



Selectiva 4.0 2 - 3 kW

EN

Operating instructions

Battery charging system



42,0426,0357,EN 007-01072021

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Power categories

General

The kW information for the power categories relates to the housing design and is not directly related to the actual device output.

2 kW

Selectiva
2040/2050/2060/2070
4020/4035

3 kW

Selectiva
2080/2100/2120
4045/4060

Safety rules

General

The device has been manufactured in line with the state of the art and according to recognized safety standards. If used incorrectly or misused, however, it can cause:

- Serious or fatal injury to the operator or third parties
 - 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 kept in a legible state
 - Must not be damaged/marked
 - 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 your device. Before switching on the device, rectify any faults that could compromise safety.

This is for your personal safety!

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 device types in terms of:

- Connection restrictions, requirements regarding permitted mains impedance *)
- Requirements with regard to the minimum short-circuit power requirement *)

*) at the interface with the public grid
see "Technical data"

In this case, the operating company or the person using the device should check whether the device may be connected, possibly by discussing the matter with the energy company where appropriate.

IMPORTANT! Ensure that the grid connection is earthed properly!

Dangers from mains current and charging current

Anyone working with battery 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 charging cable 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.

Danger due to acid, gases and vapours

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

Only use the charger in well-ventilated areas to prevent the accumulation of explosive gases. Battery rooms 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 the battery and charger during the charging procedure. Possible sources of ignition such as fire and naked flames must be kept away from the battery.

The battery connection (e.g. charging terminals) must not be disconnected for any reason during charging.

Do not inhale any of the gases and vapours released under any circumstances - 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 or 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).
- Carry out a visual inspection at least once a week or as often as specified by the battery manufacturer to ensure that the acid (electrolyte) level in the battery is at the max. mark.
- If any of the following occur, 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.
 - overheating of the battery above 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.

Under no circumstances 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 with emission class A:

- Are only designed for use in an industrial setting.
- Can cause conducted and emitted interference in other areas.

Devices with emission class B:

- Satisfy the emissions criteria for residential and industrial areas. This also applies to residential areas in which power is supplied from the public low-voltage grid.

EMC device classification according to the rating plate or the technical data.

EMC measures	<p>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).</p> <p>If this is the case, then the operating company is obliged to take appropriate action to rectify the situation.</p>
Data protection	<p>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.</p>
Maintenance	<p>Before switching on, always check the mains plug and cable as well as charger leads and charging terminals for any signs of damage.</p> <p>If the surface of the device housing is dirty, clean with a soft cloth and solvent-free cleaning agent only.</p>
Maintenance and repair	<p>Maintenance and repair work must only be carried out by authorised personnel. Use only original spare 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.</p> <hr/> <p>Modifications, installations or conversions are only permitted with the approval of the manufacturer.</p>
Obligations of the operating company	<p>The operating company must only allow persons to work with the device who:</p> <ul style="list-style-type: none"> - 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 "Safety rules" section and have confirmed as much with their signatures - Are trained to produce the required results. <hr/> <p>Checks must be carried out at regular intervals to ensure that operators are working in a safety-conscious manner.</p>
Safety inspection	<p>The manufacturer recommends that a safety inspection of the device is performed at least once every 12 months.</p> <hr/> <p>The safety inspection may only be performed by an appropriately qualified electrician</p> <ul style="list-style-type: none"> - After any changes have been made - After any additional parts are installed, or after any conversions - After repair, care and maintenance are carried out - At least every twelve months <hr/> <p>For safety inspections, follow the appropriate national and international standards and directives.</p> <hr/> <p>Further details on safety inspections can be obtained from your service centre. They will provide you on request with any documents you may require.</p>

Markings on the device

Devices with the CE marking satisfy the essential requirements of the applicable guidelines.

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

Disposal

Do not dispose of the product in domestic waste. Dispose of it according to the disposal requirements for waste electrical and electronic equipment valid at the installation site.

Copyright

Copyright of these Operating Instructions remains with the manufacturer.

Text and illustrations were accurate at the time of printing. Fronius reserves 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 Operating Instructions, we will be most grateful for your comments.

General information

Explanation of safety notices

DANGER!

Indicates **immediate danger**.

- ▶ If not avoided, death or serious injury will result.

WARNING!

Indicates a **potentially hazardous situation**.

- ▶ If not avoided, death or serious injury may result.

CAUTION!

Indicates a **situation where damage or injury could occur**.

- ▶ If not avoided, minor injury and/or damage to property may result.

NOTE!

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

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

The charger is designed to charge the batteries listed below. Any use above and beyond this purpose is deemed improper. The manufacturer is not liable for any damage resulting from such use. Proper use also includes:

- Following all the instructions contained in the Operating Instructions,
- Regularly checking the mains cable and charging leads.

WARNING!

Danger from charging dry batteries (primary cells) and non-rechargeable batteries.

This can result in serious injury and damage to property.

- ▶ Only charge the battery types listed below.



WARNING!

Danger due to unsuitable batteries being connected to the charger.

Escaping gas, fire or explosion may result in serious injury and damage to property.

- ▶ 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 charger is intended for charging lead-acid batteries and NiCd batteries. Set the charger to the type of battery to be charged:

- Pb-WET batteries (PzS, GiS, ...):
Venting, closed lead-acid wet batteries with liquid electrolyte.
- Pb-GEL batteries (PzV, GiV, ...):
Valve-regulated, sealed lead-acid batteries (VRLA) with fixed electrolyte (gel or non-woven fabric).
- NiCd batteries:
Closed or sealed NiCd batteries with liquid electrolyte.
- Pb-CSM-WET batteries (copper strained metal):
Closed lead-acid CSM batteries with liquid electrolyte.
- Lead crystal batteries:
EVFJ/CNFJ-type lead crystal batteries.

Proper handling of the device is essential for it to function correctly. Never pull on the cable when handling the device.

Grid connection



WARNING!

Danger from electric current.

This can result in serious injury or death.

- ▶ Before starting work, switch off all the devices and components involved and disconnect them from the grid.
- ▶ Secure all the devices and components involved to prevent unintentional restarting.



WARNING!

Danger due to incorrect operation and incorrectly performed work.

This can result in serious injury and damage to property.

- ▶ All the work and functions described in this document must only be carried out by trained and qualified personnel.
- ▶ Read and understand this document.
- ▶ Read and understand all the Operating Instructions for the system components, especially the safety rules.



WARNING!

Danger due to faulty or insufficient power supply.

This can result in serious injury and damage to property.

- ▶ The power supply requirements detailed in "Technical data" must be met.

Charging lead

WARNING!

Danger due to trailing charging leads.

This may result in serious injury and damage to property. 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!

Danger due to the charging plug being pulled out during the charging process.

This may result in serious injury and damage to property. The sparks caused by this can ignite the charging gases that build up during the charging process, causing a fire or an explosion.

- ▶ Once the charging process is complete, wind up the charging leads, or if available, place them on the cable holder.

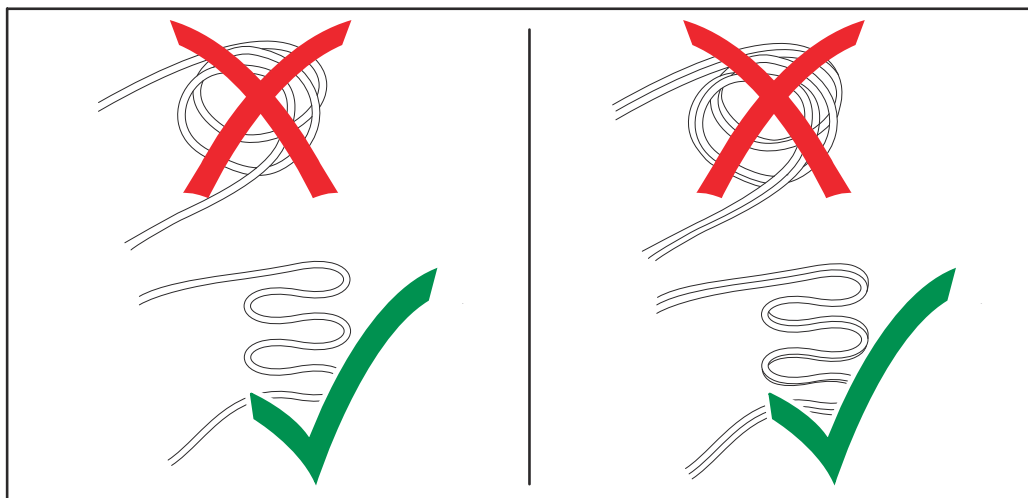
Correct installation of the mains/charging cables

CAUTION!

Danger due to overheating caused by laying the mains/charging cables incorrectly.

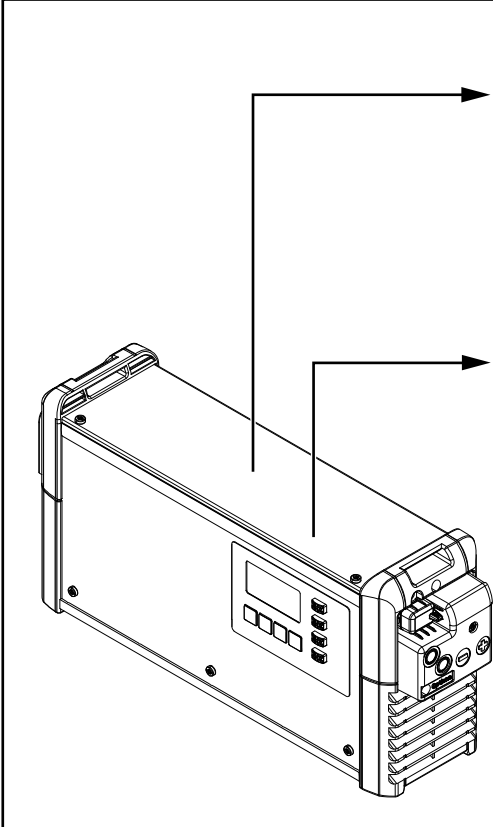
Risk of damage to the components.

- ▶ Lay mains/charging cable without loops.
- ▶ Do not cover mains/charging cable.
- ▶ Charging cables longer than 5 m (16 ft. 4.85 in.) Lay cables individually (no bundling).
- ▶ Charging cables of more than 5 m (16 ft. 4.85 in.) Cables may have an increased surface temperature (caution: hot surfaces).
- ▶ In the following cases, ensure in particular that the surface temperature of the charging cables does not exceed 80 °C (176 °F):
 - Ambient temperature is 30 °C (86 °F) or more
 - Cross-section of the charging cable is 95 mm² or more
 - Length of the charging cable is 5 m (16 ft. 4.85 in.) or more
- ▶ The mains/charging cable may only be replaced by a qualified electrician.



Warning notices on the device

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



WARNING - WARNING - ATTENTION
ADVERTENCIA - AVVISO

Ladevorgang immer stoppen bevor das Ladekabel abgezogen wird!
 Explosive Gase, Flammen und Funken vermeiden.
 Während des Ladens für ausreichend Frischluft-Zufuhr sorgen!

Always stop charging before you disconnect the charging cable!
 Explosive gases. Prevent flames and sparks.
 Provide adequate ventilation during charge!







Toujours arrêter la charge avant de déconnecter le câble de charge!
 Gaz explosifs. Éviter les flammes et les étincelles.
 Prévoir une ventilation adaptée pendant la charge!

¡Detener siempre la carga antes de desconectar el cable de carga!
 Gases explosivos. Evitar llamas y chipas.
 ¡Mantener una ventilación adecuada durante la carga!

Interrompere sempre la carica prima di scollegare il cavo di carica!
 Gas esplosivi. Evitare fiamme libere e scintille.
 Predisporre una ventilazione adeguata durante la carica!

42,0409,0419

www.fronius.com		Selectiva x.0 xxxx xkW	
		Part No.:	4,010,xxx
		Ser. No.:	xxxxxxx
	U _{AC} nom.	1~ NPE 230V 50/60Hz	
	I _{AC} max.	xxA	
	P _{AC} max.	xxxxW	
	U _{DC} nom.	xxV	
	I _{DC} max.	xxA	
IP21	Protective class I		
Fronius International GmbH Froniusstraße 1 4643 Pettenbach Austria			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 fully read the Operating Instructions.

Warning notices inside the device

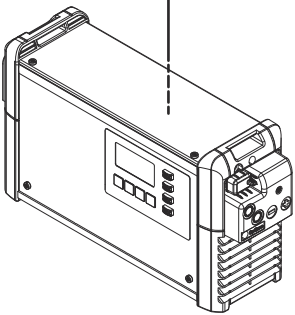
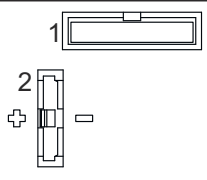

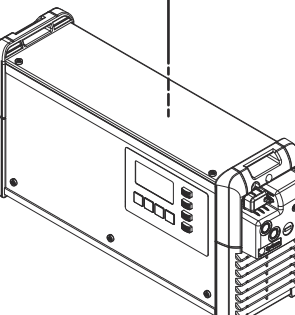
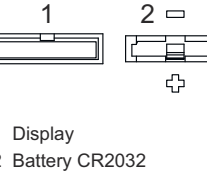

WARNING!

