JOINON

Parking+

Installation and Operation Manual
Manual de instalación y uso
Manuel d'installation et usage
Manuale d'installazione e uso

Contents

1. About this manual

1.1. Scope of application

This manual is valid for the following charging stations:

JOINON Parking+ GW68105 (single phase)

JOINON Parking+ GW68105R (single phase)

JOINON Parking+ GW68106C (three phase)

1.2. Recipients

This document is intended for qualified personnel.

The status of qualified personnel referred to in this manual will be, as a minimum, that which meets all the standards, regulations and laws regarding safety applicable to the tasks of installing and operating this unit.

The responsibility for designating qualified personnel will always fall to the company to which the personnel belong. It is necessary to decide which workers are suitable or not for carrying out specific work to preserve their safety at the same time as complying with occupational safety legislation.

These companies are responsible for providing appropriate training in electrical equipment to their personnel and for familiarizing them with the contents of this manual.

1.3. Symbols

This manual uses various symbols to emphasize and highlight certain texts. The general meanings are explained below.

General warning.

General information.

Electrical danger.

Read the section indicated.

Prohibition.

2. Unit description

2.1. Models

JOINON Parking+ GW68105 (single phase)

JOINON Parking+ GW68105R (single phase)

JOINON Parking+ GW68106C (three phase)

2.2. Compliance with regulations

CE marking

CE marking is mandatory for the sale of any product within the European Union, without prejudice to standards or laws. These charging stations have the CE marking because of their compliance with the following directives:

- *Low Voltage Directive 2014/35/EU*.
- *Electromagnetic Compatibility Directive 2014/30/EU.*

To comply with each directive, compliance with the parts applicable to our units of the appropriate harmonized standards is sufficient.

Low Voltage Directive

These charging stations sufficiently comply with this directive by means of compliance with the applicable parts of harmonized standard *EN 61851 Electric vehicle conductive charging system*.

Electromagnetic Compatibility Directive

These charging stations sufficiently comply with this directive by means of compliance with the applicable parts of harmonized standards:

- *EN 61000-6-1 Electromagnetic Compatibility*. Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments.
- *EN 61000-6-3 Electromagnetic Compatibility*. Part 6-3: Generic standards - Emission for residential, commercial and light-industrial environments.

Compliance with these standards calls for compliance with limits and procedures in other standards of the same series.

2.3. EMC requirements

These charging stations have the necessary filtering elements to comply with EMC requirements for domestic applications in order to prevent disturbances in other equipment outside the installation.

2.4. Protection class

These charging stations meet IP54 protection class against external agents.

This unit is designed to be used indoors and outdoors.

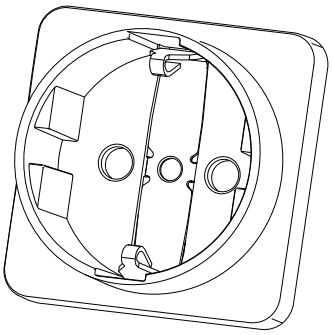
2.5. Contamination class

The pollution class for which the charging stations have been designed is grade PD3.

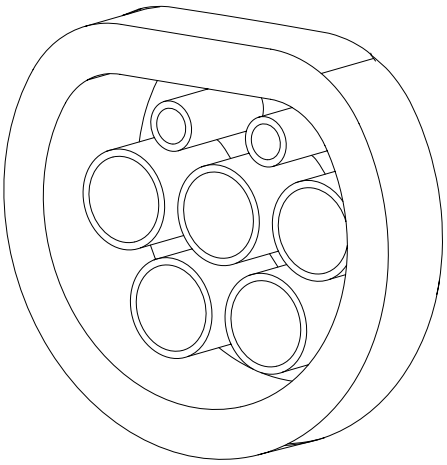
2.6. Power Sockets

These charging stations can be purchased with different connection configurations relative to the client's needs.

The different available connectors are displayed below:

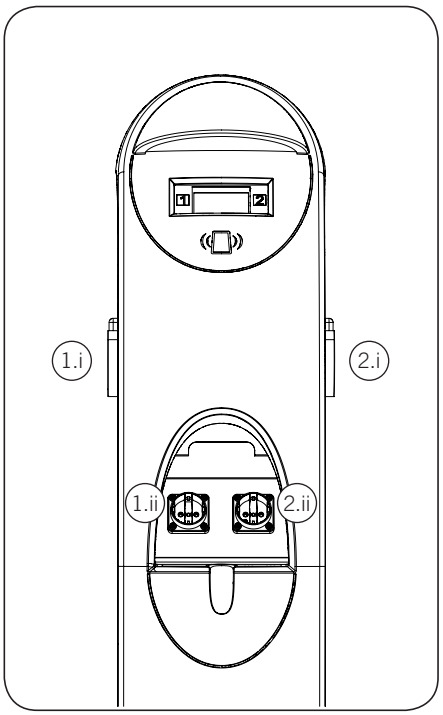


CEE 7/4 Type F



IEC 62196-2 Type 2

The JOINON Parking+ charging stations have two power sockets that can be used simultaneously. The configuration of these sockets is detailed below, indicating the different types of available connectors.



1.i. Socket 1	IEC 62196-2 Type 2	2.i. Socket 2	IEC 62196-2 Type 2
1.ii. Socket 1	CEE 7/4 Type F	2.ii. Socket 2	CEE 7/4 Type F

3. Safety

This section describes the safety warnings and the Personal Protective Equipment used in the unit.

3.1. Safety conditions

General warnings

The operations described in the manual may be performed only by qualified personnel.

The status of qualified personnel referred to in this manual will be, as a minimum, that which meets all the standards, regulations and laws regarding safety applicable to the tasks of installing and operating this unit.

The responsibility for designating qualified personnel will always fall to the company to which the personnel belong. It is necessary to decide which workers are suitable or not for carrying out specific work to preserve their safety at the same time as complying with occupational safety legislation.

These companies are responsible for providing appropriate training in electrical equipment to their personnel and for familiarizing them with the contents of this manual.

All applicable safety-related legislation for electrical work must be complied with. Danger of electric shock.

Compliance with the safety instructions set out in this manual or in the suggested legislation does not imply exemption from other specific standards for the installation, place, country or other circumstances that affect the unit.

Opening the door of the housing does not imply there is no voltage inside.

There is a risk of electric shock even after disconnecting all power sources from the system.

Only qualified personnel may open it, following the instructions in this manual.

The entire manual must be read and understood in full prior to manipulating, installing or operating the unit.

Following is a list of the basic obligatory safety standards for each country:

- *RD 614/2001* in Spain.
- *CEI 11-27* in Italy.
- *DIN VDE 0105-100* and *DIN VDE 1000-10* in Germany.
- *UTE C18-510* in France.

Category III-1000-Volt measuring instruments must be used for checking for the absence of voltage.

Ingeteam accepts no liability for any damages caused by improper use of the charging stations. Any work carried out on any stations which implies a modification of the original electrical arrangements must be proposed in advance to Ingeteam. These must be studied and approved by Ingeteam.

Carry out all operations and handling without voltage.

As a minimum security measure in this operation, you must always follow the so-called **5 golden rules**:

1. Disconnect.
2. Prevent any possible feedback.
3. Check there is no voltage.
4. Ground and short circuit.
5. Protect from live elements, if any, and put up safety signs around the work zone.

Until these five steps are completed, the work area cannot be considered voltage-free and any work performed will be considered to be work on live equipment.

Potential hazards for people

Bear in mind the following warnings concerning personal safety.

DANGER: Crushing and joint injuries.

Always follow the indications in the manual on moving and placing the unit.

The weight of this unit can cause injury if not handled correctly.

Potential hazards for the equipment

Bear in mind the following warnings concerning protection of the equipment.

The unit requires impurity-free air flow while it is operating.

Keeping the unit in the upright position and the inlets free of obstacles is essential for this air flow to reach the inside.

After all duly authorized handling, check that the equipment is ready to start operation. Only after this can it be connected following the instructions in the manual.

Do not touch boards or electronic components. The more sensitive components can be damaged or destroyed by static electricity.

Do not disconnect or connect any terminal while the unit is operating. Disconnect and check for absence of voltage first.

3.2. Personal Protective Equipment (PPE)

When working on the unit, use the following safety equipment as a minimum.

Name	Explanation
Safety footwear	In compliance with standard *UNE-EN-ISO 20345:2012*
Helmet	In compliance with standard *EN 397:1995*
Helmet with face shield	In compliance with Standard *UNE-EN 166:2002*, wherever there are directly accessible live parts.
Working clothes	Close-fitting, non-flammable, 100% cotton
Dielectric gloves	In compliance with standard *EN 60903:2005*

Tools and / or equipment used in live work must have at least Category III-1000 Volts insulation. Should the country's regulations demand another kind of personal protection, the recommended equipment should be appropriately supplemented.

4. Receipt of the unit and storage

4.1. Reception

Keep the unit in its packaging until immediately before installation.

4.2. Equipment identification

The serial number of the equipment is its unique identifier.

The unit's serial number is marked on the specifications plate.

4.3. Transport damage

If the unit has been damaged during transport, proceed as follows:

1. Do not proceed with the installation.
2. Notify the distributor immediately within 5 days of receipt of the unit.

If ultimately the unit has to be returned to the manufacturer, the original packaging must be used.

4.4. Storage

Failure to follow the instructions in this section may lead to damage to the unit.

If the unit is not installed immediately after reception, the following points should be taken into account in order to avoid damage:

- In order to permit correct conservation of the charging stations, you must not remove them from their original packaging until it is time to install them.
- Deterioration of the packaging (tears, holes, etc.) prevents the charging stations from being kept in optimum conditions before installation.
- Keep the unit free of dirt (dust, shavings, grease, etc.) and away from rodents.
- Keep it away from water splashes, welding sparks, etc.
- Cover the unit with a breathable protective material in order to prevent condensation due to ambient humidity.
- Charging stations in storage must not be subjected to weather conditions other than those indicated below:

Environmental conditions	
Minimum temperature	-20 °C
Minimum surrounding air temperature	-20 °C
Maximum surrounding air temperature	70 °C
Maximum relative humidity without condensation	95%

- It is very important to protect the unit from chemical products which can cause corrosion, as well as from salty atmospheres.
- Do not store the unit outdoors.

5. Equipment transport

You must protect the unit, during transport, from mechanical knocks, vibrations, water splashes (rain) and any other product or situation which may damage it or alter its behavior.

5.1. Transport

Transport using a pallet truck

At least the following requirements should be observed:

1. Deposit the charging stations packaged and centered relative to the forks.
2. Try to place them as close as possible to the part where the forks and the steering unit meet.
3. In all cases, observe the instructions in the pallet truck's user manual.

Transport using a forklift truck

At least the following requirements should be observed:

1. Deposit the charging stations packaged and centered relative to the forks.
2. Try to place them as close as possible to the part where the forks and the steering unit meet.
3. Ensure that the forks are perfectly level to avoid overturning the unit.
4. In any case, observe the instructions in the forklift truck's user manual.

Once the charging station has been transported to the place where it is to be located and only when it is to be installed, unpack the station.

At this time, it can be transported vertically over a short distance without packaging.

Transport of the unpackaged unit

At least the following requirements should be observed:

1. Follow the necessary ergonomic advice for lifting weights.
2. Do not release the unit until it is perfectly secured or placed.
3. Ask someone else to guide the movements to be made.

5.2. Unpacking

Correct handling of the charging stations is vitally important in order to:

- Prevent damage to the packaging which enables them to be kept in optimum condition from shipping until they are installed.
- Prevent the charging stations from receiving impacts and/or falling, which could deteriorate their mechanical features.
- Avoid, as far as possible, vibrations which may cause subsequent malfunction.

Separating the packaging

All the packaging can be delivered to a non-hazardous waste management company.

In any event, each part of the packaging may be recycled as follows:

- Plastic (polystyrene, bag and bubble wrap): the appropriate container.
- Cardboard: the appropriate container.

6. Preparation for installing the unit

When deciding the location of the unit and planning your installation, you must follow a set of guidelines based on the specifications of the unit.

6.1. Environment

- Place the charging stations in a place that is accessible for installation and maintenance work and which permits them to be operated and the indicator LEDs to be read.
- Do not place any material that is sensitive to high air temperatures near to the air outlets.
- Avoid corrosive environments that may affect the proper operation of the unit.
- Never place any object on top of the unit.

6.2. Environmental conditions

Environmental conditions must be taken into account when choosing the location of the unit.

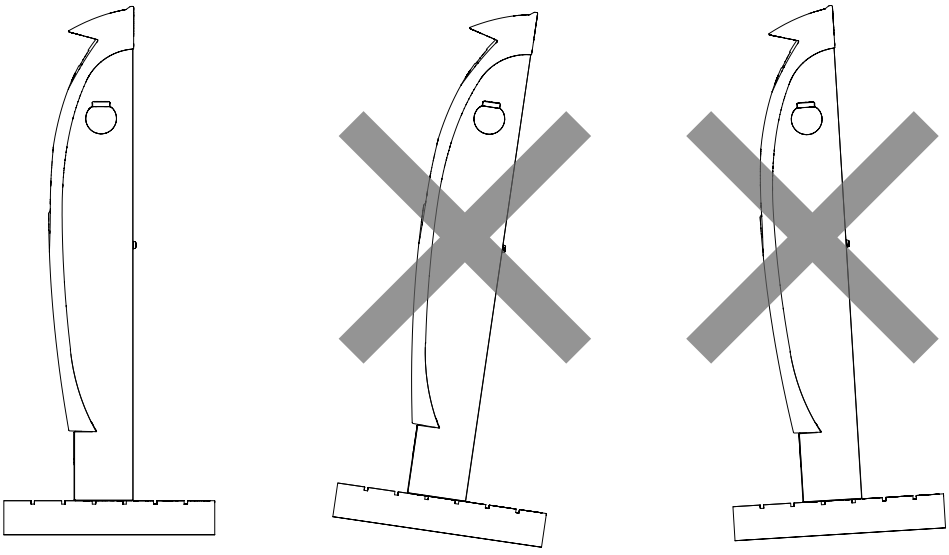
Environmental conditions	
Minimum temperature	-20 °C
Minimum surrounding air temperature	-20 °C
Maximum surrounding air temperature	70 °C
Maximum relative humidity without condensation	95%

It should be borne in mind that moderate condensation may occasionally occur as a consequence of temperature variations. For this reason, apart from the unit's own protection, it is necessary to monitor these charging stations once they have been started up on sites where the conditions described above are not expected to be present.

In the event of condensation, never apply voltage to the unit.

6.3. Supporting Surface and Fastening

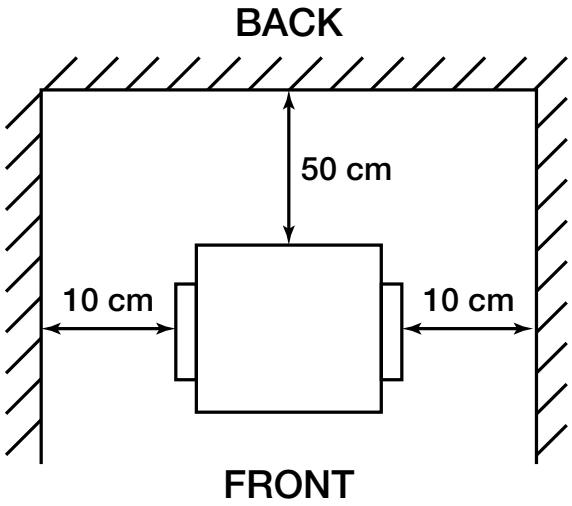
The units must be attached to an even and solid surface, and must be placed in a perfectly vertical position.



The surface on which to install the products must be suitably prepared and made according to the type of soil in order to guarantee the correct stability of the product during its use.

For this purpose it is advisable to make a stand where drown the fixing tie-rods (not supplied) to be used to fix the charging station. The tie rods must be positioned according to the dimensions in chapter 7.2.

Proceed with the fixing of the charging station on the appropriately prepared area, keeping the distances between the station and the surrounding environment as shown in the figure.



NOTE: The surface on which the charging station will be installed must be appropriately designed and built in compliance with the Standards, with the current standards, in order to guarantee the user safety regardless of the type of surface

7. Installing and connecting the unit

Before installing the unit, the packaging must be removed, taking special care not to damage the housing.

Check that there is no condensation inside the packaging. If there are signs of condensation, the unit must not be installed until you are sure it is completely dry.

All installation operations must comply with current regulations.

All operations involving moving heavy weights must be carried out by two people.

The connection operations must be carried out with no voltage and by qualified personnel.

It is important to carefully ensure there is no voltage present in the unit when gaining access to its interior.

When checking that there is no voltage, wearing dielectric gloves and safety goggles approved for electrical hazards is required.

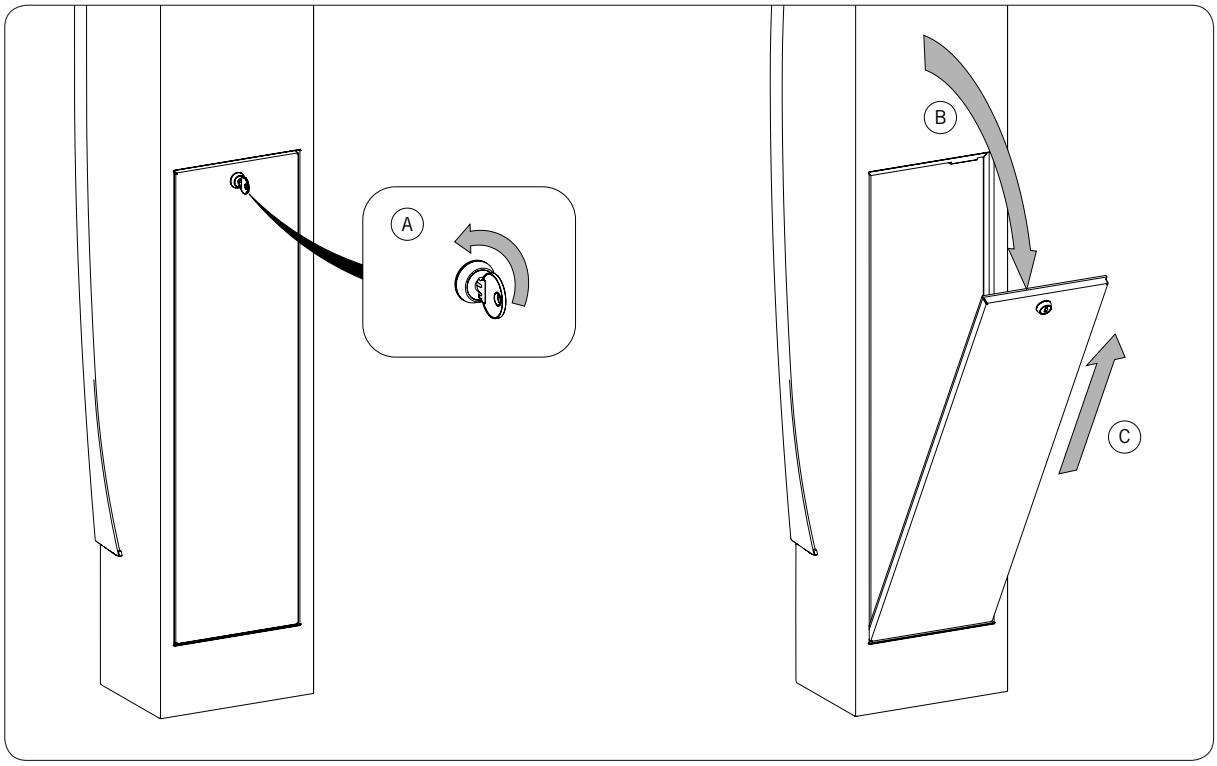
7.1. General requirements for installation

- The environment of the unit must be appropriate and meet the guidelines described in Chapter *"6. Preparation for installing the unit"*. Additionally, the parts used in the rest of the installation must be compatible with the unit and comply with the applicable legislation.
- The ventilation and workspace must be suitable for maintenance tasks according to the applicable regulations in force.
- The external connection devices, which must be suitable and sufficiently close as set forth in current regulations.
- The feed cables must be of the appropriate gauge for the maximum current.
- Special care must be taken to ensure that there are no external elements near the air inlets and outlets that obstruct proper cooling of the unit.

