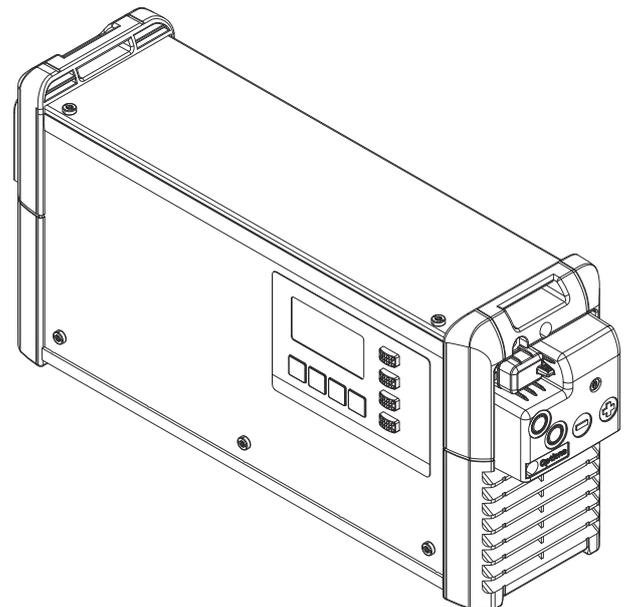




# Operating Instructions



**Selectiva Li 3 kW**  
**2120 / 4060**



**EN** | Operating Instructions



42,0426,0309,EN

013-07082024



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# Safety rules

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## 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 the commissioning, operation, maintenance, and servicing of the device must:

- Be suitably qualified
  - Have fully read and precisely followed these Operating Instructions
- 

The Operating Instructions must always be kept to hand wherever the device is being used. In addition to the Operating Instructions, all applicable local rules and regulations regarding accident prevention and environmental protection must also be followed.

---

All safety and danger notices on the device:

- Must be kept in a legible state
  - Must not be damaged
  - Must not be removed
  - Must not be covered, pasted, or painted over
- 

For the location of the safety and danger notices on the device, refer to the section headed "General information" in the Operating Instructions for the device. Before switching on the device, eliminate any faults that could compromise safety.

**Your personal safety is at stake!**

---

## Intended use

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

---

Proper use also includes:

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

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

---

## 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.

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

---

**Mains connection**

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

---

This may affect a number device types in terms of:

- Connection restrictions
- Criteria with regard to the maximum permissible mains impedance <sup>\*)</sup>
- Criteria with regard to the minimum short-circuit power requirement <sup>\*)</sup>

<sup>\*)</sup> at the interface with the public grid  
see "Technical data"

---

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

---

**IMPORTANT!** Ensure that the mains connection is earthed properly

---

**Dangers due to grid and charging current**

Working with battery chargers poses a number of dangers, such as:

- Electrical hazard due to grid and charging current
- Hazardous electromagnetic fields that may pose a risk of death for individuals with pacemakers.

---

An electric shock can be fatal. Every electric shock poses a risk of death. To prevent electric shock during operation:

- Do not touch any voltage-carrying parts inside or outside of the device.
- Never 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 under-dimensioned cables and leads must be repaired immediately by an authorized specialist.

---

**Dangers posed by the battery**

The substances contained in the battery to be charged can be harmful to the environment as well as to human and animal health.

If the battery becomes damaged, please observe the following points:

- Make sure that leaking fluids cannot get into the soil or groundwater
- If pollution has already occurred, it must be removed in accordance with relevant national regulations

---

The battery can catch fire if overheated. Do not expose the battery to heat (e.g. a permanent heat source or fire).

---

If the battery is damaged or subjected to improper use, dangerous vapours may be given off, which can irritate the airways.

If this happens:

- Ensure an adequate supply of fresh air
- Seek medical attention in case of discomfort

---

Liquid may emerge from a faulty battery.

- Avoid contact with the liquid
- Take the battery to an authorised service centre for repair
- Clean and check any parts that have come into contact with the liquid

---

Do not operate or store the device in a potentially explosive atmosphere. Special regulations apply in rooms at risk of fire or explosion. Observe relevant national and international regulations.

---

To comply with European Directive 2006/66/EC on batteries and its implementation in national law, batteries that have reached the end of their life must be collected separately and returned to an approved recycling facility. Be sure to return any used battery to your dealer, or find out about the approved collection and recycling facilities in your area. Ignoring this European Directive may be harmful to the environment and your own health!

---

As soon as it appears that the battery has been mechanically damaged, dispose of the battery in accordance with national laws and guidelines at your nearest recycling centre.

If anything is unclear or for any questions concerning disposal, contact an authorised service centre.

---

---

**General information regarding the handling of lithium batteries**

- Lithium batteries have a gas-tight seal and are harmless provided the manufacturer's specifications are adhered to during use and handling
  - Never use chargers that are not suitable for the battery type
- 

- Do not short-circuit
  - Do not mechanically damage them (tap, deform, dismantle, etc.)
  - Never heat them to above the permissible temperature or burn them
  - Always store batteries in a cool, dry place
- 

- Lithium batteries are safe to use if they are handled properly within the parameters specified by the manufacturer
  - Mishandling or circumstances that result in improper use can result in the battery contents and decomposition products leaking and related reactions that are extremely hazardous to health and the environment
  - As a wide variety of chemical substances are found inside the battery, in the event of an accident always follow the manufacturer's specifications regarding emergency response actions and first aid
- 

- Lithium batteries must, in all circumstances, be handled according to the manufacturer's instructions
  - In particular, this applies to observing the limits for maximum current load, charging and cutoff voltages as well as mechanical and thermal loads
- 

- The charger and battery are designed to work together and must not be modified or manipulated in any way as this can result in considerable safety risks
- 

- Ideally, lithium batteries should be stored at room temperature in a dry location (details regarding the storage temperature range can be found in the manufacturer's instructions)
  - Large temperature fluctuations must be avoided (e.g. do not store the batteries near to heaters, do not expose them to prolonged sunlight)
- 

- Should damage or improper handling result in the leakage of substances, then the manufacturer's instructions must be followed
- This includes the use of personal protective equipment
- When storing large quantities of lithium batteries, the local authorities should be consulted
- Employees must be trained on how to correctly handle lithium batteries (in the same way as hazardous substances)

---

**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 electrolytes 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**

Operate devices with ground conductors only on a grid with a ground conductor and a socket with a ground conductor contact. Operating the device on a grid without a ground conductor or on a socket without a ground conductor contact is considered gross negligence. The manufacturer accepts no liability for any damage resulting from improper use.

---

Only operate the device in accordance with the protection class shown on the rating plate.

---

Never commission the device if it is damaged.

---

Have the grid and device supply lead regularly inspected by an electrician to ensure that the ground conductor is functioning properly.

---

Safety devices that are not fully functional and components with defects must be repaired by an authorized specialist before the device is turned on.

---

Never bypass or disable protection devices.

---

A freely accessible mains plug is required after installation.

---

**EMC Device Classifications**

Devices in emission class A:

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

---

Devices in emission class B:

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

---

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

---

**EMC measures**

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

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

---

**Data security**

With regard to data security, the user is responsible for:

- backing up any changes made to the factory settings
- saving and retaining personal settings

---

**Maintenance** Before each start-up, check the mains plug and mains cable and charging cables and charging terminals for damage.  
If dirt accumulates on the device, clean the surface of the device housing with a soft cloth and only with solvent-free cleaning agents.

---

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

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

---

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

---

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

---

The safety inspection may only be performed by an appropriately qualified electrician

- 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
- 

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

---

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

---

**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**

Waste electrical and electronic equipment must be collected separately and recycled in an environmentally responsible manner in accordance with the EU Directive and national law. Used equipment must be returned to the distributor or through a local, authorised collection and disposal system. Correct disposal of the used device promotes sustainable recycling of resources and prevents negative effects on health and the environment.

**Packaging materials**

- Collect separately
- Observe locally valid regulations
- Compress the cardboard box to reduce volume

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**Copyright**

Copyright of these operating instructions remains with the manufacturer.

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Text and illustrations were accurate at the time of printing, subject to change. We are grateful for suggestions for improvement and information regarding any discrepancies in the operating instructions.

# General information

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## 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 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.

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## Customer-specific information

If customer-specific information is available for the supplied device, supply them with the device.

---

## Correct battery configuration

### **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 and voltage and the charger settings are correct.
  - ▶ The charger must only be used with lithium-ion batteries approved by Fronius.
-

 **WARNING!**

**Danger due to trailing charging leads.**

This could result in injury due to getting caught or tripping on loose cables.

- ▶ Lay the charging leads so that no one can trip over or become entangled in them.
- 

 **WARNING!**

**Danger due to charging plug being pulled out during charging.**

This may result in serious injury and damage to property.

- ▶ Before pulling out the charging plug, first stop the charging process using the Stop/Start key.
  - ▶ Once the charging process is complete, wind up the charging lead or, if available, place it on the cable holder.
- 

**Mains connection**

 **WARNING!**

**Danger from incorrect operation.**

This can result in severe personal injury and damage to property.

