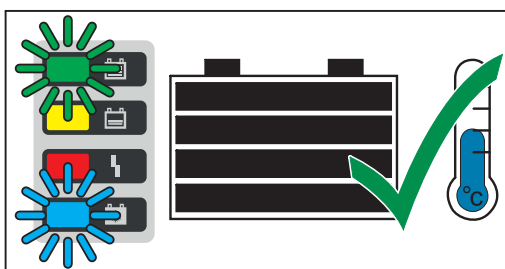


NOTE! The battery may be damaged if it is disconnected from the charger before the charging process is complete. Only disconnect the battery from the charger when it is fully charged (green "Battery charged" indicator lights up).

As soon as the battery is fully charged and has cooled down, the following indicators light up:



- "Battery charged" indicator (green)
- "Battery cooled down" indicator (blue)



For an optimal battery life, only disconnect the battery from the battery charging system when the blue "Battery cooled" indicator is showing in addition to the green indicator, in accordance with the explanation below. If several battery charging systems are in use, first disconnect the battery which has been fully charged for the longest (the coolest).

To stop the charging process:








- 1 Press the "Stop/Start" key

- 2 Unplug the charging plug or disconnect the
(-) charging lead from the negative pole of the battery and the
(+) charging lead from the positive pole of the battery

Overview of modes

The device has the following modes:

-  **Standard mode**
In standard mode the display shows the charging parameters
-  **Statistics mode**
Visualises the frequency of the device operating modes and shows the total number of charging actions. Also shows an overview of the total and average Ah produced and energy consumed per charge
-  **History mode**
Provides information about the parameters for all the stored charging processes
-  **Configuration mode**
Configuration mode enables all the settings for the device and the charging process to be adjusted
-  **USB mode**
USB mode enables a device to be updated, device configurations to be saved and loaded, and the charging parameters to be recorded during the charging process - all using a USB flash drive

As long as a battery is connected to the battery charging system, the charging process can only be interrupted and resumed using the "Stop/Start" key. Display modes can be changed using the "Menu" key as described in the following sections that explain the individual modes, but this is only possible when there is no battery connected to the battery charging system.

During a pause in the charging process the menu selection is available, however only in a limited form. In this case the modes described below are available as follows:

Statistics mode and history mode remain unrestricted.

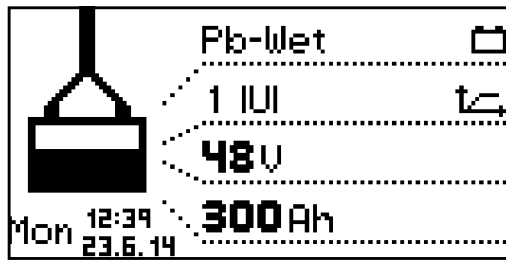
In configuration mode the following data is available:

- Date and time
- Device serial number
- Hardware version and serial number
- Software: main software, secondary software, primary software and characteristic block version

In USB mode all options except for "Update" and "Load configuration" are available.

Standard mode

Once the mains plug has been connected to the electrical mains supply, the display will automatically operate in standard mode.



In standard mode, the display shows the following charger parameters:

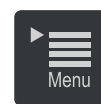
- Type of battery (e.g. wet)
- Charging characteristic (e.g. IU)
- Nominal voltage (e.g. 48 V)
- Capacity (e.g. 300 Ah)
- Day of the week, date and time

The charger parameters can be set individually. More information can be found in the "Configuration mode" section.

Menu selection

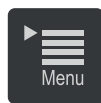


Change from standard mode to the menu selection as follows:



- 1 Press and hold the "Menu" key for approx. 5 seconds

Change from all other modes to the menu selection as follows:



- 1 Press the "Menu" key briefly

To select the desired mode:



- 2 Use the "Up/Down" keys to select the symbol for the desired mode
- e.g. the battery symbol for standard mode



- 3 Use the "Stop/Start" key to confirm the "Tick" symbol

Statistics mode

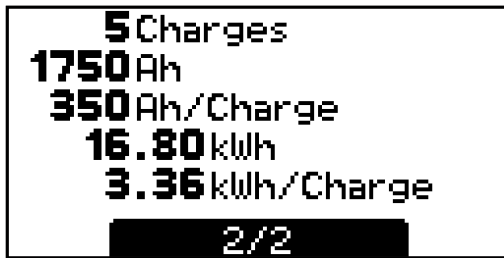


In statistics mode, horizontal bars display the frequency of the following device operating statuses:

- Idle
- Charging
- Floatingcharge
- Cooldown
- Error



1 Use the "Up/Down" keys to toggle between page 1/2 and page 2/2



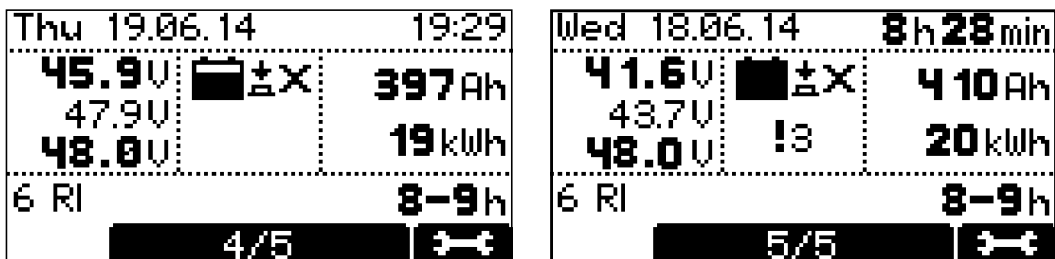
Page 2/2 shows the following values:

- Total number of charges
- Total Ah output
- Average Ah output per charge
- Total energy consumed (kWh)
- Average energy consumed (kWh) per charge

The consumed energy display is a standard value and can deviate by up to 5% from the actual amount of energy. At lower power levels the deviation may be higher.