Danger from electric shocks.

This can result in serious injury or death.

- ▶ 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 device 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>1 Display 2 Battery CR2032</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>3 kW</p>	<p>XXXX</p> <p>U_{DC} nom. XXV Part No.: 4,010,xxx Ser. No.: xxxxxxxx</p>  <p>1 Display 2 Battery CR2032</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>

Setup regulations

WARNING!

Danger from machines falling or toppling over.

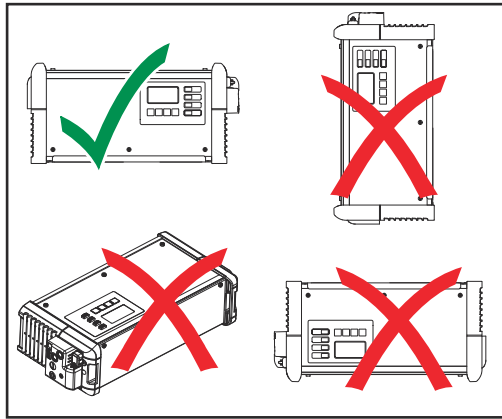
This can result in serious injury and damage to property.

- ▶ 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 fastenings are secure.

The device is tested to "Degree of protection IP21", 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

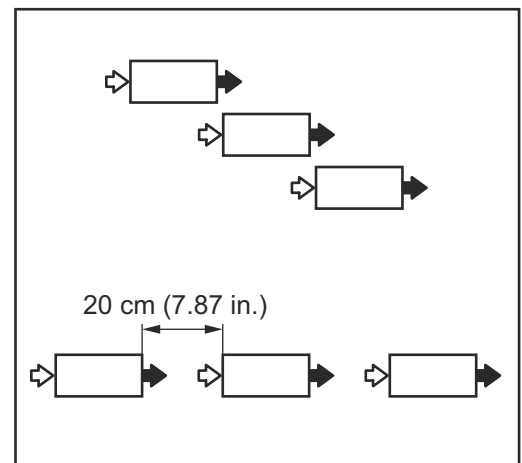
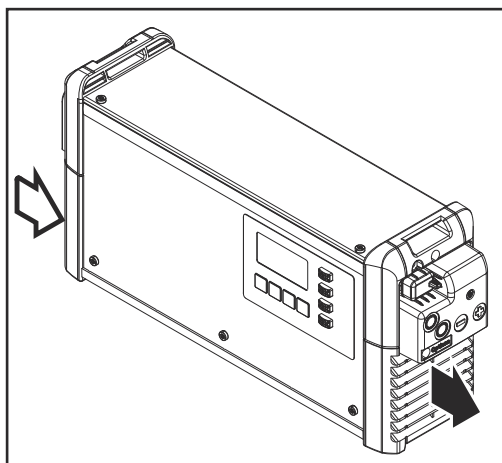
Cooling air is drawn in and flows out as indicated by the arrows in the following illustrations.

NOTE!

Danger due to partially or fully covered air inlets and outlets.

This can result in damage to property.

- 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!

Danger due to work that has been carried out incorrectly and falling devices.

This can result in serious injury and damage to property.

- ▶ 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 are 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 correct wall plugs and screws.

⚠ WARNING!

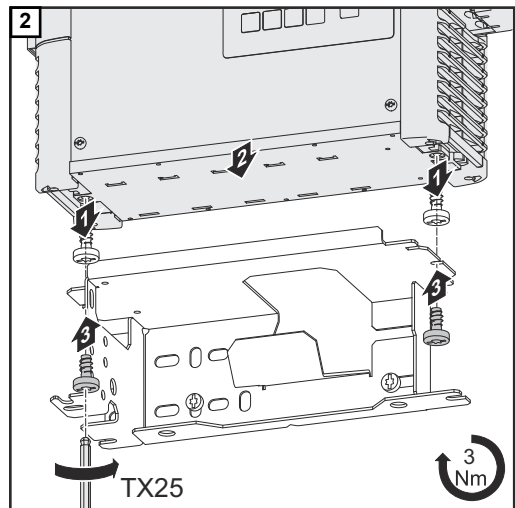
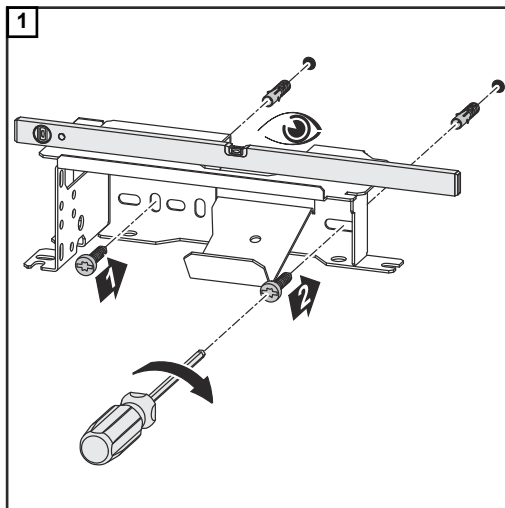
Danger due to objects falling or toppling over.

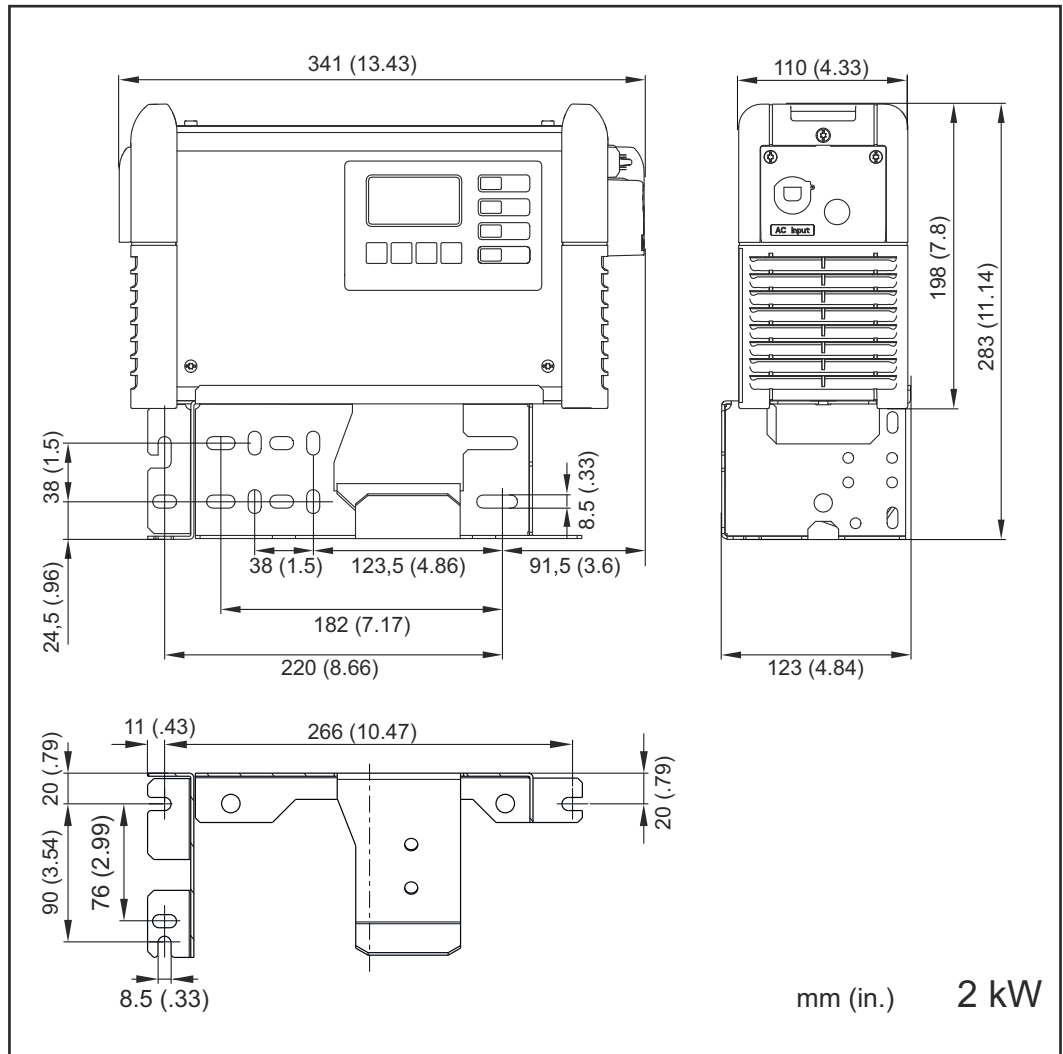
This can result in serious injury and damage to property.

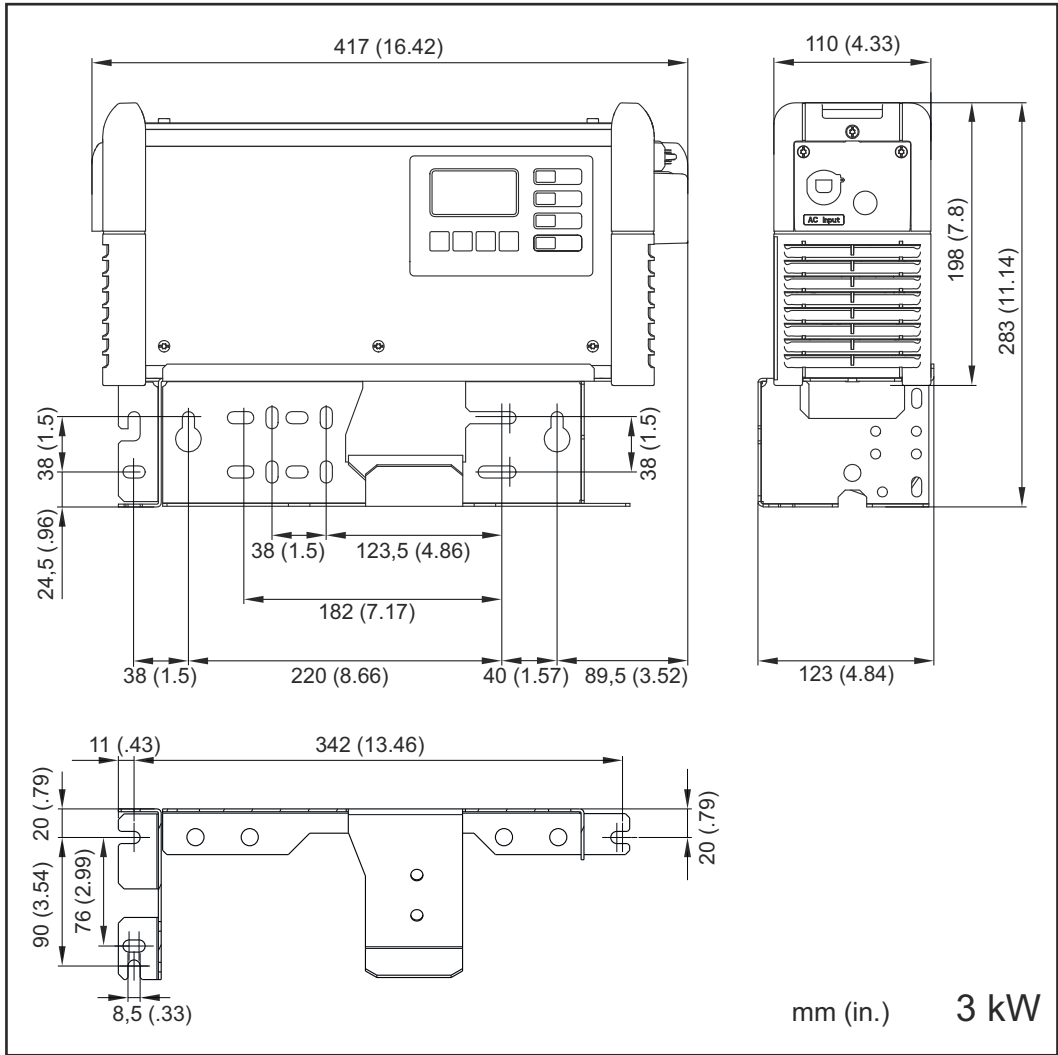
- ▶ Ensure that all screw connections are secure.
- ▶ Use only with the charger provided by the manufacturer.
- ▶ Ensure that the device is level when mounting.
- ▶ If the device is mounted on the wall, ensure the wall is capable of supporting the weight of the device.