- ▶ Do not use the functions described here until you have fully read and understood the following documents:
  - ▶ All the Operating Instructions for the system components, especially the safety rules
  - ▶ Battery and vehicle manufacturer's Operating Instructions and safety rules
- 

 **WARNING!**

**Danger due to faulty or insufficient power supply.**

This can result in severe personal injury and damage to property.

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

**Correct installation of the mains/charging cables**

 **WARNING!**

**Danger due to charging cables lying around.**

This can result in severe personal injury and damage to property. Personnel can get caught or trip on unplugged, loose cables.

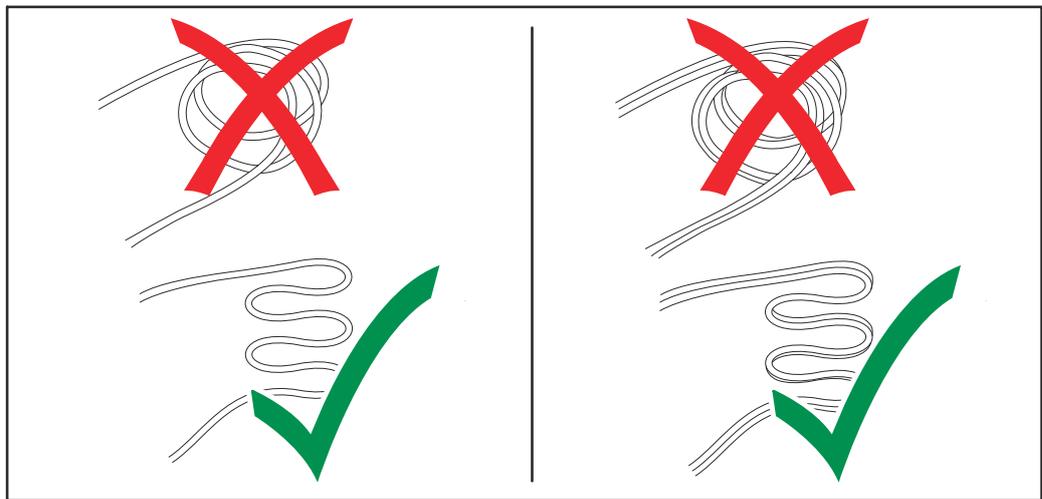
- ▶ Lay charging cables so that no one can trip over them or get caught on them.
-

**⚠ CAUTION!**

**Danger due to overheating as a result of incorrectly laid mains/charging cables.**

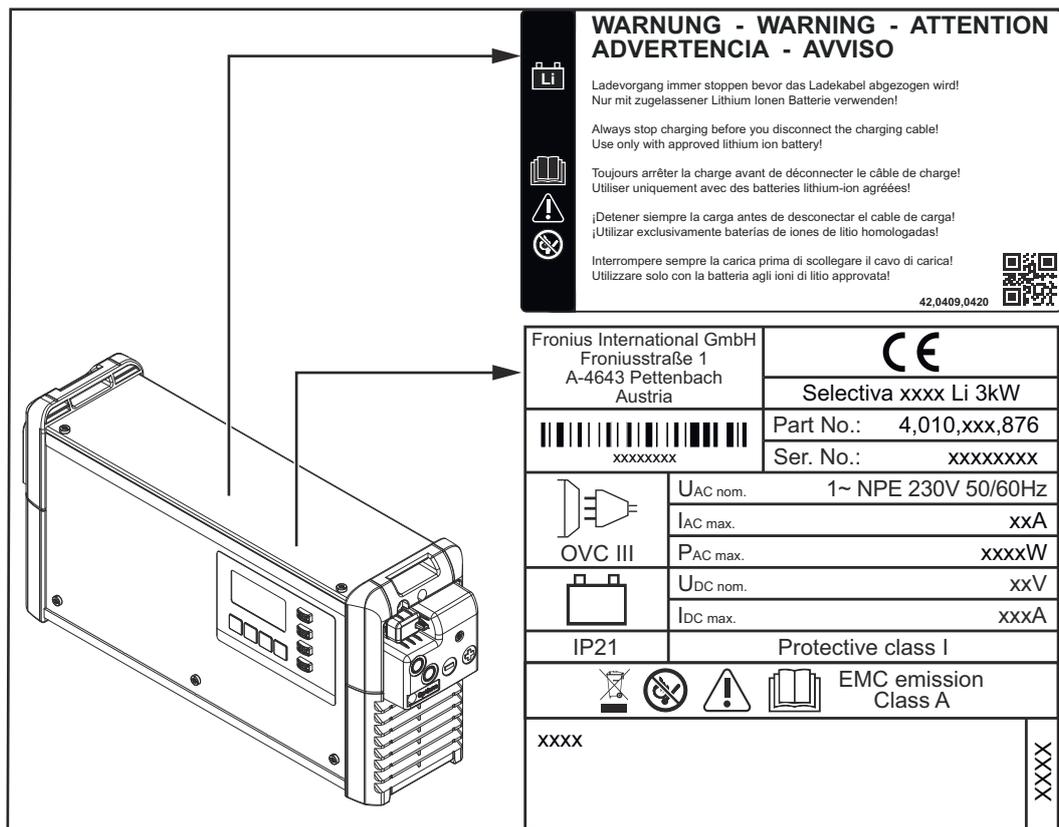
Risk of damage to the mains/charging cables.

- ▶ The mains/charging cable may only be replaced by a qualified electrician.
- ▶ Lay the mains/charging cable without a loop.
- ▶ Do not cover the mains/charging cable.
- ▶ Charging cables longer than 5 m (16 ft. 4.85 in.) must be laid individually (no bundling).
- ▶ Charging cables longer than 5 m (16 ft. 4.85 in.) can have an increased surface temperature (be aware of hot surfaces).
- ▶ In the following cases, pay special attention 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 mm<sup>2</sup> or more
  - Length of the charging cable is 5 m (16 ft. 4.85 in.) or more



**Warning notices on the device**

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



An electric shock can be fatal. The housing must never be opened by anyone other than a service technician trained by the manufacturer. The device must be disconnected from the mains before starting any work with the housing open. A suitable measuring instrument must be used to ensure that electrically charged components (e.g. capacitors) are fully discharged. Ensure that the device remains disconnected from the mains until all work has been completed.



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



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



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

## Warning notices inside the device



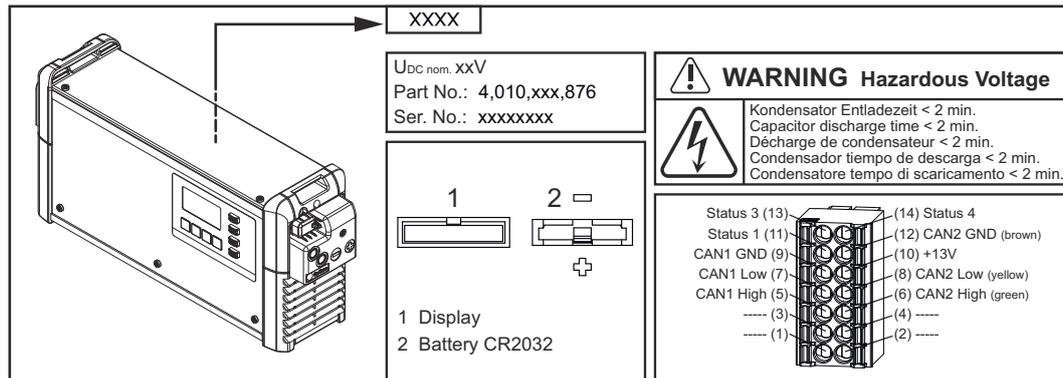
### WARNING!

#### Danger from electric current.

This can result in serious injury or death.

- ▶ The housing must never be opened by anyone other than a trained service technician.
- ▶ 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:



## Setup regulations

### **WARNING!**

#### **Danger from machines falling or toppling over.**

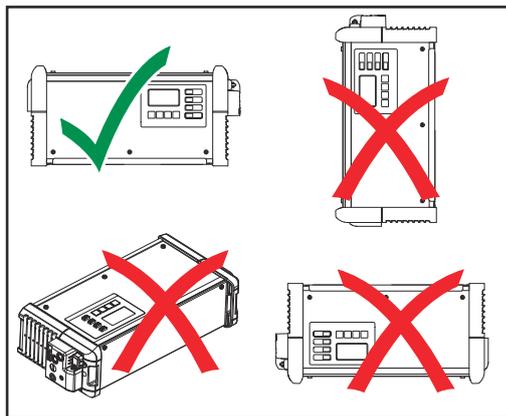
This may result in serious injury and damage to property.

- ▶ 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 IP 21 protection, meaning:

- Protection against penetration by solid foreign bodies with diameters exceeding 12.5 mm (0.49 in.)
- Protection against vertically falling drops of water

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



The device may only be operated in a horizontal position.