History mode

History mode provides information about the parameters for all the stored charging processes. In order to show changing or different displays, two versions of the display window are shown below:



1 Use the "Up/Down" keys to scroll between the pages for each stored charging process

Text content of the display window:

- Start date of charge, e.g. Thursday 19.06.14
- Start time of charge, e.g. 19:29 or charging period, e.g. 8h28min
- Voltage at charge start, e.g. 45.9 V
- Voltage after 5 minutes, e.g. 47.9 V
- Voltage at charge end, e.g. 48.0 V
- Consumed Ah, e.g. 397 Ah
- Consumed kWh, e.g. 19 kWh
- Charging characteristic, e.g. 6 RI
- Set charging period, e.g. 8-9 h or set Ah, e.g. 400 Ah or set charge end time (not shown)

Symbols shown:


- Full battery:
- Charging has been completed
- Empty battery:
- Charging has not been completed
- Exclamation mark with number:
Warning has been output with the corresponding status code. More information can be found in the "Status codes" section.
- Symbol with number:
Error has been output with the corresponding status code. More information can be found in the "Status codes" section.
- Key symbol with a tick:
Charging was stopped properly using the "Stop/Start" key
- Key symbol with a cross:
Charging was stopped without using the "Stop/Start" key
- Charging details - Display of certain battery data at the beginning and end of the charging process:
Number of cells
Ah
Characteristic
Type of battery

Configuration mode

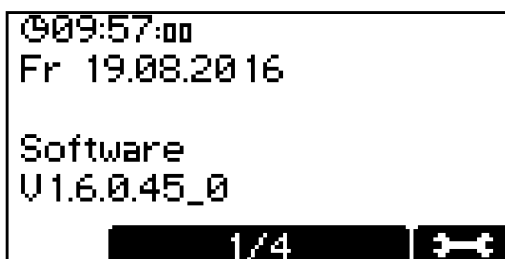
Configuration mode provides the following setting options:

- "Charging settings": settings for the battery
 - Type of battery, e.g. "Wet"
 - Charging characteristic, e.g. "IU"
 - Capacity (Ah) or charging time (h) depending on the charging characteristic

- Cells: voltage (V) and number of battery cells or automatic setting of the number of cells

 **CAUTION!** Risk of damage to the battery. Only use the automatic number of cells selection function with batteries with the following nominal voltage values:
 12 V and 24 V with 24 V devices
 24 V and 48 V with 48 V devices
 The automatic selection function must not be used with deep discharged batteries.

- "Additional functions":
for individual adaptation options for the charging characteristic
- "Additional functions": Additional functions
 - Blue LED
 - External start/stop
 - Refill indicator
- "General options": General options
 - Language
 - Contrast
 - Time (hh:mm:ss)
Time zone
Daylight saving time/normal time
 - Date (dd:mm:yy)
 - AC current limiter
 - Length of charging lead (m)
 - Charging lead cross section (mm²)
 - Code for accessing the configuration menu activated/deactivated
 - Time interval for the parameter recorded on the USB flash drive (s)
- "Reset Factory Settings": resets settings to those when the charger left the factory or optionally to the manufacturer's defaults
 - includes a double-check prompt ("OK?") that requires the operator to reconfirm that this step is intended



First the screen will appear in its initial format, showing the date, time and software version.



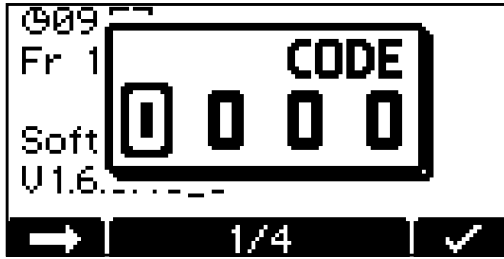
- 1** The "Up/Down" keys can be used to retrieve the following information:
- Serial number of the device plus serial number and version of the configuration memory
 - PC board for controller/power electronics: hardware version and serial number
 - Software: main software, secondary software, primary software and characteristic block version

The procedure for opening the configuration menu is as follows:



- 1** Press the "Stop/Start" key

You will be prompted to enter a code:



The code required is "1511", and is entered as follows:



1 Using the "Up/Down" keys, enter the first digit of the code



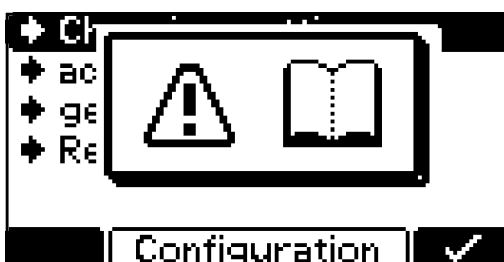
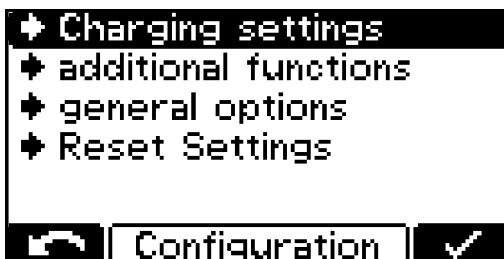
2 Press the "Menu" key to move to the next digit of the code

3 Continue to follow the procedure described above until the complete code has been entered







4 Use the "Stop/Start" key to confirm the code entered

You will now be prompted to select one of the main menu items for the configuration mode:




When you select a menu item you may be presented with a symbol prompting you to read the Operating Instructions. Confirm this prompt by pressing the "Stop/Start" key again.

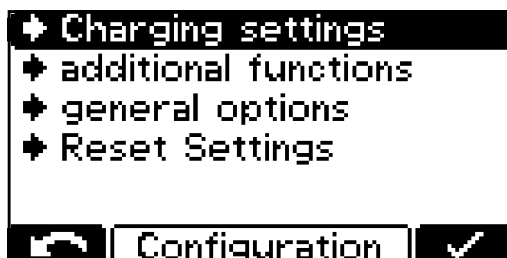
The procedure for navigating the configuration menu and its submenus is as follows:



-  **1** Use the "Up/Down" keys to select the desired menu item
-  **2** Use the "Stop/Start" key to confirm the menu item, and reconfirm any double-check prompt (e.g. "OK?")
-  **3** Use the "Up/Down" keys as necessary to choose an item e.g. "Off/On" or enter a value
-  **4** Use the "Stop/Start" key to confirm what you have entered
- 5** If the cursor should move to another setting or position after confirmation of the previous setting, then the procedure described in points (3) and (4) should be repeated

To exit the current menu:

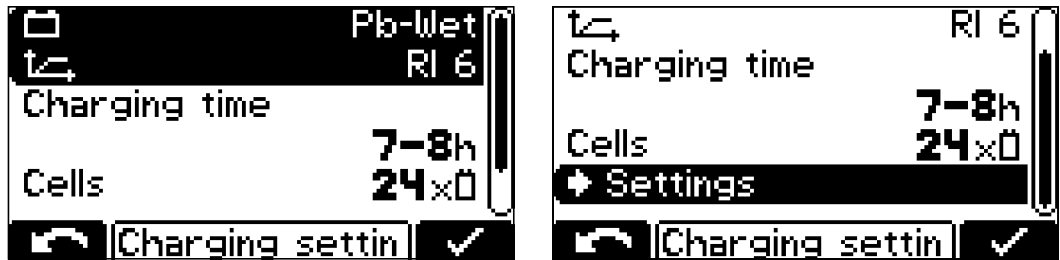
-  **6** Press the "Menu" key to return to the higher-level menu

For an example, see the explanation below of how to set the charging parameters:



-  **1** Use the "Up/Down" keys to select the "Charging settings" menu item
-  **2** Use the "Stop/Start" key to confirm this menu item





The choice of settings for the "Charging settings" menu item will now be displayed:



the display may vary depending on the selection made. If the "Pb-Wet" type of battery has been selected in combination with the "RI" characteristic ("Curve") as in the example here, then the title "Ah" is replaced by the "Charging time" setting.

Both the start and end time can be set for this charging time period. The starting time can be deselected as required; the charging time then bases itself exclusively on the specified charge end time following a manual charge start.

When applying the settings, the user will be guided through the menu in much the same way as a wizard function.

-  **3** Use the "Up/Down" keys to select the desired parameter (e.g. "Cells")
-  **4** Use the "Stop/Start" key to confirm the parameter
-  **5** Use the "Up/Down" keys to set the desired value (e.g. "24" for the number of battery cells)
-  **6** Use the "Stop/Start" key to confirm what you have entered

-> Settings

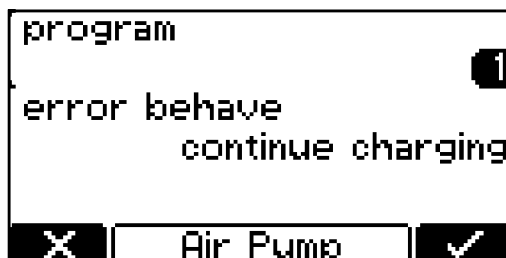
Below is a detailed description of the "-> Settings" menu item for the "Charging settings" menu item discussed above. Navigation is performed as described in the "Configuration mode" section.

A list appears with the following selection options:



The individual selection options are explained in greater detail below:

Electrolyte circulation ("Air pump") - for 3 kW devices only:



More information on the electrolyte circulation can be found under "Electrolyte circulation 3 kW" in the "Options" chapter.

The electrolyte circulation cycle is controlled by the charger's control system. A number of selection options are available for this purpose.

The following settings are available for electrolyte circulation:

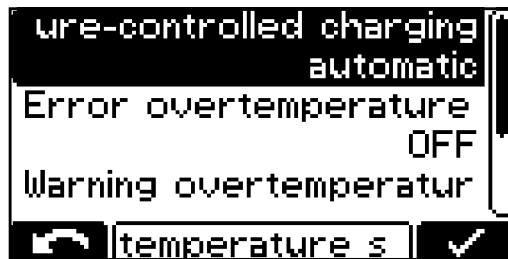
- Off:
 - Electrolyte circulation switched off
- Continuous operation ("continuous"):
 - Electrolyte circulation permanently on
- Program 1 to 5:
 - Default electrolyte circulation programs and their relevant parameters can be found in the table under "Settings" in the "Display" chapter.
- Automatic:
 - Automatic adjustment of electrolyte circulation flow rate based on the set battery parameters
- "User" - "On"/"Off":
 - Individual setting of the electrolyte circulation
 - The settings for "On" and "Off" determine the pulse/pause ratio of the air flow intervals

Default electrolyte circulation programs and their relevant parameters can be found in the table below:

Program	ON 1	OFF 1	Repeat	ON 2	OFF 2
1	30 min	25 min	1 x	5 min	25 min
2	3 min	10 min	4 x	3 min	20 min
3	3 min	12 min	1 x	3 min	12 min
4	5 min	10 min	3 x	5 min	20 min
5	2.5 min	7.5 min	1 x	2.5 min	7.5 min

In each of these programs, the solenoid valve opens for a time "ON 1" and closes for a time "OFF 1". This process is repeated for the number of times specified under "Repeat". After this number of repetitions has been completed, the process continues with the "ON 2" and "OFF 2" times until charging is completed.

Temperature-controlled charging:



The following settings are available for temperature-controlled charging:

- automatic/OFF/required:
 - automatic ... Temperature-dependent adjustment of the charging characteristic
 - OFF ... The measured battery temperature is not taken into account
 - required ...
 - Charging only starts when a temperature sensor is connected
- Error overtemperature ON/OFF:
 - ON ... Error message in the event of battery overtemperature
 - Charging process stops and can only be continued once the battery has cooled down and been reconnected
 - OFF ... No error message in the event of battery overtemperature
- Warning overtemperature ON/OFF:
 - ON ... Warning in the event of battery overtemperature
 - OFF ... No battery overtemperature warning

Equalising charge:

- OFF:
 - There is no equalising charge.
- Delay:
 - If the battery remains connected to the charger for the duration of the equalising charge delay ("equalize charge delay"), then a special type of charging takes place. This prevents acid stratification.
- Weekday:
 - Specify the weekday on which the equalising charge is to take place.

Delay:

charge start delay:

Delay time (minutes) of actual start of charging relative to the moment when charge start was initiated

charge end delay:

Delay time (minutes) before charge end is signalled (e.g. green indicator) relative to the moment when charging actually stopped

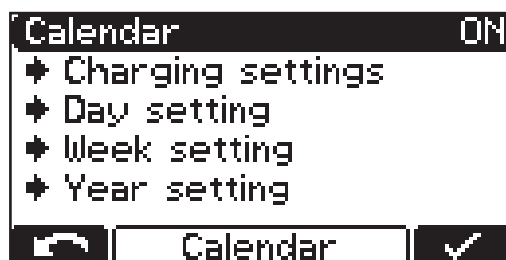
at mains failure restart charging:

If this option is chosen, the charging process is restarted automatically as soon as the mains supply becomes available again after a disruption to the electrical mains supply.