Weight of wall bracket:

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

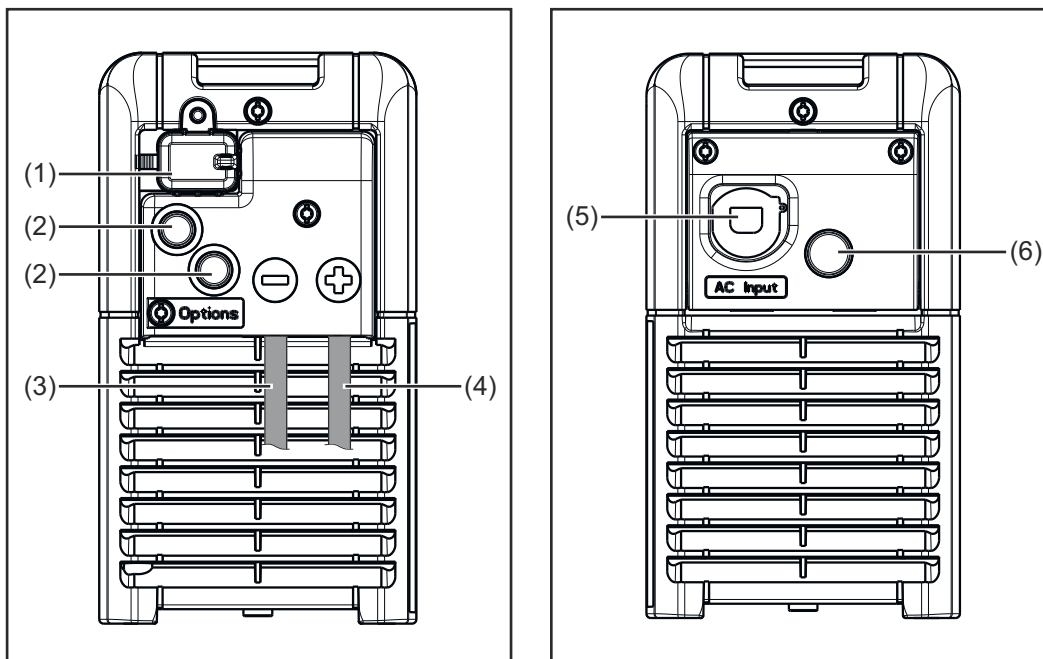






Control elements and connections

Controls and connections



No.	Function
-----	----------

(1)	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.
--	--

(2)	Position for options
-----	-----------------------------

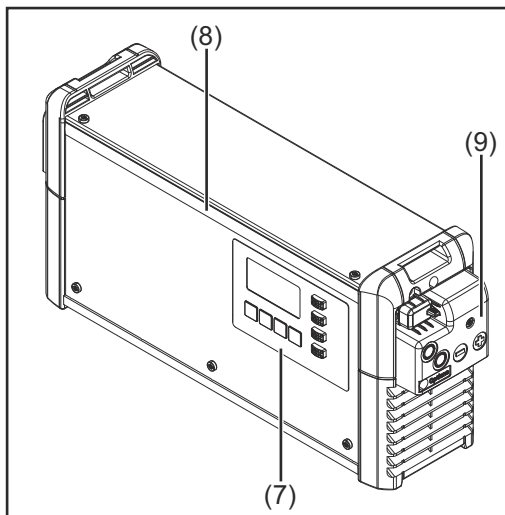
- | | |
|--|--|
| | - External start/stop option
- Temperature-controlled charging option |
|--|--|

(3)	(-) Charging lead
-----	--------------------------

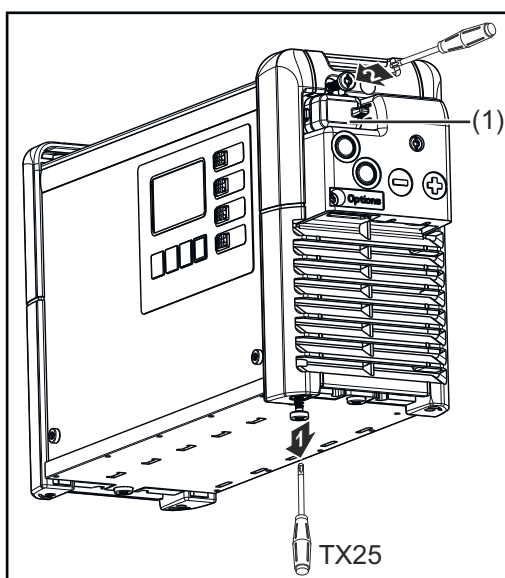
(4)	(+) Charging lead
-----	--------------------------

(5)	Mains cable
-----	--------------------

(6)	Position for electrolyte circulation option
-----	--



- | No. | Function |
|-----|--|
| (7) | Control panel |
| (8) | Optional LED strip
Lights up in different colours depending on the state of charge, as explained in the "Control panel" section |
| (9) | Cover for option plug and charging leads
The option plug and charging leads can only be accessed by removing the cover (9). The warning notices in the "Safety" section of the "Options" chapter must be obeyed. |










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

Pin assignment of the 2 kW option plug

Pin	Plug Code	Plug 14p	Plug Code	Pin
13	S 1	● ●	Dete	14
11	S 2	● ●	C2 G	12
9	C1 G	● ●	13V O	10
7	C1 L	● ●	C2 L	8
5	C1 H	● ●	C2 H	6
3		● ●		4
1	- St	● ●	+ St	2

14-pin option plug inside the housing

Pin	Plug Code	Function		Pin	Plug Code	Function	
13	S 1			14	Dete	Detect wire white	
11	S 2			12	C2 G	CAN 2GND wire brown	
9	C1 G	CAN 1GND wire brown		10	13 V O	13 V Power Supply wire white	
		Remote Control wire 4 Option Box wire brown CBG Easy GND	Remote Control wire 1 Option Box wire white CBG Easy VCC Status				
7	C1 L	CAN 1Low wire yellow		8	C2 L	CAN 2Low wire yellow	
		Remote Control wire 3 Option Box wire yellow CBG Easy Detect					
5	C1 H	CAN 1High wire green		6	C2 H	CAN 2High wire green	
		Remote Control wire 2 Option Box wire green					
3				4			
1	- St	Temperature Controlled Charging Extern Start / Stop		2	+ St	Temperature Controlled Charging Extern Start / Stop	








 Gateway/cloud

 Battery link

Pin assignment
of the 3 kW
option plug

Pin	Plug Code	Plug 14p	Plug Code	Pin
13	S 1	● ●	Dete	14
11	S 2	● ●	C2 G	12
9	C1 G	● ●	13V O	10
7	C1 L	● ●	C2 L	8
5	C1 H	● ●	C2 H	6
3		● ●		4
1	- St	● ●	+ St	2

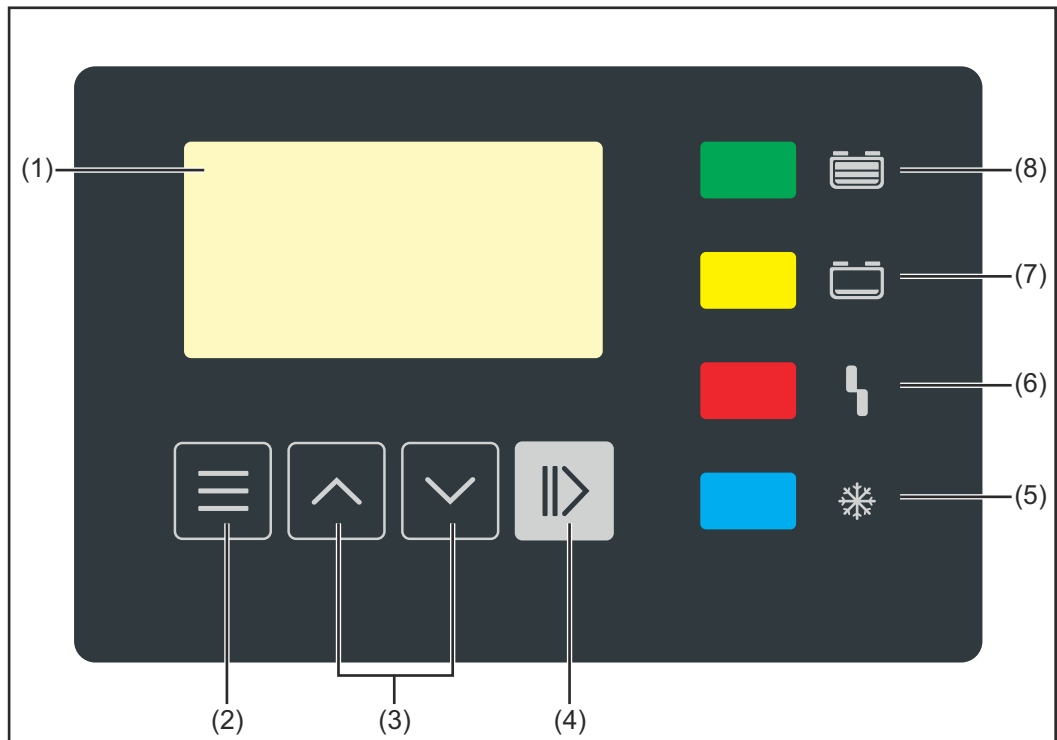
14-pin option plug inside the housing

Pin	Plug Code	Function		Pin	Plug Code	Function	
13	S 1	Status 1		14	Dete	Detect wire white	
11	S 2	Status 2		12	C2 G	CAN 2GND wire brown	
9	C1 G	CAN 1GND wire brown		10	13 V O	13 V Power Supply wire white	
		Remote Control wire 4 Option Box wire brown CBG Easy GND				Remote Control wire 1 Option Box wire white CBG Easy VCC Status Air Puls	
7	C1 L	CAN 1Low wire yellow		8	C2 L	CAN 2Low wire yellow	
		Remote Control wire 3 Option Box wire yellow CBG Easy Detect				Air Puls	
5	C1 H	CAN 1High wire green		6	C2 H	CAN 2High wire green	
		Remote Control wire 2 Option Box wire green					
3				4			
1	- St	Temperature Controlled Charging Extern Start / Stop		2	+ St	Temperature Controlled Charging Extern Start / Stop	

 Gateway/cloud

 Battery link

Control panel



No.	Function
-----	----------

- | | |
|-----|--|
| (1) | Display
Displays the current charging parameters.
Displays settings. |
| (2) | "Menu" key
Selects the desired menu.
Return to the higher-level menu. |
| (3) | "Up/Down" keys
Selects the desired menu item.
Sets the desired value. |
| (4) | "Pause/Start" key
For interrupting and resuming the charging process.
Confirms a menu item or setting. |
| (5) | "Battery cooled" indicator (blue)
Indicates a cooled battery that 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" chapter. |
| (6) | "Fault" indicator (red)
On steady: The charger outputs an error. The current conditions do not allow proper charging. While the red indicator is on, charging cannot take place (charging interrupted). The relevant status code appears on 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)**

Lit: 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

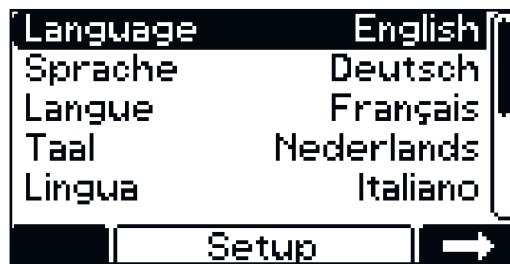
Starting for the first time

When the charger is first connected to the mains, the device is in SETUP mode.

The following basic settings must be changed or confirmed in this mode:

- Language (English, German, French, etc.)
- Date, time and time zone
- Length and cross-section of the charging lead
- Type of battery, characteristic, number of cells and charging time or battery capacity

1 Connect the charger mains plug to the electrical mains supply.



2 Use the "Up/Down" keys to select the desired menu language.

3 Confirm with the "Pause/Start" key.

English is set as the default language.



4 Use the "Up/Down" keys to select the time zone.

5 Confirm with the "Pause/Start" key.

UTC+1 Central European Time (Berlin) is set as the default time zone.



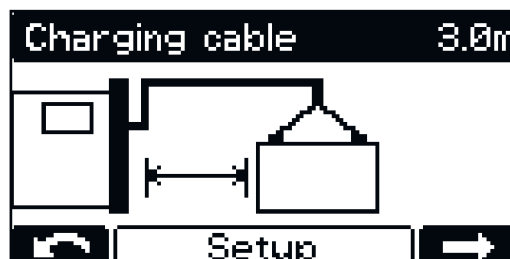
Adjust the following settings:

- Daylight saving time ON/OFF
- Hour format
- Time
- Date

6 Use the "Up/Down" keys to select the desired setting.

7 Use the "Pause/Start" key to confirm the setting.

Daylight saving time ON and the 24h format are used as the default settings.