#### **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

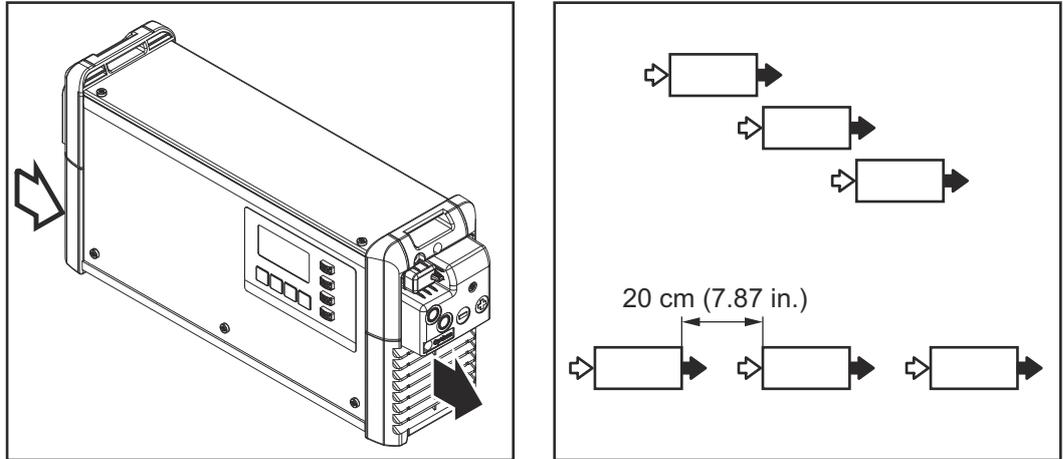
Cooling air is drawn in and flows out as indicated by the arrows in the following illustrations.

## 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 device toppling over.

This may 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.

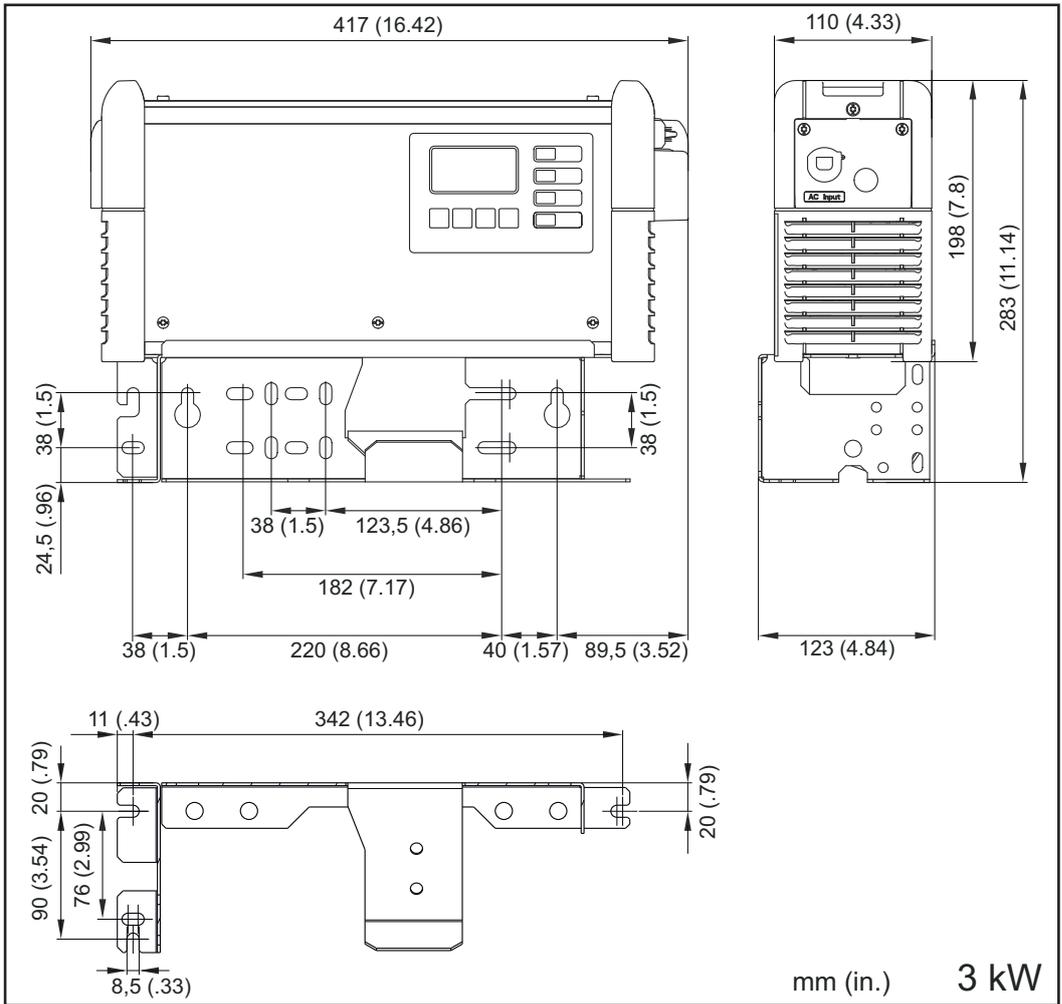
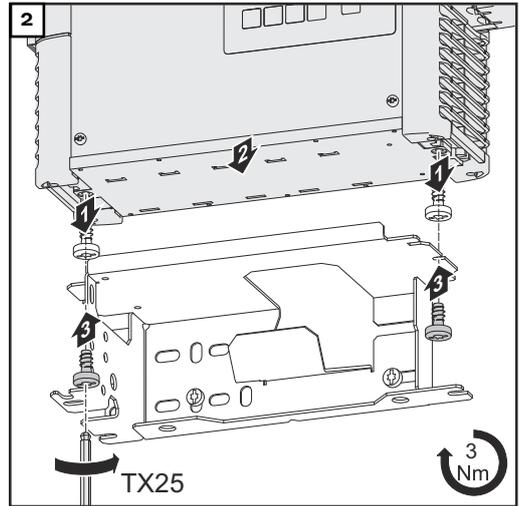
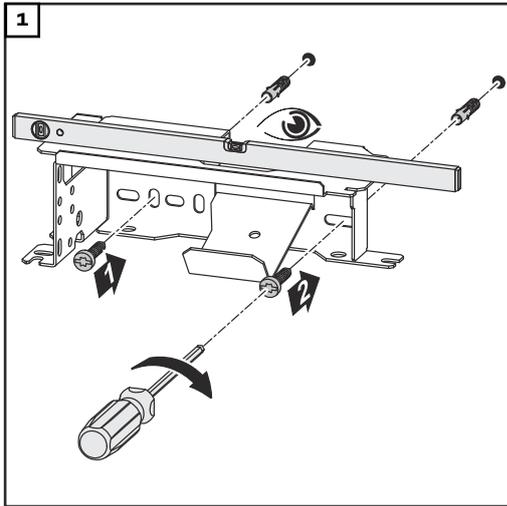
This may result in serious injury and damage to property.

- ▶ Ensure that all screw connections are secure.
- ▶ Use only with the charger provided by the manufacturer.
- ▶ Ensure 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:

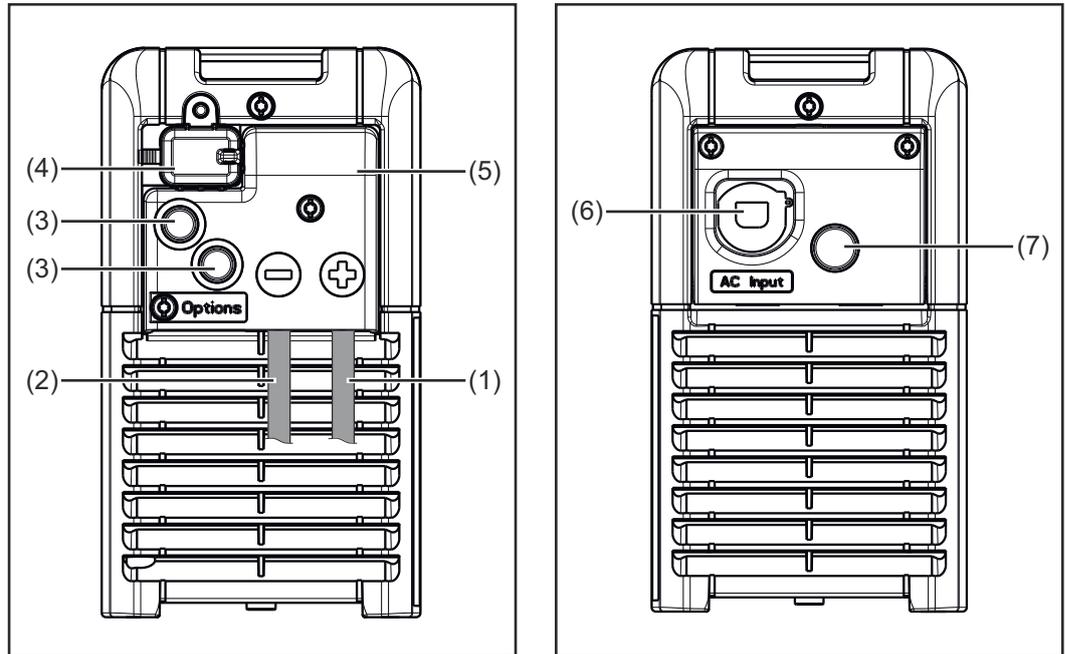
3 kW

1.35 kg (2.98 lb)

