SOLOPORT

OPERATING INSTRUCTIONS

Solar carport

SP40/5-1 | SP40/5-1A | SP40/5-1W | SP40/5-1AW
SPG5 | SPG5-A | SPG5-W | SPG5-AW
SPG | SPG-A | SPG-W | SPG-AW

Please read this manual before using the product and follow the instructions it contains!

CONTENT

FOREWORD

Congratulations on the purchase of your new carport. The carport has been manufactured from high-quality materials, especially for durable and reliable use. For your own safety and for the correct operation of the electrical components, be sure to read and follow these operating instructions before using the carport. Keep these operating instructions. Check the wallbox, the inverter, the solar modules and the aluminium frame for transport damage. Damaged components must not be used. The main purpose of the carport is to provide shelter for vehicles and to safely charge electric cars and other electrically powered devices. At the same time, an off-grid energy storage system can be charged ecologically. Improper handling may result in injury or damage to the equipment. Any liability for damage resulting from the improper use of the individual components or the disregard of specifications and rules of conduct in these operating instructions is excluded. The operator is responsible for ensuring correct use by authorised persons.

DEFINITION OF TERMS

OPERATORS AND INTENDED USE

Persons who use this carport. This use refers, among other things, to safe use, adjustment and cleaning from the outside while avoiding all hazards. The same is due to disproportionate and incorrect usage behaviour. This results from reasonably foreseeable misuse and the safety instructions in these operating instructions. Intended use refers to the use of this carport in accordance with the information provided in these operating instructions.

CARPORT

This (solar-powered) carport, with all attachments, including all components, which are mounted on the cabinet. In these instructions, we always refer to the carport with solar modules, even if components or the frame are sold separately.

REASONABLY FORESEEABLE MISUSE

Use of this carport in a manner not intended by the designer but which may result from readily foreseeable human behaviour.

TARGET GROUP

Group of persons intended by the manufacturer for these operating instructions (operator, electrician).

TECHNICAL DATA

GENERAL

Type	Unit	PKW	Camper van
Total length	mm	7100	
Total width	mm	3860	
Total height	mm	3540	4500
Total length solar modules	mm	6950	
Clearance height	mm	2200	2920
Frame material		Aluminum	
Frame weight	kg	176	192
Sockets	V	2 x 230	
Access protection		Keypad	
Roof load	kg/m²	540	
Wind load	km/h	108	

SOLAR PANEL

Type	Unit	Value
Width	mm	1722
Depth	mm	1134
Height	mm	30
Weight	kg	22
Max. power	W	420
Rated voltage	V	31.6
Number of cells		108
Cell material		Monocrystalline silicon
Efficiency	%	21.51
IP class junction box		IP68

BATTERIES

Type	Unit	Value
Width	mm	521
Depth	mm	269
Height	mm	224
Weight	kg	12 x 67
Number		12
Rated voltage	V	12
Rated capacity	Ah	280
Battery type		Lead-gel battery

INVERTER

Type	Unit	Value
Width	mm	420
Depth	mm	110
Height	mm	310
Weight	kg	14.5
Rated output power	kW	8.2
Max. input power	kW	10.2
Rated output voltage	V	230 (± 5)
Max. DC input voltage	V	500
Max. input current	A	27
Max. solar charging current	A	160
Short-circuit protection		Circuit-breaker
Interface		WLAN

WALLBOX GENERAL

Type	Unit	Value
Brand		SoloPort
width	mm	152
Depth	mm	96
Height	mm	239
Weight	kg	3.6
Charging cable length	m	5

WALLBOX ELECTRICS

Type	Unit	Value
Required supply voltage	V	220
Required connection frequency	Hz	50
Output voltage	V	220
Output power	kW	1.8 – 7
Charging power	kW	1.4 – 7.3
Power adjustment		Yes
Control system		App
Output current	A	6 – 32
Phases		1
Overvoltage protection value	Vac	265
Undervoltage protection value	Vac	175
Overtemperature protection value	°C	80

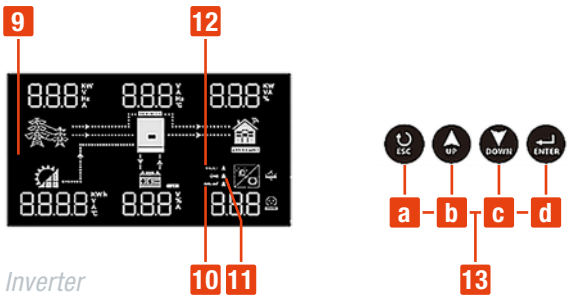
Type	Unit	Value
Protection value against electrical leakage	mA	AC30 + DC6
RFID		No
Charging mode		Automatic, time control
Average lifetime	h	50000
Operating temperature	°C	-25 – + 55
Air humidity	%	0 – 95
Altitude	m	< 2000
Mounting		Wall mounting
Cooling		Natural cooling
IP protection class		IP65
Connection type		Type 2 according to IEC 62196-2

The technical data refer to the model SP40/5-1. Observe the technical data of your product.

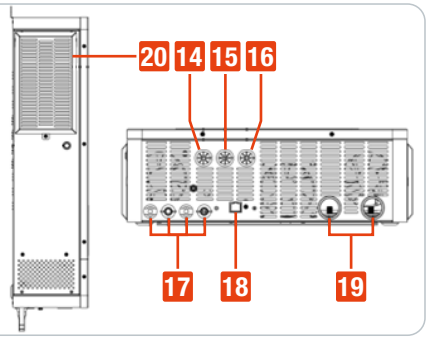
OVERVIEW OF MAIN COMPONENTS

Wallbox

No.	Designation
1	Off switch
2	Status light
3	Charging plug for vehicle connection
4	Charging cable
5	Connection cable
6	Charging plug holder
7	Charging plug cover



Inverter



Fuse box

No.	Designation
8	Type plate with serial number
9	LCD display
10	Status display
11	Charge level indicator
12	Error display
13	Function buttons
13a	Back
13b	Up
13c	Down
13d	Confirm
14	AC input
15	Main output
16	Second output
17	Solad system inputs (PV1 / PV2)
18	LAN connection (RS-232)

No.	Designation
19	Battery input plus and minus
20	Air inlet
21	Lock
22	Inverter
23	Battery disconnection switch
24	Keypad
25	230 V double socket
24	Wallbox
25	Storage compartment for instructions

EQUIPMENT

Equipment / accessories	SPG / SPG-A / SPG-W / SPG-AW	SPG5 / SPG5-A / SPG5-W / SPG5-AW	SP40/5-1 / SP40/5-1A / SP40/5-1W / SP40/5-1AW
12 solar modules		•	•
Aluminum frame	•	•	•
Luminaire with motion detector			•
Control cabinet			•
Wallbox			•
Inverter			•
Keypad			•
Earthing spike			•

Observe your model with the corresponding equipment during assembly and the further instructions in the manual.

HANDLING

Note: This chapter refers exclusively to operation by the end user. Further technical data and maintenance measures by qualified personnel can be found in the chapter „Maintenance & repair by qualified personnel“.