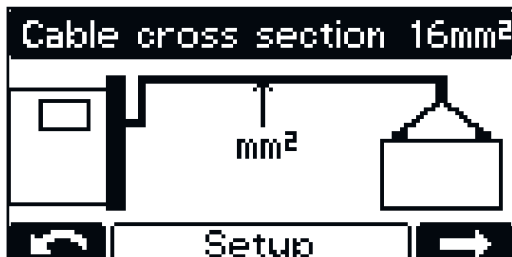


8 Use the "Up/Down" keys to set the length of the charging lead.

9 Confirm with the "Pause/Start" key.

The charger is configured with the correct charging lead length as per the order.

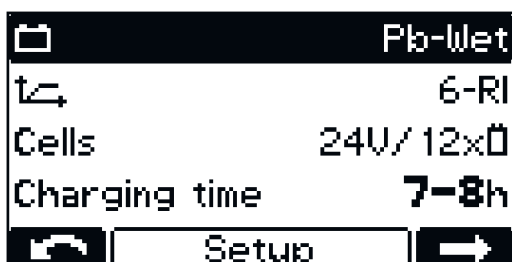
An incorrectly set charging lead length can negatively influence the charging process.



- 10 Use the "Up/Down" keys to set the cross-section of the charging lead.
- 11 Confirm with the "Pause/Start" key.

The charger is configured with the correct charging lead cross-section as per the order.

An incorrectly set charging lead cross-section can have a negative influence on the charging process.



- 12 If the displayed charging configuration is correct, confirm the charging configuration with the "Pause/Start" key.

The charger is preconfigured as specified in the order.

If the charger was ordered without any additional configuration, the following default settings are used:

- Type of battery: Pb-wet (for PzS, GiS)
- Characteristic: 6 - RI
- Maximum number of cells intended for the charger
- Charging time: 7 - 8 h

If the configuration does not coincide with the battery used, the parameters need to be adjusted accordingly.

More information on the charger parameters can be found under "Configuration mode" in the "Display" chapter.

Charging

WARNING!

Danger due to escaping battery acid or explosion if faulty batteries are charged.

This can result in serious injury and damage to property.

- ▶ Before charging, ensure that the battery to be charged is fully functional.

WARNING!

Danger due to the use of the incorrect type of battery and incorrect charge settings.

This can result in serious injury and damage to property.

- ▶ Before starting the charging process, make sure that the correct type of battery is set on the charger.
- ▶ The following settings must be performed for the individual types of batteries before charging:
 - Charging curve
 - Nominal voltage (number of battery cells)
 - Battery capacity (Ah) or charging time (h)

More information on the charger parameters can be found under "Configuration mode" in the "Display" chapter.

NOTE!

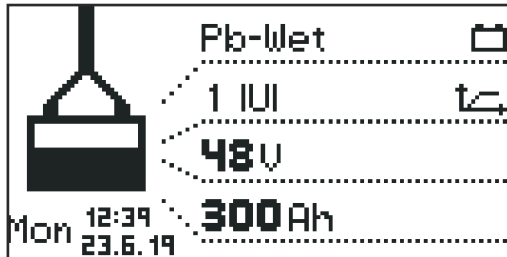
Risk of property damage if the charging plug contacts are very dirty.

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 Connect the charger mains plug to the electrical mains supply.

You will be prompted to confirm whether the correct parameters have been set for the battery to be charged.



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

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

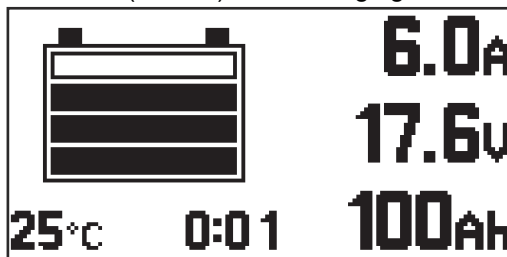
The charger parameters can be set individually. More information on the charger parameters can be found under "Configuration mode" in the "Display" chapter. Ensure that the battery to be charged matches the configuration of the charger.

2 Plug in the charging plug.

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

During the charging process the display shows the following values:

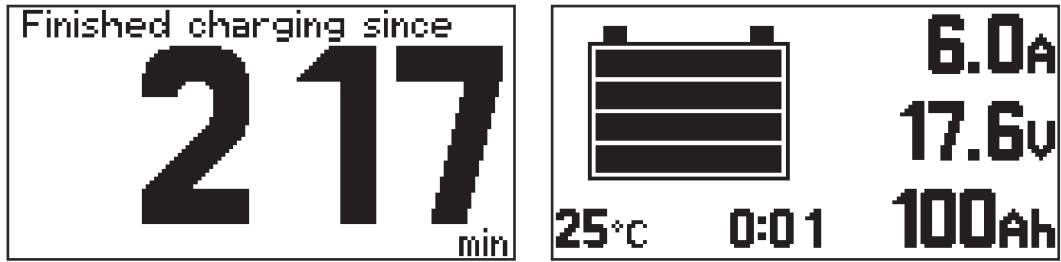
- Current charging current (A)
- Current charging voltage (V)
- Applied charge (Ah)
- Battery temperature with the "temperature-controlled charging" option
- Time (hh:mm) since charging started



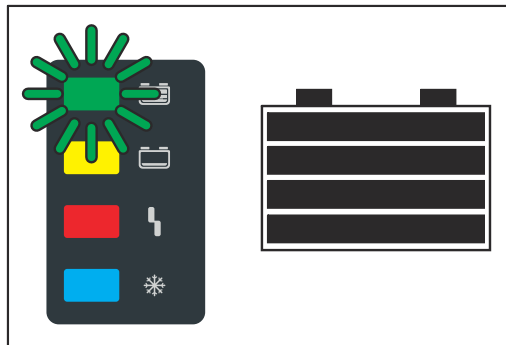
The battery symbol indicates the current state of charge. The greater the number of bars that are displayed, the further advanced the charging process is. As soon as the battery is fully charged, a minute counter will appear (see figure on right). This counts the minutes since the end of charging; when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

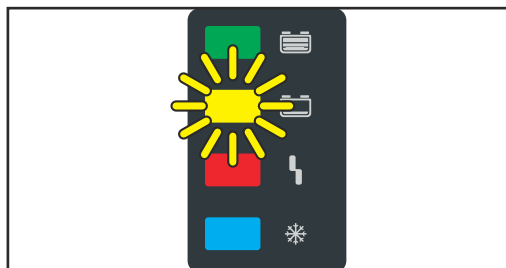


- The battery is always ready to use.
- The battery can remain connected to the charger for any length of time.
- Conservation charging counteracts battery self discharge.

Interrupting the charging process

To interrupt the charging process:

- 1 Press the "Pause/Start" key.



While the charging progress is interrupted:

- The "Charge" indicator flashes (yellow).

To resume the charging process:

- 2 Press the "Pause/Start" key again.

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

Stopping charging

⚠ WARNING!

Danger due to ignition of oxyhydrogen caused by sparks generated when the charging leads are disconnected.

This can result in serious injury and damage to property.

- ▶ Before disconnecting or unplugging the charging plug, first stop the charging process by pressing the "Pause/Start" key.

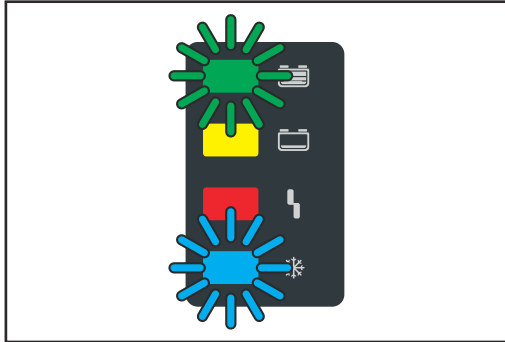
NOTE!

Risk of damage to the battery if it is disconnected from the charger before the charging process is complete.

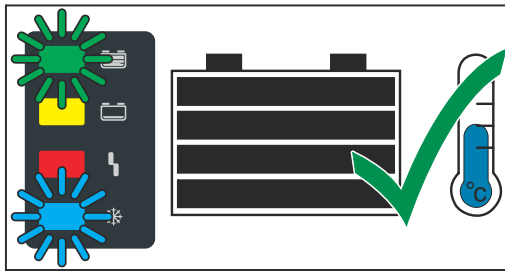
This may damage the battery.

- ▶ 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" indicator (blue)



For an optimal battery life, only disconnect the battery from the charger when the blue "Battery cooled" indicator is showing in addition to the green indicator, in accordance with the explanation below. If several chargers 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 "Pause/Start" key.
- 2 Disconnect the charging plug.

Display

Overview of display modes

The device has the following display modes:

No.	Function
	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 charger, the charging process can only be interrupted and resumed using the "Pause/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 charger.

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

Statistics mode and history mode remain unrestricted.

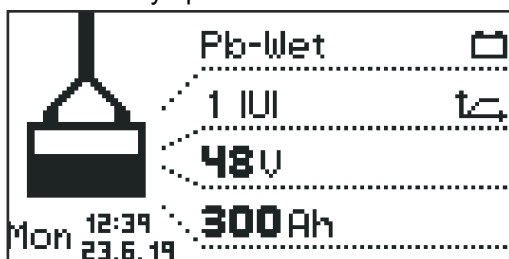
In configuration mode the following data is available:

- 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. Pb-WET)
- Charging characteristic (e.g. IU1)
- 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 Briefly press the "Menu" key.

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 "Pause/Start" key to confirm the "Tick" symbol.

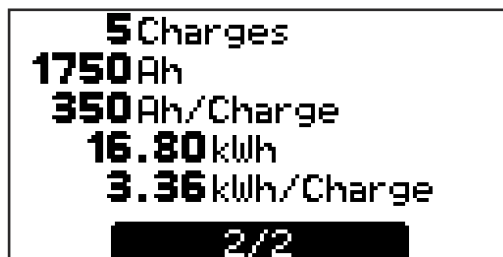
Statistics mode



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.



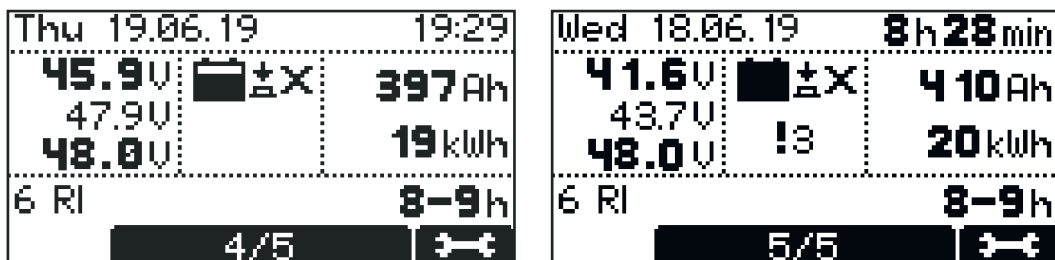
Page 2/2 shows the following values:

- 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 from the actual amount of energy by up to 5% at nominal output. 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:

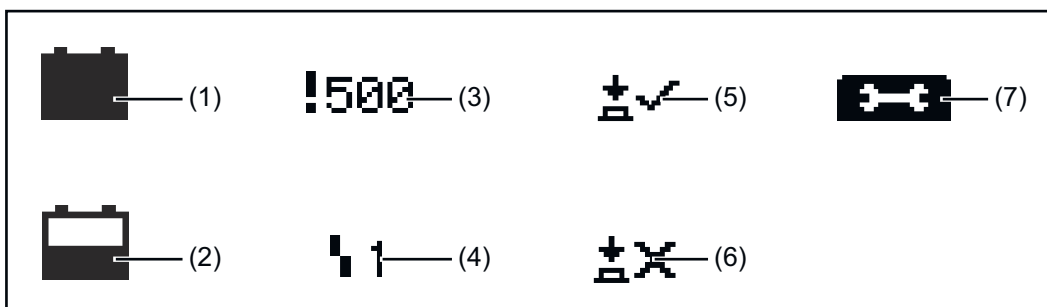


- 1 Use the "Up/Down" keys to switch between the pages for each stored charging process.

Contents of the display window

- Charge start date, e.g.: Thursday, 19/06/14.
- Charge start time, e.g.: 19:29 or charging time, e.g.: 8 h 28 min.
- 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.
- Ah consumed, e.g.: 397 Ah.
- kWh consumed, e.g.: 19 kWh.
- Charging characteristic, e.g.: 6 RI.
- Set charging time, e.g.: 8 - 9 h or set Ah, e.g.: 400 Ah or set charge end time (not shown).