Connection specifications		
Connection type	Single phase	Three phase
Number of conductors	2P + E	3P + N + E
Nominal current	up to 32 A	up to 32 A
Conductor maximum diameter	10 mm^2 (2 x 6 mm^2)	

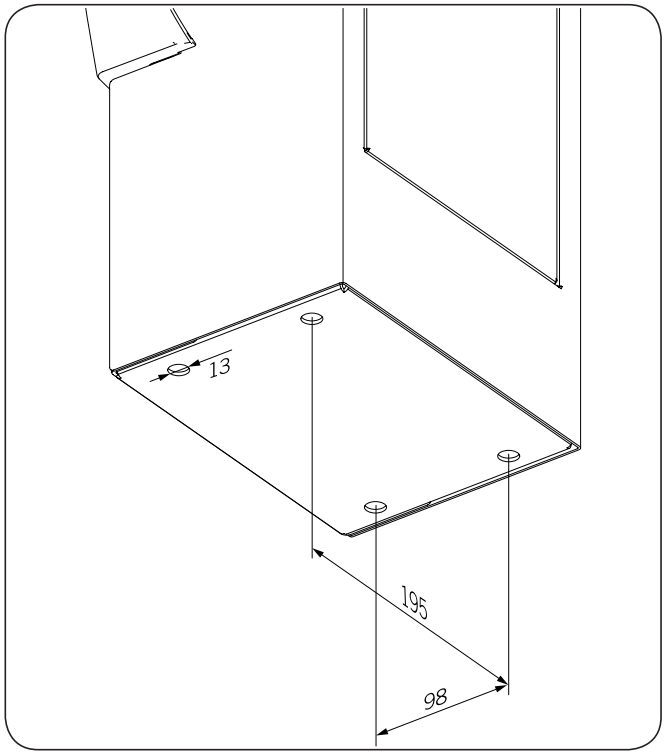
7.2. Installing the unit

1. These charging stations have a back access with a key opening to facilitate the installation and connections. Open the access using the key provided.

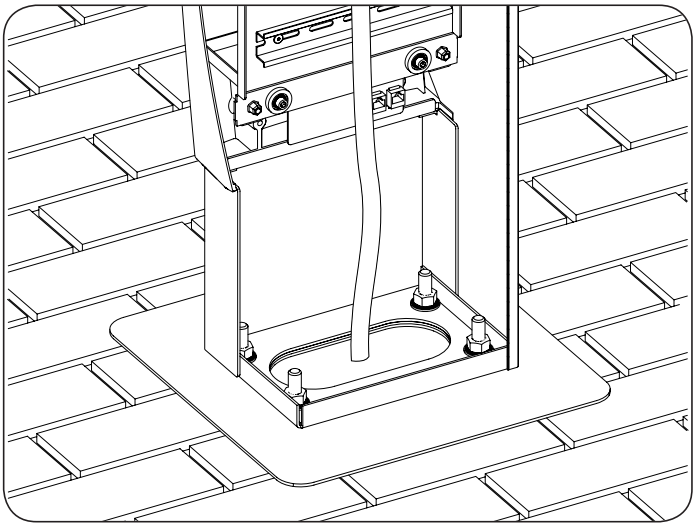


2. Couple the fixing base of the charging station with the prepared area.

The following figure shows the position of the anchorage points on the product in order to properly prepare the mounting area.



Lead the wiring to the inside of the charging station, as shown in the following figure.



3. Check that the unit properly secured.

7.3. Connecting the power to the unit

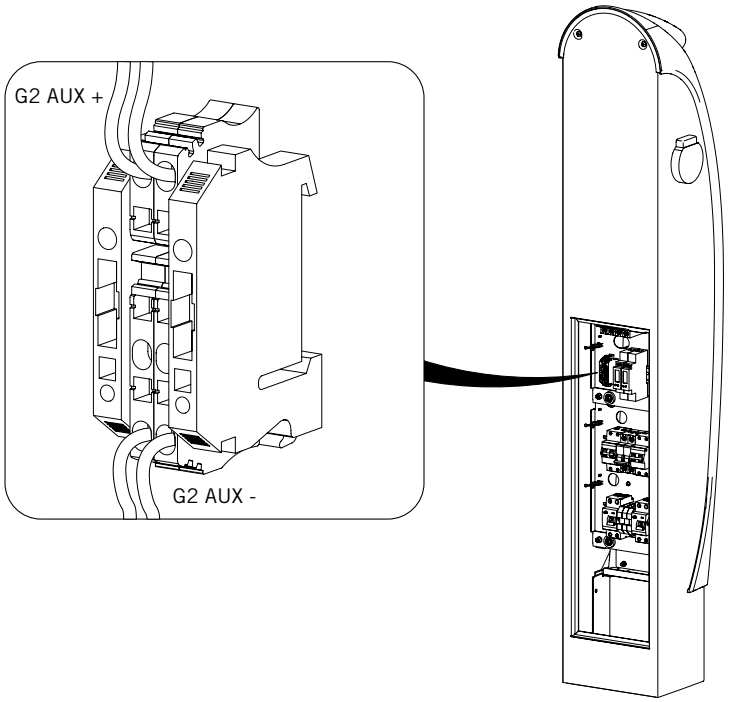
Cabling requirements

The connection must meet certain requirements:

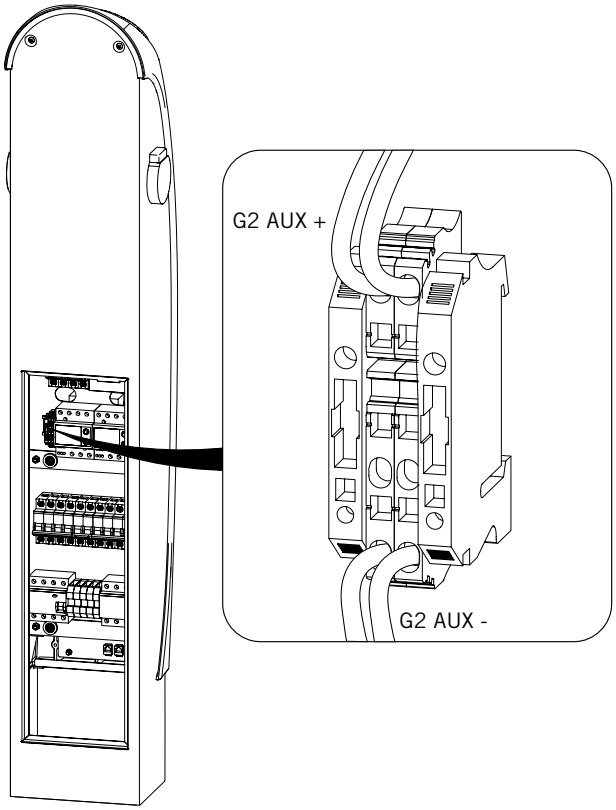
Connection specifications		
Connection type	Single phase	Three phase
Number of conductors	2P + E	3P + N + E
Nominal current	up to 64 A	up to 64 A
Conductor maximum diameter	16 mm^2 (2 x 10 mm^2)	

Connection process

1. The unit´s connection is done via the back access. Check if the battery´s wiring is properly connected (*G2 AUX +* and *G2 AUX -*). The wiring comes with the serial number printed to avoid confusions.

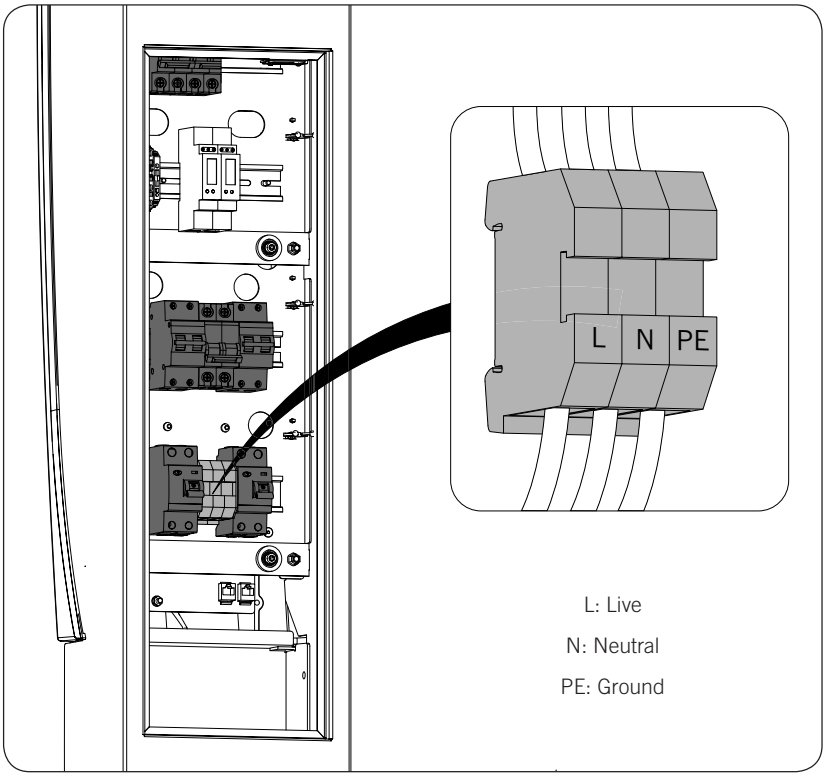


Single phase charging station

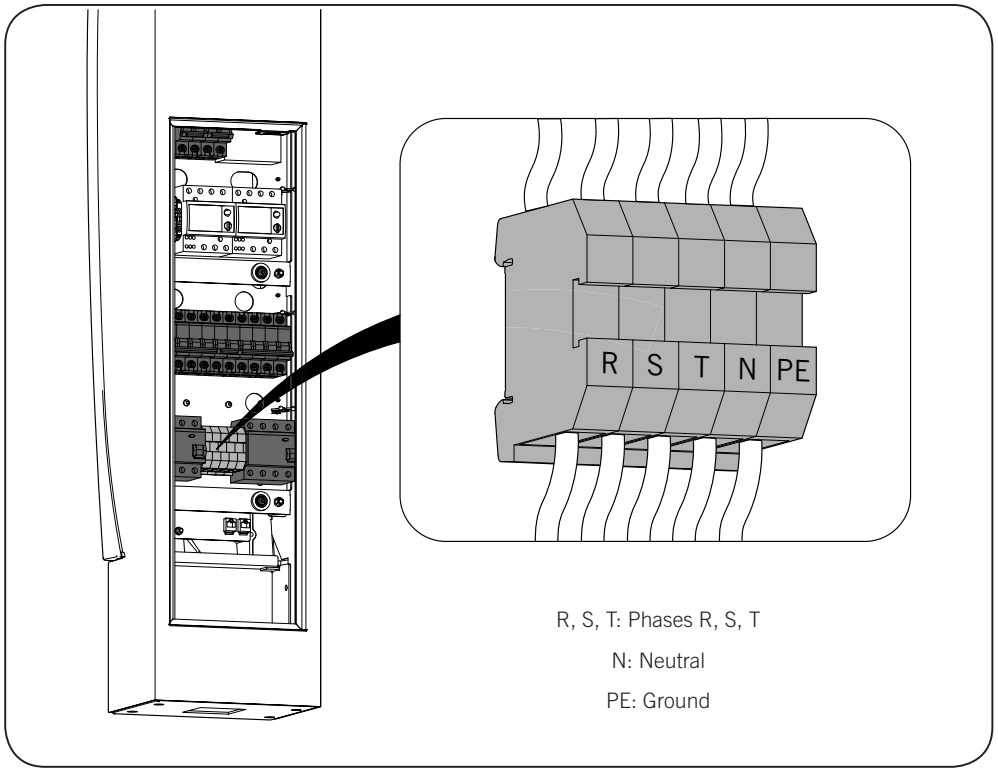


Three phase charging station

2. Connect the power wiring *L*, *N* and *PE* switch the residual current device and magnetothermic residual current device to ON (marked in dark gray in the following figure).

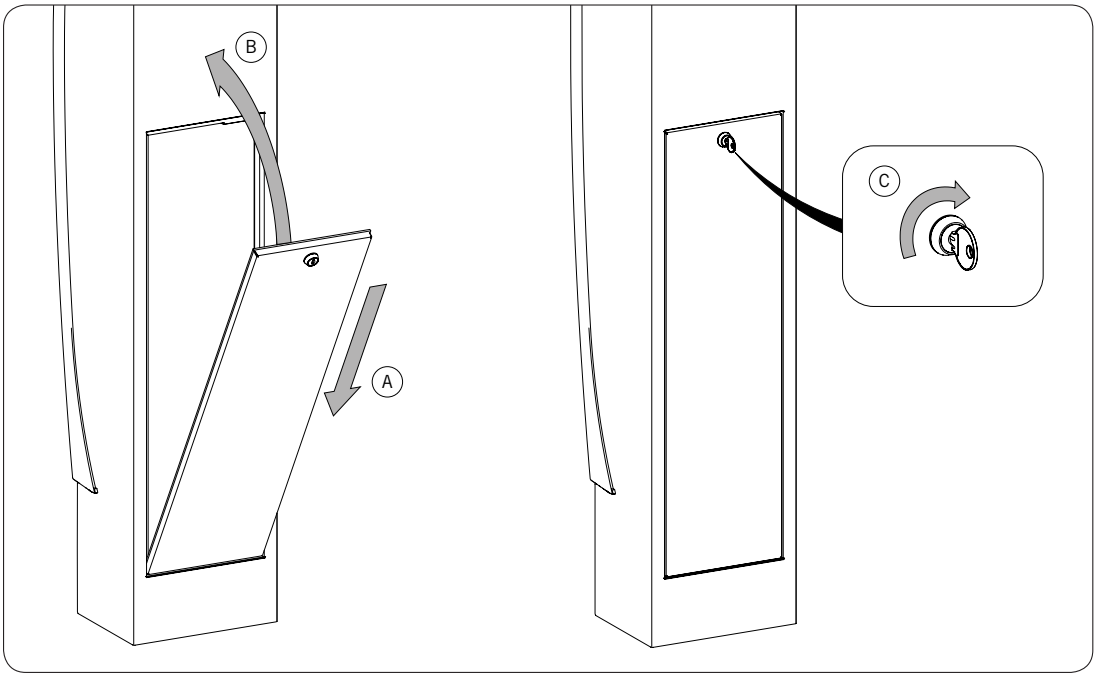


Single phase charging station



Three phase charging station

3. Close the back access and lock it with the key.



When the charging station is powered both sockets are lit. After briefly verifying its status, the light will switch to green and the display will show an electric vehicle and the current time. The station is ready and awaits identification from the user in order to begin charging.

If the station detects a fault, the lights of the corresponding socket or both (if both are at fault) turn red and indicates the type of incident on the display *"9. Operation"*).

8. Communication accessories

These charging stations have a local RS-485 data bus that enables interconnection between the stations.

All the charging stations can be accessed either locally or remotely. For remote connection they use an external modem located in the installation or a modem supplied in the charging station if requested upon placing the order.

This section explains the wiring process for local connection, whereby this type of connection is available as standard.