SAFETY INSTRUCTIONS

GENERAL

For your own safety and for the proper use of this carport, it is essential that you read and observe these operating instructions before using it. All safety instructions listed here must be observed to ensure the safety of all users, as the carport generates high and strong direct currents as well as 230 V alternating current. Any liability for damages resulting from the improper use of the carport or the disregard of specifications and rules of conduct in these operating instructions is excluded. In general, comply with all legal regulations and specifications regarding occupational safety.

- When transporting the entire carport incl. control cabinet, pay attention to the centre of gravity. Falling components can be damaged or cause injuries.
- Only transport and store the control cabinet standing up. Transporting it lying down damages internal components.
- Transport the product using suitable lifting equipment. Use the fork openings underneath the enclosure. Avoid jerky movements during transport to prevent tipping.
- Only erect the carport in locations for which you have a building permit and fix it securely. Install the grounding spike according to the installation instructions to protect the electrical components from lightning strikes. If necessary, contact the locally responsible office or authority to clarify building code obligations.
- It is the owner‘s responsibility to take care of the building permits. These differ depending on the place of installation (e.g. country / state / city).
- Ensure that operators and fitters have read these operating instructions and follow the regulations for safe working.
- Keep unauthorised persons, especially children, away from the electrical equipment.
- Modifications to the carport, especially to and in the control box, must never be carried out by yourself. The control box is considered a „locked electrical operating facility“. Only qualified electricians are permitted to open it.
- Only use the components when fully assembled.
- Do not use the electrical components in an explosive environment.
- Persons wearing a pacemaker or implanted defibrillator (ICD) should contact their doctor or manufacturer before using the solar carport or keep a safe distance from the battery control cabinet to avoid any interference.
- Maintenance and servicing work must be carried out regularly by qualified personnel in accordance with the applicable regional standards and regulations. Electrical work may only be carried out by qualified electricians or under their direction and supervision.
- Turn the battery disconnect switch to disconnect the batteries from the rest of the system. This is mainly necessary during work on the electrical system by skilled personnel.
- Make sure that no liquids get near the charging socket.
- Do not clean vehicles parked under the carport with high pressure water during charging.
- Do not make any modifications or changes to the units without the manufacturer's consent and only use SoloPort brand components with this system. Non-compliance will result in exclusion of warranty.

OPERATING INFORMATION

- Contact the manufacturer or trade partner if you have any questions about the product and the technical equipment.
- Keep these operating instructions. Stow them in the compartment provided inside the control cabinet.
- Lock the wallbox after charging to prevent unauthorised persons from using it.
- Lock the control cabinet and stow the keys in a safe place.
- The recommended ambient temperature for the operation of the batteries at maximum capacity is between 10 °C and 30 °C.
- Make sure that the control cabinet is not exposed to direct sunlight. If the temperature is too high it switches off completely to prevent overheating.
- At low temperatures, the capacity of the battery storage decreases. This is not a defect and is exclusively due to the physical properties of lead-gel batteries.

WALLBOX

- Check the charging cable for damage before starting a charging process.
- Do not leave the charging coupler on the ground and do not drag it across the ground.
- Clean the wallbox with a soft cloth. Do not use any devices that work with high pressure water.
- The safety devices on the charging system must not be dismantled, manipulated or bypassed.
- Before each use, check that the safety devices on the housing, connection cable and charging coupling are undamaged and fully functional.
- The charging cable must not be under tension. Drive your vehicle close enough to the wallbox to avoid mechanical tension. Do not pull on the charging cable.
- The wallbox is not suitable for charging vehicles with gassing batteries.

The wallbox WBE7/1-1 complies with the European directive on electromagnetic compatibility with regard to interference radiation when operated correctly.

ASSEMBLY INSTRUCTIONS

CONNECTING THE SOLAR MODULES

The solar modules are connected to the control cabinet. Do not connect them directly to the wallbox.

1. Mount the solar modules on the frame of the carport.
2. Connect the cables of all solar modules in series. Follow the installation instructions for the solar carport.
3. Place the control cabinet in the position as shown in picture **A**. Screw it to the supports of the carport. Use the enclosed mounting material for this.
4. Install the earth spike by anchoring it in the ground and connecting it to the intended location in the control cabinet.
5. Plug the free ends of the cables from the solar modules into the outside of the control cabinet, as shown in picture **B**.
6. Set the main switch in the fuse box to the „ON“ position, as shown in picture **C**.
7. Turn the red disconnector switch to the „ON“ position, as shown in picture **D**.

A

B

C

D

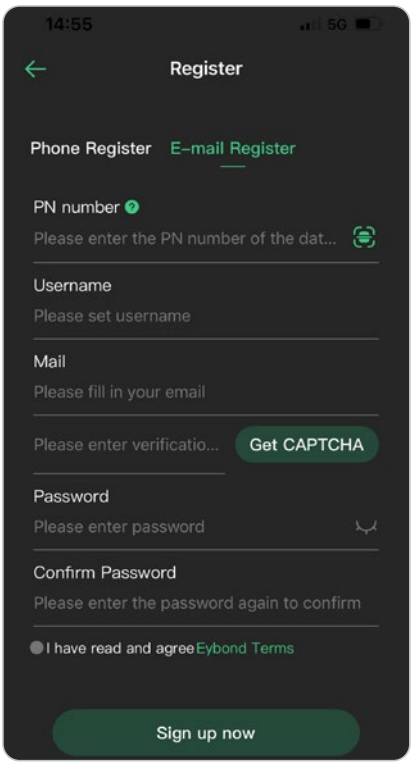
OPERATING INSTRUCTIONS

APP INSTALLATION

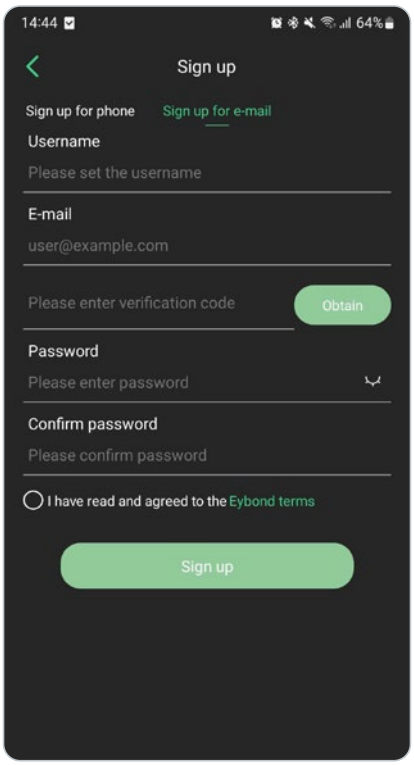
IOS

Android

1. Download the SmartESS app from the AppStore or PlayStore.
2. Create a new account in the app by clicking on „Register“.
3. Follow the instructions of the app. Select these input options:
   3.1. user name (username)
   3.2. mail
   3.3. password
4. Send a verification code to your email address by clicking on „Get verification code“. Enter this code in the empty field next to it.