Symbols shown



No.	Function
(1)	Full battery Charging has been completed.
(2)	Empty battery Charging has not been completed.
(3)	Exclamation mark with number Warning has been issued with the corresponding status code. More information can be found in the "Status codes" section.
(4)	Symbol with number Error has been issued with the corresponding status code. More information can be found in the "Status codes" section.
(5)	Key symbol with a tick Charging was stopped properly using the "Pause/Start" key.
(6)	Key symbol with a cross Charging was stopped without using the "Pause/Start" key.
(7)	Charging details Displays 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!

Danger of damage to the battery.

This may result in damage to the battery.

- ▶ The number of cells should only be set automatically for batteries with the following nominal voltages: 12 V and 24 V for 24 V devices, 24 V and 48 V for 48 V devices.
- ▶ Do not set the number of cells automatically for deep discharged batteries.

-
- Additional settings:
for individual adaptation options for the charging characteristic.

"Additional functions": Additional functions

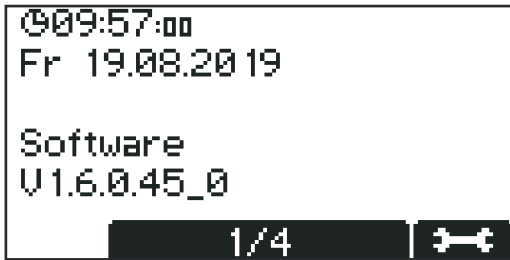
- Blue LED
- External start/stop
- Refill indicator
- Options area
- Start charging again after a grid failure

"General options": General settings

- Language
- Contrast
- Time (hh:mm:ss)
Time zone
Daylight saving time/normal time
- Date (dd:mm:yy)
- Length of charging cable (m)
- Charging cable cross section (mm²)
- AC current limitation
- Unit for temperature values
- Code for accessing the configuration menu activated/deactivated.
- Time interval for the parameters recorded on the USB flash drive (s).
- Reset statistics
- Reset history

"Reset Settings"

- Includes a double-check prompt ("OK?") that requires the operator to reconfirm that this step is intended.

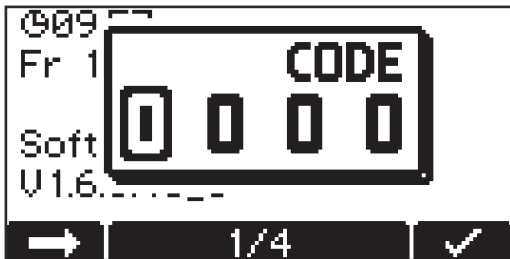


First the screen will appear in its initial format, showing the date, time and software version.

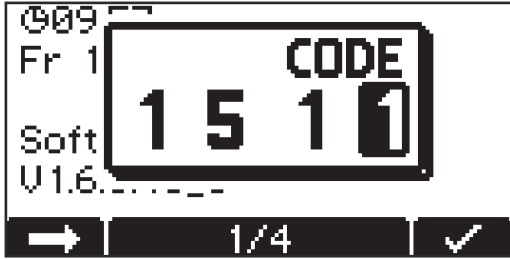
- 1 The "Up/Down" keys can be used to retrieve the following information:
 - Serial number of the charger plus serial number and version of the configuration memory.
 - PC board for controller/power electronics: hardware version and serial number.
 - Software: main software, secondary software, primary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

The procedure for opening the configuration menu is as follows:

- 1 Press the "Pause/Start" key.

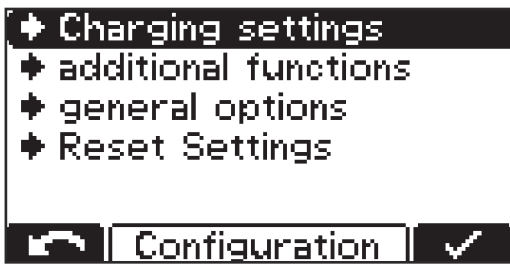


You will be prompted to enter a code.

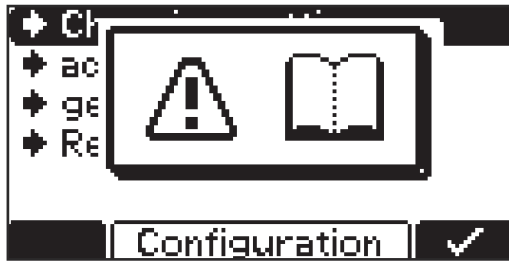


The code required is "1511" and is entered as follows:

- 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 following the procedure described above until the complete code has been entered.
- 4 Use the "Pause/Start" key to confirm the code entered.



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



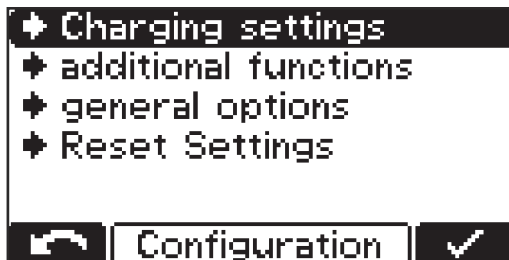
When you select a menu item you may be presented with a prompt to read the Operating Instructions. Confirm this prompt by pressing the "Pause/Start" key again.

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 "Pause/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 "Pause/Start" key to confirm what you have entered.
- 5 If the cursor moves to another setting or position after confirmation of the previous setting, repeat the procedure described in points (3) and (4).

To exit the current menu:

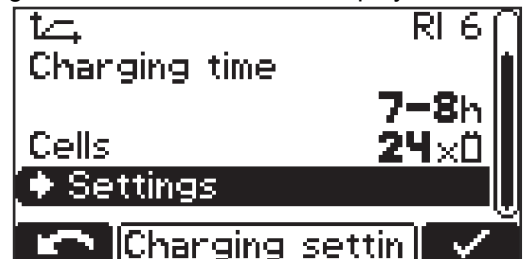
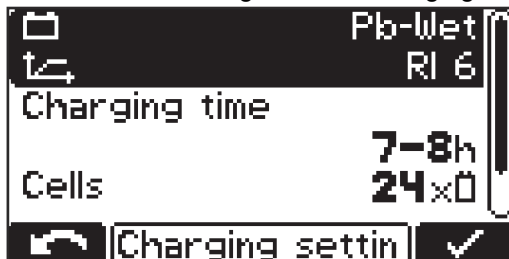
- 6 Press the "Menu" key to return to the higher-level menu.



See the following explanation of how to set the charging settings by way of example:

- 1 Use the "Up/Down" keys to select the "Charging settings" menu item.
- 2 Use the "Pause/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, the "Ah" heading is replaced by the "Charging time" setting option.

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.

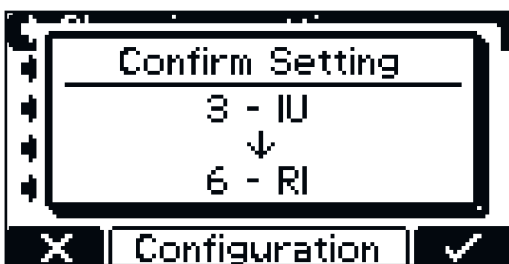
- 3 Use the "Up/Down" keys to select the desired parameter (e.g. "Cells").
- 4 Use the "Pause/Start" key to confirm the parameter.

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

If one or more relevant settings are changed for the charging process in configuration mode, you will once again be prompted to confirm acceptance of the changed settings when exiting configuration mode.

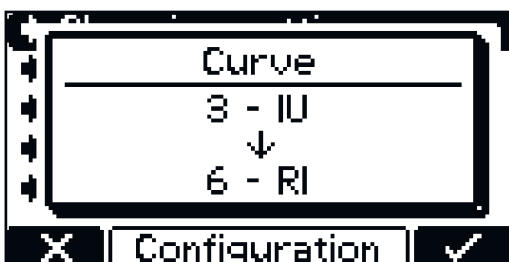
The following settings need to be confirmed when exiting configuration mode:

- Characteristic
- Battery capacity in Ah (excluding the RI characteristic)
- Number of cells
- Equalising charge ON/OFF
- CAN protocol



Example:

Changing the characteristic from 3 - UI (Pb-WET) to 6 - RI (Pb-WET).

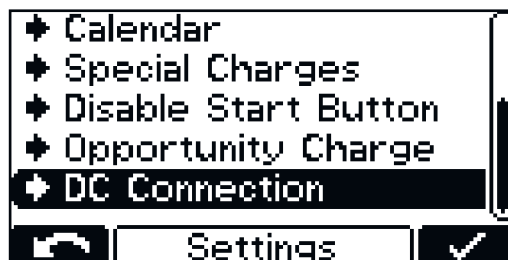
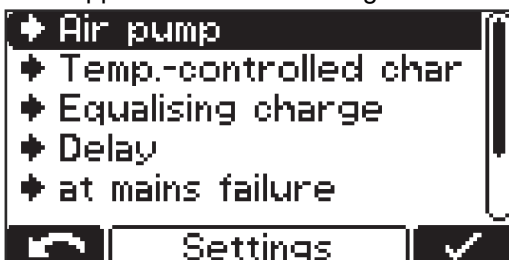


If the setting is not confirmed, the charger returns to configuration mode and the setting can be changed to the desired value.

Settings

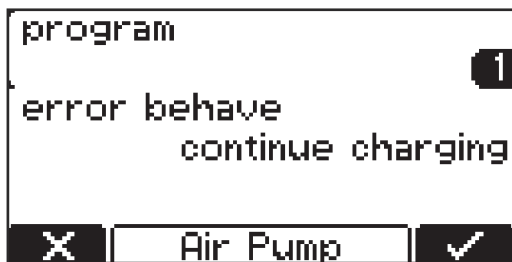
Below is a detailed description of the "Settings" menu item for the "Charging settings" menu item discussed above. Navigation is performed as described in the "Configuration mode" section.

A list appears with the following selection options:



The individual selection options are explained in greater detail below.

Electrolyte circulation



"Air Pump" electrolyte circulation (*not available on the Selectiva 220 V variant*):

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 the 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.

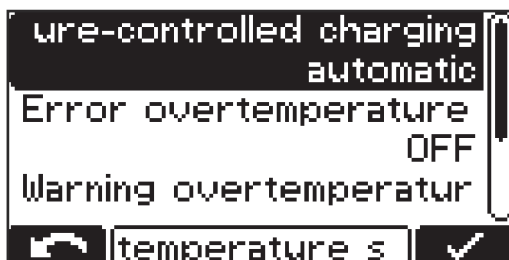
Default electrolyte circulation programs and their relevant parameters can be found in the table below:

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

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 if the 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 warning in the event of battery overtemperature.

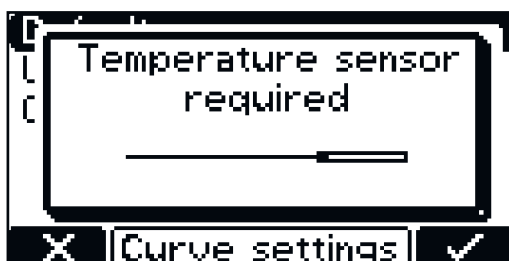
An external temperature sensor is required for certain characteristics. If this type of characteristic is selected in configuration mode, a note is shown indicating that an external temperature sensor is required.

The following characteristics require an external temperature sensor:

- 28 - FCC IUI - CSM WET
- 30 - FCC IUI - WET



A note is displayed if a characteristic that requires an external temperature sensor is selected.



- 1 Use the "Pause/Start" key to confirm the note.

Equalising charge

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"), a special type of charging takes place. This prevents acid stratification.
- The parameters for the current (ampere/100 ampere hours), voltage (volt/cell) and duration of the equalising charge may all be changed.

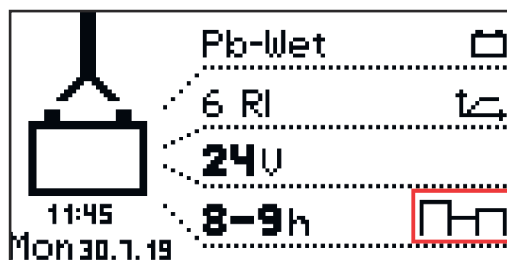
Weekday

- Specify the weekday on which the equalising charge is to take place.
- The parameters for the current (ampere/100 ampere hours), voltage (volt/cell) and duration of the equalising charge may all be changed.

Manual equalising charge ("Manual")

- An equalising charge can be started manually by pressing the relevant key on the display.
- The equalising charge starts after a set delay time has been observed. The charge parameters that have been set are followed.
- The parameters for the current (ampere/100 ampere hours), voltage (volt/cell) and duration of the equalising charge may all be changed.
- This function is only available for Pb-Wet characteristics.

If a setting for the equalising charge is enabled, a symbol on the home screen next to the set ampere hours or charging time shows whether an equalising charge is being carried out or can be started.



Delay

"Delay"

"Charge start delay"

- Delay time (minutes) between the activation time of the charge start and the actual charge start.