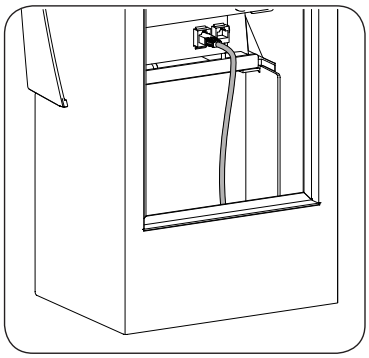
8.1. Local communication

8.1.1. JOINON Parking+

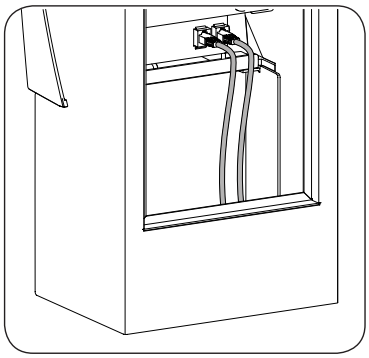
Follow the instructions below to complete the local connection:

1. Connect the communication ring.

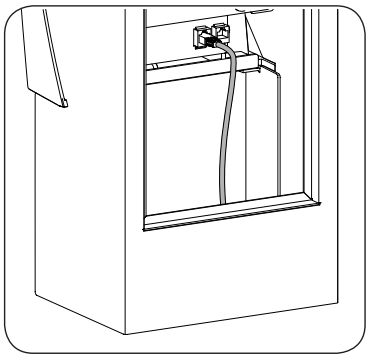
First station



Intermediate station

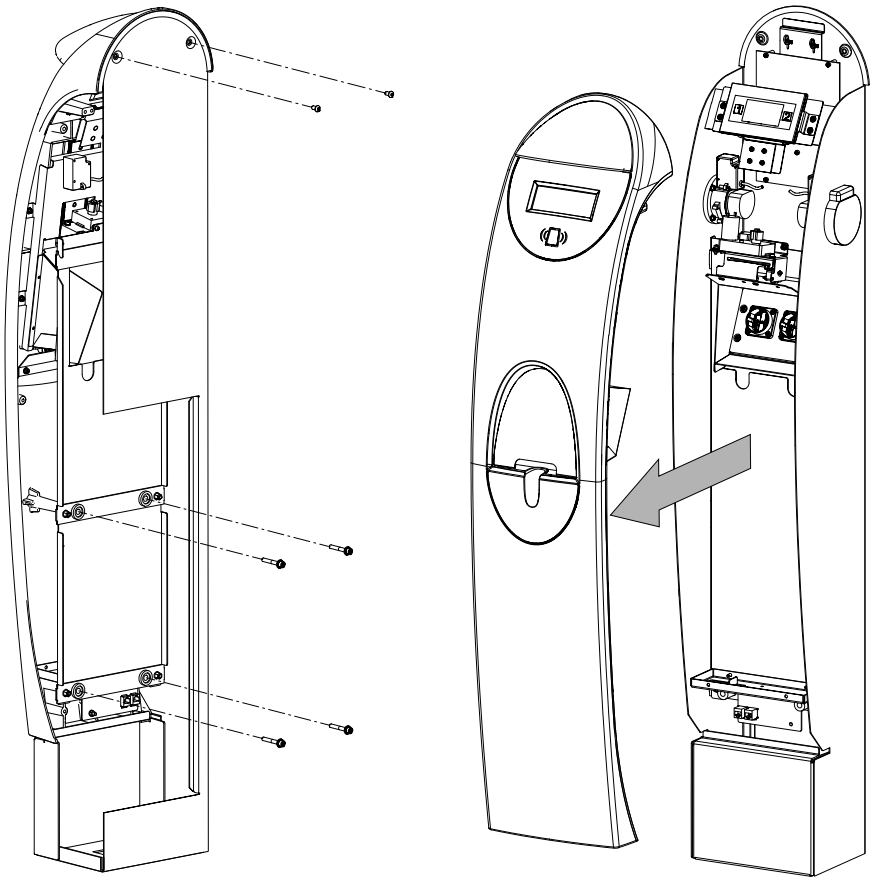


Final station

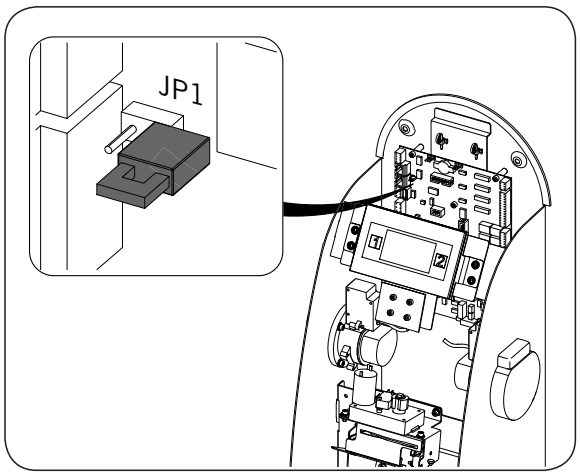


The JP1 jumper for control cards comes uninstalled. In all intermediate stations, the communication ring must remain uninstalled, but must be installed in the two ends.

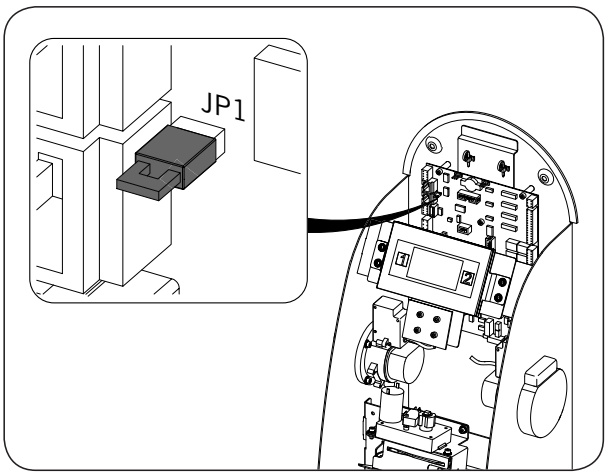
2. To install the JP1 jumper in the end stations, access its control card. On these stations uninstall the six bolts indicated in the following figure and remove the front.



3. Install JP1 jumper on the control card of the end charging stations.

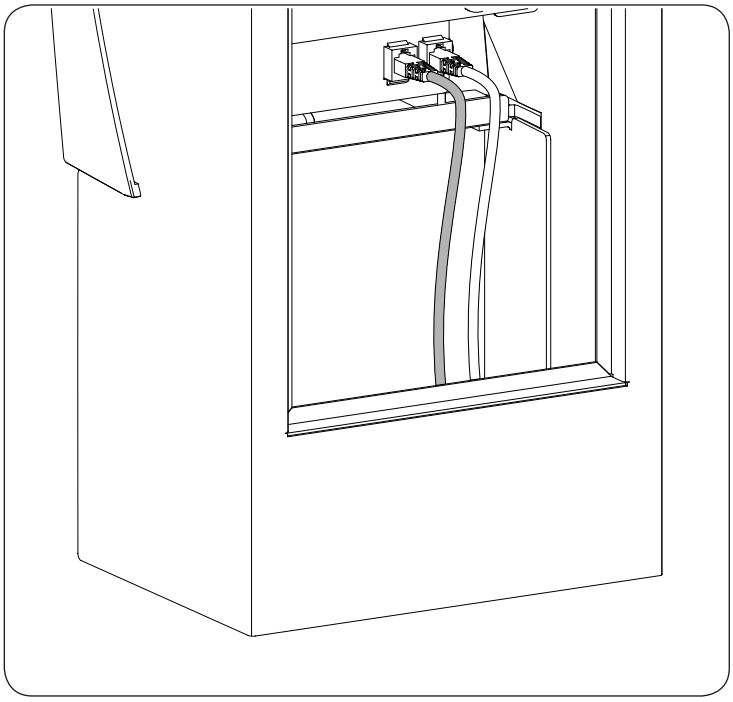


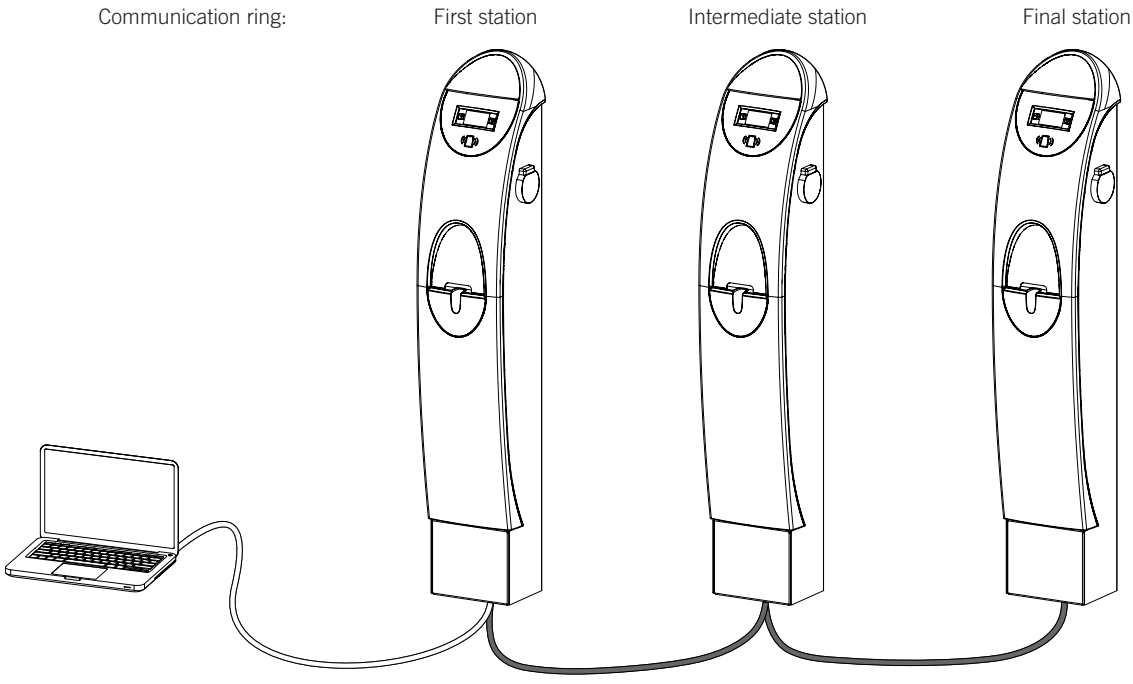
Jumper JP1 uninstalled (intermediate stations)



Jumper JP1 installed (stations at the two ends)

4. Use a USB to RS-485 converter with RJ45 connector (not supplied with the charging station) to connect the computer to the first station of the communication ring (white cable in the following figure).





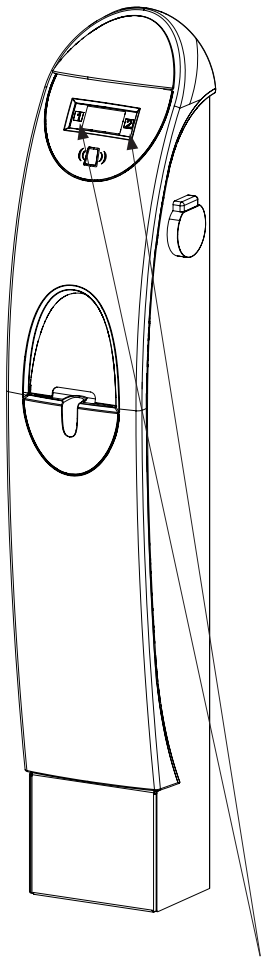
9. Operation

The main function of the charging station is to supply and measure electrical energy for users that have prior authorization with an RFID card reader system.

This section describes the operation of the charging station in detail.

9.1. Status indication

The charging station indicates its current status by means of light signals from several LEDs.The JOINON Parking+ station has independent indicators for each power socket.



Lighting of power socket 1 and 2

JOINON Parking+

Status	Lighting	Description
Awaiting vehicle	Continuous green	The charging socket is waiting for a vehicle to be connected in order to proceed with charging.
Awaiting charge	Flashing yellow	A user has identified a card using the reader and has selected the charging socket and said socket is waiting for the user to connect their vehicle to the station.
Charge	Continuous blue	A vehicle has been connected to the charging station.
Reduced consumption	Flashing blue	The consumption is reduced.
End of charge	Flashing yellow	After a vehicle has been charged, a user has identified their card using the reader and the charging station is waiting for the vehicle to be disconnected.

Status	Lighting	Description
Incident	Continuous red	The charging process is not being carried out correctly due to a problem.
Standby	None	The charging station has been remotely shut down.
End of session	Steady white	The charge has finished.
Card rejected	Steady white	The card is not valid or has not been recognized.
Select socket	Current status lighting, flashing	Once the card has been identified, it waits for the socket selection to start the charging process.

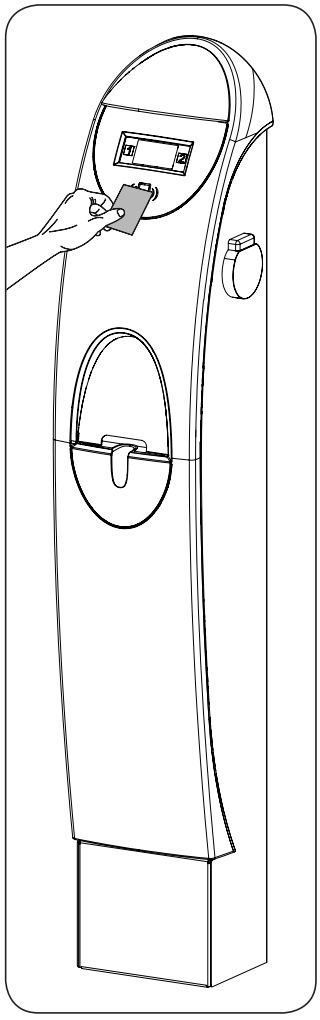
9.2. Charging process

9.2.1. JOINON Parking+

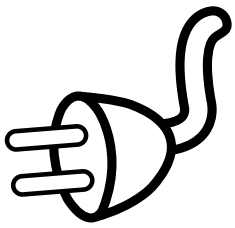
The electrical supply connector must not be removed from the vehicle while the charging is being carried out.

Starting the charge process

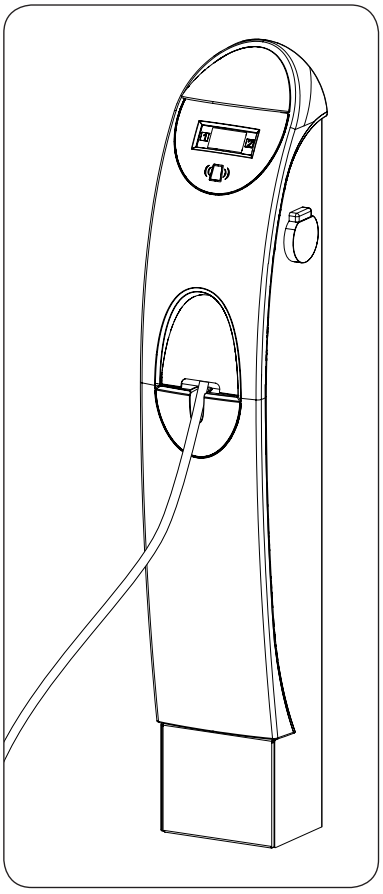
1. Check that the charging station is in awaiting vehicle status with the green light.
2. Identify the card using the reader located on the area indicated below the display.



If the reading is correct, and after pressing the number of a free Socket, the charging station goes into *waiting to charge* status. An image of a plug flashes on the display.



3. Raise the cover manually, if you want to use one of the interior connectors, and connect the cable into the desired socket. If you want to use one of the exterior connectors, open the protective covers and connect the charging cable.



Depending on the connector type used, the operation may vary slightly:

Connector type	Connection detection	Regulation governing the charge sequence
CEE 7/4 Type F (Schuko)	Automatic detection after lowering the cover	IEC61851
IEC 62196-2 Type 2	Instant automatic detection	IEC61851

The station locks the cover when it is completely closed and starts to supply energy to the vehicle, switching to the *charge* status.

Ending the charge process

4. To conclude the charge cycle, pass the cart to the reader and select the Socket in which you want to complete the charge process. The station interrupts the electrical supply and unlocks the cover of the receptacle or the connector.

5. Open the cover, if using one of the interior connectors, remove the connector and close the cover. The station will lock the cover and return to the *awaiting vehicle* status.

Loss of power

The station has an auxiliary supply that allows basic operations to be carried out when faced with a loss of electricity supply. In such a situation the station indicates this anomaly on the display.

In the event that the station is in the *awaiting vehicle* status and the electricity supply is lost, the message shown is:

"AC FAILURE"

If the supply loss occurs when a vehicle is being charged, the message is:

"AC FAILURE. Identify again to unlock the door"

In this situation the user must identify the ID card using the reader again and select the socket being used to unlock the cover and be able to disconnect the vehicle. After this process, the station turns off if the other socket is not being used.

A *Master User* can unlock the cover to pull out the connector and, after identifying themselves, can shut down the station with the lock active, as long as the sockets are being used.

When supply is restored after the supply is lost, the station returns to the status active before said loss of supply.

9.3. Languages

The information of each user session is displayed in the language configured on each card, regardless of the default language configured in the station.

In the case of users with no language configured, the station displays the information in the default language set.

9.4. Incidents

In the event of incidents the station switches to *incident* status, indicating the incident on the display.

Fault in the installation (error code 0001)

The station protections have tripped.

The station detects that the fault persists in the installation and the protections will not be restored until the fault disappears.

The electrical installation must be checked by qualified personnel.

Interrupted supply (error code 0002)

- Absence of electricity grid. There is no electricity supply. The station restarts when it is restored.
- The protections have tripped. The protections have tripped but the fault causing the trip has disappeared.

In the case that unit has resettable protections, the station will reset the protections shortly.

Incorrect hatch position (error code 0004)

The hatch is not in the position corresponding to the charge status.

Make sure that there are no loose or incorrectly inserted cables in the control card.

Connector powered (error code 0008)

The connector is powered when it should not be or is not powered when it should be.

Verify that all protections are ON.

Energy meter communication fault (error code 0016)

The internal communication with the energy meter is not correct, possibly due to a trip of the protections. Proceed to check the electric installation with a qualified personnel to check if protections have tripped.

If the protections have not tripped, notify the incident to the technical service.

RFID communication fault (error code 0032)

There is an anomaly with the internal communication with the card reader.

Inform the technical service of the incident.

Tilt sensor alarm (error code 0064)

These charging stations are available with a tilt sensor alarm.

Make sure that the unit is installed vertically, perpendicular to the ground. If this is not the case, correct the installation.

DC current leak (error code 0128)

Depending on the model, charging stations can have a DC current leak sensor for charging. A leak in the current that causes the alarm to trigger originates from the electric vehicle that is being charged; thus it is not an alarm for the recharging station, rather the charge is stopped for safety reasons.

The maximum admissible limit for DC current leaks is exceeded.

Charging sequence fault (error code 0256)

Incorrect charging sequence or disconnection of the vehicle during charging. The alarm disappears upon completing the session.

Maximum permitted charge current (error code 0512)

The vehicle has not respected the maximum charge current allowed during a maximum established time.

The alarm will disappear upon completion of the charge session of the electric vehicle causing the alarm.

Communication failure with the power manager (error code 1024)

Failure in the communication between the station and power manager. This error appears if the station is configured to work together with a power manager, but it is not present.