IOS

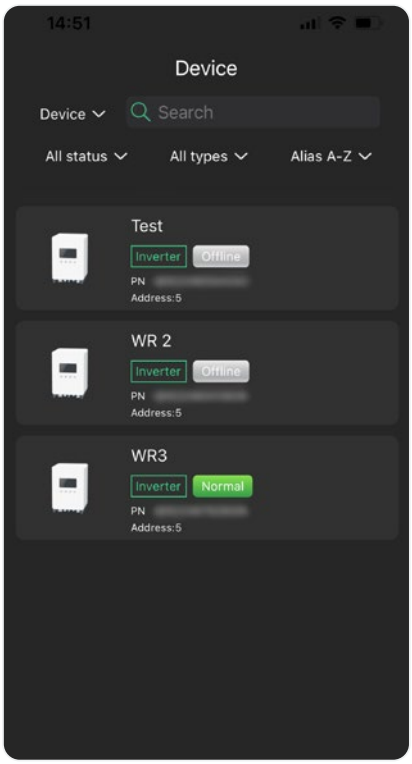


Android

5. Pair the app with your inverter:
   5.1. Do not close the app under any circumstances during pairing with the inverter.
   5.2. Go to the WLAN settings of your end device (Android or IOS).
   5.3. Select the serial number of the WLAN stick located to the left of the fuse box as the new WLAN connection for your terminal.
   5.4. Enter the initial password of the WLAN stick. It is 12345678.
   5.5. Go back to the SmartESS app and open the „Me“ tab.
   5.6. Click on the blue icon in the top right corner („network“). Select „Wi-Fi Config“ here.
   5.7. In this menu, search for WLAN connections in the immediate vicinity. To do this, click on the WLAN symbol.
   5.8. Then pair the stick with the desired WLAN.
   5.9. Fill out the information protocol for your inverter. Wait approx. 5 minutes until the inverter appears in the overview.
   5.10. Finally, reset your mobile phone WLAN to the original one. The app setup is complete.

The initial password of the WLAN stick is 12345678. Change this password in the settings of the stick as soon as you have completely set up the device.

You need a 2,4 GHz network to connect to the inverter.



IOS

Android

Now the unit is paired with the app and operating information can be retrieved via the terminal. This is described below.

INSTRUCTIONS FOR USING THE APP

Please note that the key figures displayed in the app are only updated every 5 minutes. This can lead to different values in your vehicle app and the SmartESS app.

The SmartESS app serves as an information tool to help you get the most out of your SoloPort carport.

The key figures shown are only approximate values and are intended to help you use the carport as sustainably as possible.

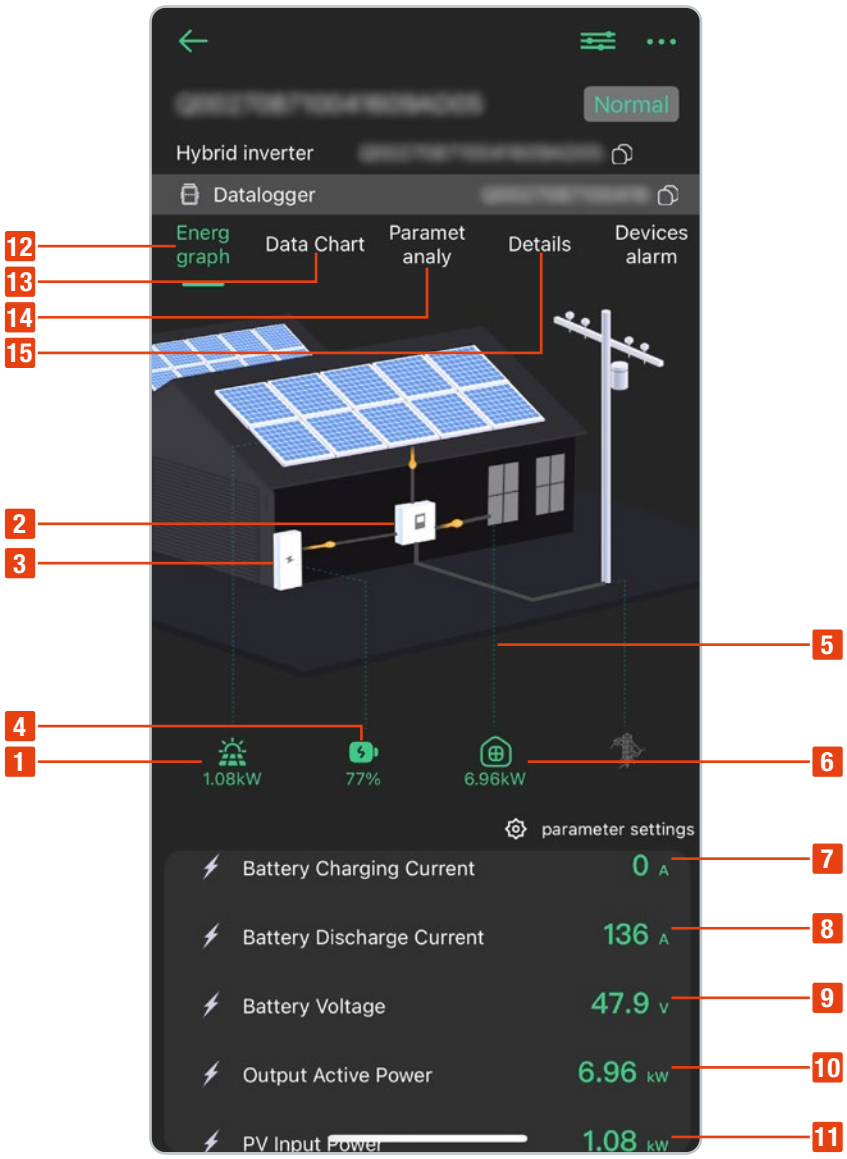
Due to physical properties, the battery voltage reflects the actual state of charge of the battery more accurately than the percentage value shown in the app. At a battery voltage of 57.7 V, the battery is fully charged.

As soon as the battery drops below a voltage of 41 V, the current drain is automatically terminated. This protects the battery from discharging too deeply and thus guarantees a long battery life.

Depending on the discharge level, the battery voltage drops due to physical conditions. This has no influence on the state of charge of the battery.

APP INTERFACE

Click on the set up device to view the operating system.