Calendar:

The calendar function allows charging to be started automatically according to the following criteria:

- Time window in which charging may not be started if a battery is connected
- Time window in which charging is to be started using a defined characteristic 1 if a battery is connected
- Time window in which charging is to be started using a defined characteristic 2 if a battery is connected



1 To activate the calendar function, select the "ON" setting and confirm



The first menu item "Charging settings" allows three characteristics to be defined:

- Type of battery for every characteristic: e.g. Pb-Wet
- Curve settings when selecting the relevant characteristic

Additional settings can be found under the "Calendar" function:

Day Setting 1-5:



The day settings allow up to five different charging start time profiles to be defined with the following settings:



- Symbol for characteristic 1:
Time window in which charging is to be started using characteristic 1 (e.g. 00:00-06:00)
- Stop:
Time window in which charging must not take place (e.g. 06:00-20:00)
- Symbol for characteristic 2:
Time window in which charging is to be started using characteristic 2 (e.g. 20:00-24:00)



NOTE! Ongoing charging operations are unaffected by the set time windows. If in the example above a battery is connected at 05:45, the charge end time is governed according to need and is not interrupted by the end time specified for the set time window (06:00 in the example).

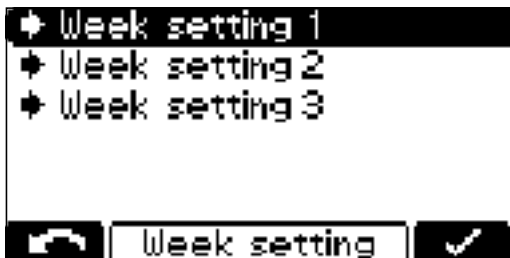
If the battery is connected during the "stop" time window, charging is started automatically during the next time window.

If charging is started manually during the "stop" time window, charging will always take place using characteristic 1.



Additional settings:

- Change the allocated characteristic: characteristics symbol
- Remove the selected characteristic: "remove"



Week Setting:

- Three different week settings can be defined.

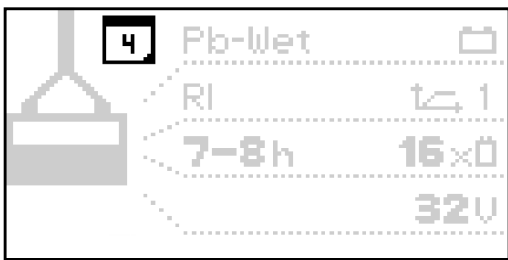


A previously created day setting can be assigned to any day of the week.



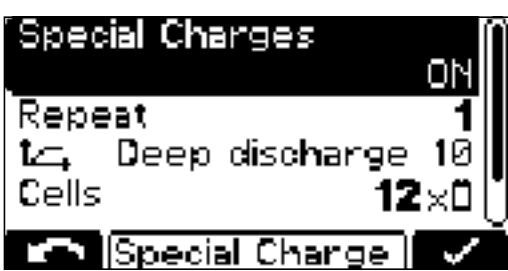
Year Setting:

- Multiple periods throughout the year may be defined, each containing a single week setting (e.g. 1/1 - 7/1).



When the calendar function is active, a calendar symbol appears with the current day (shown here with the number "4").

Special Charges:

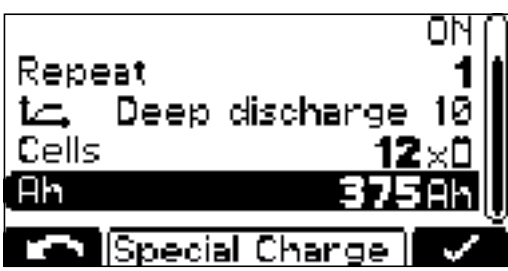


Selecting "Special Charges" allows one or more of the alternative charging types to be performed temporarily:

- ON: Function activated
- OFF: Function deactivated

The "repeat" setting defines how often the alternative charging mode should be performed until the device reverts to the original charging parameters again:

- Setting range: 1 to 99 repetitions



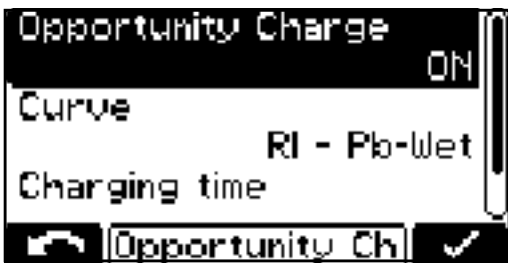
The following settings are also possible:

- Characteristic: e.g. "Deep discharge 10"
- Number of battery cells: "Cells" - e.g. 12x
- Battery capacity in Ah: e.g. 375 Ah

Disable Start Button:

- ON: The charging process cannot be started using the "Stop/Start" key; one reason for this is to prevent unauthorised intervention.
- OFF: The charging process can be started using the "Stop/Start" key.

Special function "Opportunity Charge":



To extend the usage interval of a battery, it is possible to re-charge it at a time when it will not be needed, e.g. during scheduled plant shutdowns.

- ON: Function activated
- OFF: Function deactivated



The following curve settings are available:

- Curve - e.g. RI - Pb-Wet
- Charging time - e.g. 5-6 h

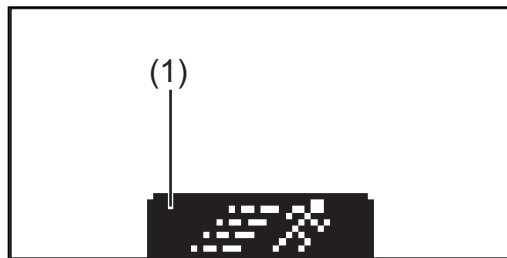
When opportunity charging is "ON" and a battery is connected, the following appears:



- Figure on left: display when RI characteristic is selected
- Figure on right: display for all other characteristics

To start opportunity charging:

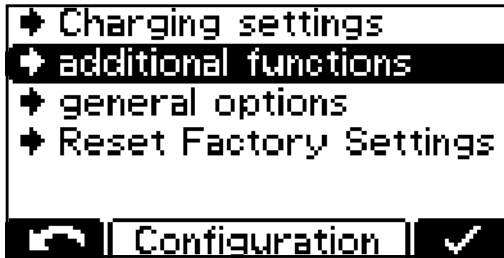
- Use the "Up" key to select the runner symbol (1)



- Figure on left: "Runner symbol" (1)
- Figure on right: display when opportunity charging starts

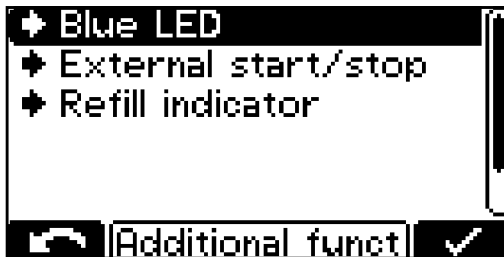
Additional functions

The following contains a detailed description of the "additional functions" menu item in configuration mode. Navigation is performed as described in the "Configuration mode" section.