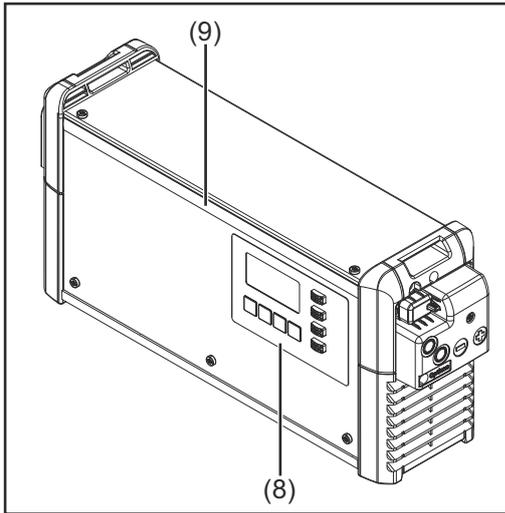


# Control elements and connections

## Controls and connections

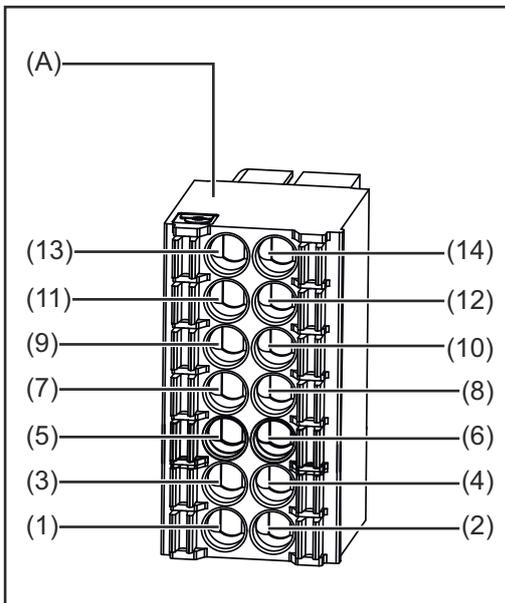


No.	Function
(1)	(+) Charging lead
(2)	(-) Charging lead
(3)	Position for options
(4)	USB port
(5)	Cover for option connector and charging leads *
(6)	Blanking cover
(7)	Mains cable

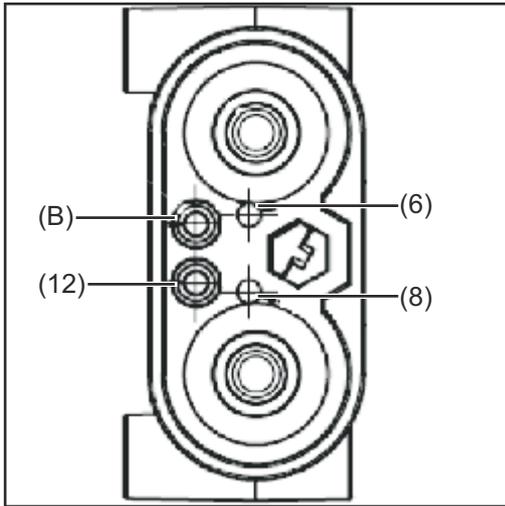


No.	Function
<b>(8)</b>	<b>Control panel</b>
<b>(9)</b>	<b>Optional LED strip</b> Lights up in different colours depending on the state of charge, as explained in the "Control panel" section

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



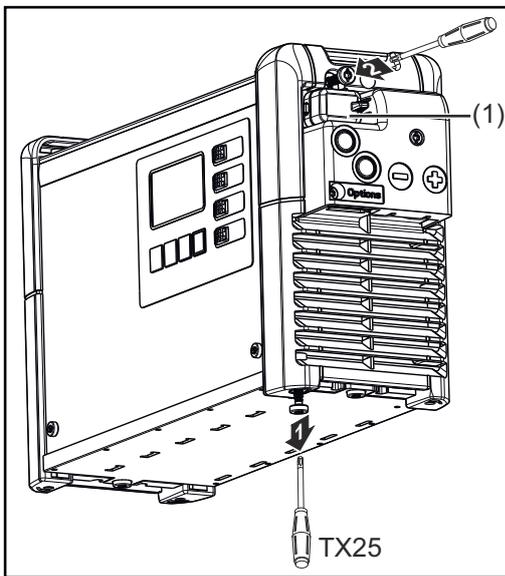
<b>(13)</b>	Status 3 LED RED	<b>(14)</b>	Status 4 LED BLUE
<b>(11)</b>	Status 1 LED GREEN	<b>(12)</b>	CAN 2 GND Cable brown
<b>(9)</b>	CAN 1 GND	<b>(10)</b>	+ 13 V
<b>(7)</b>	CAN 1 Low	<b>(8)</b>	CAN 2 Low Cable yellow
<b>(5)</b>	CAN 1 High	<b>(6)</b>	CAN 2 High Cable green
<b>(3)</b>	Not assigned	<b>(4)</b>	Not assigned
<b>(1)</b>	Not assigned	<b>(2)</b>	Not assigned



Charging plug

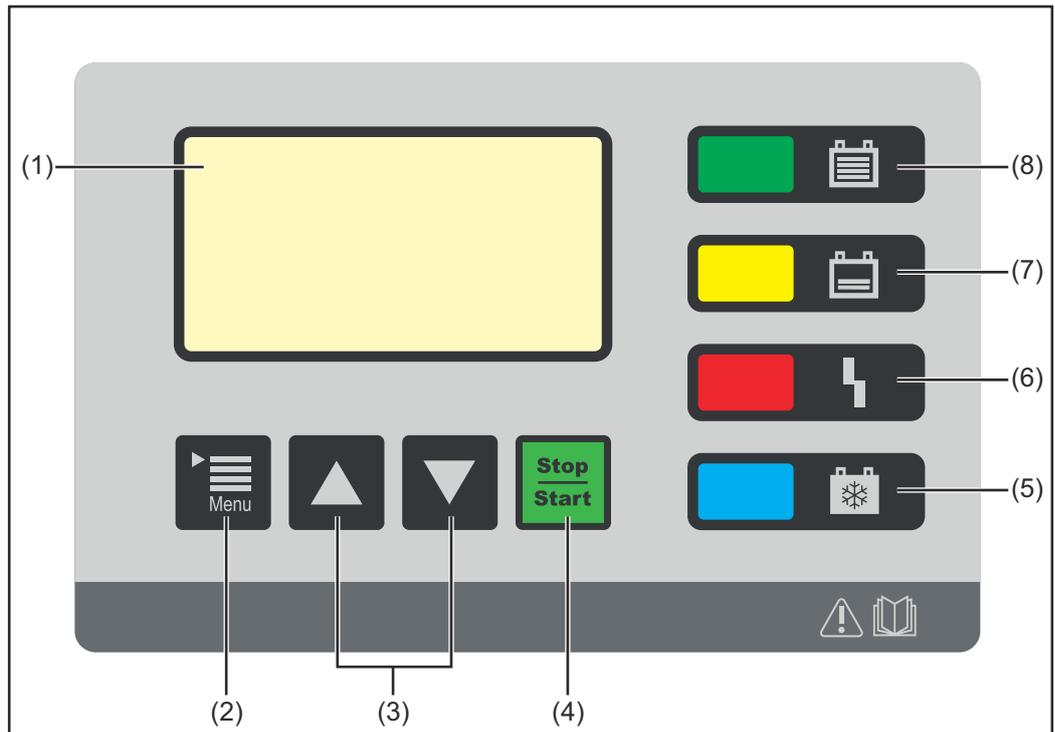
<b>(B)</b>	Detect Cable white	<b>(6)</b>	CAN 2 High Cable green
<b>(12)</b>	CAN 2 GND Cable brown	<b>(8)</b>	CAN 2 Low Cable yellow

The Detect cable (B) is not needed on the charger in this application. The Detect cable (B) is present on the charging plug, but not on the option plug (A).



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

## Control panel



No.	Function
(1)	<b>Display</b> Displays the current charging parameters Displays settings
(2)	<b>"Menu" key</b> Selects the desired menu Selects the appropriate symbol to return to the previous display
(3)	<b>"Up/Down" keys</b> Selects the desired menu item Sets the desired value
(4)	<b>"Stop/Start" key</b> For interrupting and resuming the charging process Confirms a menu item or setting
(5)	<b>"State of charge"/"Battery cooled down" indicator (blue)</b> Depending on the setting, it signals the following battery conditions, according to the "Display" chapter, "Additional functions" section: <b>Blue state of charge LED setting:</b> signals that the state of charge has exceeded a particular % value during the charging process. <b>Blue time/temperature LED setting:</b> indicates that a battery has cooled down and is ready for use. <b>On steady:</b> after charging has finished, the set cooling time or optionally the battery temperature has been reached.
(6)	<b>"Fault" indicator (red)</b> <b>On steady:</b> the charger outputs an error. The current conditions do not allow proper charge. While the red indicator is on, charging cannot take

place (charging interrupted). The relevant status code appears in the display.

**Flashes briefly every 3 seconds:** the charger outputs a warning. Charging is continued despite the adverse charging parameters. The relevant status code and the state of charge appear alternately on the display.

---

**(7) "Charge" indicator (orange)**

**Lit:** during charging

**Flashes:** if charging has been interrupted

---

**(8) "Battery charged" indicator (green)**

**On steady:** charging ended

---

# Charging the battery

## Charging

### **WARNING!**

#### **Danger due to improper handling of the lithium battery.**

This may result in serious injury and damage to property.