10. Shutting down the unit

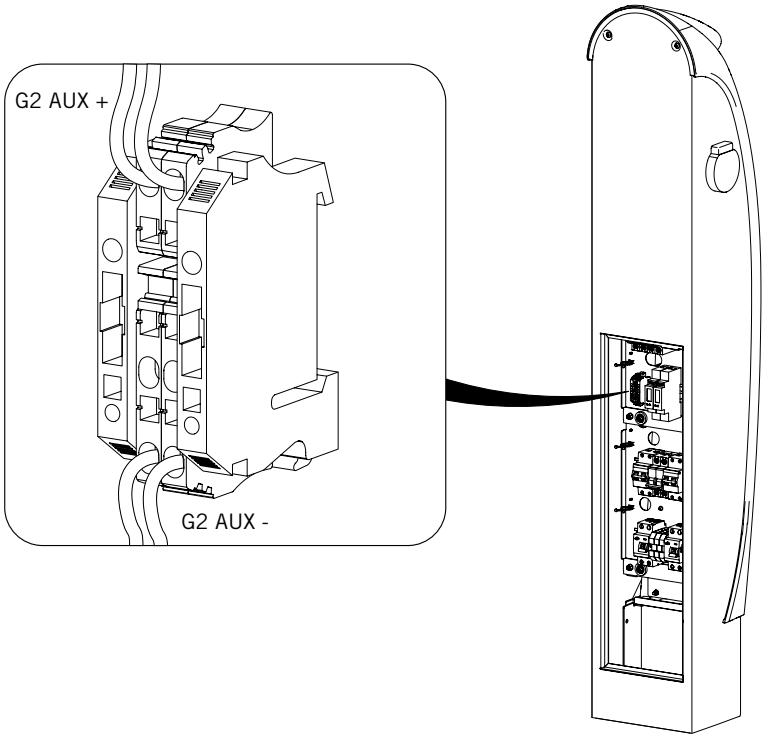
This section describes the procedure to shut down the unit. If it is necessary to carry out work on the unit interior (qualified personnel only) these instructions must be followed in the same order shown here to remove the voltage.

10.1. Process for shutting down the unit

In the event that you wish to shut down or disassemble the charging station, as a result of the auxiliary power supply present in the unit it does not shut down directly after its power supply is removed. In this case the station shows the following alarm message:

"AC FAILURE"

To completely shut down the station, identify a Master user card using the reader. Now the charging station can be completely shut down. If you do not have a Master type card, disconnect the battery.



It is strongly recommended to completely shut down the charging station in order to extend the life of the auxiliary power supply.

11. Preventive maintenance

11.1. Residual current devices

It is recommended to carry out annual checks of the residual current device of the station. To do so, press the RESET button on the device and wait for the unit to be reset.

The rear cover must only be opened in order to test both residual current devices, carefully making sure no contact is made with any other accessible devices or cables.

The worker that accesses the bottom of the access door to the protections must have the due training from the company (recharging station operator) and must be authorized to carry out such operations.

11.2. Ground connection

It is recommended to carry out an annual revision of the proper connection of the metal casing and other metal components on the outside of the charging station with the installation ground conductor.

The rear cover must only be opened in order to test the continuity between the arrival at the installation's ground conductor and the metal casing and other metal components located on the outside of the charging station.

The worker that accesses the bottom of the access door to the protections must have the due training from the company (recharging station operator) and must be authorized to carry out such operations.

12. Troubleshooting

This section provides a guide for troubleshooting problems that may arise in the installation and operation of charging stations.

Troubleshooting must be performed by qualified personnel in compliance with the general safety instructions in this manual.

12.1. Alarms

In the event of an alarm the station switches to the “alarm” status, lighting up red.

Fault in the installation (error code 0001)

Description

The station protections have tripped.

If the station is equipped with automatic reset protections, it detects whether the fault persists in the installation and the protections are not restored until the fault disappears.

This error does not appear in charging stations that do not have interior protections.

Solution

If manual reset protections are present, the station must be opened in order to gain access to these protections.

Reset the protections with the switch in the incorrect position. If the problem persists:

- Make sure that the cabling of the protections is correct and check that there are no loose or incorrectly tightened cables.
- Check the cabling of the auxiliary protection contact.

Interrupted supply (error code 0002)

Description

This error can be caused by:

- Absence of electricity grid. The station restarts when the power is restored.
- The protections have tripped.

Solution

If the error persists after the electrical grid supply is restored, check for the presence of voltage in the charging station connection socket.

If the alarm is caused by the tripping of the unit's internal protections, this can be resolved by following the instructions indicated in section *“Fault in the installation (error code 0001)”*.

Incorrect cover position (error code 0004)

Description

The access cover to the connectors is not in the position corresponding to the charge status.

Solution

- Make sure that no components are obstructing the travel of the cover.

If the error persists, contact the telephone support service.

Connector powered (error code 0008)

Description

The connector is powered when it should not be or is not powered when it should be.

Solution

Measure the voltage present in the connector(s) using a multimeter. Verify that all protections are ON.

If voltage is present

Check that the activation coil of the contactor has a 230 Vac power supply.

- If it is powered, the problem may originate from the control card. Make sure that there are no loose or incorrectly inserted cables in the control card.
- If it is not powered, check that there are no loose or incorrectly tightened cables in the contactors or power relays.

  It may be necessary to replace the contactor. Contact the telephone support service.

If no voltage is present

The problem may originate from the control card. Make sure that there are no loose or incorrectly inserted cables in the control card.

Energy meter communication fault (error code 0016)

Description

The internal communication with the energy meter is not correct or an unmonitored protection has tripped.

Solution

Check the protections and reset them if necessary. If the fault continues, check that the connection is correct.

RFID communication fault (error code 0032)

Description

There is an anomaly with the internal communication with the card reader.

Solution

Contact the telephone support service.

Tilt sensor alarm (error code 0064)

Description

These charging stations may have a tilt sensor that detects whether the installed station doesn't maintain the vertical angle relative to the ground.

Solution

Make sure that the unit is installed vertically, perpendicular to the ground. If this is not the case, correct the installation.

DC current leak (error code 0128)

Description

The maximum admissible limit for direct current leaks is exceeded while charging.

Depending on the model, charging stations can have a direct current leak sensor for charging. A leak in the current that causes the alarm to trigger originates from the electric vehicle that is being charged; thus it is not an alarm for the station, rather the charge is stopped for safety reasons.

Solution

If the alarm persists when there is no electric vehicle connected, contact the telephone support service.

Charging sequence fault (error code 0256)

Description

Incorrect charging sequence or disconnection of the vehicle during charging.

Solution

If the alarm appears due to the vehicle's disconnection during the charge session, it will disappear upon completing the session.

If the alarm persists when there is no charge session in progress, contact the telephone assistance.

Maximum permitted charge current (error code 0512)

Description

The vehicle has not respected the maximum charge current allowed during a maximum established time.

Solution

The alarm will disappear upon completion of the charge session of the electric vehicle causing the alarm.

Communication failure with the power manager (error code 1024)

Description

Failure in the communication between the station and power manager. This error appears if the station is configured to work together with a power manager, but it is not present.

Solution

Check the communication between the station and power manager. If there is no power manager, disable it in the station's configuration.

The keypad does not work

Description

The charging station keypad does not respond.

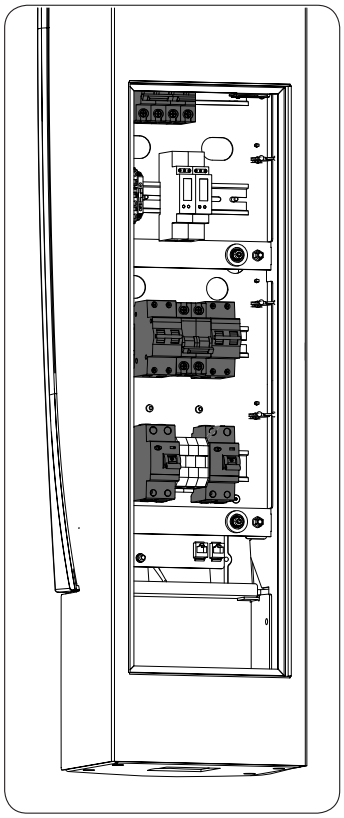
Solution

Make sure that the keypad cable is correctly inserted inside the unit and that there are no loose or incorrectly inserted cables in the control card.

If the error persists, contact the telephone support service.

12.2. Reset the protections

In the following figures we display the location of the charging stations protections to proceed to reset them after a trip.



13. Waste handling

These charging stations use components that are harmful to the environment (electronic cards, batteries or cells, etc.).

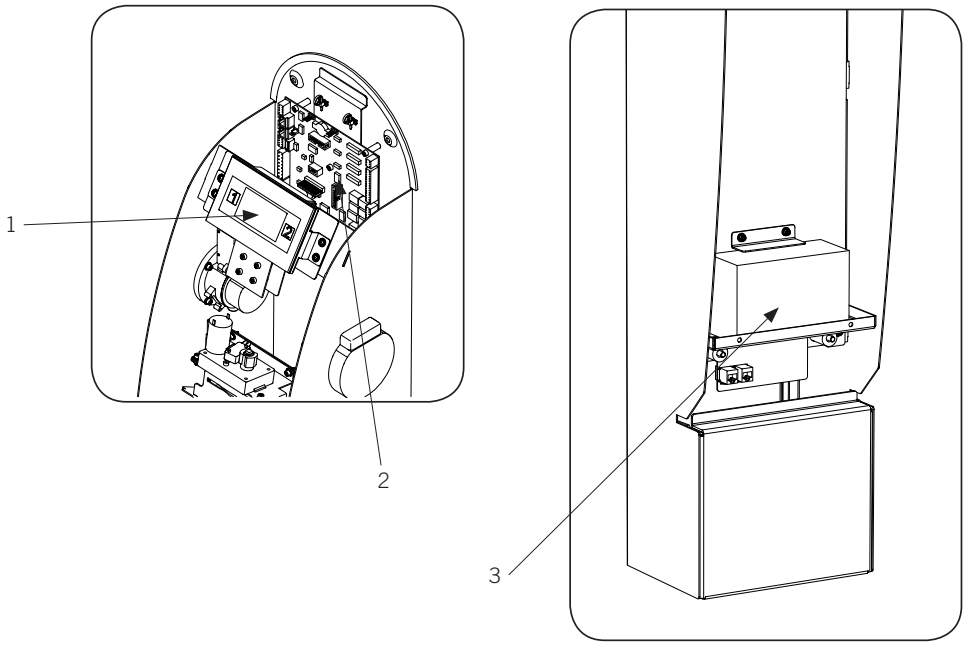
At the end of the unit's life, the waste must be correctly processed by an authorized hazardous waste management company.

In accordance with an environmentally-friendly policy, the authorized manager is informed, via this Section, of the location of components to be decontaminated.

The elements within the unit that must be handled individually are:

1. Liquid crystal displays.
2. Printed circuit board cards.
3. Batteries or accumulators.

Their location is shown in the following images.



Waste that can be handled by conventional waste collection means

Most of this waste is from the unit's packaging, which must be properly separated and processed.

All the packaging can be delivered to a non-hazardous waste management company.

In any event, each part of the packaging may be recycled as follows:

- Plastic (polystyrene, bag and bubble wrap): Appropriate container (plastic and bottles).
- Cardboard: Appropriate container (paper and cardboard).

Contenidos

1. Información sobre este manual

1.1. Campo de aplicación

Este manual es válido para las siguientes estaciones de carga:

JOINON Parking+ GW68105 (monofásico)

JOINON Parking+ GW68105R (monofásico)

JOINON Parking+ GW68106C (trifasico)

1.2. Destinatarios

El presente documento está orientado a personal cualificado.

La condición de personal cualificado a la que se refiere este manual, será como mínimo aquella que satisfaga todas las normas, reglamentos y leyes en materia de seguridad aplicables a los trabajos de instalación y operación de este equipo.

La responsabilidad de designar al personal cualificado siempre recaerá sobre la empresa a la que pertenezca este personal, debiendo decidir qué trabajador es apto o no para realizar uno u otro trabajo para preservar su seguridad a la vez que se cumple la legislación de seguridad en el trabajo.

Dichas empresas son responsables de proporcionar una adecuada formación en equipos eléctricos a su personal, y a familiarizarlo con el contenido de este manual.

1.3. Simbología

A lo largo de este manual se utilizarán diferentes símbolos con el fin de remarcar y resaltar ciertos textos. A continuación se explican los significados generales de estos.


Atención general.


Información general.


Riesgo eléctrico.


Leer el apartado indicado.


Prohibición.

2. Descripción del equipo

2.1. Modelos

JOINON Parking+ GW68105 (monofásico)

JOINON Parking+ GW68105R (monofásico)

JOINON Parking+ GW68106C (trifasico)

2.2. Cumplimiento de normativa

Marcado CE

El marcado CE es imprescindible para comercializar cualquier producto en la Unión Europea sin perjuicio de las normas o leyes. Estas estaciones de recarga tienen el marcado CE en virtud del cumplimiento de las siguientes directivas:

- *Directiva de Baja Tensión 2014/35/EU*.
- *Directiva de Compatibilidad Electromagnética 2014/30/EU.*

Para cumplir cada directiva, es suficiente el cumplimiento de las partes aplicables a nuestro equipo de las normas armonizadas adecuadas.

Directiva de Baja Tensión

Estas estaciones de recarga cumplen suficientemente esta directiva mediante el cumplimiento de las partes que le son aplicables de la norma armonizada *EN 61851 Sistema conductivo de carga para vehículos eléctricos*.

Directiva de Compatibilidad Electromagnética

Estas estaciones de recarga cumplen suficientemente esta directiva mediante el cumplimiento de las partes que le son aplicables de las normas armonizadas:

- *EN 61000-6-1 Compatibilidad Electromagnética*. Parte 6-1: Normas genéricas - Inmunidad para entornos residenciales, comerciales e industria ligera.
- *EN 61000-6-3 Compatibilidad Electromagnética*. Parte 6-3: Normas genéricas - Emisión para entornos residenciales, comerciales e industria ligera.

El cumplimiento de estas normas obliga a cumplir límites y procedimientos de otras normas de la misma serie.

2.3. Requerimientos EMC

Estas estaciones de recarga disponen de los elementos de filtro necesarios para el cumplimiento de los requerimientos de EMC para aplicaciones domésticas con el fin de evitar perturbaciones en otros equipos exteriores a la instalación.

2.4. Grado de protección

Estas estaciones de recarga tienen un grado de protección IP54 contra agentes externos.

Este equipo está diseñado para su uso en interior y exterior.

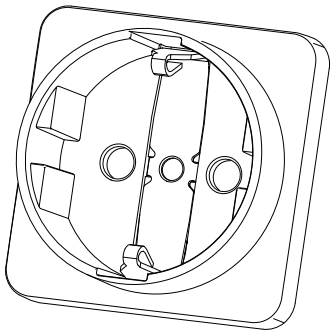
2.5. Grado de contaminación

El grado de contaminación para el cual se han previsto estas estaciones de recarga es PD3.

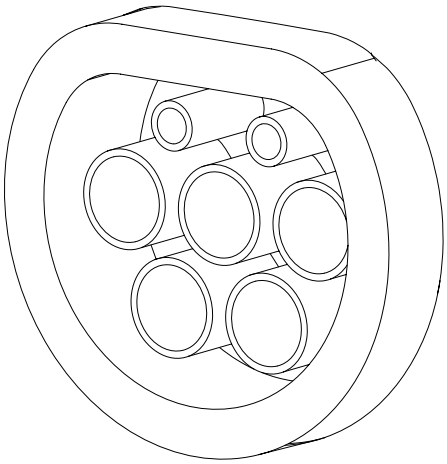
2.6. Tomas de corriente

Estas estaciones de recarga pueden adquirirse con distintas configuraciones de conectores en función de las necesidades del cliente.

Los distintos conectores disponibles se muestran a continuación:

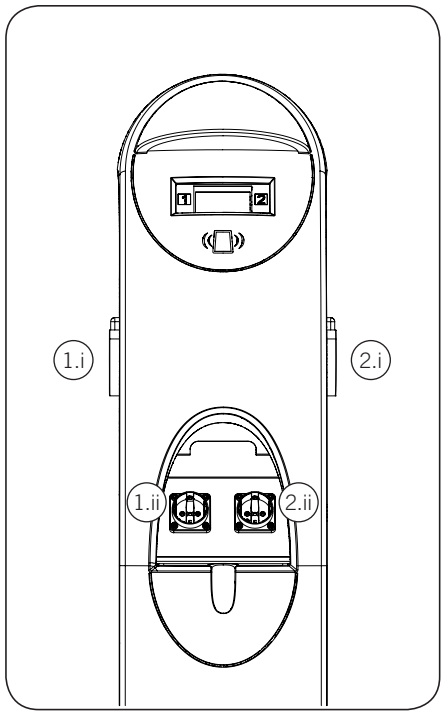


CEE 7/4 Tipo F



IEC 62196-2 Tipo 2

Las estaciones de recarga JOINON Parking+ disponen de dos tomas de corriente que pueden utilizarse al mismo tiempo. La configuración de dichas tomas se detalla a continuación, indicando para cada toma los distintos tipos de conectores disponibles.



1.i. Toma 1	IEC 62196-2 Tipo 2	2.i. Toma 2	IEC 62196-2 Tipo 2
1.ii. Toma 1	CEE 7/4 Tipo F	2.ii. Toma 2	CEE 7/4 Tipo F

3. Seguridad

A lo largo de este apartado se detallan los avisos de seguridad así como el Equipo de Protección Individual.

3.1. Condiciones de seguridad

Avisos generales

Las operaciones detalladas en el manual sólo pueden ser realizadas por personal cualificado.

La condición de personal cualificado a la que se refiere este manual, será como mínimo aquella que satisfaga todas las normas, reglamentos y leyes en materia de seguridad aplicables a los trabajos de instalación y operación de este equipo.

La responsabilidad de designar al personal cualificado siempre recaerá sobre la empresa a la que pertenezca este personal, debiendo decidir qué trabajador es apto o no para realizar uno u otro trabajo para preservar su seguridad a la vez que se cumple la legislación de seguridad en el trabajo.

Dichas empresas son responsables de proporcionar una adecuada formación en equipos eléctricos a su personal, y a familiarizarlo con el contenido de este manual.

Se recuerda que es obligatorio cumplir toda la legislación aplicable en materia de seguridad para el trabajo eléctrico. Existe peligro de descarga eléctrica.

El cumplimiento de las instrucciones de seguridad expuestas en este manual o de la legislación sugerida no exime del cumplimiento de otras normas específicas de la instalación, el lugar, el país u otras circunstancias que afecten al equipo.

La apertura de la envolvente no implica la ausencia de tensión en su interior.

Existe peligro de descarga eléctrica incluso después de desconectar todas las fuentes de energía del sistema.

Sólo podrá abrirla personal cualificado siguiendo las instrucciones de este manual.

Es obligatorio leer y entender el manual por completo antes de comenzar a manipular, instalar u operar el equipo.

La normativa de seguridad básica de obligado cumplimiento para cada país es:

- *RD 614/2001* en España.
- *CEI 11-27* en Italia.
- *DIN VDE 0105-100* y *DIN VDE 1000-10* en Alemania.
- *UTE C18-510* en Francia.

Es obligatorio para comprobar ausencia de tensión utilizar elementos de medida de categoría III-1000 Voltios.