"Charge end delay"

- Delay time (minutes) between the signaled end of charge (e.g. green indicator) and the actual end of charge.

"At mains failure restart charging"

- If this option is activated, the charging process is automatically restarted after a fault in the electrical network as soon as the electrical network is available again.

"At mains failure"

- Restart charging
- Automatic/continue charging

If the "Restart charging" option is activated, the charging process is automatically restarted after a fault in the electrical network as soon as the electrical network is available again.

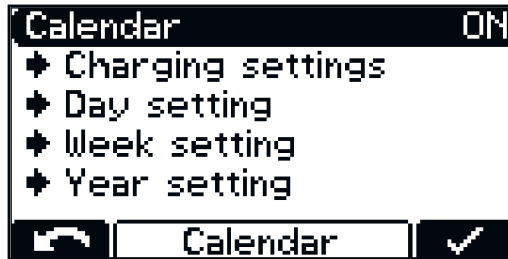
If the "Automatic/continue charging" option is activated, the charging process is automatically continued after a fault in the electrical network as soon as the electrical network is available again.

Calendar

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.



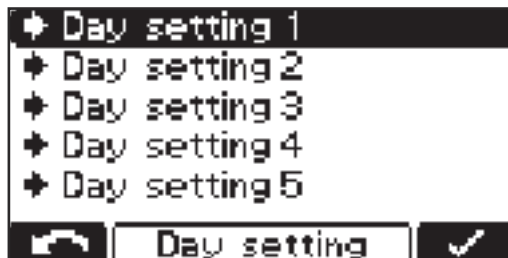
1 To activate the calendar function, select the "ON" setting and confirm.



"Charging settings" menu item:

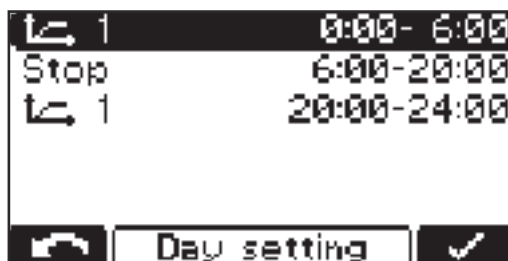
- Type of battery for every characteristic: e.g. Pb-WET.
- Curve settings when selecting the relevant characteristic.

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:

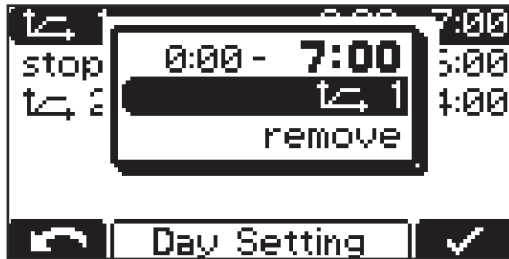


- Symbol for characteristic 1: Time window in which charging is to be started using characteristic 1 (e.g.: 00:00-06:00)
- Stop: Time window in which charging must not take place (e.g.: 06:00-20:00)
- Symbol for characteristic 1: Time window in which charging is to be started using characteristic 1 (e.g.: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

NOTE!

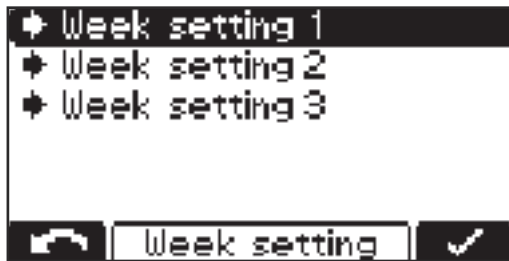
Ongoing charging operations are unaffected by the set time windows.

- ▶ 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.



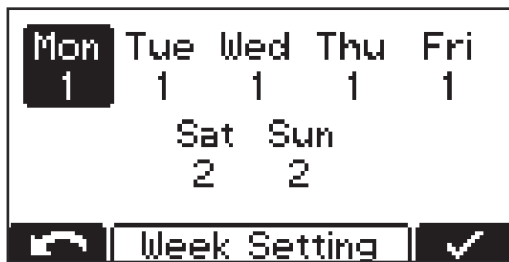
Additional settings:

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

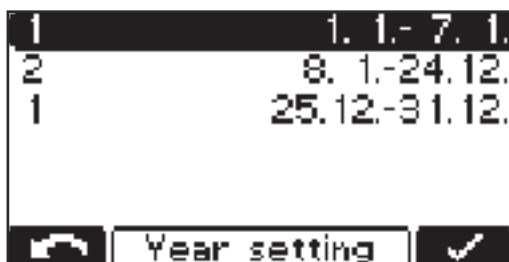


Week Setting:

- Three different week settings can be defined.

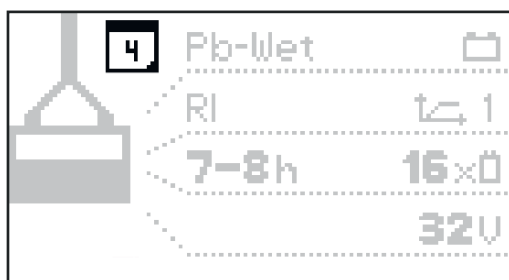


A previously created day setting can be assigned to any day of the week.

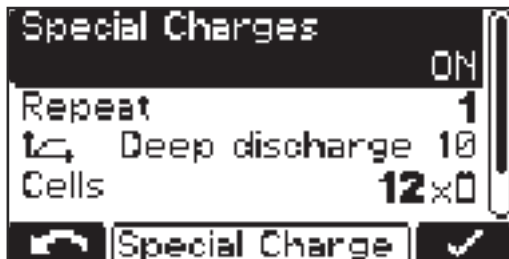


Year Setting:

- 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 (shown here with the number "4" as the current date) appears on the display.



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

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

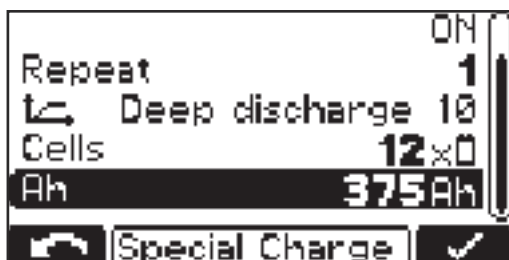
Disable Start Button

ON

- The charging process cannot be started using the "Pause/Start" key, e.g. to prevent unauthorised intervention.

OFF

- The charging process can be started using the "Pause/Start" key.

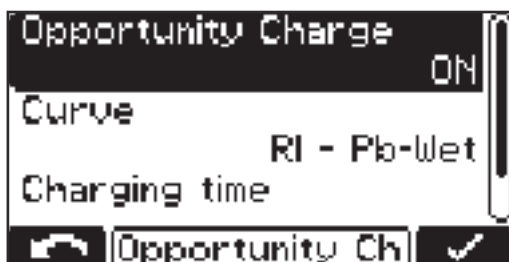


The following settings are also possible:

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

"Opportunity Charge" special function

"Opportunity Charge" special function:



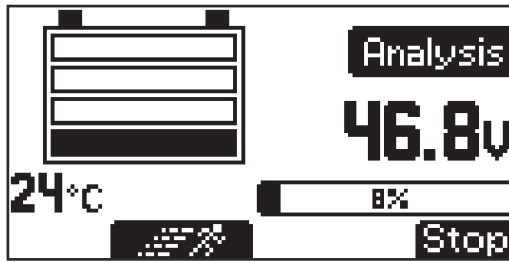
To extend the usage interval of a battery, it is possible to recharge it at a time when it will not be needed, e.g. during scheduled plant shutdowns.



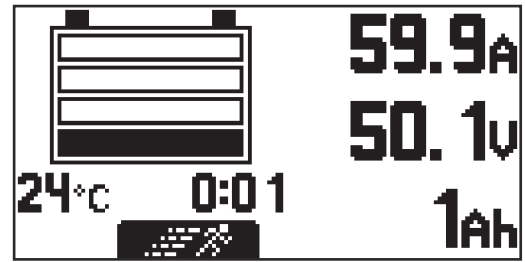
The following curve settings are available:

- 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:



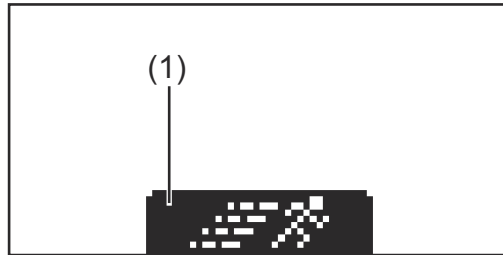
Display when RI characteristic is selected



Display for other characteristics (e.g. IUI)

To start opportunity charging:

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



"Runner symbol" (1)



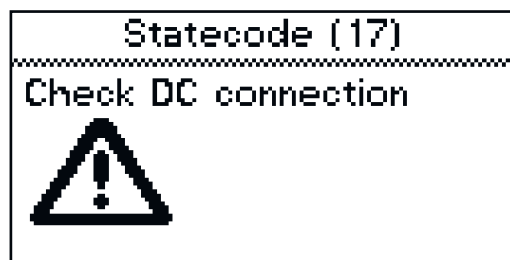
Display when opportunity charging starts

DC connection

DC Connection:



The "DC Connection" menu contains the setting for the DC connection check. If the DC connection check is switched on ("ON"), the connection between the charger and the battery is checked during the charging process.

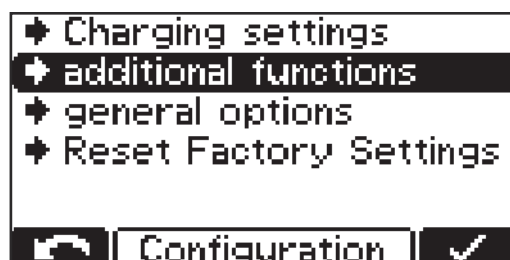


If problems arise with the DC connection during the charging process, status code 17 is set if the DC connection check is active.

A connection problem can occur if, for example, charging contacts are worn or dirty.

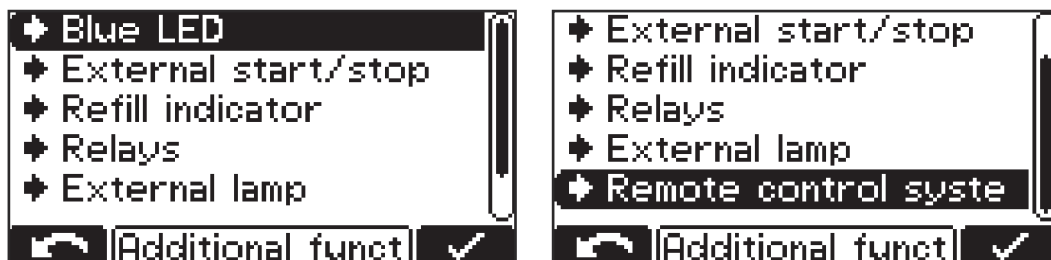
Additional functions

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:



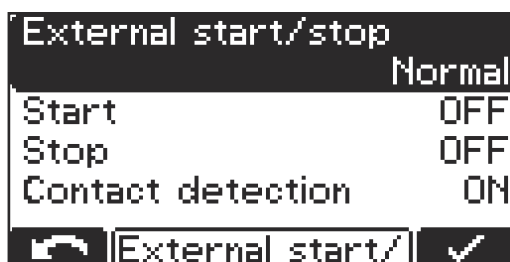
The individual selection options are explained in greater detail below:

Setting the "Blue LED" indicator

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

A temperature value can be set here in conjunction with the "Temperature-controlled charging" option. The blue "battery cooled" 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:

Button

- The function of the "OK/STOP" key can be simulated using an external button.

Normal

- **Start 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.
- **Start OFF**
Charging starts when a battery is connected.
- **Stop ON**
Charging is interrupted when an external switch is opened, or when the charging plug is disconnected by opening the auxiliary contacts.
- **Stop OFF**
Opening of an external switch or the auxiliary contacts is ignored.

Contact detection

- **ON**
When Start Normal is ON, a battery is connected and the external start/stop contact is not closed, error 16 is set.
When Stop Normal is ON, charging has started, the external start/stop contact is open and the battery is not disconnected, error 16 is set.
- **OFF**
Contact detection does not take place.

Refill Indicator

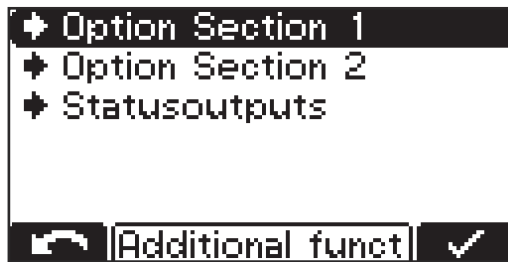
The refill indicator is a message that appears as soon as the battery needs topping up with distilled water. The time at which refilling is deemed necessary can be defined as follows:

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.