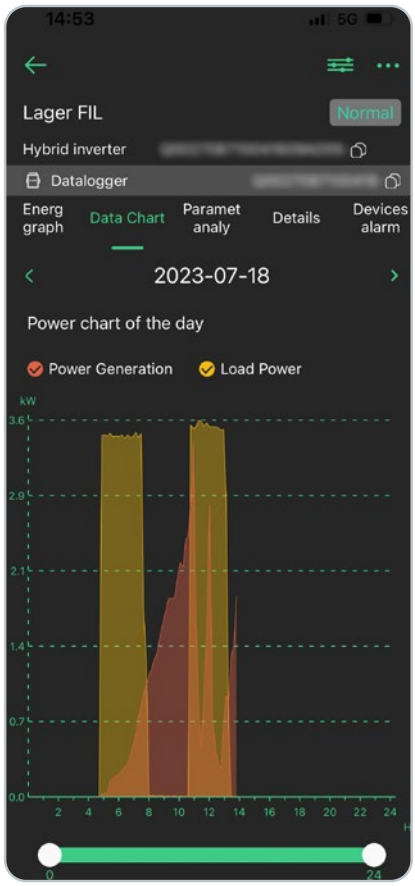


No.	Designation
1	Input power of solar panels
2	Inverter status
3	Input / output current battery
4	Battery status
5	Input current of inverter
6	Inverter output power
7	Battery charging current
8	Battery discharge current
9	Battery voltage
10	Output power inverter
11	Solar input power
12	Flow chart
13	Overview input and output power
14	Analysis tab
15	Data list
16	Settings

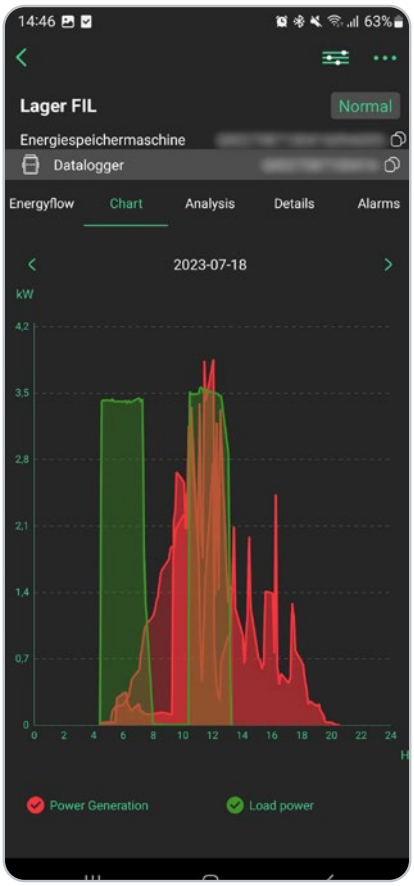
Note: Depending on the app version and operating system of your mobile phone, the app may differ visually.

ANALYSIS DATA

Via the Chart tab (13), input and output power can be displayed simultaneously. These are the most important key figures for monitoring the use of the carport. By moving over the screen, you can display individual points in time as numerical values.



IOS



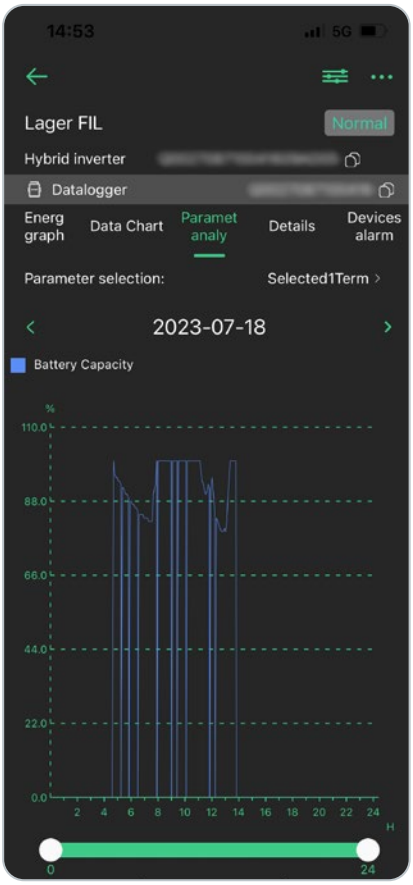
Android

Use the buttons to select whether „Power Generation“ (solar input power) and / or „Load Power“ (input current consumer) should be displayed.

The Analysis tab (14) takes you to the analysis menu. Here you can call up the continuous data of various key figures.

Click on the upper drop-down menu to select the desired key figure.

By moving over the screen, you can display individual points in time as numerical values.



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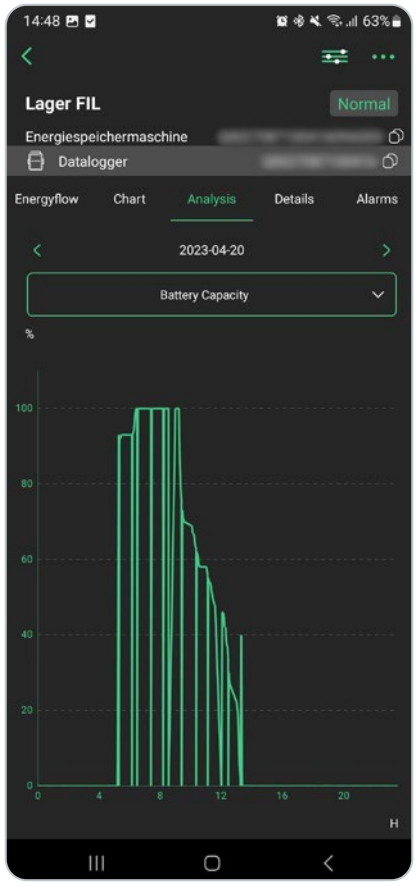
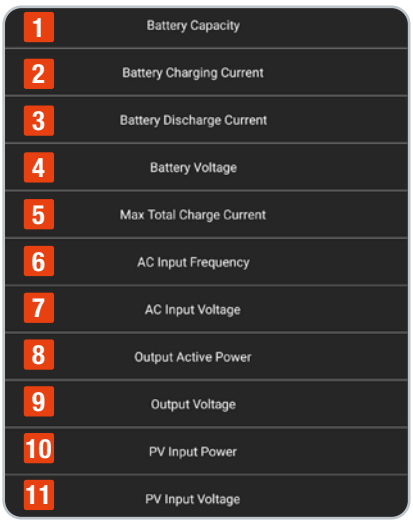


Android

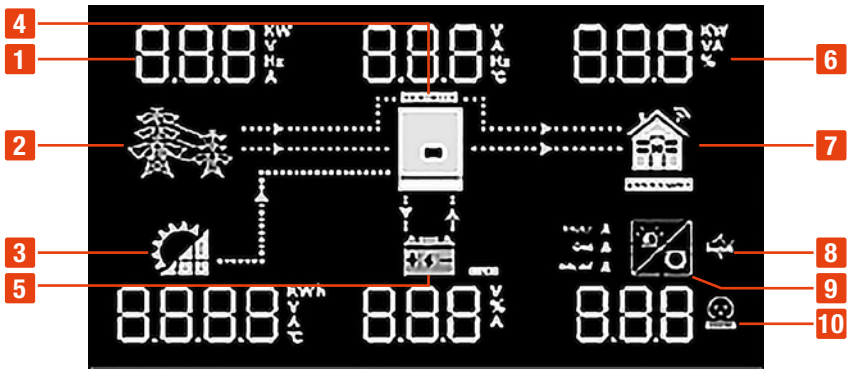


No.	Unit	Description
1	%	Battery capacity
2	A	Battery charge current
3	A	Battery discharge current
4	V	Battery voltage
5	A	Maximum charge current
6	Hz	AC input frequency