- ▶ Note the following points without exception:
- ▶ Only connect lithium batteries that have been approved by the manufacturer to the charger.
- ▶ Never expose the lithium battery to naked flames. Excessive heat can cause the battery to ignite or explode.
- ▶ If the lithium battery becomes damaged due to improper handling, poisonous substances can escape which are harmful to health.
- ▶ Do not drop the lithium battery into water. This may lead to a short circuit. This in turn can cause the battery to become hot, ignite or explode.
- ▶ Do not charge batteries with visible damage.

### **WARNING!**

#### **Danger due to a faulty battery.**

This may result in serious injury and damage to property.

- ▶ Before charging, ensure that the battery is in full working order.

### **NOTE!**

#### **Danger due to very dirty charging plug contacts.**

This can result in damage to property.

- ▶ 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



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

- Type of battery (Li-Ion)
- Charging characteristic, e.g. Fronius Li-Ion
- Charger voltage range, alternates with the maximum output current, or only the battery nominal voltage if a battery is connected
- Connection status:
  - Not connected, or
  - Connected
- Day of the week, date and time

The charger parameters can be set individually. More information on the charger parameters can be found under "Configuration mode" in the "Display functions"

chapter. Ensure that the battery to be charged matches the configuration of the battery charging system.

**2** Plug in the charging plug

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

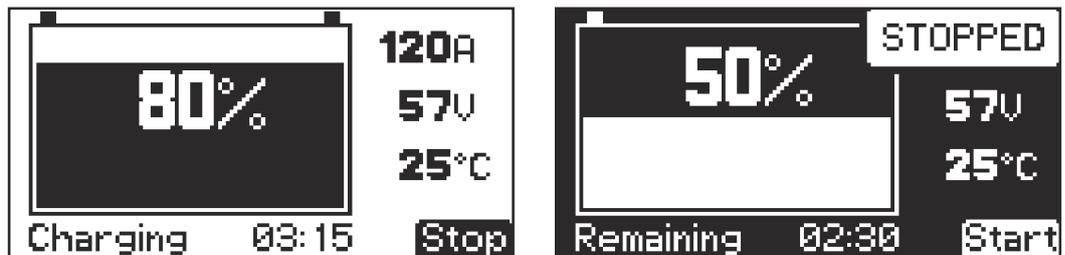
During the charging process the display shows the following values:

- Current charging current (A)
- Current charging voltage (V)
- Battery temperature (°C / °F)
- Current state of charge (%)
- The time (hh:mm) since charging started
- The remaining charging time (hh:mm)  
(provided the battery is sending this information to the charger)
- If set:  
Primary current limit (A)  
Power limitation through calendar setting (kW)

When the primary current limit or calendar-based power limitation are enabled, the respective limit value is shown on the display while charging is in progress. If both functions are enabled at the same time, the lower limit is shown.

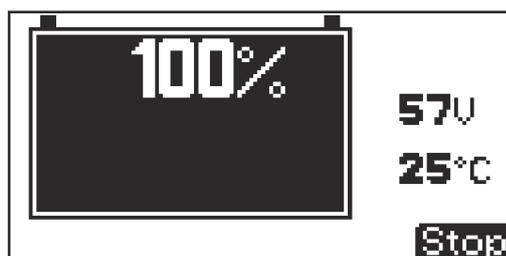


If the blue indicator is set to "state of charge" (see "Additional functions" in the "Display" chapter), the blue indicator lights up once the state of charge exceeds a defined % value.

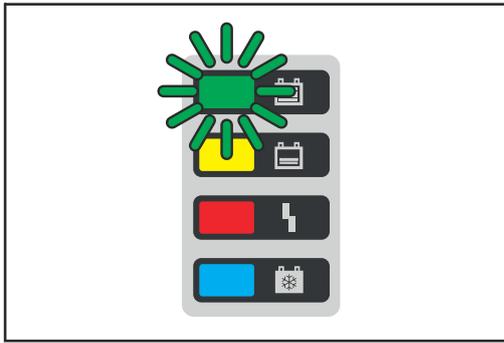


The battery symbol indicates the current state of charge. The battery state of charge is stated as a percentage.

If the charging process is interrupted because the "Stop / Start" button was pressed, the display shows that the charging process has been stopped.



As soon as the battery is fully charged, the green "Battery charged" indicator lights up on the control panel and the charging current is no longer displayed.



- The green "Battery charged" indicator is on
- The battery is always ready to use
- The battery can remain connected to the charger for as long as required

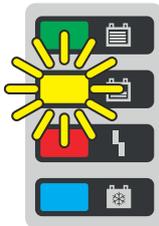
## Interrupting charging

To interrupt the charging process:



- 1 Press the "Stop/Start" key

While the charging progress is interrupted:



The "Charge" indicator (yellow) flashes

To resume the charging process:



- 2 Press the "Stop/Start" key again

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

## Stopping charging

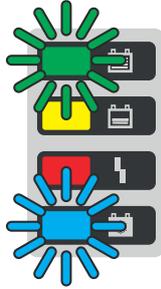
### **WARNING!**

#### **Danger when disconnecting the charging cables.**

This can result in severe personal injury and damage to property due to sparking.

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

As soon as the battery is fully charged, the following indicator lights up:



- "Battery charged" indicator (green)

Depending on the blue indicator setting, this will also light up if

- The state of charge has exceeded a specific value
- The set battery cooling time has been reached, or optionally the set battery temperature

To stop the charging process:



- 1 Press the "Stop/Start" key

- 2 Unplug the charging plug

When the charging contacts are open, the automatic open circuit voltage detection ensures that the charging contacts are de-energised.

# Display

## Overview of display modes

No.	Function
	<b>Standard mode</b> In standard mode the display shows the charging parameters.
	<b>Statistics mode</b> 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.
	<b>History mode</b> Provides information about the parameters for all the stored charging processes.
	<b>Configuration mode</b> Configuration mode enables all the settings for the device and the charging process to be adjusted.
	<b>USB mode</b> USB mode enables a device to be updated, device configurations to be saved and loaded, and the charging parameters to be recorded during the charging process - all using a USB flash drive.

As long as a battery is connected to the battery charger, the charging process can only be interrupted and resumed by pressing the "Pause/Start" button. It is only possible to change the display modes with the "Menu" button after disconnecting the battery from the battery charger. A detailed description of the display modes is given in the following chapter.

A limited menu selection is available while charging has been paused.

### NOTE!

**A limited menu selection is available while charging has been paused.**

## Standard mode

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

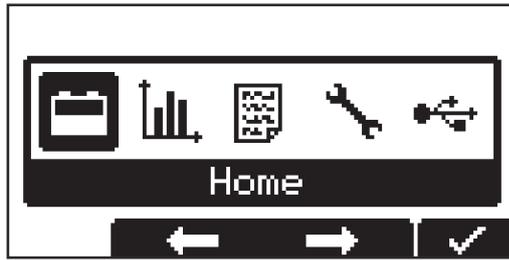


In standard mode, the display shows the following charger parameters:

- Type of battery (Li-Ion)
- Charging characteristic, Fronius Li-Ion (CAN)
- Charger voltage range, alternates with the maximum output current, or only the battery nominal voltage if a battery is connected
- Connection status:  
Not connected, or  
Connected
- 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

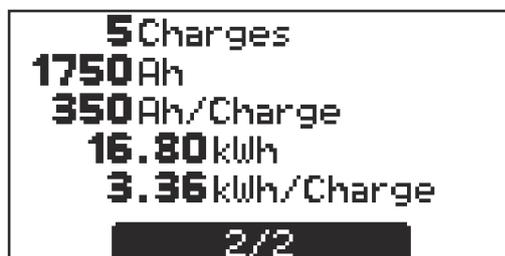


In statistics mode, horizontal bars display the frequency of the following device operating statuses:

- Idle
- Charging
- Charge Finished
- Cooldown
- Error



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



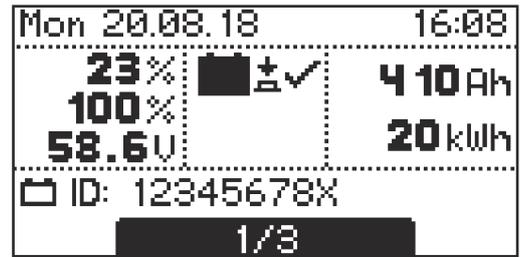
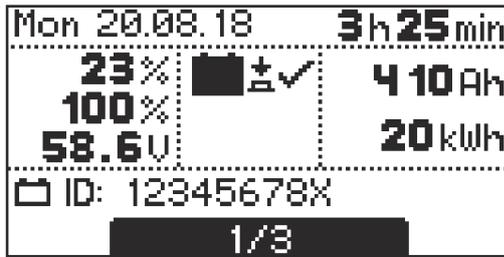
Page 2/2 shows the following values:

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

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

## History mode

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



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

Text content of the display window:

- Start date of charge, e.g. Mon 20/08/2014
- Duration of charge, e.g. 3h25min or charging start time, e.g.: 16:08
- State of charge at charge start, e.g. 23%
- State of charge at charge end, e.g. 100%
- Voltage at charge end, e.g. 58.6 V
- Consumed Ah, e.g. 410 Ah
- Consumed kWh, e.g. 20 kWh
- Battery ID, e.g. 12345678X