Option Section



Option Section 1

- Setting options:
 - CAN1 (option box)
 - Cool Bat Guide Easy (Fronius variants only)

Option Section 2 (3 kW only)

- Setting options:
 - CAN2 (option box)
 - AirPuls (EUW)

Status outputs (3 kW only)

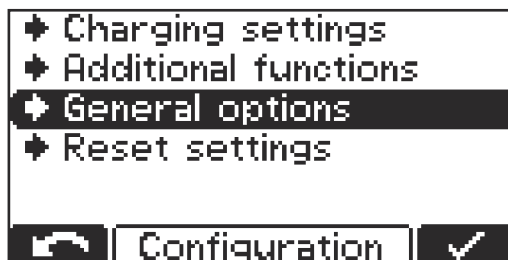
- Setting for external lamp (normal or RGB)

At mains failure restart charging

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

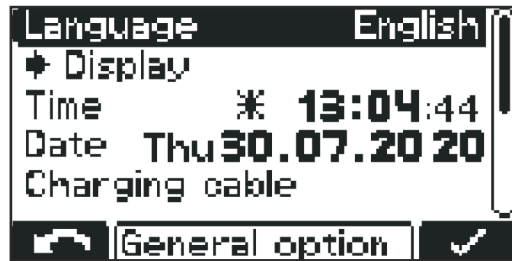
General settings

Detailed explanation of the "general options" menu item in configuration mode.



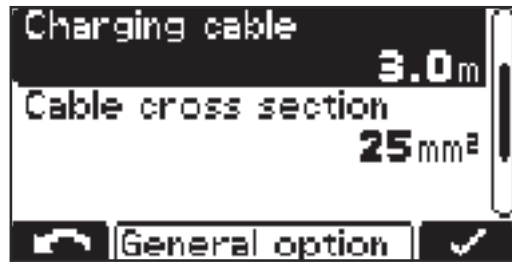
- 1 Select the "general options" menu item.

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

Charging cable:

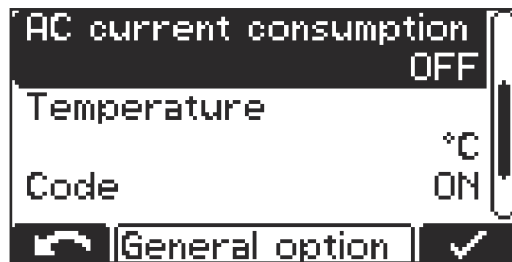


- Basic length of charging cable (m)

Cable cross section:

- Cross-section of the charging cable (mm²)

AC current consumption:

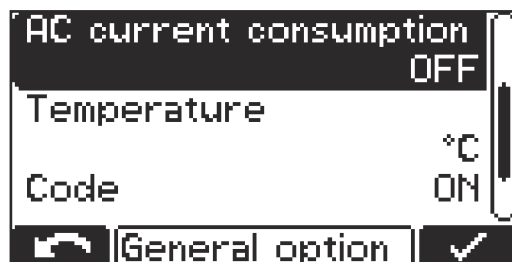


- Adapt the maximum consumed device current to the on-site electrical installation or the device connector fitted on the device.



- The minimum and maximum values differ depending on the different device classes. The minimum value is approx. 25% of the maximum nominal current of the charger.

Temperature:

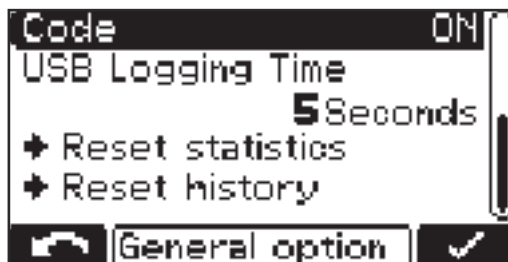


- Temperature in °C / °F

Code:

- Code entry required / not required to access configuration mode ("Code ON / OFF")

USB Logging Time:



- Time interval (s) for recording charging parameters on the USB flash drive (USB Logging Time)

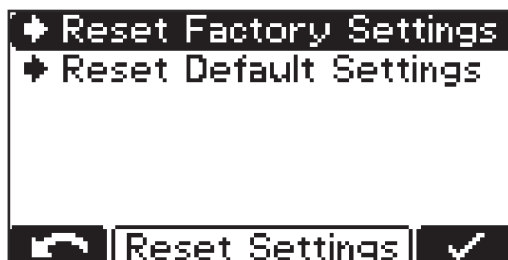
Reset statistics

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:



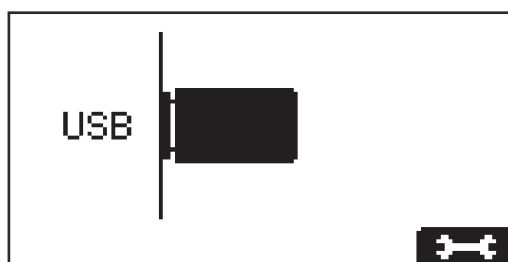
Reset Factory Settings:

- 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** (www.fronius.com/i-spot) 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.

Navigating in USB mode

- 1 Use the "Pause/Start" key to access the following settings.
- 2 Use the "Up/Down" keys to scroll between the settings.

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

To start a data download, confirm this again with the "Pause/Start" key. If you do not confirm with the "Pause/Start" key, the download will start automatically after one minute.

A USB flash drive may be connected while charging is in progress, after the "Pause/Start" key has been pressed. However, this can only be used to read out data. An update or new configuration cannot be loaded.

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!
- The latest firmware is available in the [Download area](#) of the Fronius website.
- The firmware installation instructions are included in the download's zip 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 as well as the device settings and user curves (configuration) are saved.
- The following time ranges can be selected for the datalogger:
 - 1 month
 - 3 months
 - Everything
 - Since last time

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 as "csv" files rather than in the I-SPoT VIEWER format.
(Automatically created 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 a suitable device configuration stored on the USB flash drive onto the device.

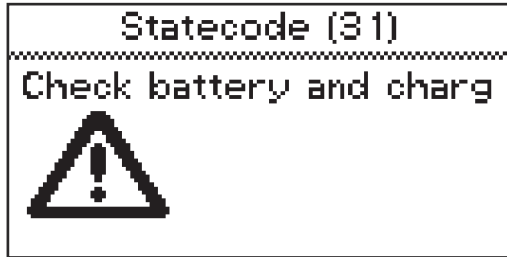
Load dealer text

- 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 distributor.
- 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. In this case, the folder structure is also cre-

ated 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 fault
- The voltage of the connected battery is unsuitable.
- The device has overheated.
- There is a software or hardware fault.

Battery fault:

If the battery signals a fault, the charger displays this fault as a battery fault including the corresponding fault number for the battery. The respective fault is explained in the battery's Operating Instructions.

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 your authorised service centre
Freely-defined text, which could for example include the contact details of the distributor, can be displayed if the device is in an error state.

Status codes caused by external factors

No.	Cause / Remedy
(11)	Check grid voltage
(12)	Check grid (phase failure)
(13)	External temperature sensor faulty
(14)	Electrolyte circulation faulty (pressure switch not switching)
(15)	Control voltage not detected
(16)	External start/stop is not closed.
(17)	Open circuit voltage detection triggered more than once during charging (e.g. worn charging contacts)

Status codes in the event of a battery fault

No.	Cause / Remedy
(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
(27)	Battery not supported
(28)	Battery heavily discharged - safety charging is being carried out
(29)	Battery is connected with reverse polarity
(30)	Thermal runaway
(100) -	General battery fault
(400)	

Status codes in the event of a CAN fault

No.	Cause / Remedy
(51)	Battery not responding
(52)	Battery data cannot be requested
(53)	Battery voltage not supported
(54)	Communication fault
(55)	Battery fault
(56)	Battery does not switch on
(57)	Message time limit exceeded
(58)	Registration failed

Status codes in the event of a charging error

No.	Cause / Remedy
(31)	Timeout in I1 phase
(32)	Timeout in U1 phase
(33)	Battery overvoltage in the I2 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
(39)	Timeout in RI charge

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

No.	Cause / Remedy
(500)	Module 1 (top) temperature sensor faulty
(501)	Module 2 (bottom) temperature sensor faulty
(502)	PCB temperature sensor faulty
(503)	Primary overtemperature
(504)	Fan blocked/faulty
(505)	Intermediate circuit over/undervoltage
(506)	Intermediate circuit imbalance
(507)	Primary supply voltage outside the tolerance
(508)	Grid failure
(509)	Wrong device configuration
(510)	Primary EEPROM faulty
(527)	Phase shifter overcurrent
(528)	Charging relay switched off during load operation
(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

No.	Cause / Remedy
(520)	Secondary temperature sensor faulty
(521)	Secondary overtemperature
(522)	Output fuse faulty
(523)	Secondary supply voltage outside the tolerance
(524)	Secondary reference voltage outside the tolerance
(525)	Current offset
(526)	Current offset outside the tolerance
(527)	Power module overcurrent (primary)
(529)	No secondary communication
(530)	No primary communication
(531)	Secondary EEPROM faulty
(532)	Microcontroller fault

(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

No.	Cause / Remedy
-----	----------------

(540)	Configuration memory chip 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 could not be resumed after a power failure
(550)	Time not set
(551)	Hardware change detected
(552)	Configuration memory chip invalid
(553)	Primary update failed
(554)	Fault in the master-slave communication
(555)	Incorrect device software

Options

Safety

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

WARNING!

Danger due to work that has been carried out improperly.

This can result in serious injury and damage to property.

- ▶ All work involved with connecting optional components must only be carried out by qualified specialist technicians.
 - ▶ If Installation Instructions or User Information is available for the optional component concerned, 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 with any documents you may require on request.
-

WARNING!

Danger from machines falling or toppling over.

This can result in serious injury and damage to property.

- ▶ Due to its weight, 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.
-

Electrolyte circulation 3 kW

NOTE!

Danger due to the ingress of electrolyte from the battery or due to operation without any back pressure.

This may result in damage to the air pump.

- ▶ 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!

Danger due to non-observance of the permissible mains voltage tolerance.

This can cause malfunctions and damage.

- ▶ For the electrolyte circulation option, a restricted mains voltage tolerance vis-à-vis the charger of 207 V to 250 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 the 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

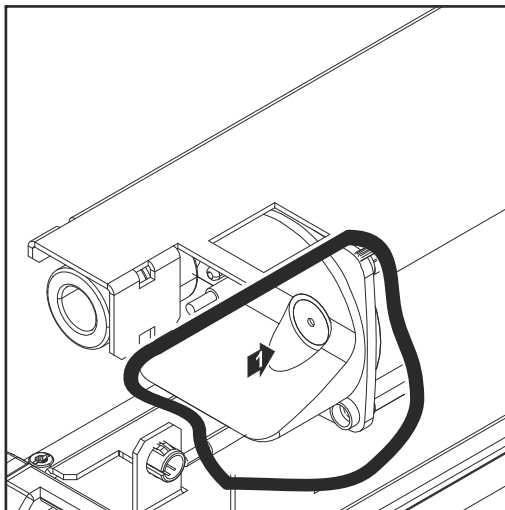
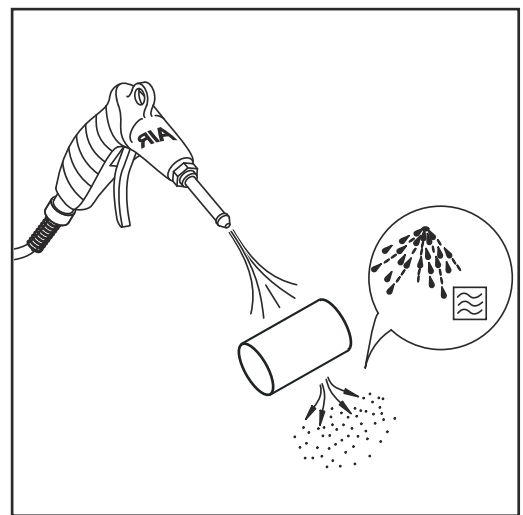
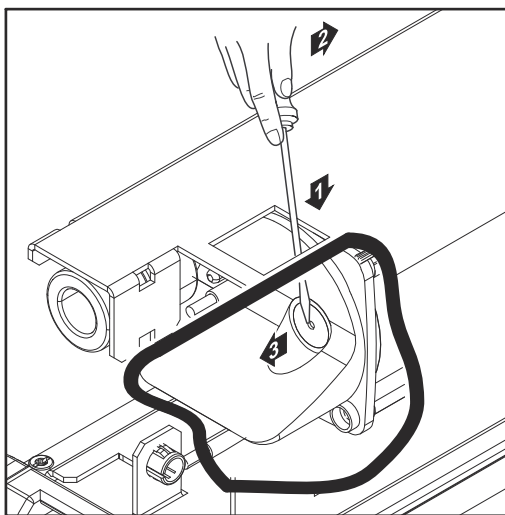
The air filter insert for the integrated air pump should be cleaned once a year. In dusty environments, the cleaning interval should be shortened accordingly. The air filter insert must be removed for cleaning. Remove the air filter by levering it out with a slotted screwdriver; then refit it as follows:

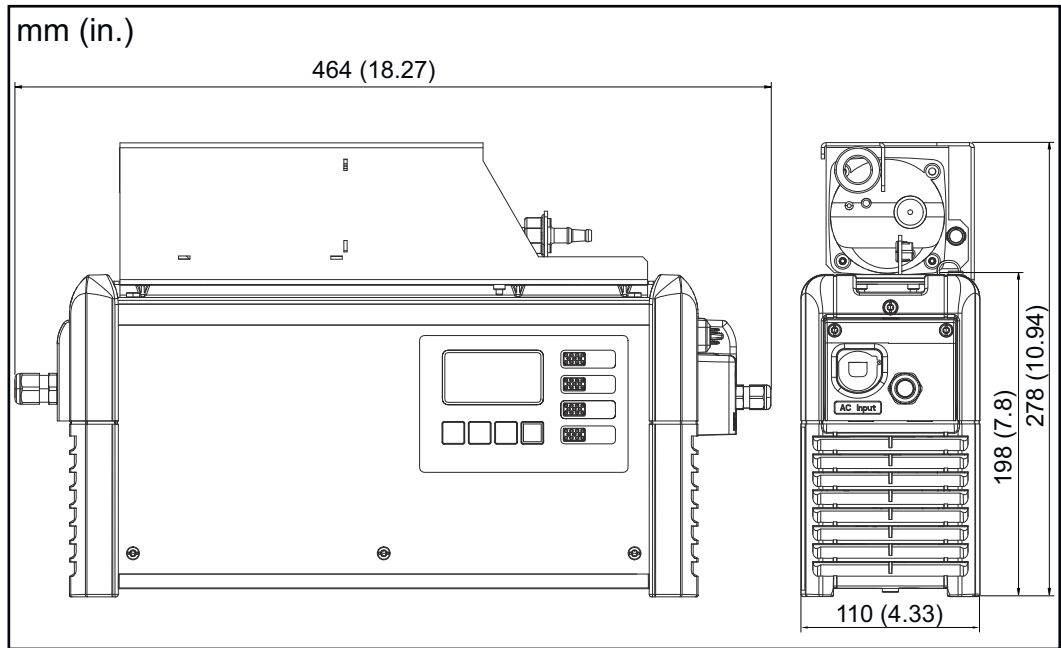
NOTE!

Danger from using the air filter with unsuitable chargers.

This can result in damage to property.

- ▶ Only use the air filter with the chargers provided by the manufacturer for this purpose.





External start/stop

The external start/stop option prevents sparking if the charging plug is disconnected during charging. Special contacts inside the charging plug register a separation from the charging socket. These are leading contacts in relation to the main contacts. 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 the device from becoming dirty. This avoids a possible reduction in power and other problems. Detailed information can be found in the corresponding User Information.
Cleaning interval as required (manufacturer's recommendation: monthly)

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.

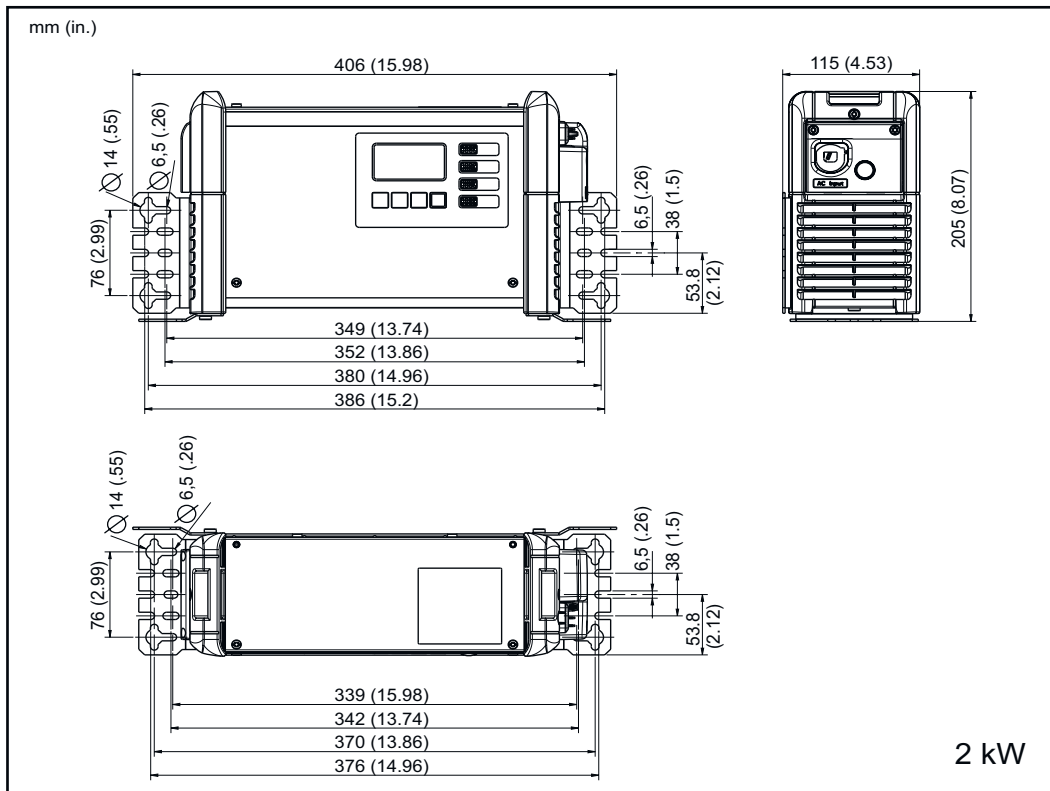
Option box

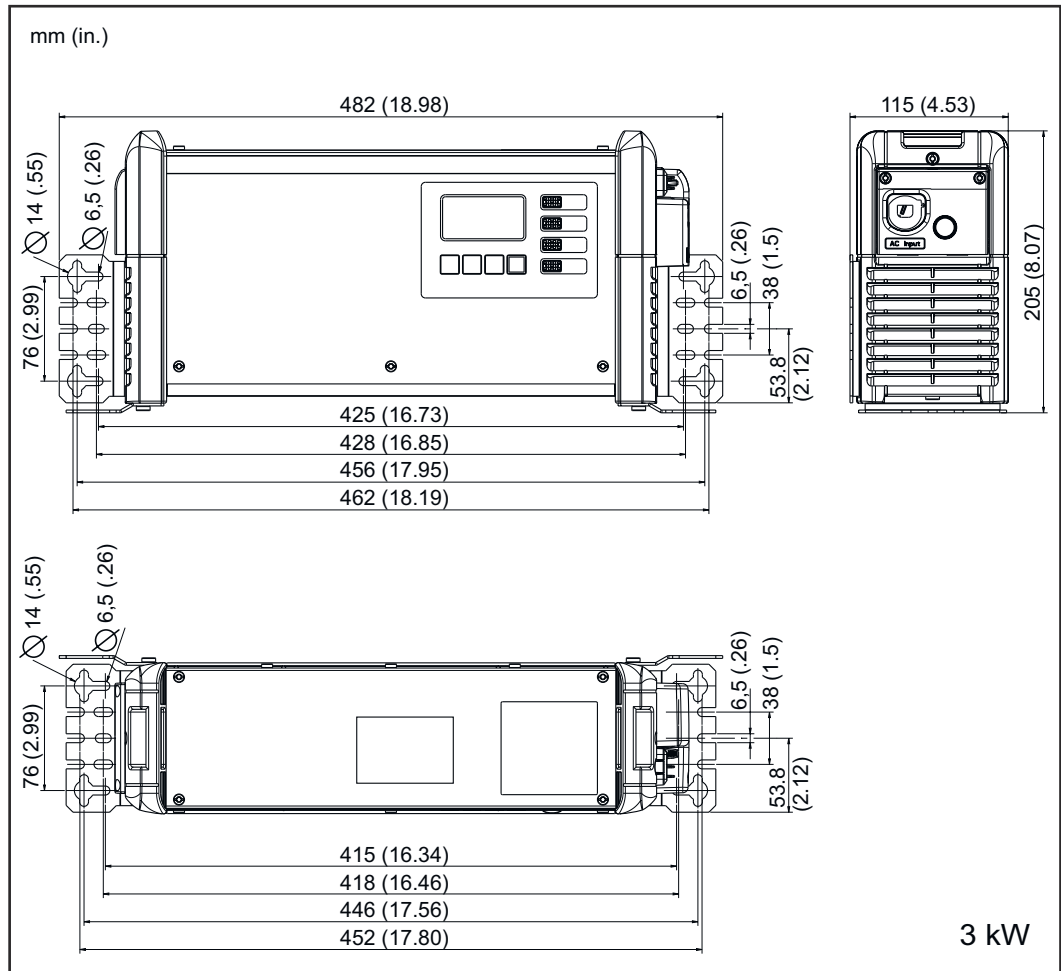
Using the option box, information on the state of charge of the connected battery can be obtained via an external circuit.

Error messages and additional features such as the Aquamatic control function, external air pump and refill indicator can also be displayed.

Mounting plate

The mounting plate may be used as a space-saving floor or wall bracket.





Remote control system

The remote control system allows the device to be fully controlled from a distance of up to 30 m (98 ft., 5.1 in.). This option includes a full control panel in an aluminium housing that provides IP42 protection.

GatewayLink

The GatewayLink makes it easy to connect the Gateway on the charger. The Gateway can be connected without opening the charger.

Gateway

The Gateway is the connecting link between the charger and the network. More detailed information can be found in the corresponding User Information.

Technical data

Selectiva 2 kW

Mains voltage ¹⁾	~ 230 V, ± 15%
Grid frequency	50/60 Hz
Mains fuse protection ²⁾	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 ³⁾	None
Standby usage	4.9 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.)
Degree of contamination	3
Degree of protection ⁴⁾	IP21
Overvoltage category	II
Operating temperature ⁵⁾	-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.)
Mark of conformity	according to rating plate
Product standard	EN62477-1

- 1) The device is approved for operation on neutral-earthed networks.
- 2) The thermal stress of the circuit breaker must not exceed 30,000 A²s.
- 3) Interface to a 230/400 V and 50 Hz public grid.
- 4) For indoor use only, do not expose to rain or snow.
- 5) 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 ⁶⁾
2040 2 kW	7.9 A	1540 W	24 V	40 A	5.8 kg (12.79 lb)
2050 2 kW	9.9 A	1930 W	24 V	50 A	6.1 kg (13.45 lb)
2060 2 kW	12.0 A	2330 W	24 V	60 A	6.1 kg (13.45 lb)
2070 2 kW	12.1 A	2350 W	24 V	70 A	6.1 kg (13.45 lb)

Device-specific data	Max. AC current	Max. AC power	Nominal voltage	Max. charging current	Weight ⁶⁾
4020 2 kW	7.9 A	1530 W	48 V	20 A	5.8 kg (12.79 lb)
4035 2 kW	11.9 A	2330 W	48 V	35 A	5.8 kg (12.79 lb)

6) With standard mains and charging leads

Selectiva 3 kW

Mains voltage ¹⁾	~ 230 V, ± 15%
Grid frequency	50/60 Hz
Mains fuse protection ²⁾	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 ³⁾	None
Standby consumption	
24 V devices	4.9 W
48 V devices	5.1 W
EMC device class	B
Dimensions L x W x H	417 x 110 x 198 mm (16.42 x 4.33 x 7.8 in.)
Degree of contamination	3
Degree of protection ⁴⁾	IP21
Overvoltage category	II
Operating temperature ⁵⁾	-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.)
Mark of conformity	according to rating plate
Product standard	EN62477-1

- 1) The device is approved for operation on neutral-earthed networks.
- 2) The thermal stress of the circuit breaker must not exceed 30,000 A²s.
- 3) Interface to a 230/400 V and 50 Hz public grid.
- 4) For indoor use only, do not expose to rain or snow.
- 5) 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 ⁶⁾
2080 3 kW	15.1 A	3040 W	24 V	80 A	8.2 kg (18.08 lb)
2100 3 kW	15.3 A	3290 W	24 V	100 A	8.2 kg (18.08 lb)
2120 3 kW	15.5 A	3340 W	24 V	120 A	8.7 kg (19.18 lb)
4045 3 kW	15.0 A	3250 W	48 V	45 A	7.4 kg (16.31 lb)
4060 3 kW	15.2 A	3280 W	48 V	60 A	7.4 kg (16.31 lb)

6) With standard mains and charging leads

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