1 Select the "additional functions" menu item

A list appears with the following selection options:



The individual selection options are explained in greater detail below:

Setting the "Blue LED" indicator:

Time (minutes) that must be allowed to pass before the blue "battery cooled down" indicator should come on to indicate that a battery has cooled down sufficiently. The time from the end of charging is used as the setting.

In conjunction with the "Temperature-controlled charging" option, a temperature value can be set here. The blue "battery cooled down" indicator will light up to signal a sufficiently-cooled battery once the temperature drops below this value.

External start/stop:



The following settings are available when external start/stop is selected:

- Start:
 - normal ON:
 - Charging starts when an external switch is closed and a battery is detected
 - Or when the charging plug is connected by closing the auxiliary contacts and a battery is detected
 - normal OFF:
 - Charging starts when a battery is connected

- Stop:
 - normal ON:
 - Charging is interrupted when an external switch is opened
 - Or when the charging plug is disconnected by opening the auxiliary contacts
 - normal OFF:
 - Opening of an external switch or the auxiliary contacts is ignored
- Button:
 - The function of the "Stop/Start" key can be simulated using an external button

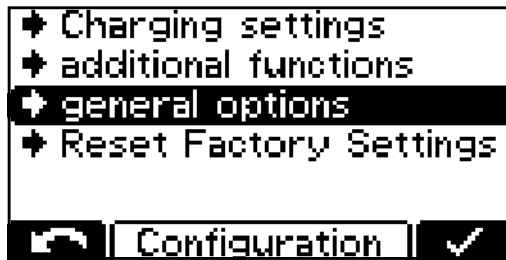
Refill Indicator:

The refill indicator is a message that appears as soon as the battery needs topping up with distilled water. The time at which refilling is deemed necessary can be defined as follows:

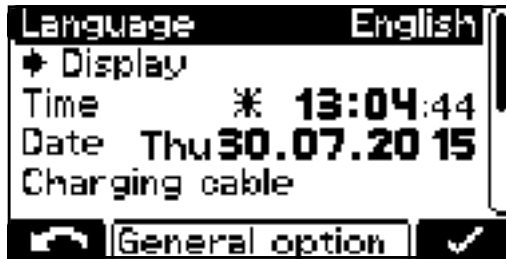
- Every nth week and weekday
 - e.g. top up with water every fortnight on a Friday
- If set to "off", the refilling request does not have to be confirmed

General options

A detailed explanation of the "general options" menu item in configuration mode can be found below. Navigation is performed as described in the "Configuration mode" section.



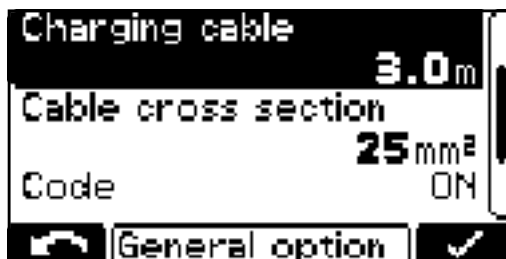
1 Select the "general options" menu item



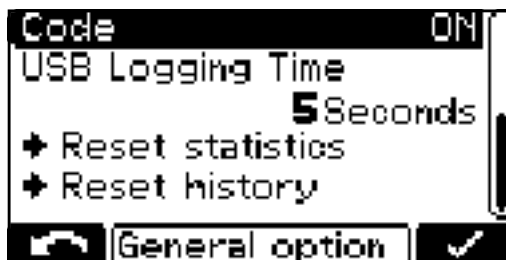
A list appears with the following selection options:

- Language
- Display settings
 - Contrast
 - LED brightness
 - Show Ah at charge end ON/OFF

- Time and Date
 - daylight saving time / normal time
 - Predefined time zones
 - User-defined time zones



- Basic length of charging cable in m (Charging Cable)
- Cable cross section (mm²)
- Code entry required / not required to access configuration mode (Code ON / OFF)



- Time interval (s) for recording charging parameters on the USB stick (USB Logging Time)
- Reset statistics
- Reset history

For more detailed information on the statistics and history, please refer to the "Statistics mode" and "History mode" sections.

Reset settings

The menu item below "General options" offers two alternative ways of resetting all the settings:



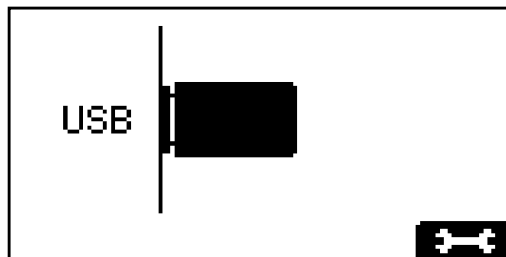
Reset Factory Settings:

- Resets to factory settings

Reset Default Settings:

- Resets settings to the manufacturer's defaults

USB mode



In USB mode, the display shows whether or not a USB flash drive is connected.

The USB flash drive must conform to the following specifications:

- Formatting: FAT32
- 32 Gigabyte maximum
- Non multi-partitioned

The I-SPoT VIEWER software supports the visualisation and evaluation of data on the USB flash drive.

Only insert the USB flash drive when charging is not in progress or if the charging process has been interrupted.

If the charging process is only interrupted, not completed, it is only possible to read out data. A new update or configuration cannot be loaded.



- 1 Use the "Stop/Start" key to access the following settings.



- 2 Use the "Up/Down" keys to scroll between the settings.



- 3 Use the "Stop/Start" key to confirm the desired setting.