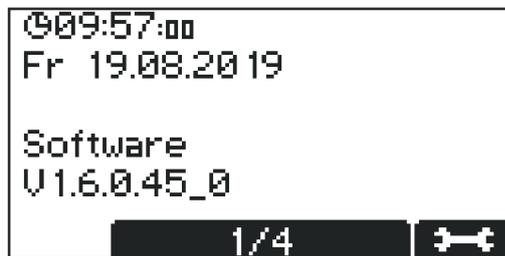
#### Symbols shown

-  - Full battery:  
Charging has been completed
-  - Empty battery:  
Charging has not been completed
-  - Exclamation mark with number:  
Warning has been output with the corresponding status code. More information can be found in the "Status codes" section.
-  - Symbol with number:  
Error has been output with the corresponding status code. More information can be found in the "Status codes" section.
-  - Key symbol with a tick:  
Charging was stopped properly using the "Stop/Start" key
-  - Key symbol with a cross:  
Charging was stopped without using the "Stop/Start" key

## Configuration mode

Configuration mode provides the following setting options:

- "Charging settings": charge settings
  - Additional settings:
  - Time delay
  - Calendar
  - Disable Start button
  - Check DC connection
- "Additional functions": Additional functions
  - Blue LED
  - External start/stop
  - External lamp
  - CAN
- "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 (mm<sup>2</sup>)
  - 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": resets settings to those when the charger left the factory or optionally to the manufacturer's defaults
  - includes a double-check prompt ("OK?") that requires the operator to re-confirm 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:

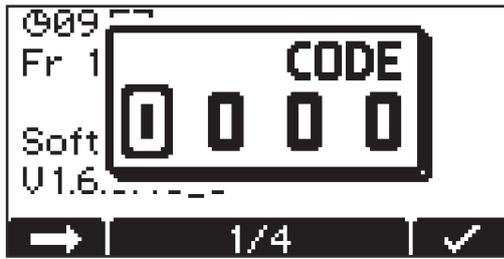
- Serial number of the charger plus serial number and version of the configuration memory
- PC board for controller/power electronics: hardware version and serial number
- Software: main software, secondary software, primary software and characteristic block version

The procedure for opening the configuration menu is as follows:



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

You will be prompted to enter a code:



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



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



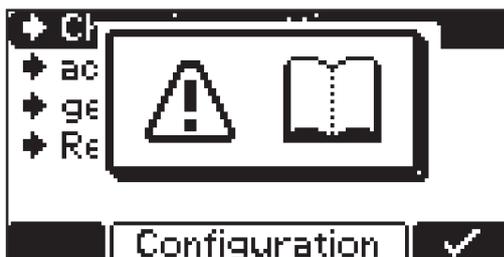
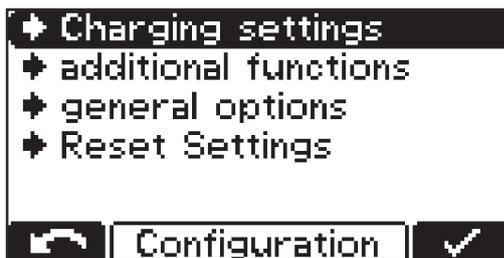
2 Press the "Menu" key to move to the next digit of the code

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



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

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



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

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

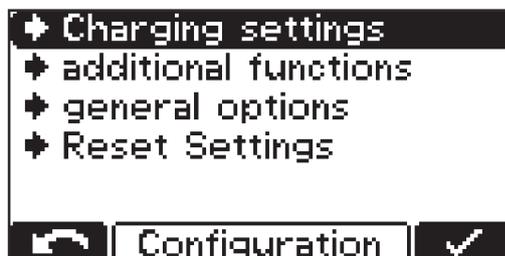
-   **1** Use the "Up/Down" keys to select the desired menu item
-  **2** Use the "Stop/Start" key to confirm the menu item, and re-confirm any double-check prompt (e.g. "OK?")
-   **3** Use the "Up/Down" keys as necessary to choose an item, e.g. "Off/On" or enter a value
-  **4** Use the "Stop/Start" key to confirm what you have entered
- 5** If the cursor 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

## Charging settings

The following section provides a detailed explanation of the "Charging settings" menu item in configuration mode. Navigation is carried out as described in the "Configuration mode" section.



- 1** Select the "Charging settings" menu item

A list appears with the following selection options:



### "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

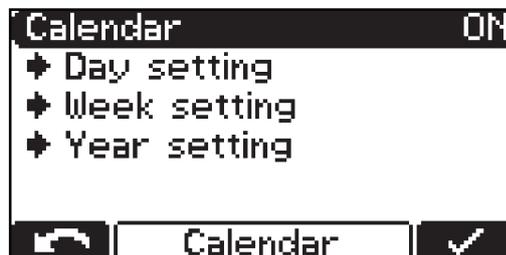
If the "Restart charging" option is activated, the charging process is automatically restarted after a fault in the electrical network as soon as the electrical network is available again.

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" - optional

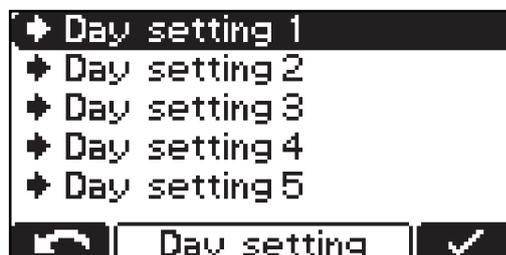
The calendar function enables charging to be started automatically according to the following criteria:

- Time window within which no charging should take place when a battery is connected
- Time window within which charging should take place when a battery is connected



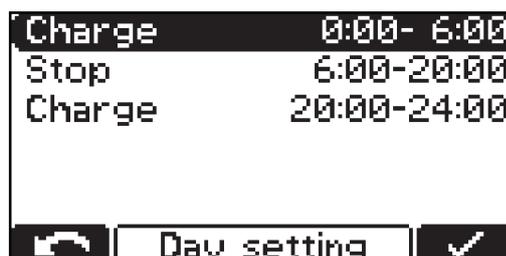
- 1 To activate the calendar function, select and confirm the "ON" setting

The following settings are possible within the calendar function:



"Day setting 1-7":

The day settings allow up to 7 different charging phase time profiles to be defined.



"Charge":

- Time window within which charging should start (e.g: 0:00-6:00, 20:00-24:00)

Stop:

- Time window within which no charging should take place (e.g: 6:00-20:00)

**Please note!** Ongoing charges are influenced by the set time windows.

- If a battery is connected at 05:45 in the above example, charging is stopped by the specified end time (6:00 in the example) of the set time window. The subsequent charging phase resumes the charging process.
- If the battery is connected within the stop time window, charging will start automatically in the next time window.



Each time window can be adjusted in 15-minute increments. It is possible to assign up to 15 time windows per day setting.

For each time window, either Charge or Stop can be selected.

**"AC power limit"**

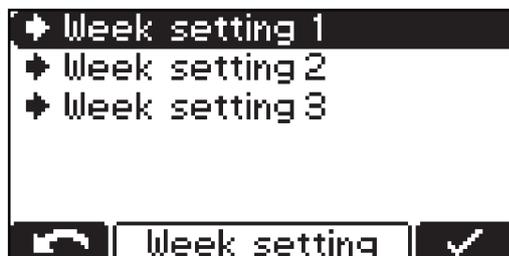
- Requirement: "Charge" is selected
- A maximum AC power can be set per time window, which the device must not exceed in this phase.



The "AC power limit" can be adjusted in increments of 0.5 kW.

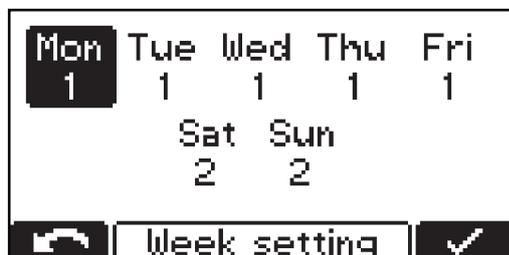
The minimum and maximum values differ for the different device classes. The minimum value is approx. 25% of the maximum output power of the device concerned.

**Please note!** The efficiency of the device can be negatively influenced by a set power limit.

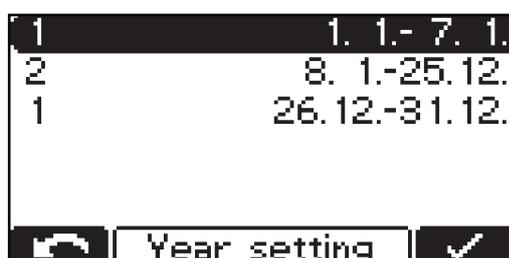


"Week setting":

- It is possible to configure 3 different week settings.



Each day of the week can be assigned one of the previously created day settings.



"Year setting":

- It is possible to assign a week setting to several calendar periods (e.g. 1.1. - 7.1.).

When the calendar function is activated, a calendar symbol appears in the display.