Ingeteam no se responsabiliza de los daños que pudieran causarse por una utilización inadecuada de las estaciones de recarga. Toda intervención que se realice sobre estas estaciones que suponga un cambio en las disposiciones eléctricas respecto a las originales deberán ser previamente propuestas a Ingeteam. Éstas deberán ser estudiadas y aprobadas por Ingeteam.

Realizar todas las maniobras y manipulaciones sin tensión.

Como medida mínima de seguridad en esta operación, se deberán observar las llamadas **5 reglas de oro**:

1. Desconectar.
2. Prevenir cualquier posible realimentación.
3. Verificar la ausencia de tensión.
4. Poner a tierra y en cortocircuito.
5. Proteger frente a elementos próximos en tensión, en su caso, y establecer una señalización de seguridad para delimitar la zona de trabajo.

Hasta que no se hayan completado las cinco etapas, no podrá autorizarse el trabajo sin tensión y se considerará trabajo en tensión en la parte afectada.

Peligros potenciales para las personas

Se han de tener en cuenta los siguientes avisos con el fin de proteger su seguridad.

PELIGRO: aplastamiento y lesiones articulares.

Seguir siempre las indicaciones del manual para mover y emplazar el equipo.

El peso de este equipo puede producir lesiones si no se manipula correctamente.

Peligros potenciales para el equipo

Se han de tener en cuenta los siguientes avisos con el fin de proteger el equipo.

El equipo necesita un flujo de aire libre de impurezas mientras está funcionando.

Mantener la posición vertical y las entradas sin obstáculos es imprescindible para que este flujo de aire llegue al interior del equipo.

Después de toda manipulación debidamente autorizada, comprobar que el equipo está preparado para empezar a funcionar. Sólo después se puede proceder a conectarlo siguiendo las instrucciones del manual.

No tocar tarjetas ni componentes electrónicos. Los componentes más sensibles pueden dañarse o destruirse por la electricidad estática.

No desconectar o conectar ningún terminal mientras el equipo está funcionando. Desconectar y comprobar la ausencia de tensión antes.

3.2. Equipo de Protección Individual (EPI)

Siempre que se trabaje en el equipo usar, como mínimo, el siguiente equipamiento de seguridad.

Denominación	Explicación
Calzado de seguridad	Conforme a la norma *UNE-EN-ISO 20345:2012*
Casco	Conforme a la norma *EN 397:1995*
Casco con pantalla facial	Conforme a la norma *la UNE-EN 166:2002*, siempre que existan elementos con tensión directamente accesibles.
Ropa de trabajo	Ceñida al cuerpo, no inflamable, 100% de algodón
Guantes dieléctricos	Conforme a la norma *EN 60903:2005*

Las herramientas y/o equipos empleados en trabajos en tensión deben poseer, al menos, aislamiento de categoría III-1000 Voltios. En caso de que normativas propias del lugar exijan otro tipo de equipo de protección individual, el equipo recomendado se deberá completar adecuadamente.

4. Recepción del equipo y almacenamiento

4.1. Recepción

Mantener el embalaje colocado hasta inmediatamente antes de su instalación.

4.2. Identificación del equipo

El número de serie del equipo lo identifica de forma inequívoca.

El número de serie del equipo viene reflejado en la placa de características.

4.3. Daños en el transporte

Si durante el transporte el equipo ha sufrido daños actuar en el siguiente orden:

1. No proceder a la instalación.
2. Notificar este hecho inmediatamente al distribuidor dentro de los 5 días posteriores a la recepción del equipo.

Si finalmente fuese necesario devolver el equipo al fabricante, se deberá usar el mismo embalaje en el que se recibió.

4.4. Almacenamiento

El incumplimiento de las instrucciones dadas en esta sección puede causar daños en el equipo.

Si el equipo no es instalado inmediatamente después de su recepción, se deberán tener en cuenta los siguientes puntos con el fin de evitar su deterioro:

- Con el fin de permitir una correcta conservación de las estaciones de recarga, no debe retirarse el embalaje original hasta el mismo momento de su instalación.
- El deterioro del embalaje (cortes, agujeros, etc.) hace que las estaciones de recarga no se mantengan en óptimas condiciones antes de su instalación.
- Mantener el equipo libre de suciedad (polvo, virutas, grasa, etc.), así como de roedores.
- Evitar que reciba proyecciones de agua, chispas de soldaduras, etc.
- Cubrir el equipo con un material protector transpirable con el fin de evitar condensación debida a la humedad ambiental.
- Las estaciones de recarga almacenadas no deberán estar sometidas a condiciones climáticas diferentes a las siguientes:

Condiciones medioambientales	
Temperatura mínima	-20 °C
Temperatura mínima del aire circundante	-20 °C
Temperatura máxima del aire circundante	70 °C
Humedad relativa máxima sin condensación	95%

- Es muy importante proteger el equipo frente a productos químicos que puedan producir corrosión, así como de ambientes salinos.
- No almacenar el equipo a la intemperie.

5. Transporte del equipo

Se deberá proteger el equipo durante su transporte de golpes mecánicos, vibraciones, proyecciones de agua (lluvia) y cualquier otro producto o situación que pueda dañar o alterar su comportamiento.

5.1. Transporte

Transporte mediante transpaleta

Se deberán observar al menos las siguientes prescripciones:

1. Depositar las estaciones de recarga embaladas y centradas respecto a las uñas.
2. Procurar colocarlas lo más cerca de la unión de las uñas con el tirador.
3. En cualquier caso, respetar el manual de utilización de la transpaleta.

Transporte mediante carretilla elevadora

Se deberán observar al menos las siguientes prescripciones:

1. Depositar las estaciones de recarga embaladas y centradas respecto a las uñas.
2. Procurar colocarlas lo más cerca de la unión de las uñas con el tirador.
3. Asegurarse que las pinzas están perfectamente niveladas para evitar posibles vuelcos del equipo.
4. En cualquier caso, respetar el manual de utilización de la carretilla.

Una vez que la estación de recarga se ha transportado al lugar donde se va a ubicar, y sólo cuando se vaya a instalar, se desembalará la estación.

En ese momento se puede transportar verticalmente una distancia corta sin el embalaje.

Transporte del equipo con el equipo desembalado

Se deberán observar al menos las siguientes prescripciones:

1. Seguir los consejos ergonómicos necesarios para levantar pesos.
2. No soltar el equipo hasta que esté perfectamente fijado o depositado.
3. Pedir que otra persona guíe los movimientos a realizar.

5.2. Desembalaje

Es de vital importancia la correcta manipulación de las estaciones de recarga con el fin de:

- No deteriorar el embalaje que permite mantener estos en óptimas condiciones desde su expedición hasta el momento de ser instalados.
- Evitar golpes y/o caídas de las estaciones de recarga que pudieran deteriorar las características mecánicas de las mismas.
- Evitar, en la medida de lo posible, las vibraciones que puedan provocar un mal funcionamiento posterior.

Segregación del embalaje

Todo el embalaje se puede entregar a un gestor autorizado de residuos no peligrosos.

En cualquier caso, el destino de cada parte del embalaje será:

- Plástico (poliestireno, bolsa y papel burbuja): contenedor correspondiente.
- Cartón: contenedor correspondiente.

6. Preparación para la instalación del equipo

A la hora de decidir la ubicación del equipo y planificar su instalación, se deberán seguir una serie de pautas derivadas de las características del mismo.

6.1. Entorno

- Colocar las estaciones de recarga en un lugar accesible a los trabajos de instalación y mantenimiento, y que permita su manejo y la lectura de los LED indicadores.
- No colocar en las inmediaciones de las salidas de aire ningún material sensible a las altas temperaturas.
- Evitar ambientes corrosivos que puedan afectar al correcto funcionamiento del equipo.
- Queda terminantemente prohibido dejar cualquier objeto sobre el equipo.

6.2. Condiciones medioambientales

Se deberán tener en cuenta las condiciones ambientales de operación del equipo para elegir su ubicación.

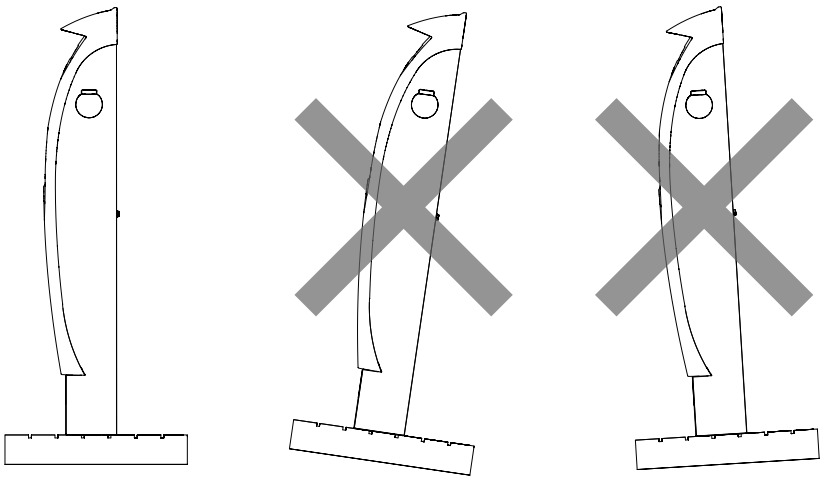
Condiciones medioambientales	
Temperatura mínima	-20 °C
Temperatura mínima del aire circundante	-20 °C
Temperatura máxima del aire circundante	70 °C
Humedad relativa máxima sin condensación	95%

Conviene tener en cuenta que, ocasionalmente, podría producirse una condensación moderada como consecuencia de las variaciones de temperatura. Por esta razón, y al margen de la propia protección del equipo, se hace necesaria una vigilancia de estas estaciones de recarga, una vez puestos en marcha en aquellos emplazamientos en los que se sospeche no vayan a darse las condiciones anteriormente descritas.

Con condensación, no aplicar nunca tensión al equipo.

6.3. Superficie de apoyo y anclaje

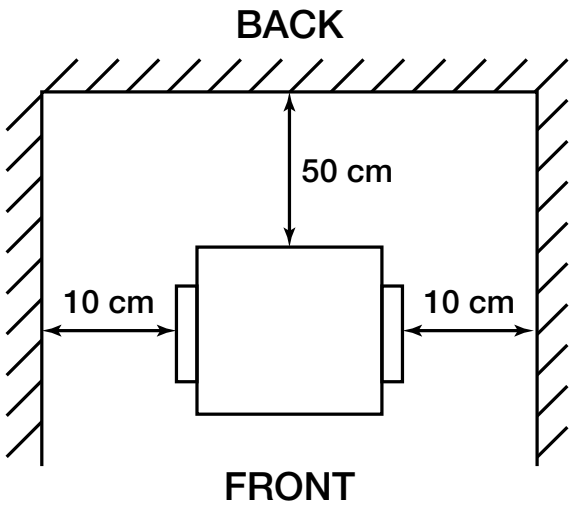
Se deberá reservar una superficie regular y sólida para amarrar el equipo, debiendo quedar éste perfectamente vertical.



La superficie sobre la cual instalar los productos debe estar adecuadamente preparada y hecha de acuerdo con el tipo de suelo para garantizar la estabilidad correcta del producto durante su uso.

Para este fin, es aconsejable colocar un soporte donde ahogar los tirantes de fijación (no suministrados) que se utilizarán para fijar la estación de carga. Los tirantes deben colocarse de acuerdo con las dimensiones en el capítulo 7.2.

Proceda con la fijación de la estación de carga en el área apropiadamente preparada, manteniendo las distancias entre la estación y el entorno circundante como se muestra en la figura



NOTA: La superficie sobre la que se instalará la estación de carga debe diseñarse y construirse adecuadamente de acuerdo con los estándares, con los estándares actuales, para garantizar la seguridad del usuario independientemente del tipo de superficie.

7. Instalación y conexión del equipo

Antes de proceder a la instalación del equipo, deberá retirarse el embalaje teniendo especial cuidado de que no se dañe la envolvente.

Deberá cerciorarse de la inexistencia de condensación en el interior del embalaje. Si existieran signos de condensación, no se deberá instalar el equipo hasta asegurarse que está completamente seco.

Todas las operaciones de instalación deben mantener observancia con el reglamento vigente.

Todas las operaciones que impliquen movimiento de pesos elevados se deberán llevar a cabo entre dos personas.

La tarea de conexión deberá realizarse sin tensión por personal cualificado.

Hay que vigilar cuidadosamente la ausencia de tensión en el equipo cuando se acceda a su interior.

Para medir ausencia de tensión es obligatorio el uso de guantes dieléctricos y gafas de seguridad homologadas para riesgo eléctrico.

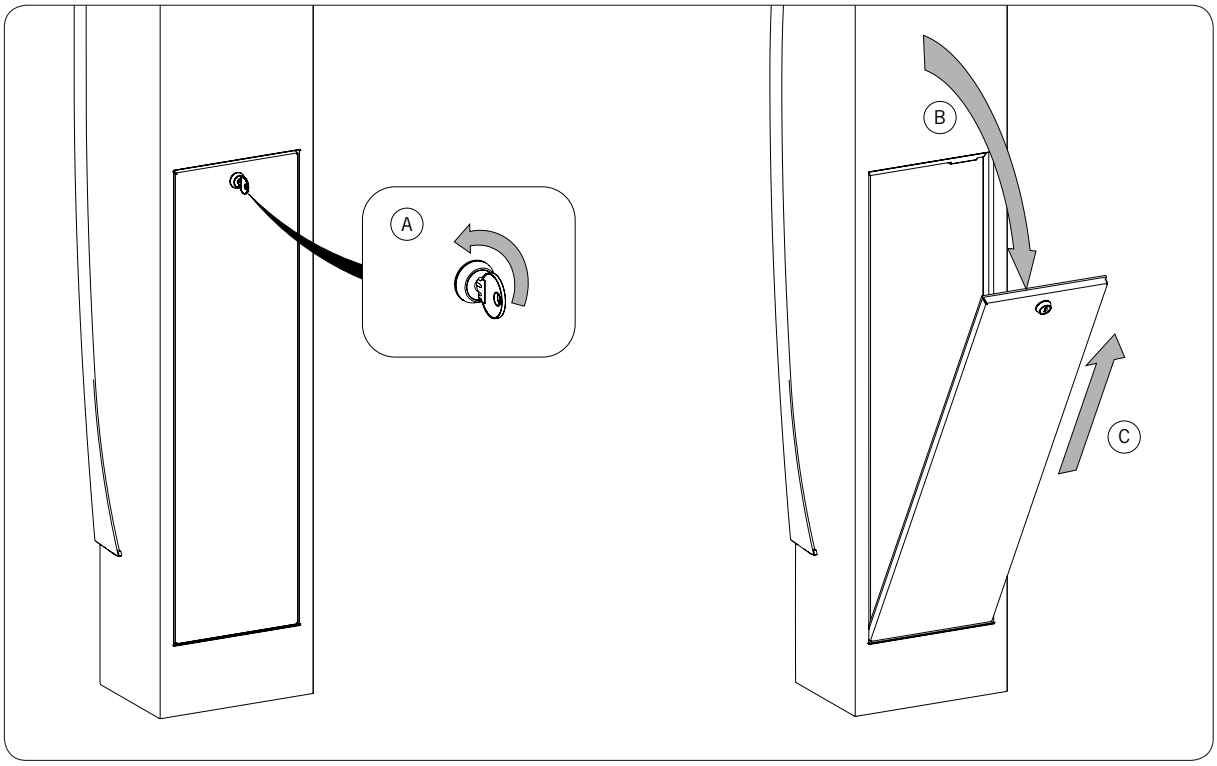
7.1. Requerimientos generales de instalación

- El entorno del equipo deberá ser el adecuado, satisfaciendo las pautas descritas en el capítulo *"6. Preparación para la instalación del equipo"*. Además, los elementos empleados en el resto de la instalación deberán ser compatibles con el equipo y con el cumplimiento de la legislación aplicable.
- La ventilación y el espacio de trabajo deberán ser los adecuados para las labores de mantenimiento según reglamento aplicable vigente.
- Los dispositivos exteriores de conexión deberán ser adecuados y estarán lo suficientemente cerca según se establece en el reglamento vigente.
- Los cables de acometida deberán tener la sección adecuada a la intensidad máxima.
- Se tendrá especial cuidado para que no existan elementos exteriores próximos a las entradas y salidas de aire que impidan la correcta refrigeración del equipo.

Especificaciones acometida		
Tipo de conexión	Monofásica	Trifásica
Número de conductores	2P + T	3P + N + T
Corriente nominal	hasta 32 A	hasta 32 A
Diámetro máximo conductor	10 mm^2 (2 x 6 mm^2)	

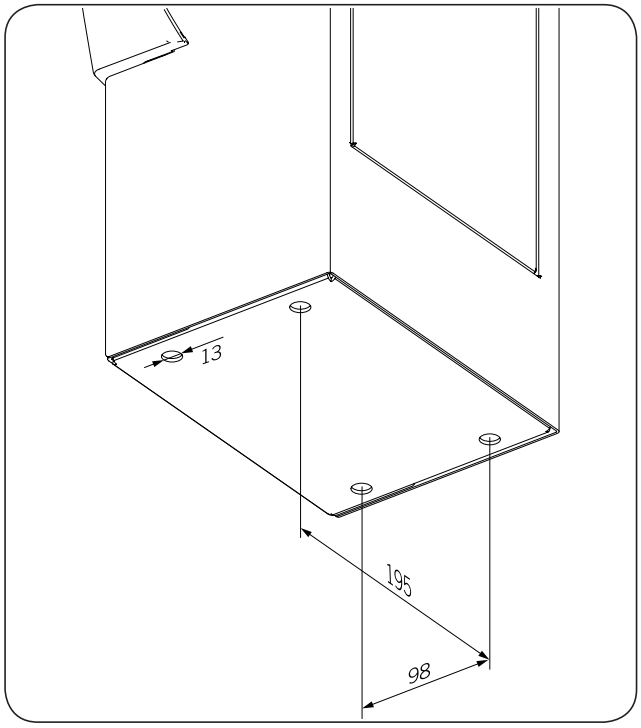
7.2. Instalación del equipo

1. Estas estaciones de carga disponen de un acceso posterior con apertura mediante llave para facilitar la instalación y las conexiones. Abrir el acceso utilizando la llave facilitada.