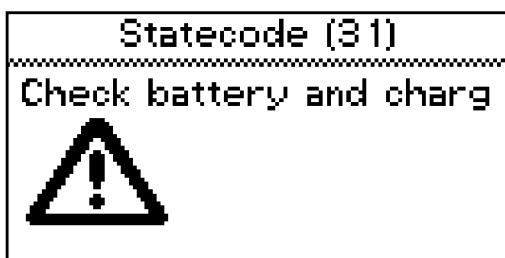
- **Safely remove**
Safely remove the USB flash drive as soon as the desired action has been completed.

- **Update**
A list of the suitable update files stored on the USB flash drive opens. Select and confirm the desired file in the same way as scrolling through the settings. Do not change the automatically assigned file names of the update file!
- **Download**
The data relating to the logged charging parameters stored in the device's datalogger is saved to the USB flash drive for the I-SPoT VIEWER. Additionally, events - such as the device settings and user characteristics (configuration) - are saved.
The following time ranges can be selected for the datalogger:
 - 1 month
 - 3 months
 - All
 - Since the last save
- **Download optional**
The following options are available:
 - I-SPoT VIEWER
The logged data is saved in the same way as for the "Download" function, but saving only the I-SPoT VIEWER data.
 - Save datalogger
The logged data is saved in the same way as for the "Download" function, but is saved not in the I-SPoT VIEWER format, but as ".csv" files
(Automatic folder structure for the ".csv" files: *
Fronius\<<device serial number>\Charges\<<yyyymmdd>\<hhmmss.csv>
 - Save events
Events are saved to the USB flash drive.
 - Save configuration
The device settings are saved to the USB flash drive.



- **Load configuration**
Loads onto the device one of the suitable device configurations stored on the USB flash drive, provided the configuration files are present.
 - **Load dealer text**
A text file can be loaded from the USB flash drive that is displayed as soon as the device enters an error state. The text file can, for example, contain the contact details of the dealer. The file must be saved on the USB flash drive as a ".txt" file in "unicode" format. The file name must be "dealer.txt". The number of characters is restricted to 99.
- * If a USB flash drive is connected while charging is in progress, the ".csv" files are saved directly to the USB flash drive. The folder structure here is also created automatically and differs due to the presence of the "Datalog" folder instead of the "Charges" folder.

Status codes



If a fault occurs during operation, specific status codes may be displayed. Faults can result from the following:

- Battery is connected with reverse polarity
- The voltage of the connected battery is unsuitable
- The device has overheated
- There is a software or hardware fault

If an error message appears on the display and if you cannot resolve the error yourself:

- 1 Note the displayed status code: e.g. "Statecode (31)"
- 2 Note the configuration of the device
- 3 Contact After-Sales Service
Freely-defined text, which could for example include the contact details of the dealer, can be displayed if the device is in an error state. More information can be found in the "USB mode" section.

Status codes caused by external factors

Number	Cause
(11)	Mains overvoltage or undervoltage
(13)	External temperature sensor faulty
(14)	Electrolyte circulation faulty (pressure switch not switching)

Status codes in the event of a battery fault

Number	Cause
(22)	Battery undervoltage
(23)	Battery overvoltage
(24)	Battery too hot (with external temperature sensor only)
(25)	Battery too cold (with external temperature sensor only)
(26)	Cell fault detected
(29)	Battery is connected with reverse polarity

Status codes in the event of a charging error

Number	Cause
(31)	Timeout in I1 phase
(32)	Timeout in U1 phase
(34)	Ah limit exceed
(35)	Timeout in I2 phase
(36)	Target voltage in I2 phase not reached (with format characteristic only)
(37)	Problem with RI charge
(38)	Set charging time cannot be reached

Status codes in the event of a fault in the primary circuit

Number	Cause
(500)	Primary temperature sensor faulty
(503)	Primary overtemperature
(504)	Ventilator current outside the tolerance
(505)	Intermediate circuit overvoltage/undervoltage
(507)	Primary supply voltage outside the tolerance
(508)	Power failure
(510)	Primary EEPROM faulty
(527)	Phase shifter overcurrent
(530)	Communication error
(532)	Microcontroller error (e.g. Division by 0)
(533)	Reference voltage outside the tolerance
(534)	Start-up error
(535)	PFC overcurrent
(536)	Phase shifter or PFC faulty

Status codes in the event of a fault in the secondary circuit

Number	Cause
(520)	Secondary temperature sensor faulty
(521)	Secondary overtemperature
(522)	Fuse fault
(524)	Reference voltage outside the tolerance
(525)	Current offset compensation error
(526)	Current offset outside the tolerance
(529)	Secondary communication not working
(531)	EEPROM faulty / access not working
(532)	Microcontroller error (e.g. Division by 0)
(537)	Voltage measurement faulty
(570)	Secondary relay cannot be switched
(571)	ADC/SPI error

Status codes in the event of a fault in the controller

Number	Cause
(540)	CFM missing/faulty
(541)	No secondary communication
(542)	Secondary initialisation failed
(543)	Program/memory fault in characteristic control
(544)	Program/memory fault in characteristic control
(545)	Primary initialisation failed
(546)	Update failed
(547)	Load/save settings failed
(548)	Load/save characteristic settings failed
(549)	Charging process could not be continued after a power outage, due to a fault in the backup battery
(550)	Time not set

Status codes in the event of a fault in the controller

Number	Cause
(551)	Hardware change detected
(552)	CFM invalid

Options

Safety

In order to connect optional components it may be necessary to open the housing. The following warning notices must be obeyed:



WARNING! An electric shock can be fatal. The housing must never be opened by anyone other than a service technician trained by the manufacturer. The device must be disconnected from the mains before starting any work with the housing open. A suitable measuring instrument must be used to ensure that electrically charged components (e.g. capacitors) are fully discharged. Use an easily legible and understandable warning sign to ensure that the charger is not reconnected to the mains supply before all the work has been completed.



WARNING! Work that is carried out improperly can cause serious injury or damage. All work involved with connecting optional components must only be carried out by qualified specialist technicians. If there are installation instructions or a leaflet for the optional component concerned, then all warning notices and instructions therein must be obeyed.

In the case of all optional components with electrical connections, once the connection work is complete, a safety inspection must be carried out in accordance with relevant national and international standards and directives. Further details on safety inspections can be obtained from your authorised service centre. They will provide you on request with any documents you may require.