**"Disable Start Button"**

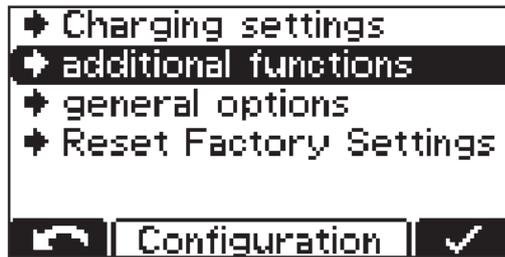
- ON:
  - It is not possible to start the charging process using the "Stop/Start" button, which prevents unauthorized access, for example.
- OFF:
  - It is possible to start the charging process using the "Stop/Start" button

**"Check DC Connection"**

- ON:
  - An error is output if an open circuit is detected several times per charge and the battery remains connected (e.g. bad plug contact)
- OFF:
  - No error is output when an open circuit is detected.

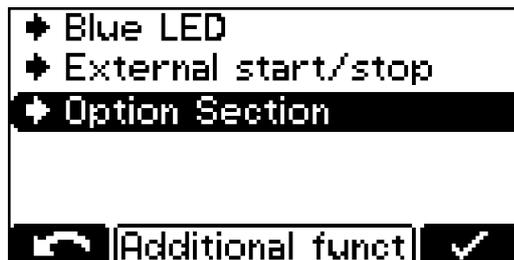
**Additional functions**

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



1 Select the "additional functions" menu item

A list appears with the following selection options:



**Blue LED:**

- Setting of the "Blue LED" indicator:
  - Governed by state of charge: set value is the battery state of charge in %. The blue indicator lights up once the state of charge exceeds the set percentage value while charging is in progress. The blue indicator will never light up if the value is set to 100%.
  - Setting the time (minutes) that should be allowed to pass before the "Blue battery cooled" down indicator should come on to signal that a battery has cooled down sufficiently. The time from the end of charging is used as the setting.
  - Governed by temperature: the set value is a temperature below which the blue "battery cooled down" indicator should come on to signal that a battery has cooled down sufficiently.

**External start/stop:**

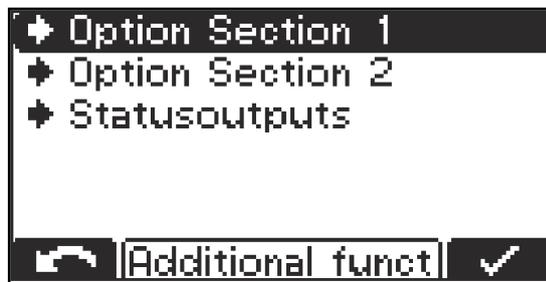


The following settings are available when external start/stop is selected:

- Start:
  - normal ON:
    - Charging starts when an external switch is closed and a battery is detected
    - Or when the charging plug is connected by closing the auxiliary contacts and a battery is detected
  - normal OFF:
    - Charging starts when a battery is connected
- Stop:
  - normal ON:
    - Charging is interrupted when an external switch is opened
    - Or when the charging plug is disconnected by opening the auxiliary contacts
  - normal OFF:
    - Opening of an external switch or the auxiliary contacts is ignored
- Button:

The function of the "Stop/Start" key can be simulated using an external button

Option Section:



"Option Section 1" is currently not used for any adjustable settings.

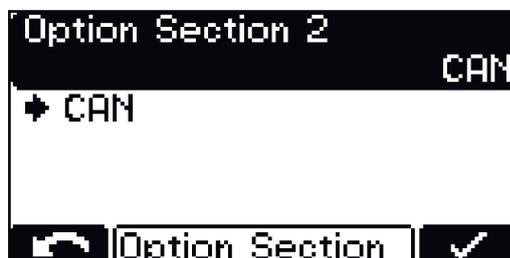
The following can be adjusted under "Option Section 2":

- CAN2 protocol  
(for Li-Ion protocols the CAN2 interface is used as standard.)

The following can be adjusted under "Statusoutputs":

- Setting for external lamp  
(normal or RGB)

CAN submenu item:



The CAN protocol to be used can be set under the "CAN" submenu item. This depends on the respective application.



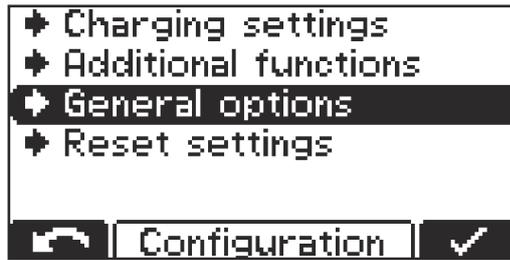
A tick appears in the "Status" area as soon as a CAN connection has been successfully established. Otherwise a "x" is shown.

To view the protocol version number:  
- Press the "Stop/Start" key

The "-> Statistics" area contains further information on the CAN communication.

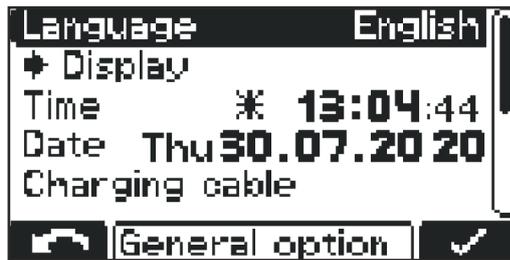
## General settings

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



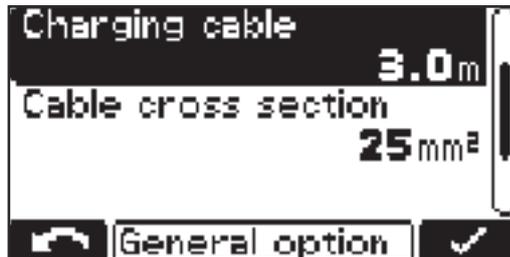
- 1 Select the "general options" menu item.

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:

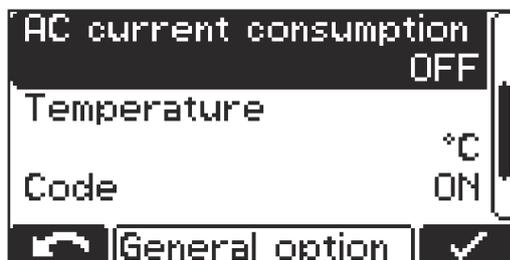


- Basic length of charging cable (m)

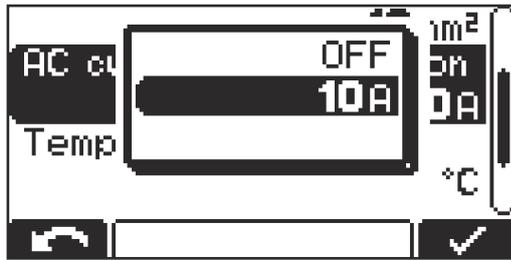
### Cable cross section:

- Cross-section of the charging cable (mm<sup>2</sup>)

### AC current consumption:

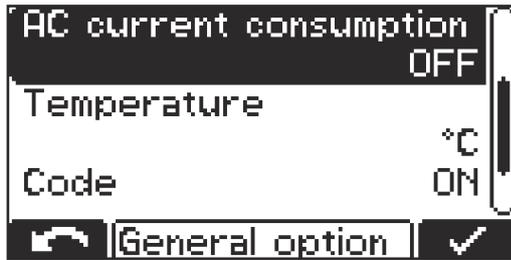


- Adapt the maximum consumed device current to the on-site electrical installation or the device connector fitted on the device.



- 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:**

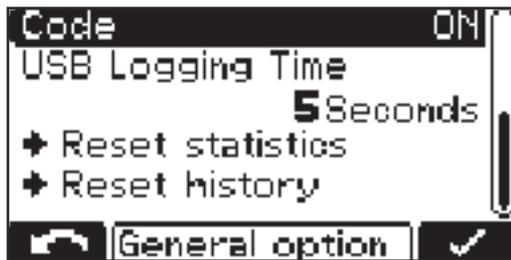


- Temperature in °C / °F

**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 offers 2 possibilities to reset all settings made:



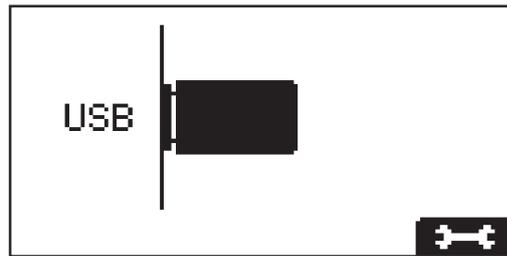
Reset Factory Settings:

- Resets to factory settings.

Reset Default Settings:

- Resets settings to the manufacturer's defaults.

## USB mode



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

The USB flash drive must conform to the following specifications:

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

The I-SPoT VIEWER software supports the visualisation and evaluation of data on the USB flash drive. The I-SPoT VIEWER software can be found online at the following address: <http://www.fronius.com/i-spot>.