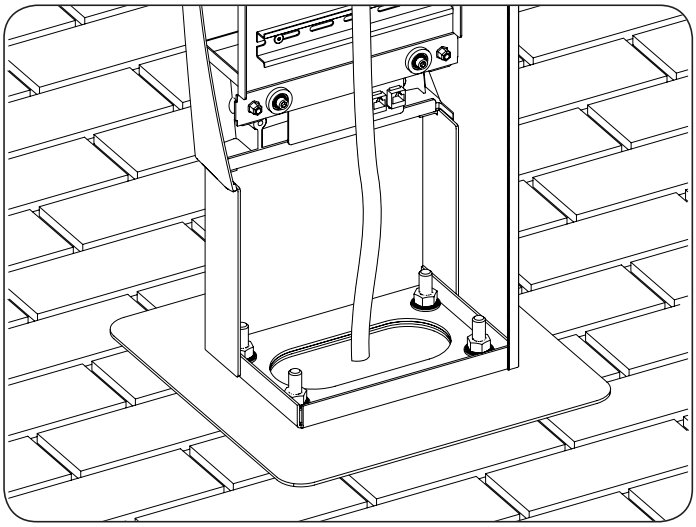


2. Acople la base de fijación de la estación de carga con el área preparada.

La siguiente figura muestra la posición de los puntos de anclaje en el producto para preparar adecuadamente el área de montaje.



Conducir el cableado hacia el interior de la estación de recarga, tal y como muestra la siguiente figura.



3. Verificar que el equipo ha quedado bien asegurado.

7.3. Conexión de la alimentación del equipo

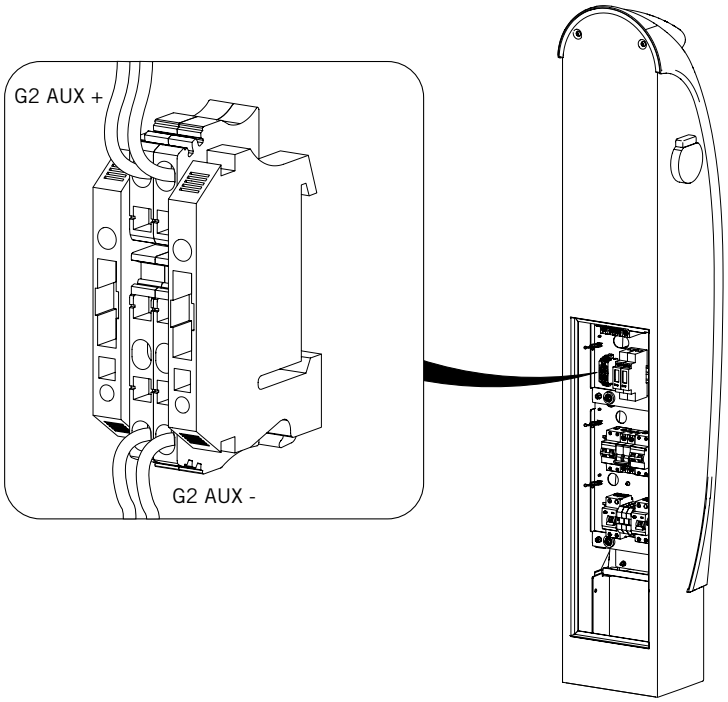
Requisitos del cableado

La acometida deberá cumplir ciertos requerimientos:

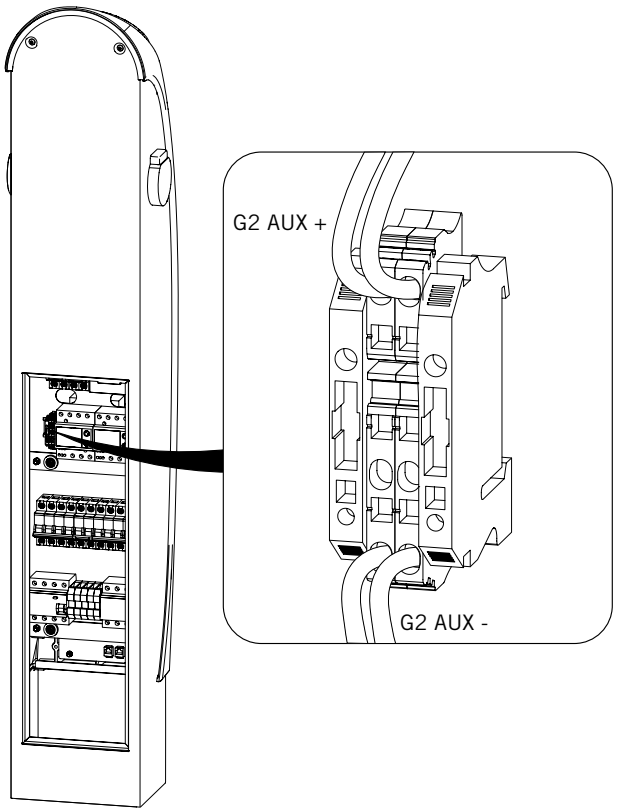
Especificaciones acometida		
Tipo de conexión	Monofásica	Trifásica
Número de conductores	2P + T	3P + N + T
Corriente nominal	hasta 64 A	hasta 64 A
Diámetro máximo conductor	16 mm^2 (2 x 10 mm^2)	

Proceso de conexión

1. La conexión del equipo se realizará a través del acceso posterior. Comprobar que el cableado de la batería está correctamente conectado (*G2 AUX +* y *G2 AUX -*). El cableado está serigrafiado para evitar confusiones.

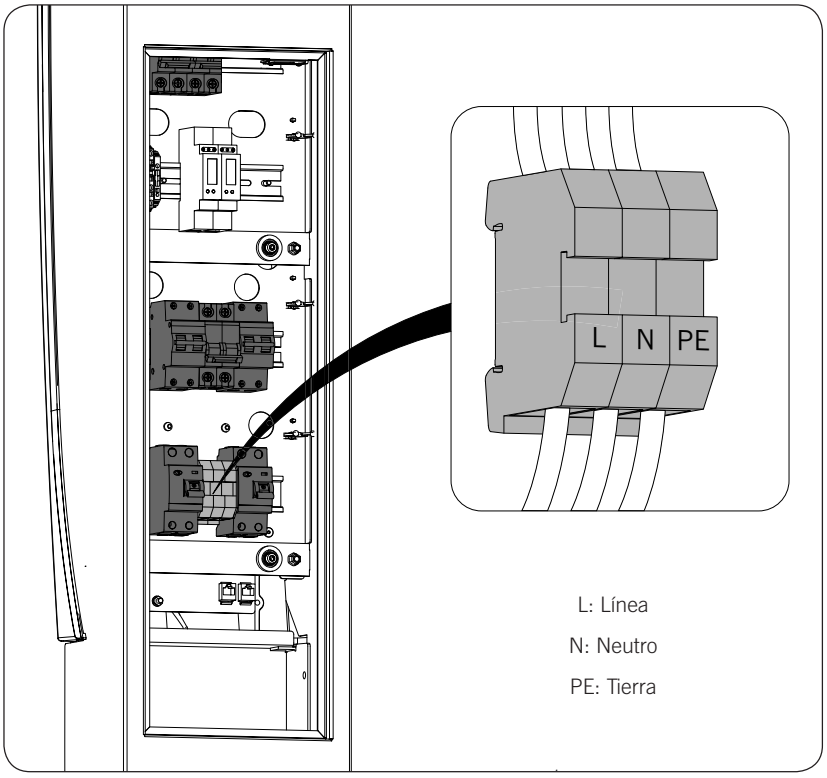


Estación de recarga monofásica

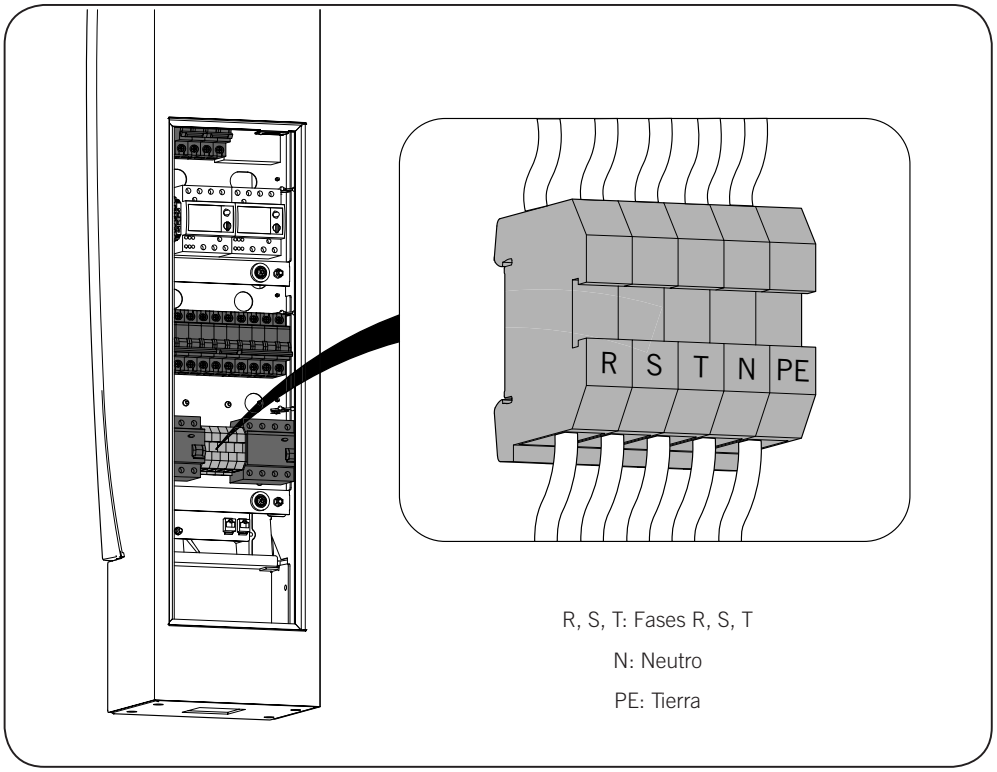


Estación de recarga trifásica

2. Conectar el cableado de alimentación *L*, *N* y *PE* y posteriormente accionar las protecciones diferenciales y magnetotérmicas a su posición de ON (marcados en gris oscuro en la siguiente figura).

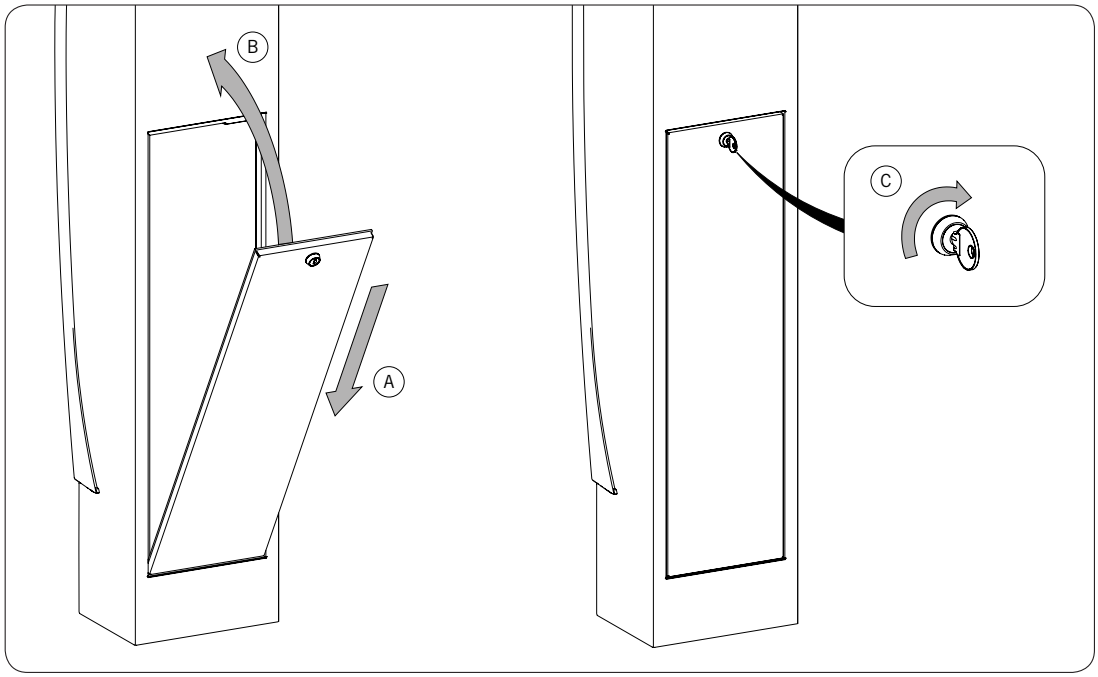


Estación de recarga monofásica



Estación de recarga trifásica

3. Cerrar el acceso posterior y bloquearlo mediante llave.



Cuando la estación de recarga se alimente ambas tomas aparecerán iluminadas. Tras una breve comprobación de su estado, la iluminación pasará a verde y mostrará un vehículo eléctrico y la hora actual en su display. La estación está lista y queda en espera de identificación de usuario para proceder a la recarga.

Si la estación localizara algún defecto en su funcionamiento, la iluminación de la toma correspondiente o de ambas, en caso de ser un fallo común a ambas, sería de color rojo y se indicaría el tipo de incidencia por display (ver *"9. Funcionamiento"*).

8. Accesorios de comunicación

Estas estaciones de recarga incorporan un bus de datos RS-485 local que permite la conexión entre diferentes estaciones.

El acceso a todas las estaciones de recarga podrá ser de forma local o remota, utilizando en este último caso bien un módem externo propio situado en la instalación o el proporcionado dentro de la estación de recarga si así se ha solicitado al efectuar el pedido.

En este apartado se explica el proceso de conexión para la conexión local, siendo esta comunicación posible de serie.

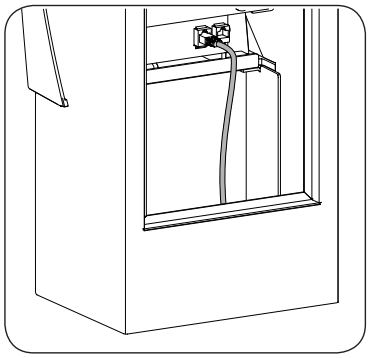
8.1. Comunicación local

8.1.1. JOINON Parking+

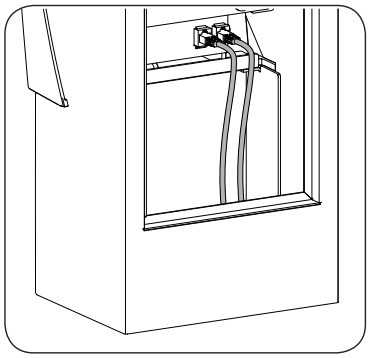
Para realizar la conexión local seguir las siguientes indicaciones:

1. Conectar el anillo de comunicación.

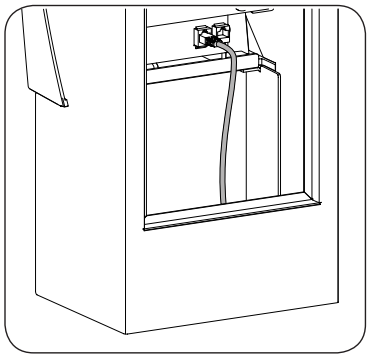
Primera estación



Estación intermedia

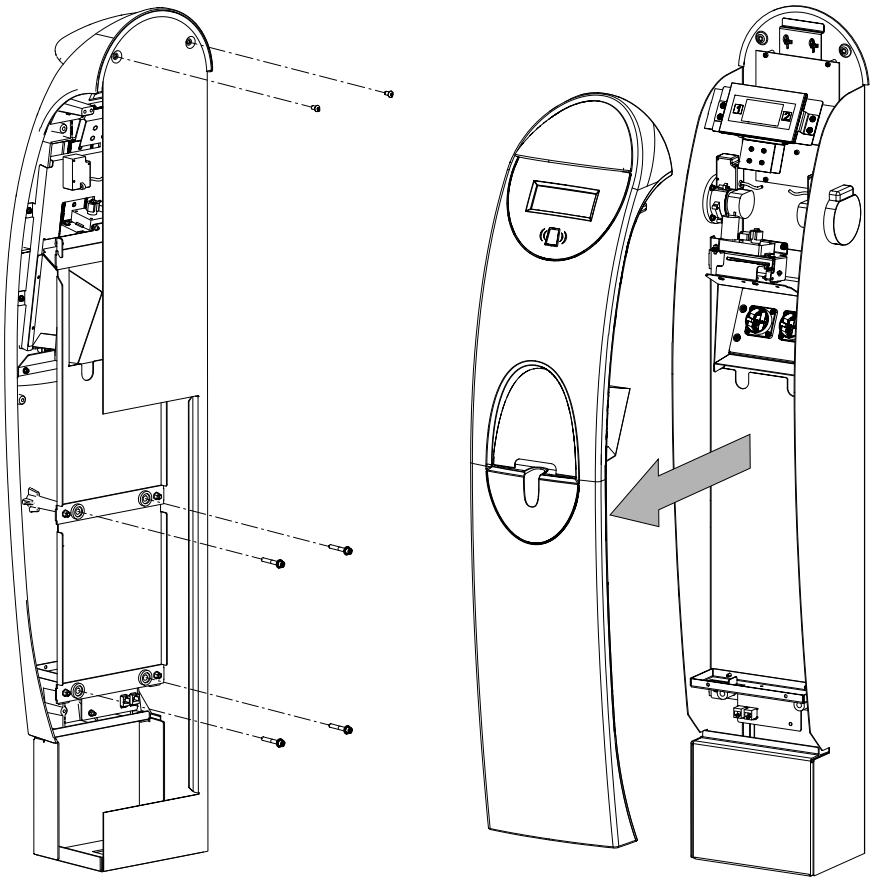


Estación final

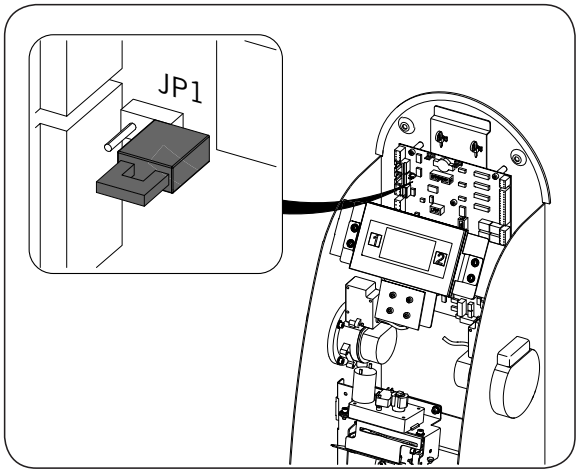


El jumper JP1 de las tarjetas de control viene desinstalado de serie. En todas las estaciones intermedias del anillo de comunicación deberá permanecer desinstalado, mientras que en las estaciones de los dos extremos deberá instalarse.