Electrolyte circulation 3 kW



NOTE! Risk of damage to air pump from the ingress of electrolyte from the battery or from operation without any back pressure. Always set up the charger at least 0.5 m (1 ft. 7.69 in.) above the battery to be charged. Always use an undamaged connecting hose provided specifically for this purpose to connect the charger's compressed air outlet to the battery.



NOTE! Failure to observe the permitted mains voltage tolerance can cause malfunctions and damage. For the electrolyte circulation option, a restricted mains voltage tolerance vis-à-vis the charger of +/-10 V applies.

The electrolyte circulation option introduces air into the battery through capillary tubes that are provided specifically for this purpose. This allows intensive mixing of the electrolyte to take place. The benefit is reduced heating of the battery, and consequently longer battery-life, plus reduced water loss during charging.

If a pump fault or leaks in the connection with the battery result in a fault being detected, then the status code "Statecode 14" will appear on the display. One way in which this fault can be indicated is by using an external indicator lamp to show a common error.


Weight of the electrolyte circulation set: Air-Puls + air hose kit

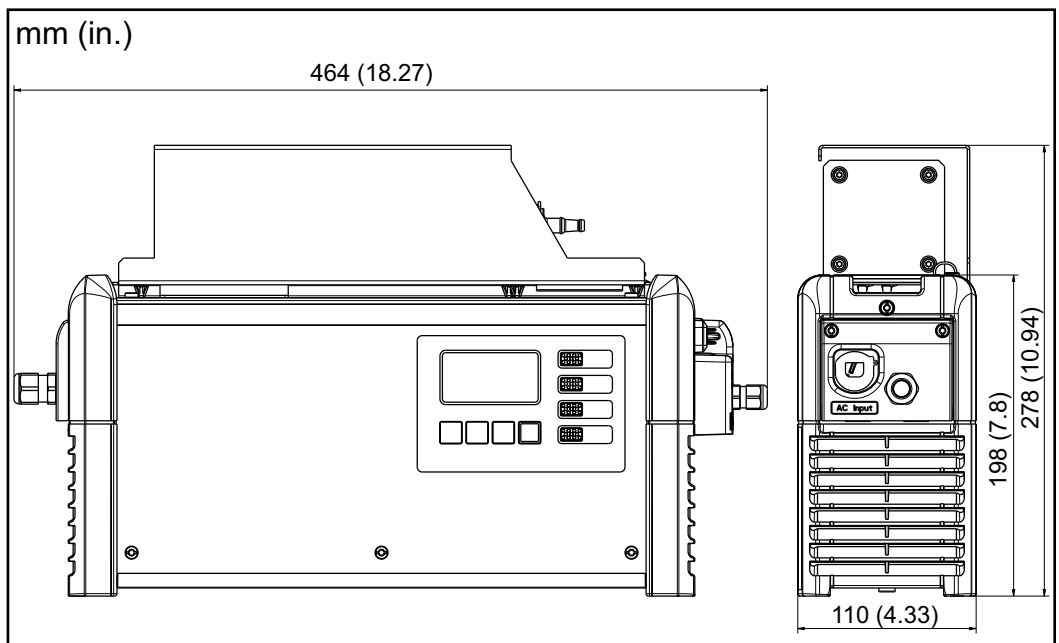
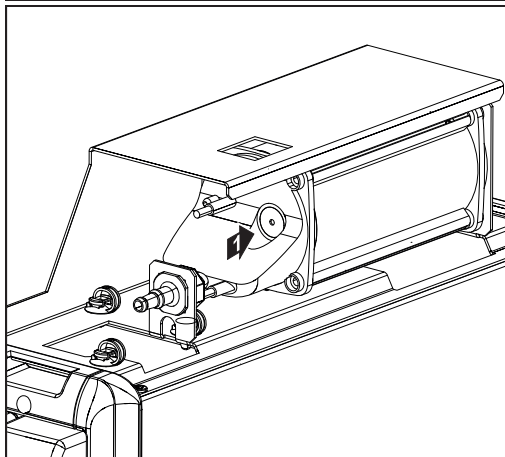
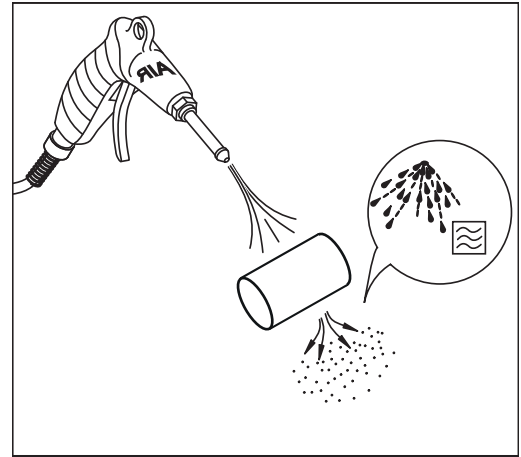
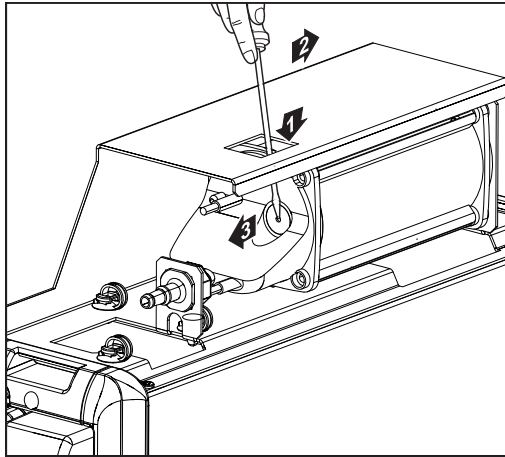
3 kW

2.5 kg (5.51 lb)

Electrolyte circulation air filter insert

The air filter insert for the integrated air pump should be cleaned once a year. In dusty environments, the cleaning interval should be shortened accordingly. The air filter insert must be removed for cleaning. Remove the air filter by levering it out with a slotted screwdriver; then refit it as follows.