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

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



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



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



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

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

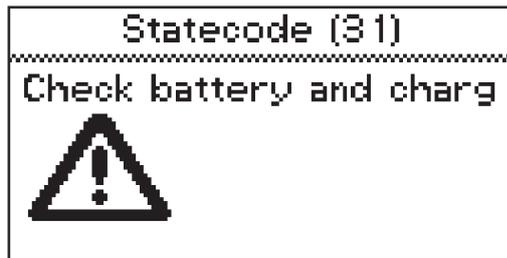


- **Safely remove**  
Safely remove the USB flash drive as soon as the desired action has been completed.
- **Update**  
A list of the suitable update files stored on the USB flash drive opens. Select and confirm the desired file in the same way as scrolling through the settings.  
Do not change the automatically assigned file names of the update file!
- **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. Events are also saved.  
The following time ranges can be selected for the datalogger:
  - 1 month
  - 3 months
  - All
  - Since the last save
- **Download optional**  
The following options are available:
  - I-SPoT VIEWER  
The logged data is saved in the same way as for the "Download" function, but saving only the I-SPoT VIEWER data.
  - Save Datalogger  
The logged data is saved in the same way as for the "Download" function, but is saved not in the I-SPoT VIEWER format, but as ".csv" files (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 dealer text**  
A text file can be loaded from the USB flash drive that is displayed as soon as the device enters an error state. The text file can, for example, contain the contact details of the dealer. The file must be saved on the USB flash drive as a ".txt" file in "unicode" format. The file name must be "dealer.txt". The number of characters is restricted to 99.
- \* If a USB flash drive is connected while charging is in progress, the .csv files are saved directly to the USB flash drive. The folder structure here is also created automatically and differs due to the presence of the "Datalog" folder instead of the "Charges" folder.

## Status codes



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

- Battery 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 battery 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 mains voltage
(12)	Check mains (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

#### **Status codes in the event of a charging error**

<b>No.</b>	<b>Cause / Remedy</b>
(31)	Timeout in I1 phase
(32)	Timeout in U1 phase
(33)	Battery overvoltage in the I2 phase
(34)	Ah exceeded
(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 CAN fault (battery)**

<b>No.</b>	<b>Cause / Remedy</b>
(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 gateway fault**

<b>No.</b>	<b>Cause / Remedy</b>
(101)	Setting CAN Connect is active and no CAN connection to the gateway could be established for at least 2 minutes.
(102)	No gateway connection to the back-end.
(103)	Gateway is online but has registered no charger or another charger.

**Status codes in the event of a TagID fault**

<b>No.</b>	<b>Cause / Remedy</b>
(200)	Set technology on the battery charger is not compatible with the connected battery.
(201)	The nominal voltage of the battery is not supported by the battery charger or is prevented by a battery charger setting
(202)	The battery charger power is not high enough to charge the connected battery
(203)	CAN communication to TagID could not be established
(204)	TagID data could not be read
(205)	TagID update could not be performed
(206)	TagID temperature sensor is faulty
(207)	TagID voltage sensor is faulty
(208)	TagID battery master data is invalid or not available
(209)	Faulty EEPROM memory
(210)	Faulty flash memory
(211)	Invalid device signature
(212)	TagID data could not be written
(213)	The charger power is not sufficient to charge the battery in the desired charging time
(214)	Too much power dissipation on the DC path
(215)	TagID level sensor is mounted in the wrong cell or is faulty
(216)	TagID software crash

**Status codes in the event of a temperature monitoring fault**

<b>No.</b>	<b>Cause / Remedy</b>
(300)	Connection to the temperature sensor could not be established
(301)	Faulty temperature sensor
(302)	Temperature exceeded - temperature too high

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

<b>No.</b>	<b>Cause / Remedy</b>
(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)	Power failure
(509)	Wrong device configuration
(510)	Primary EEPROM faulty
(527)	Phase shifter overcurrent
(528)	High charge 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**

<b>No.</b>	<b>Cause / Remedy</b>
(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 modification detected
(552)	Configuration memory chip invalid
(553)	Primary update failed
(554)	Fault in the communication
(555)	Incorrect device software
(557)	Interruption of the InterLock communication
(558)	The second device, which is connected via the InterLock option, has an error
(559)	The second device, which is connected via the InterLock option, is incompatible with this device

# Options

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## Safety

The housing has to be partially opened to connect the options.

 **WARNING!**

**Danger of electric shock.**

This may result in serious injuries or death.

- ▶ The housing must never be opened by anyone other than a service technician trained by the manufacturer.
  - ▶ Before working with the housing open, the device must be disconnected from the grid.
  - ▶ A suitable measuring device must be used to ensure that electrically charged components (e.g., capacitors) are completely discharged.
  - ▶ With the aid of a clearly legible, understandable warning sign, ensure that the device remains disconnected from the grid until all work has been completed.
- 

 **WARNING!**

**Danger due to work that is not carried out properly.**

This can result in severe personal injury and damage to property.

- ▶ All work involved with connecting optional components must only be carried out by service technicians trained by the manufacturer.
  - ▶ If there are Installation Instructions or User Information for the optional component concerned, then all warning notices and instructions therein must be obeyed.
  - ▶ For all options with electrical connections, a safety inspection must be carried out in accordance with the applicable national and international standards and guidelines after connection work has been carried out.
  - ▶ You can obtain more information about the safety inspection from the authorized service body.
  - ▶ The service body will provide the necessary documents upon request.
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## 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.

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## 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)

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## "Mobile" kit

A carrying strap makes it easier to move the device.

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## Wall bracket

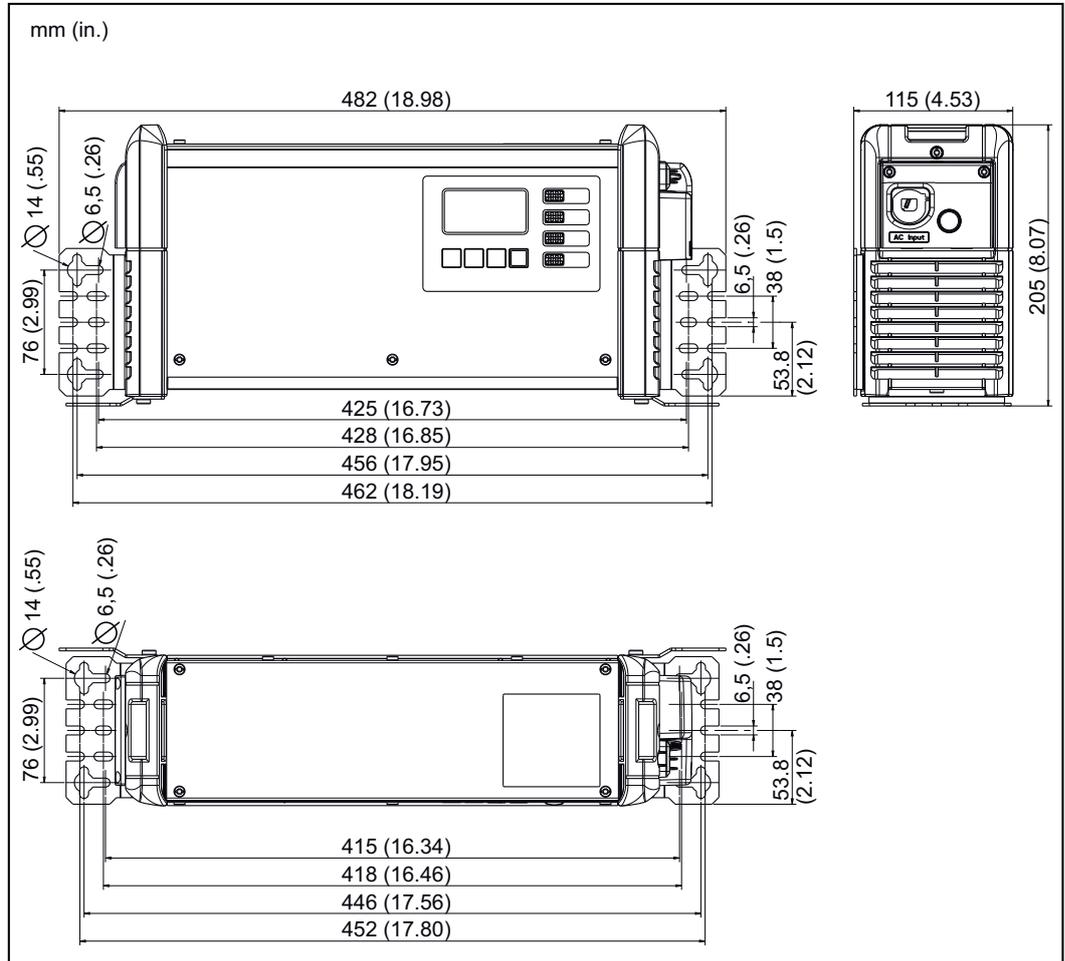
The robust wall bracket ensures safe fitting on site. More information can be found in the corresponding Installation Instructions.

**Floor bracket**

The robust floor bracket ensures safe fitting on site. More information can be found in the corresponding Installation Instructions.

**Mounting plate**

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



# Technical data

## Selectiva 3 kW Li-Ion

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

- 1) The device is approved for operation on neutral-earthed networks.
- 2) The leakage current to earth is less than 3.5 mA.
- 3) Interface to a 230/400 V, 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 <sup>6)</sup>
Selectiva 2120	15.6 A	3320 W	24 V	120 A	8.7 kg (19.18 lb)
Selectiva 4060	15.3 A	3270 W	48 V	60 A	8.7 kg (19.18 lb)

- 6) With standard mains and charging leads







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