No.	Unit	Description
7	V	AC input voltage
8	kW	Output power
9	V	Output voltage
10	kW	PV input power
11	V	PV input voltage

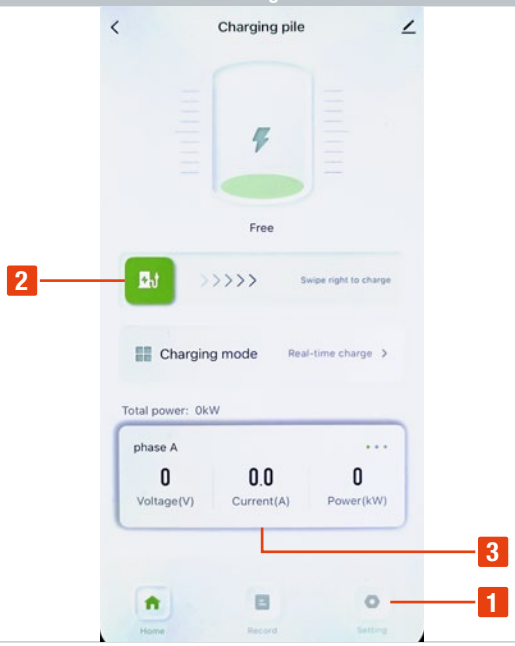
Use the upper tab to switch between the days. Via the Data tab (15) you can display the key figures one below the other as a list.

Indicator lights on the LED display of the inverter:



No.	Symbol	Description
1		Displays the input code numbers: Current, input voltage, frequency, charging power, battery voltage
2		AC input
3		Solad panels are connected
4		Indicates that direct mains power is supplied
5		Battery present
6		Information about inverter: Output current, charge, output voltage
7		Indicates overcharging
8		Indicates that the alarm is switched off
9		Shows settings
10		Warning and error codes: Flashes for warning code, lights up continuously for error code

OPERATING THE WALLBOX

Description	Image
1. Set the desired charging current in the „Settings“ of the app. 6 A - 32 A can be selected 2. Start the charging process by swiping the bar in your app to the right 3. You will receive an overview of the current charging status in the app	

CHARGING AN ELECTRIC VEHICLE

1. Place the vehicle to be charged centrally under the carport. Make sure that the charging cable is not under tension when plugged into the vehicle.
2. Switch off the electric vehicle.
3. Unlock the wallbox by entering the 5-digit password in the keypad and pressing **#**. The password for dialling into the settings is 12345. You can enter your password here.
4. Set the desired charging power in amperes on the wallbox.
5. Take the charging cable in your hand and insert it into the charging socket of the electric vehicle.
6. The charging process will start after a few seconds.
7. Then lock your electric vehicle.
8. Unlock your vehicle and disconnect the charging cable to interrupt / end the charging process.
9. Lock the wallbox again by entering the password and pressing **#**.

Change the password on the keypad after initial operation to protect access from unauthorised persons.
Be sure to keep the new password, as only you have access to it.

Emergency stop switch pressed: If the error code „Emergency Error“ appears on the display, the emergency stop switch is activated. Turn it out to use the wallbox.

CHANGING THE PASSWORD OF THE KEYPAD

1. Connect the carport properly.
2. Unlock the system by entering the initial password *123456# of the keypad.
3. Change the password by entering 1 „New password“ **#**.
4. Press * to confirm the entry and exit programming mode.

Check that plugs, connectors or cables are undamaged before plugging into the vehicle.

RECOMMENDED USAGE BEHAVIOUR OF THE SOLAR CARPORT

Since this carport is not connected to the public power grid and is powered exclusively by solar energy, the degree of utilisation depends on the light or solar radiation and the ambient temperature. This requires a fundamentally different usage behaviour compared to other charging stations, which operate with a permanently constant energy supply.

In the following, we would like to explain the most important operating states to you, as well as point out the following useful procedures for you. The aim here is to generate as much electricity as possible and to obtain the highest possible electricity yield for self-use.

First of all, when setting up the carport, you should ensure that the solar modules, which are located on the roof, are aligned as far as possible towards the south, as the solar radiation is highest from this direction. The more accurate the orientation, the more electricity your carport will produce.

Make sure that no objects such as trees, houses or lanterns cast shadows on the roof of the carport, as this would greatly reduce the output of the solar modules.

Dirt, such as dust, leaves or branches, which remain on the solar panels, also considerably limit their performance. Normally, no cleaning is necessary, as rain ensures regular cleaning of the solar modules. If necessary, we recommend gentle cleaning of the solar modules with water.

GENERAL NOTES ON THE COMPONENTS

INVERTER AND APP

You can use the app to monitor and display all relevant operating states of the carport at any time and from any location. However, it is necessary that you have an internet connection at the carport in order to be able to transmit the data. The app displays the live data of the integrated inverter as well as its data from the past to the minute, which is a great advantage for the usage behaviour in the future.

The inverter, on the other hand, controls the input and output flows between the solar system, battery storage and the consumer, whereby the largest consumer will be your electric vehicle.

THE ELECTRIC CABINET

Since the electric cabinet contains batteries with a maximum usable capacity of 30 kWh, it is possible to obtain electricity for charging an electric car both during the day and at night. The same applies to the use of the 230 V sockets.

It is possible to charge with a maximum of 10.2 kW output current from the overall system. If you connect consumers with a higher output, the system will switch off and the fuse will blow. This applies to both sockets and the vehicle charging plug.

THE WALLBOX

The wallbox attached to the outside of the carport has a maximum charging capacity of 7.4 kW. This means that you can charge a maximum of 7 kW of energy in one hour. You can set the charging current of the wallbox from 1.8 kW - 7.4 kW (6 A - 32 A).

THE BATTERIES

The power storage unit is located in the control cabinet and consists of 12 individual, maintenance-free lead gel batteries, each with a battery size of 12 V / 280 Ah. These batteries have specific physical properties that result in recommendations for action aimed at increasing both performance and service life. The more gently the batteries are charged or discharged, the more energy they can store and deliver. The solar modules on the roof ensure that the batteries are charged gently, without you having to follow any special procedures. The solar modules have a maximum peak output of 5 kWp, which is not normally reached. This ensures that the batteries are usually charged at less than 4 kW. This is gentler on the batteries and ensures a long service life.

The same applies to the extraction of electricity from the batteries. The more gently they are discharged, the higher the amount of energy (kWh) they can deliver and the longer their service life. Therefore, you should always make sure to charge your electric vehicle with the lowest possible current. This is especially true when charging at night and no electricity is generated by the solar modules.

INSTRUCTIONS FOR USE FOR THE MOST IMPORTANT OPERATING STATES

In general, there are 5 different operating states that determine optimal usage behaviour and which we would like to describe in the following in order to provide you with guidance for the use of your solar carport.

Of course, there are more than these 5 cases, but we want to focus on these 5 cases for simplification and to make use more concrete.