 **NOTE!** To avoid damage, only use the air filter with the compatible battery charging systems from the manufacturer.



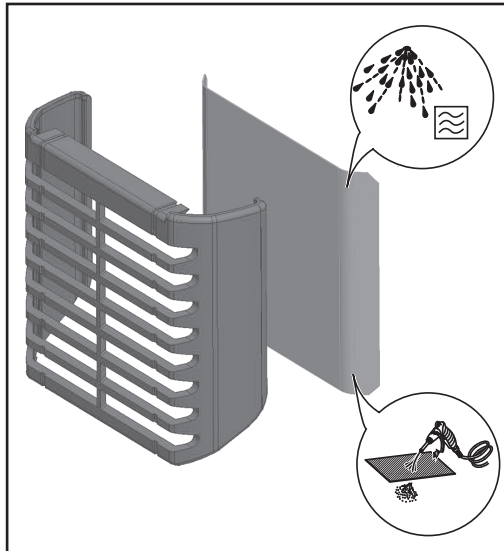
External start/stop	The external start/stop option prevents sparking if the charging plug is disconnected during charging. Dedicated auxiliary contacts inside the plug detect the removal of a shorting jumper in the counterpart before the main contacts have even become separated. This triggers an immediate stop to charging. As a result there is no wear to the main contacts, and this arrangement safeguards more effectively against an oxyhydrogen explosion.
Temperature-controlled charging	The temperature-controlled charging option always adjusts the charging voltage according to the current temperature of the battery. This results in considerably longer battery-life, especially where batteries are used in cold stores.
LED strip	The LED strip acts as a status indicator and lights up in the same colours as the display elements on the control panel. An LED strip including a diffuser is installed in the gap between the front wall and upper part of the housing.

Air filter

In dusty environments, the air filter prevents the inside of device from becoming dirty. This avoids a possible reduction in power and other problems.



NOTE! To avoid damage, only use the air filter with the compatible battery charging systems from the manufacturer.



- Weekly

Weight of the air filter:

2-3 kW

0.05 kg (1 lb)

Wall and floor bracket

The robust wall and floor bracket with integrated cable holder ensures safe installation at the place of use. Detailed information and diagrams can be found in under "Wall and floor bracket" in the "General information" chapter.

"Mobile" kit

A carrying strap makes it easier to move the device.

Option box

Using the option box, information on the state of charge of the connected battery can be obtained via an external circuit. Error messages and additional features such as the Aquamatic control function, external air pump and refill indicator can also be displayed.

Technical data

Selectiva 2 kW

Mains voltage ¹⁾	~ 230 V, ±15%
Mains frequency	50/60 Hz
Mains fuse protection	max. 16 A
Minimum mains lead cross section	1.5 mm ² (0.002325 in ²)
Protection class	I (with ground conductor)
Max. permitted mains impedance Z_{max} on PCC ²⁾	none
Standby usage	5 W
EMC device class	B
Dimensions l x w x h	341 x 110 x 198 mm (13.43 x 4.33 x 7.8 in.)
Pollution level	3
Protection class ³⁾	IP21
Overvoltage category	III
Operating temperature ⁴⁾	-20 °C to +40 °C (-4 °F to 104 °F)
Storage temperature	-25 °C to +80 °C (-13 °F to 176 °F)
Relative humidity	maximum 85%
Maximum altitude above sea level	2000 m (6561 ft.)
Marks of conformity	according to rating plate
Product standard	EN62477-1

- 1) The device is approved for operation on neutral-earthed networks.
- 2) Interface to a 230/400 V, 50 Hz public grid
- 3) For indoor use only, do not expose to rain or snow
- 4) A high ambient temperature may result in power degradation (derating)

Device-specific data	Max. AC current	Max. AC power	Nominal voltage	Max. charging current	Weight ⁵⁾
Selectiva 2040 2kW	8 A	1550 W	24 V	40 A	5.8 kg (12.79 lb)
Selectiva 2050 2kW	9.9 A	1930 W	24 V	50 A	6.1 kg (13.45 lb)
Selectiva 2060 2kW	12.1 A	2340 W	24 V	60 A	6.1 kg (13.45 lb)
Selectiva 2070 2kW	12.2 A	2370 W	24 V	70 A	6.1 kg (13.45 lb)
Selectiva 4020 2kW	8 A	1550 W	48 V	20 A	5.8 kg (12.79 lb)
Selectiva 4035 2kW	11.9 A	2310 W	48 V	35 A	5.8 kg (12.79 lb)

- 5) With standard mains and charging leads

Selectiva 3 kW

Mains voltage ¹⁾	~ 230 V, ±15%
Mains frequency	50/60 Hz
Mains fuse protection	max. 16 A
Minimum mains lead cross section	1.5 mm ² (0.002325 in ²)
Protection class	I (with ground conductor)
Max. permitted mains impedance Z _{max} on PCC ²⁾	none
Standby usage	5 W
EMC device class	A
Dimensions l x w x h	417 x 110 x 198 mm (16.42 x 4.33 x 7.8 in.)
Pollution level	3
Protection class ³⁾	IP21
Overvoltage category	III
Operating temperature ⁴⁾	-20 °C to +40 °C (-4 °F to 104 °F)
Storage temperature	-25 °C to +80 °C (-13 °F to 176 °F)
Relative humidity	maximum 85%
Maximum altitude above sea level	2000 m (6561 ft.)
Marks of conformity	according to rating plate
Product standard	EN62477-1

- 1) The device is approved for operation on neutral-earthed networks.
- 2) Interface to a 230/400 V, 50 Hz public grid
- 3) For indoor use only, do not expose to rain or snow
- 4) A high ambient temperature may result in power degradation (derating)

Device-specific data	Max. AC current	Max. AC power	Nominal voltage	Max. charging current	Weight ⁵⁾
Selectiva 2080 3kW	15.2 A	3020 W	24 V	80 A	8.2 kg (18.08 lb)
Selectiva 2100 3kW	15.3 A	3290 W	24 V	100 A	8.2 kg (18.08 lb)
Selectiva 2120 3kW	15.6 A	3320 W	24 V	120 A	8.7 kg (19.18 lb)
Selectiva 4045 3kW	15.1 A	3240 W	48 V	45 A	7.4 kg (16.31 lb)
Selectiva 4060 3kW	15.3 A	3270 W	48 V	60 A	7.4 kg (16.31 lb)

- 5) With standard mains and charging leads

Fronius Worldwide - www.fronius.com/addresses

Fronius International GmbH

Froniusplatz 1

A-4600 Wels

E-Mail: perfect.charging@fronius.com

<http://www.fronius.com>

Under <http://www.fronius.com/addresses> you will find all addresses of our sales branches and partner firms!