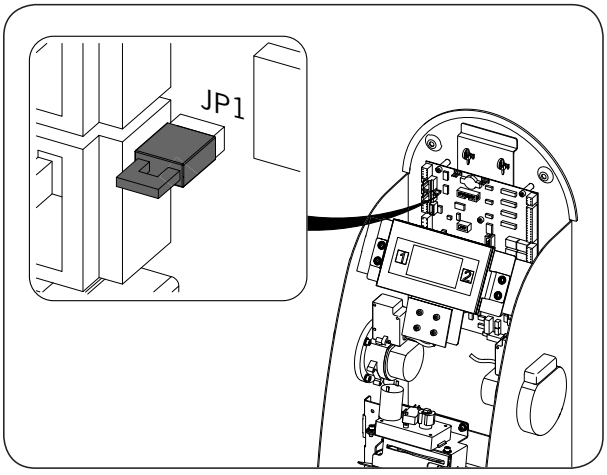
2. Para instalar el jumper JP1 en las estaciones de los extremos se deberá acceder a la tarjeta de control de las mismas. En dichas estaciones desinstalar los seis tornillos indicados en la siguiente figura y extraer el frontal.



3. Instalar el jumper JP1 en la tarjeta de control de las estaciones de recarga de los extremos.

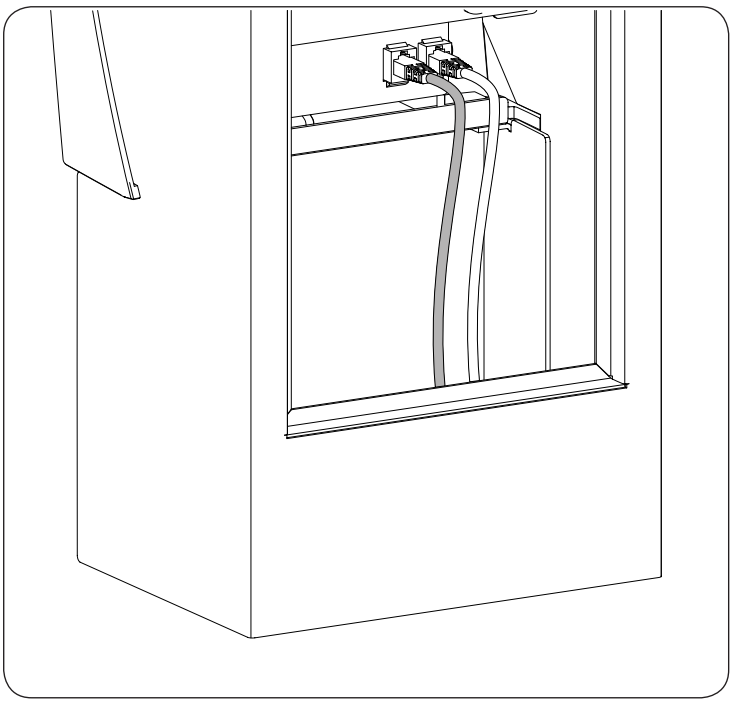


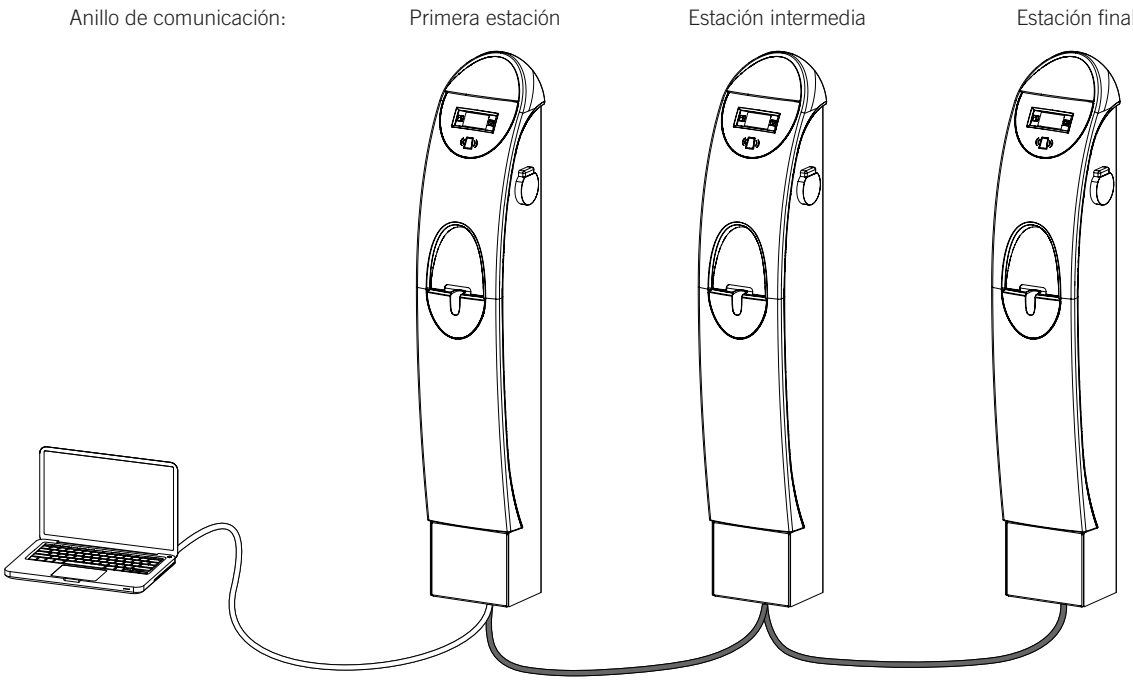
Jumper JP1 desinstalado (estaciones intermedias)



Jumper JP1 instalado (estaciones de los dos extremos)

4. Utilizar un convertidor USB a RS-485 con terminación RJ45 (no suministrado junto a la estación de recarga) para conectar el ordenador a la primera estación del anillo de comunicación (cable blanco en la siguiente figura).





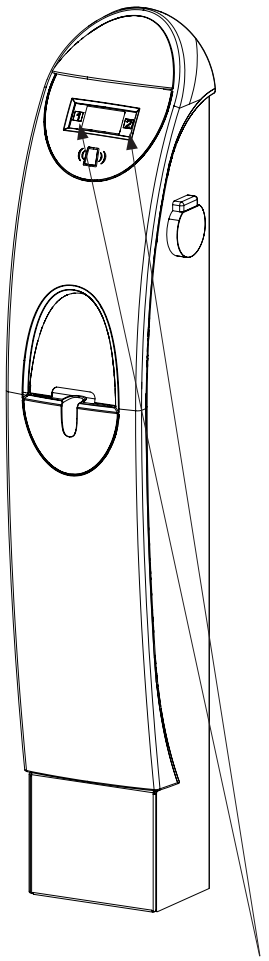
9. Funcionamiento

La función principal de la estación de recarga es el suministro de energía eléctrica y medición de la misma, para usuarios autorizados previamente mediante un sistema de lectura de tarjetas RFID.

En este apartado se detalla el funcionamiento de la estación de recarga.

9.1. Indicación de estados

La estación de recarga indica el estado en que se encuentra por medio de una señalización luminosa con varios LED.La estación JOINON Parking+ dispone de indicadores independientes para cada toma de corriente.



Iluminación tomas de corriente
1 y 2

JOINON Parking+

Estado	Iluminación	Descripción
Espera vehículo	Verde continua	La toma de carga se encuentra esperando a que un vehículo sea conectado para proceder a su carga.
Espera carga	Amarilla parpadeando	Un usuario ha pasado la tarjeta por el lector, ha seleccionado la toma de carga y dicha toma espera a que el usuario conecte su vehículo a ésta.
Carga	Azul continua	Un vehículo se ha conectado a la toma de carga.
Consumo reducido	Azul parpadeando	El consumo es reducido.
Fin de carga	Amarillo parpadeando	El usuario, tras realizar la carga, ha pasado la tarjeta y la estación de recarga espera a que éste desconecte su vehículo.
Incidencia	Roja continua	El proceso de carga no se está efectuando correctamente debido a algún problema.

Estado	Iluminación	Descripción
Stand by	Ninguna	La estación de recarga ha sido desconectada remotamente.
Fin de sesión	Blanca continua	La sesión de carga ha terminado.
Tarjeta rechazada	Blanca continua	La tarjeta no es válida o no se ha reconocido correctamente.
Selección de toma	Iluminación del estado actual, parpadeando	Una vez identificada la tarjeta el equipo permanece en espera de selección de toma para iniciar el proceso de carga.

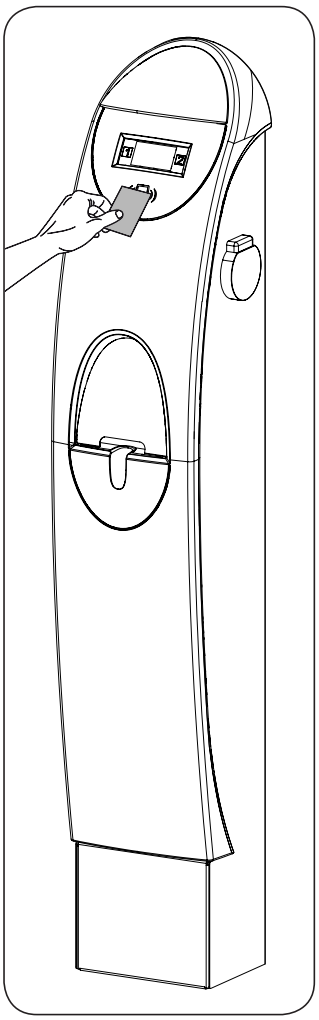
9.2. Proceso de carga

9.3. JOINON Parking+

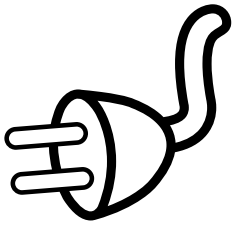
El conector de suministro eléctrico no debe ser extraído del vehículo mientras se esté realizando la operación de carga.

Inicio del proceso de carga

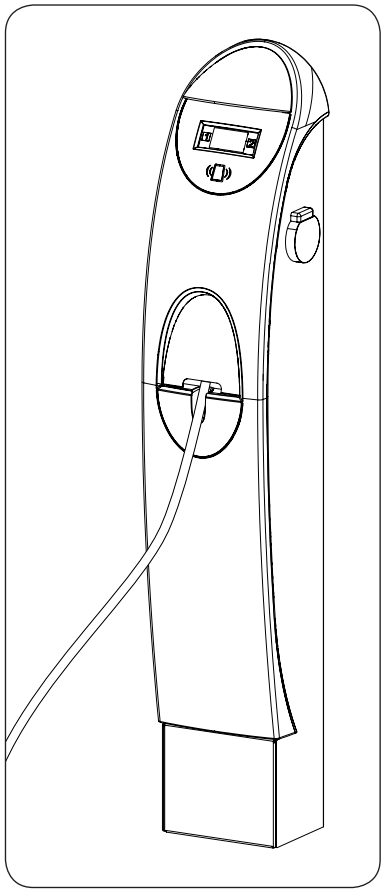
1. Comprobar que la estación se encuentra en estado de espera de vehículo con la ilumicación en verde.
2. Aproximar la tarjeta al lector de tarjetas situado en la zona indicada inferior al display.



En caso de lectura correcta, y tras pulsar el número de la toma libre, la estación de recarga pasará al estado *espera carga*. En el display aparecerá parpadeando la ilustración de un enchufe.



3. Subir la tapa manualmente, en caso de querer utilizar uno de los conectores interiores, y conectar el cable en la toma eléctrica deseada. Si se desea utilizar uno de los conectores exteriores, abrir su tapa protectora y conectar el cable de carga.



Dependiendo del tipo de conector utilizado el funcionamiento varía ligeramente:

Tipo de conector	Detección de la conexión	Normativa que rige la secuencia de carga
CEE 7/4 Tipo F (Schuko)	Detección automática tras bajar la tapa	IEC61851
IEC 62196-2 Tipo 2	Detección automática instantánea	IEC61851

Al producirse el cierre completo de la tapa, la estación procederá al bloqueo de la misma y al inicio del suministro de energía, pasando al estado *carga*.

Fin del proceso de carga

4. Para concluir el ciclo de carga, volver a aproximar la tarjeta al lector y seleccionar la toma en la que se desea finalizar el proceso de carga. La estación interrumpe el suministro eléctrico y desbloquea la tapa del receptáculo o el conector.

5. Abrir la tapa, en caso de estar utilizando uno de los conectores interiores, extraer el conector y cerrar la tapa. La estación bloqueará la tapa y pasará de nuevo al estado *espera vehículo*.

Pérdida de suministro

La estación dispone de una alimentación auxiliar que permite mantener la funcionalidad básica de ésta ante perdidas de suministro eléctrico. Ante esta situación, la estación indica la anomalía por display.

En el caso de que la estación se encontrase en estado de *espera vehículo* y perdiese el suministro eléctrico el mensaje mostrado sería:

"ALIMENTACIÓN INTERRUMPIDA"

Si la pérdida de suministro apareciese mientras se está realizando la carga de un vehículo el mensaje sería:

"ALIMENTACIÓN INTERRUMPIDA. Identifíquese para desbloquear la tapa"

Ante lo cual el usuario tendría que volver a pasar su tarjeta identificativa por el lector y seleccionar la toma que se está utilizando para que la tapa se desbloquease y pudiese desconectar su vehículo. Tras este proceso, la estación se apagaría si la otra toma no estuviera siendo utilizada.

Un *Usuario Maestro* será capaz de desbloquear la tapa para extraer el conector y podrá, tras una identificación posterior, apagar la estación con el bloqueo activo, siempre que ninguna de las tomas esté siendo utilizada.

Ante un restablecimiento del suministro, tras una pérdida de suministro anterior, la estación volverá al estado anterior a dicha pérdida.

9.4. Idiomas

La información de cada sesión de usuario se visualizará en el idioma configurado en cada tarjeta, independientemente del idioma por defecto configurado en la estación.

En el caso de usuarios sin idioma configurado, la estación visualizará la información en el idioma que esta tenga configurado por defecto.

9.5. Incidencias

En caso de incidencias la estación pasa al estado *incidencia* indicando por display la incidencia.

Defecto en la instalación (código de error 0001)

Se ha producido un disparo de las protecciones de la estación.

La estación detecta que el defecto persiste en la instalación y no procederá al rearme de las protecciones hasta que el defecto desaparezca.

Se deberá proceder a la revisión de la instalación eléctrica por parte de Personal Cualificado.

Alimentación interrumpida (código de error 0002)

- Ausencia de red eléctrica. No hay suministro eléctrico. La estación se reiniciará cuando éste se restablezca.
- Se ha producido un disparo de las protecciones. Se ha producido un disparo de las protecciones pero el defecto que lo ha causado ha desaparecido.

En caso de equipar protecciones rearmables la estación volverá a realizar el rearme de las protecciones en unos instantes.

Posición de trampilla incorrecta (código de error 0004)

La trampilla no está en la posición que corresponde al estado de carga.

Comprobar que no hay ningún cable suelto o mal insertado en la tarjeta de control.

Conector energizado (código de error 0008)

El conector tiene tensión cuando no debería o no la tiene cuando debería.

Revisar que todas las protecciones están en ON.

Fallo comunicación contador energía (código de error 0016)

La comunicación interna con el contador de energía no es correcta, pudiendo estar motivado por disparo de las protecciones. Proceder a la revisión de la instalación eléctrica por parte de personal cualificado para comprobar si se han disparado las protecciones.

En caso de que las protecciones no se hayan disparado avisar de la incidencia al servicio técnico.

Fallo comunicación RFID (código de error 0032)

La comunicación interna con el lector de tarjetas no es correcta.

Avisar de la incidencia al servicio técnico.

Alarma sensor de inclinación (código de error 0064)

Estas estaciones de recarga pueden disponer de un sensor de inclinación.

Revisar que el equipo se encuentra instalado verticalmente respecto al suelo. En caso contrario corregir la instalación.

Fuga de corriente DC (código de error 0128)

Las estaciones de recarga pueden incorporar, según modelo, un sensor de fuga de corriente DC en carga. La fuga de corriente que provoca la alarma es provocada por el vehículo eléctrico que está en proceso de carga, por lo que no se trata de una alarma de la estación de recarga, sino una parada de la carga por motivos de seguridad.

Se ha superado el límite superior admisible para la fuga de corrientes DC.

Fallo secuencia de carga (código de error 0256)

Secuencia de carga incorrecta o desconexión del vehículo durante la carga. La alarma desaparece al terminar la sesión.

Corriente de carga máxima permitida (código de error 0512)

El vehículo no ha respetado el límite máximo de corriente de carga permitido durante un tiempo máximo establecido.

La alarma desaparecerá cuando se finalice la sesión de carga del vehículo eléctrico que ha provocado la alarma.

Fallo de comunicación con el gestor de potencia (código de error 1024)

Fallo en la comunicación entre la estación y el gestor de potencia. Este error aparecerá en caso de que la estación está configurada para trabajar junto a un gestor de potencia y éste no exista.

10. Desconexión del equipo

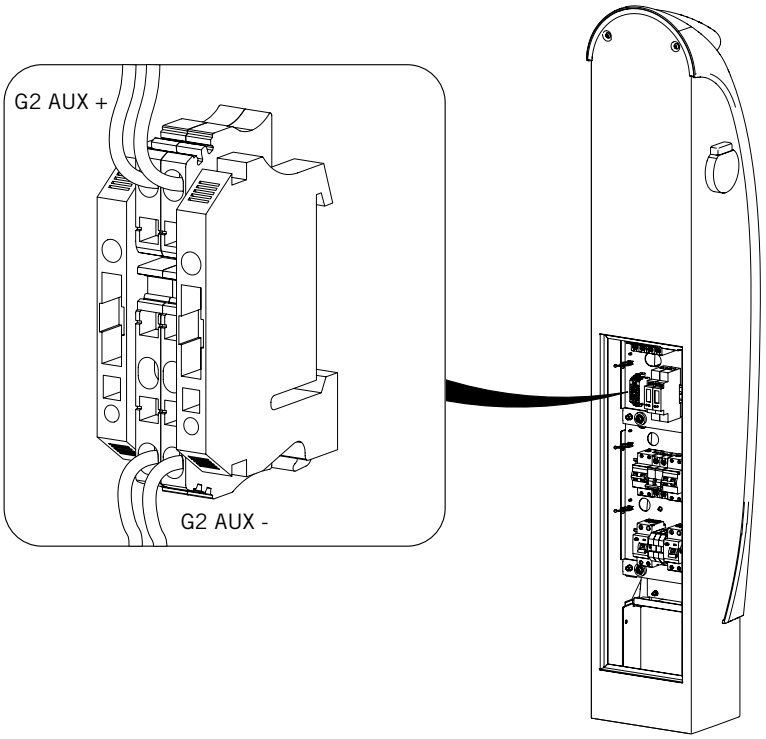
A lo largo de este apartado se detalla el procedimiento para desconectar el equipo. En caso de querer operar en el interior del equipo (sólo para personal cualificado) es obligatorio seguir estas instrucciones en el mismo orden en el que aquí aparecen para quitar tensión.