1. Battery is **100 % charged** and you **don‘t have much time**

   If you only have a short time and your car cannot be charged for a long time, you have the option of charging at maximum power. In this case, set the wallbox to 32 A (7 kW) charging power. Depending on the ambient temperature and battery life, you can charge a max. of 25 kWh of energy into your car via the wallbox in this operating mode, with a charging time of 3 hours.

2. Battery is **100 % charged** and you have **plenty of time**

   If you have a lot of time because the car is parked under the carport all night, we recommend reducing the power of the wallbox. In the best case, to 8 A (1.8 kW) charging power. This will give you up to 30 % more energy from the battery (up to 30 kWh in total). This slow way of charging also protects the batteries and increases their service life. As soon as the maximum battery capacity of your e-vehicle is reached, the power supply switches off automatically. At the time of switching off, there is still a significant residual energy in the battery, which ensures longevity and protects the battery from a possible deep discharge.

3. Battery is **50 % charged** and you want to charge your car **at night**

   Even if the battery is not 100 % charged, you may need to charge your vehicle. For example, if strong and long-lasting sunshine is forecast for the next day, it is advisable to discharge the battery beforehand. This way you use the entire battery capacity of the solar carport and thus the largest possible share of the available solar energy. The electricity that the sun provides the next day is stored by the battery. However, if the battery is not discharged the night before, you lose the usable electricity because more electricity is generated than can be absorbed by the battery. Prevent this by charging your car as soon as possible or by connecting other consumers to the installed sockets.

4. Battery is charged between **0 – 50 %** and you want to charge your car **during the day**

   Depending on the intensity of daylight, the carport achieves a corresponding charging power via the solar modules. While the sun is shining, the solar modules will output between 1 - 4.5 kW of power, depending on the individual conditions and the incidence of sunlight. This means that (even when the battery is empty) as soon as the PV module power is above 1.8 kW (and while you are only charging your car with 1.8 kW), no power needs to come from the battery. The electricity comes directly from the PV modules and is fed (without diversions) directly into your car. Any excess power (over 1.8 kW) is not lost, but simply flows into the battery and charges it. If less than 1.8 kW charging power is generated by the PV modules, the missing power would be taken from the battery to keep the 1.8 kW charging current stable. This is done until the battery is completely discharged and the power supply is then automatically switched off.

5. Battery is **100 % charged** and you want to charge your car **during the day**

   If, in addition to the fully charged battery, the sun should also be shining, you would have the ideal state with the highest possible charging power. As described under 3., you should now make sure that the set charging current is higher than the current produced via the solar modules. This means that if the generated current is between 2 - 4 kW, you can charge your vehicle with up to 7 kW. In this case, only the difference (3 - 5 kW) to the generated current would be taken from the battery.

EXAMPLE TABLE

Case	Description	PV power (kW)	Carport battery (kW)		Wallbox (kW)	
1	Battery charge 100 %, bright sunshine	2	- 5	(Discharge)	7	(Carload)
2	Battery charge 100 %, bright sunshine	4	- 3	(Discharge)	7	(Carload)
3	Battery charge 100 %, night	0	- 1.8	(Discharge)	1.8	(Carload)
4	Battery charge 0 - 100 %, night	0	- 1.8	(Discharge)	1.8	(Carload)
5	Battery charge 0 - 100 %, overcast	1.8	0		1.8	(Carload)
6	Battery charging 0 - 100 %, cloudy	3	+ 1.2	(Charge)	1.8	(Carload)
7	Battery charge 0 - 100 %, bright sunshine	4.5	+ 2.7	(Charge)	1.8	(Carload)

DRIVING PERFORMANCE COMPARED TO GENERATED ELECTRICITY

Based on the 51st degree of latitude (which corresponds roughly to the middle of Germany), this carport can generate up to 5000 kWh of electricity per year. Since an average electric vehicle requires approx. 20 kWh per 100 km, the maximum electricity generated would correspond to a driving distance of approx. 20000 km. An average car driver drives about 15000 km per year. Thus, the theoretically generated amount of electricity is sufficient for this mileage.

INFLUENCE OF THE SEASONS ON ELECTRICITY GENERATION

The amount of electricity generated varies greatly depending on the season. The solar carport therefore generates a greater amount of electricity in the summer months than in the darker winter months. This means that a 100 % degree of self-sufficiency cannot be guaranteed all year round. With an average mileage of 15000 km per year, we therefore calculate a maximum degree of self-sufficiency of up to 80 %. This means that in the dark winter months, especially in December to January, you will have very little yield and you will only be able to carry out very few charging processes.

To make matters worse in these months, the battery, for physical reasons, loses capacity as it gets colder. This is not a defect in the product, but is entirely due to the nature and physical properties of a lead-gel battery. In the brightest summer months, it is exactly the opposite. Especially in the summer months, the carport may generate and store more electricity than you need for your vehicle. For this reason, two 230 V sockets are attached to the carport so that you can use excess electricity beyond charging your vehicle. In this way, you can prevent surplus electricity from being lost unused and unstored.

MAINTENANCE & REPAIR BY SPECIALISTS

Warning: All of the following information is required by qualified electricians to perform maintenance on electrical components. All other persons are strictly prohibited from opening the control cabinet.

DEFINITION OF TERMS

PPE

Personal protective equipment, such as safety helmets, safety shoes, protective gloves, protective clothing.

SAFETY INSTRUCTIONS

- Before carrying out any work on the electrical components, disconnect the entire system from the power supply and secure it against being switched on again. Proceed as follows:
  » Disconnect
  » Secure against being switched on again
  » Determine the absence of voltage
  » Earth and short-circuit
  » Cover or isolate adjacent live parts.
- Maintenance and servicing work may only be carried out after disconnection from the power circuit. Also turn the battery disconnect switch for this purpose.
- Wear suitable PPE (personal protective equipment) when working with electrical components.

INVERTER

- Observe local rules and regulations when using the inverter.
- Never touch the live DC cable. Switch the inverter load-free and disconnect it before any maintenance work by turning the battery disconnection switch.
- Do not operate the battery disconnect switch in the event of a fault.
- Do not disconnect the DC connectors under load.
- Switch off the AC circuit breaker or, if it has already tripped, leave it switched off and secure it against being switched on again.
- In the event of a fault, wait until there is no more DC power at the inverter.
- Never short-circuit the AC output and DC input.
- Make sure that the power supply is disconnected before attempting to hardwire the unit.
- Do not open the inverter when it is freezing. The cold ambient temperature can damage the seal and cause the enclosure to leak.
- Observe the recommended ambient temperature of 0 °C - 45 °C. Outside this temperature range, the inverter may be damaged.
- Ground yourself before touching any component. Touching electronic components can damage the inverter via electrostatic discharge.

SOLAR PANEL

- Connect and earth the frame of the solar modules, the rack and the electrically conductive surfaces throughout.
- Follow the locally applicable regulations for electrical protective equipment and occupational safety.
- Only touch the cables of the solar modules at the insulation.
- Ensure correct wiring, which is described in the installation instructions.

BATTERY TECHNOLOGY

- Be especially careful when servicing the batteries. Use special tools to reduce the risk of electric shock.
- Pay particular attention to safety when working with metal tools. There is a risk of arcing or short-circuiting.
- Wear appropriate PPE when working on the batteries.

When installing the wallbox, comply with the applicable standards and guidelines for electrical installations.

TECHNICAL DRAWINGS & SCHEMATICS

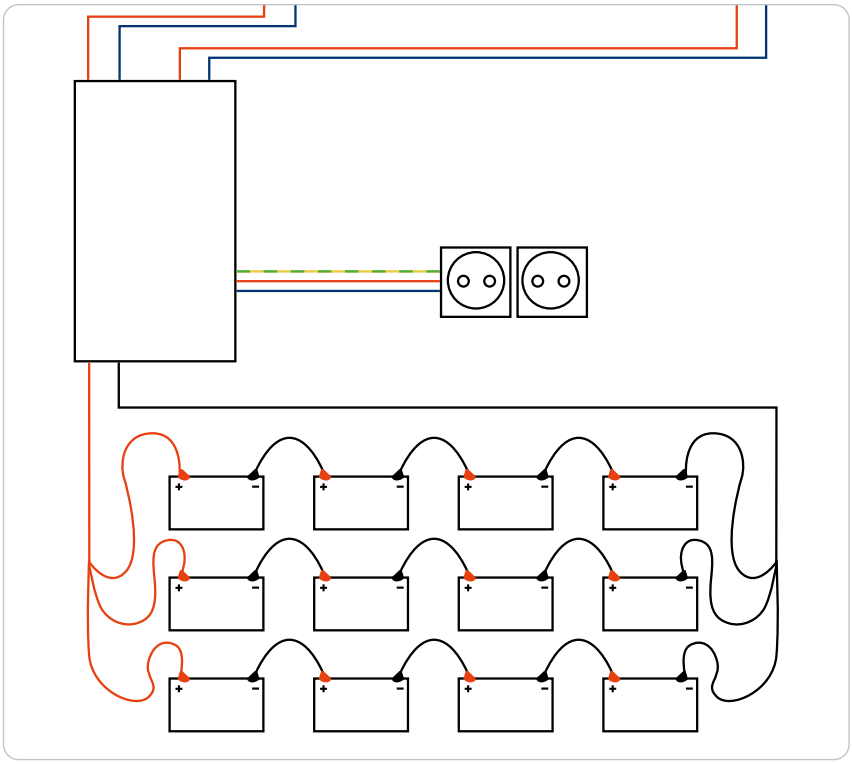
ELECTRICAL SCHEME BATTERY STORAGE

PV PERFORMANCE DATA

- 1 string of 12 solar modules
- SW 420 M-108 / 4 string (3 x)
- Impp = 13.30 A / 53.20 A
- Vmpp = 31.60 V / 379.20 V
- VoC = 37.56 V / 112.68 V

BATTERY PACK

- 3 x 4 pieces
- 12 V / 280 Ah
- 48 V / 840 Ah
- 40 kWh gross



FUSE BOX

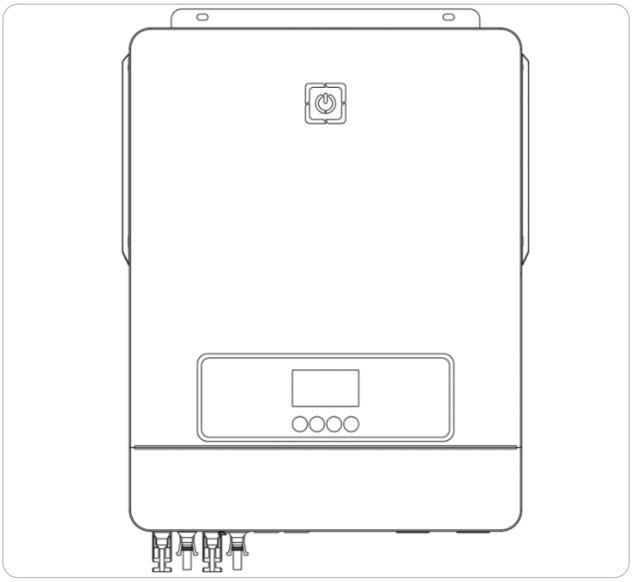
No.	Designation
1	Residual current circuit breaker (RCD) for all 230 V devices
2	Circuit breaker (C32 switch) for the wallbox
3	Circuit breaker (C16 switch) for sockets
4	DC high-voltage fuses
5	DC overvoltage protection
6	DC high-voltage fuses
7	DC main switch / disconnector
8	Voltage transformer DC / DC from 48 V to 12 V

CHECKLIST FOR MAINTENANCE / INSPECTION

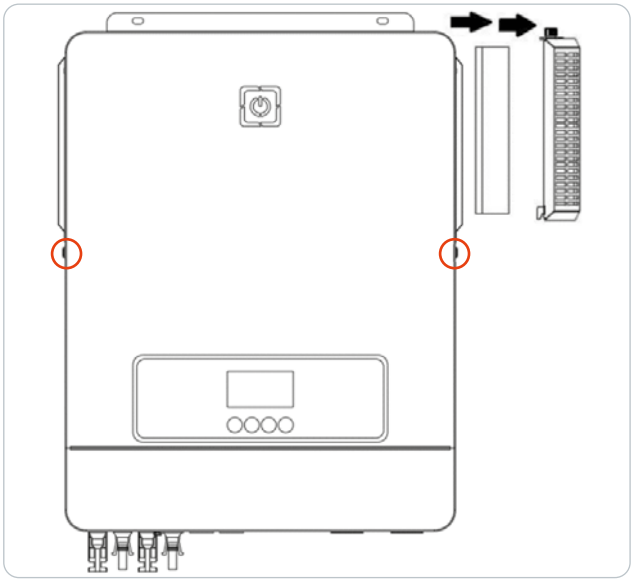
CLEANING AND MAINTENANCE OF THE INVERTER

Switch off the system completely before any maintenance work. If necessary, disconnect it from the power supply to reduce the risk of electric shock.

1. Open the inverter housing by loosening the two screws on the sides.



2. The cover of the ventilation can then be removed and the foam filter removed.



3. Clean the filter and the cover. If you use water, let the components dry completely before inserting them.
4. Put the components back into the inverter in reverse order.

Clean the dust filter at least once a month to ensure proper functioning.

TROUBLESHOOTING

Problem	Cause	Solution
AC overvoltage	Input voltage too high	If the voltage exceeds 265 V for a short time, wait for the system to return to normal voltage
		Check the background monitoring data and analyse it. If the voltage in this range is too high for a longer period of time, the input overvoltage protection point can be increased up to 265 V by configuring the software
AC undervoltage	Input voltage too low	Check the background monitoring data and analyse it. If, when the input voltage is low, the voltage in this range is too low for a longer period of time (175 V), the input undervoltage protection point can be lowered to a minimum of 90 V via the configuration software
AC overcurrent	Output current too high	Immediately switch on the overcurrent circuit breaker
		Check if there is low impedance or a short circuit between the two output lines
		Contact customer service
The vehicle will not charge	The wallbox is locked	Pull out the red emergency stop switch on the side of the wallbox
	Connection error	Check if the charging cable is plugged in correctly
The inverter switches off during start-up	Battery voltage is too low	Charge the battery
		Replace the battery
The inverter cannot be controlled after start-up	Battery voltage is too low	Charge the battery
		Replace the battery
	Fuse has been activated	Replace the fuse
		Switch the fuse back on
Mains voltage is present but the inverter is operating in battery mode	Input fuse has been activated	Check the wiring
		Switch the fuse back on
When the inverter is switched on, the internal relay switches on and off repeatedly	Battery is not connected	Check the wiring to the battery. Rewire the batteries if necessary

ERROR DISPLAY

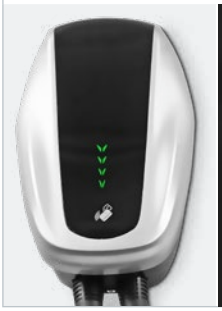
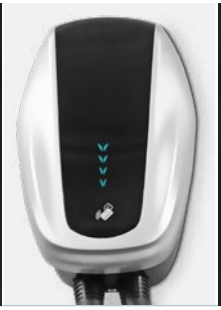
ERROR CODES INVERTER

No.	Designation
01	Fan is blocked when the inverter is switched off
02	Overheating
03	Battery voltage is too high
04	Battery voltage is too low
05	Output current is short-circuited or overheating has been detected
06	Output voltage is too high
07	Overcharge timeout
08	Bus voltage is too high
09	Bus start failed
51	Overcurrent or overvoltage
52	Bus voltage too low
53	Inverter start failed
55	Over DC voltage at AC output
57	Current sensor error
58	Output voltage too low
59	Solar module voltage is above the limit value

WARNCODES WECHSELRICHTER

No.	Designation
01	The fan is blocked when the inverter is switched on
03	Battery is overcharged
04	Low battery charge
07	Overcharge
10	Output power reduced
15	Solar module energy output is low
E9	Battery equalisation
bP	Battery is not connected

WALLBOX WARNING INDICATORS

Green light	Blue light	Red light
Switched on	Charging process / charging process completed	Fault indicator
		

Work status	Red	Green	Blue
Free	-	Switched on	-
Charging gun plugged in	-	-	Blinks
Charging process	-	-	Switched on
Transmission error of the measuring devices	Blinks 1 x	-	-
Undervoltage alarm	Blinks 2 x	-	-
Overvoltage alarm	Blinks 3 x	-	-
Earthing fault	Blinks 4 x	-	-
Overvoltage protection	Blinks 5 x	-	-
Permanent overvoltage protection	Blinks 6 x	-	-
Leakage protection	Blinks 7 x	-	-
Overheating protection	Blinks 8 x	-	-
Emergency stop button	Blinks 9 x	-	-
RFID fault	Blinks 10 x	-	-
Relay fault	Blinks 11 x	-	-
Memory error	Blinks 12 + 13 x	-	-
Clock exception	Blinks 14 x	-	-

Problem	Cause	Solution
Overheating error	1. The ambient temperature exceeds the permissible operating temperature 2. The input voltage of the AC power supply is too high 3. Internal charger defective	1. Install the charging station in an environment with a low ambient temperature 2. If the problem cannot be solved, do not use the charging station. Please contact customer service or a qualified electrician
Device overvoltage	1. The input voltage of the AC power supply is too high 2. Internal charger defective	1. Check the input voltage 2 If the problem cannot be resolved, please do not use the charging station If the problem cannot be resolved, please do not use the charging station. Please contact customer service or a qualified electrician
Device undervoltage	1. The input voltage of the AC power supply is too low 2. Internal charger defective	1. Check the input voltage 2 If the problem cannot be resolved, please do not use the charging station If the problem cannot be resolved, please do not use the charging station. Please contact customer service or a qualified electrician
Meter not connected	Failure of the meter module	If the problem cannot be resolved, please do not use the charging station If the problem cannot be resolved, please do not use the charging station. Please contact customer service or a qualified electrician
Emergency fault	1. The emergency stop button is pressed 2. The emergency stop button is damaged	1. Press the emergency stop button again 2. Replace the emergency stop button
Earthing fault	Error in the line	Check whether the earthing cable is reliably connected
Overcurrent fault	Overload protection	Please contact customer service or a qualified electrician

SERVICE & CONTACT

Contact our product experts and find help and solutions for your product. Here you will find all contact information listed by country and language: www.topregal.co.uk/en/service

Responsible for the content:
TOPREGAL GmbH
Industriestrasse 3
70794 Filderstadt
GERMANY
www.topregal.com

UKCA Declaration of Conformity

The manufacturer

TOPREGAL UK Ltd.
Carlton Drive Crumlin
Gwent NP11 4EA

hereby declares that the following product

Product name:

SoloPort
Carport Gestell

Type:

SPG

Serial number:

SPG-1000000000 – SPG-9999999999

that the equipment is in conformity with the following relevant UK legislations and applied standards:

305/2011/EU Construction Products Regulation (BauPVO)

EN 1090-1+A1

Name and adress of the person who is authorized, compile the technical documentation:

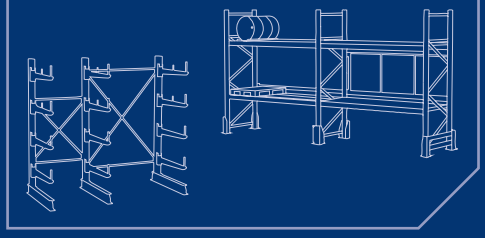
TOPREGAL UK Ltd.
Carlton Drive Crumlin
Gwent NP11 4EA

Place: Crumlin UK
Date: 01.02.2024

Juergen Effner
Chief Executive Officer

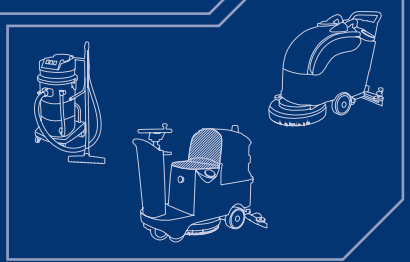
TOPREGAL

TOPREGAL



SolidHub

WIPEKET



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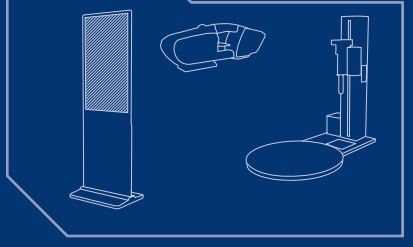
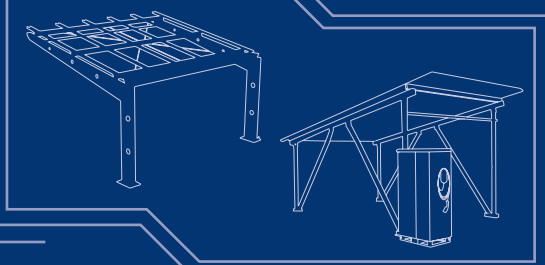


SOLOPORT



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