10.1. Proceso de desconexión del equipo

Para el caso en que se quiera apagar o desinstalar la estación de recarga, debido a la alimentación auxiliar existente en la misma, ésta no se apaga directamente al retirar el suministro de energía a la misma. En este caso, la estación mostrará el siguiente mensaje de alarma:

"ALIMENTACIÓN INTERRUMPIDA"

Para apagar completamente la estación, se deberá aproximar una tarjeta de usuario tipo Master al lector. Se podrá entonces proceder a la desconexión total de la estación de recarga. En caso de no disponer de una tarjeta tipo Master desconectar la batería.



Se recomienda expresamente realizar un apagado completo de la estación de recarga para prolongar la vida de la alimentación auxiliar.

11. Mantenimiento preventivo

11.1. Dispositivos de Corriente Diferencial

Se recomienda una comprobación anual del dispositivo de corriente diferencial de la estación. Pulsar para ello el botón de RESET del dispositivo y esperar el rearme.

La apertura de la tapa trasera ha de efectuarse con el único motivo de realizar el test de ambos dispositivos de corriente diferencial, evitando el contacto con cualquier otro dispositivo o cable accesible.

El trabajador que acceda a la parte inferior de la puerta de acceso a las protecciones, tendrá que estar debidamente formado por el empresario (operador de la estación de recarga) y autorizado por parte del mismo para poder realizar estas tareas.

11.2. Conexión a tierra

Se recomienda una comprobación anual de la correcta conexión de la carcasa metálica y demás componentes metálicos situados en el exterior de la estación de recarga con el conductor de tierra de la instalación.

La apertura de la tapa trasera ha de efectuarse con el único motivo de realizar un test de continuidad entre la llegada del conductor de tierra de la instalación y la carcasa metálica y demás componentes metálicos situados en el exterior de la estación de recarga.

El trabajador que acceda a la parte inferior de la puerta de acceso a las protecciones, tendrá que estar debidamente formado por el empresario (operador de la estación de recarga) y autorizado por parte del mismo para poder realizar estas tareas

12. Solución de problemas

En este apartado se detallan los problemas que pudieran darse en la instalación y funcionamiento de las estaciones de recarga.

La solución de problemas debe ser realizada por personal cualificado atendiendo a las condiciones generales de seguridad dadas en este manual.

12.1. Alarmas

En caso de alarma la estación pasa al estado “alarma”, iluminándose en color rojo.

Defecto en la instalación (código de error 0001)

Descripción

Se ha producido un disparo de las protecciones de la estación.

Si la estación estuviera dotada de protecciones con rearme automático, ésta detecta si el defecto persiste en la instalación y no procederá al rearme de las protecciones hasta que el defecto desaparezca.

Este error no se produce en estaciones de recarga que no incorporen protecciones en su interior.

Solución

En el caso de que las protecciones sean de rearme manual, se deberá abrir la estación para tener acceso a las protecciones.

Proceder a rearmar las protecciones cuyo mando no esté en su posición correcta. Si el problema persiste,

- Revisar el correcto cableado de las protecciones y comprobar que no hay ningún cable suelto ni mal apretado.
- Revisar el cableado del contacto auxiliar de la protección.

Alimentación interrumpida (código de error 0002)

Descripción

Este error puede derivarse a causa de:

- Ausencia de red eléctrica. La estación se reiniciará cuando el suministro se restablezca.
- Se ha producido un disparo de las protecciones.

Solución

Si tras restablecerse la red eléctrica el error persiste, comprobar la presencia de tensión en la toma de acometida de la estación de recarga.

Si la causa de la alarma se ha producido por un disparo de las protecciones internas del equipo, proceder a solucionarlo tal y como se indica en el apartado *“Defecto en la instalación (código de error 0001)”*.

Posición de la tapa incorrecta (código de error 0004)

Descripción

La tapa de acceso a los conectores no está en la posición que corresponde al estado de carga.

Solución

- Comprobar que no hay ningún elemento que obstaculice el recorrido de la tapa.

Si el error persiste, contactar con el servicio de asistencia telefónica.

Conector energizado (código de error 0008)

Descripción

El conector tiene tensión cuando no debería o no la tiene cuando debería.

Solución

Medir con un multímetro la presencia de tensión en el (los) conector(es). Revisar que todas las protecciones están en ON.

Si existe tensión

Verificar que la bobina de activación del contactor está alimentada a 230 Vac.

- Si está alimentada el problema puede estar originado en la tarjeta de control. Compruebe que no hay ningún cable suelto o mal insertado en la tarjeta de control.
- Si no está alimentada, comprobar que no hay ningún cable suelto o mal apretado en los contactores o relés de potencia.

  Puede ser necesaria la sustitución del contactor. Contactar con el servicio de asistencia telefónica.

Si no existe tensión

El problema puede estar originado en la tarjeta de control. Comprobar que no hay ningún cable suelto o mal insertado en la tarjeta de control.

Fallo comunicación contador energía (código de error 0016)

Descripción

La comunicación interna con el contador de energía no es correcta o se ha disparado alguna protección no monitorizada.

Solución

Revisar las protecciones y rearmarlas si fuese necesario. Si el fallo persiste, comprobar que la conexión es correcta.

Fallo comunicación RFID (código de error 0032)

Descripción

La comunicación interna con el lector de tarjetas no es correcta.

Solución

Contactar con el servicio de atención telefónica.

Alarma sensor de inclinación (código de error 0064)

Descripción

Estas estaciones de recarga pueden disponer de un sensor de inclinación que detecta si la estación está instalada sin mantener la vertical respecto al suelo.

Solución

Revisar que el equipo se encuentra instalado verticalmente respecto al suelo. En caso contrario corregir la instalación.

Fuga de corriente continua (código de error 0128)

Descripción

Se ha superado la fuga de corriente DC máxima permitida en carga.

Las estaciones de recarga pueden incorporar, según modelo, un sensor de fuga de corriente continua en carga. La fuga de corriente que provoca la alarma es provocada por el vehículo eléctrico que está en proceso de carga, por lo que no se trata de una alarma de la estación, sino una parada de la carga por motivos de seguridad.

Solución

Si la alarma persiste en ausencia de vehículo eléctrico conectado, contactar con el servicio de asistencia telefónica.

Fallo secuencia de carga (código de error 0256)

Descripción

Secuencia de carga incorrecta o desconexión del vehículo durante la carga.

Solución

En caso de que la alarma se produzca por la desconexión del vehículo durante la sesión de carga, ésta desaparecerá cuando se finalice dicha sesión.

Si la alarma persiste no habiendo ninguna sesión de carga en curso, contactar con el servicio de asistencia telefónica.

Corriente de carga máxima permitida (código de error 0512)

Descripción

El vehículo no ha respetado el límite máximo de corriente de carga permitido durante un tiempo máximo establecido.

Solución

La alarma desaparecerá cuando se finalice la sesión de carga del vehículo eléctrico que ha provocado la alarma.

Fallo de comunicación con el gestor de potencia (código de error 1024)

Descripción

Fallo en la comunicación entre la estación y el gestor de potencia. Este error aparecerá en caso de que la estación está configurada para trabajar junto a un gestor de potencia y éste no exista.

Solución

Revisar la comunicación entre la estación y el gestor de potencia. En caso de que no exista gestor de potencia deshabilitarlo en la configuración de la estación.

El teclado no funciona

Descripción

El teclado de la estación de recarga no responde.

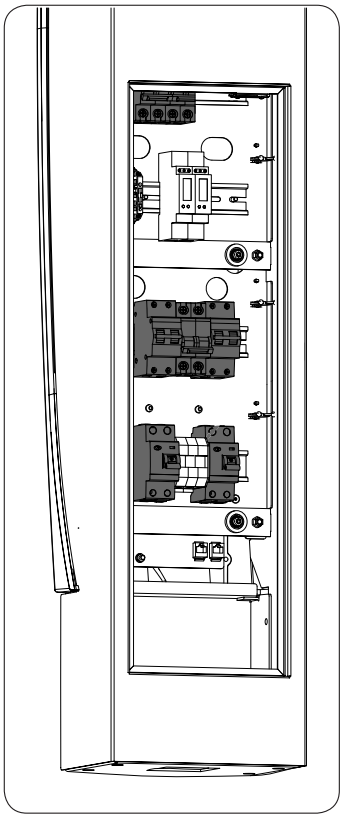
Solución

Comprobar que el cable del teclado está correctamente insertado en el interior de equipo y que no existe ningún cable suelto o mal insertado en la tarjeta de control.

Si el error persiste, contactar con el servicio de asistencia telefónica.

12.2. Rearme de las protecciones

En las siguientes figuras se muestra la ubicación de las protecciones de las estaciones de recarga para proceder a se rearme en caso de disparo.



13. Tratamiento de residuos

Estas estaciones de recarga utilizan componentes nocivos para el medio ambiente (tarjetas electrónicas, baterías o pilas, etc.).

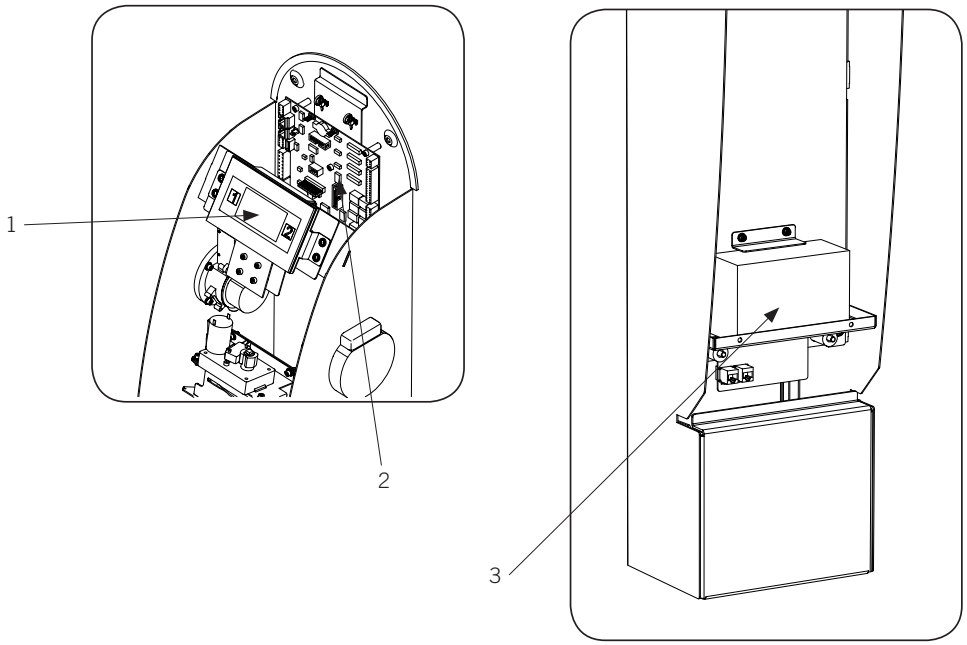
Concluida la vida útil del equipo, el residuo debe ser puesto en manos de un gestor autorizado de residuos peligrosos para su correcto procesado.

Siguiendo una política respetuosa con el medio ambiente, a través de este apartado, se informa al gestor autorizado respecto a la localización de los componentes a descontaminar.

Los elementos presentes en el interior del equipo y que han de ser tratados específicamente son:

1. Pantallas de cristal líquido.
2. Tarjetas de circuitos impresos.
3. Baterías o acumuladores.

En las siguientes imágenes se indica su ubicación.



Residuos asimilables a recogidas de residuos convencionales

La mayor parte de estos residuos derivan del embalaje del equipo, que debe ser convenientemente segregado y tratado.

Todo el embalaje se puede entregar a un gestor autorizado de residuos no peligrosos.

En cualquier caso, el destino de cada parte del embalaje será:

- Plástico (poliestireno, bolsa y papel burbuja): Contenedor correspondiente (plásticos y envases).
- Cartón: Contenedor correspondiente (de papel y cartón).

Table des matières

1. Information concernant ce manuel

1.1. Champ d'application

Ce manuel est valable pour les bornes de recharge suivantes :

JOINON Parking+ GW68105 (monophasé)

JOINON Parking+ GW68105R (monophasé)

JOINON Parking+ GW68106C (triphasé)

1.2. Destinataires

Le présent document est dirigé au personnel qualifié.

Les aptitudes du personnel qualifié auxquelles se réfère ce manuel doivent être, au minimum, celles qui satisfont à toutes les normes, règlements et lois en matière de sécurité applicables aux travaux d'installation et à l'utilisation de cet appareil.

La responsabilité de désigner le personnel qualifié est toujours à la charge de l'entreprise à laquelle appartient ce personnel. Pour préserver la sécurité de l'employé tout en respectant la loi sur la sécurité au travail, c'est à l'entreprise de déterminer qui est apte ou non à réaliser un travail.

Ces entreprises sont responsables de former leur personnel sur les appareils électroniques ainsi que de le familiariser avec le contenu de ce manuel.

1.3. Symbolique

Tout au long de ce manuel, divers symboles sont utilisés afin de souligner et de mettre en valeur certaines parties du texte. La signification générale de ces symboles est la suivante :


Avertissement général


Information générale


Risque électrique


Lire la section indiquée


Interdiction

2. Description de l'appareil

2.1. Modèles

JOINON Parking+ GW68105 (monophasé)

JOINON Parking+ GW68105R (monophasé)

JOINON Parking+ GW68106C (triphasé)

2.2. Respect de la réglementation

Marquage CE

Le marquage CE est obligatoire pour commercialiser tout produit dans l'Union européenne dans le respect des normes ou lois. Ces bornes de recharge sont dotées du marquage CE en vertu du respect des directives suivantes :

- *Directive Basse tension 2014/35/EU.*
- *Directive de Compatibilité électromagnétique 2014/30/UE.*

Pour satisfaire à chaque directive, il est suffisant de se conformer aux parties des normes harmonisées applicables à notre appareil.

Directive Basse tension

Ces bornes de recharge sont conformes à cette directive dans la mesure où elles respectent les parties applicables de la norme harmonisée *EN 61851 Système de charge conductive pour véhicules électriques*.

Directive de compatibilité électromagnétique

Ces bornes de recharge sont conformes à cette directive dans la mesure où elles respectent les parties applicables des normes harmonisées :

- *EN 61000-6-1 Compatibilité électromagnétique*. Partie 6-1 : Normes génériques - Immunité pour zones résidentielles, commerciales et d'industrie légère.
- *EN 61000-6-3 Compatibilité électromagnétique*. Partie 6-3 : Normes génériques - Émissions pour zones résidentielles, commerciales et d'industrie légère.

Le respect de ces normes requiert le respect de limites et procédures d'autres normes de la même série.

2.3. Exigences EMC

Ces bornes de recharge sont équipées des éléments filtrants nécessaires pour répondre aux exigences EMC pour les applications domestiques afin d'éviter les perturbations d'appareils extérieurs à l'installation.

2.4. Indice de protection

Les bornes de recharge possèdent un indice de protection IP54 contre les agents externes.

Cet appareil est conçu pour une utilisation intérieure et extérieure.

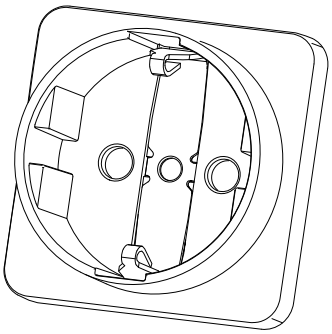
2.5. Degré de pollution

Ces bornes de recharge ont été conçues pour le degré de pollution PD3.

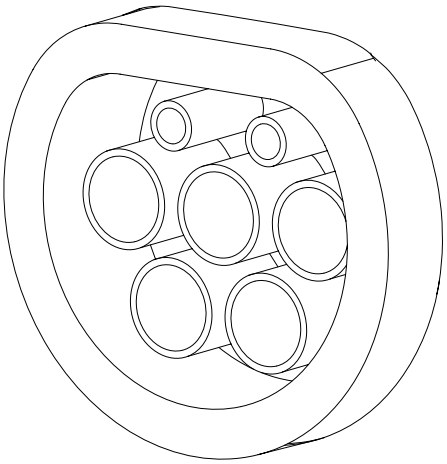
2.6. Prises de courant

Il est possible d'acquérir ces bornes de recharge avec différentes configurations de connecteurs en fonction des besoins du client.

Les divers connecteurs disponibles sont indiqués ci-après :

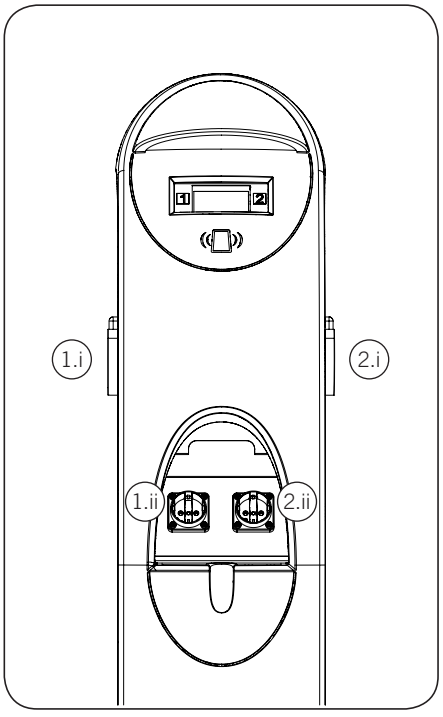


CEE 7/4 Type F



CEI 62196-2 Type 2

Les bornes de recharge JOINON Parking+ disposent de deux prises de courant qu'il est possible d'utiliser simultanément. La configuration de ces prises est détaillée ci-après, en indiquant pour chaque prise les divers types de connecteurs disponibles.



1.i. Prise 1	CEI 62196-2 Type 2	2.i. Prise 2	CEI 62196-2 Type 2
1.ii. Prise 1	CEE 7/4 Type F	2.ii. Prise 2	CEE 7/4 Type F

3. Sécurité

Cette section décrit les avertissements de sécurité et les équipements de protection individuelle.

3.1. Conditions de sécurité

Avertissements généraux

Les opérations décrites dans ce manuel ne doivent être réalisées que par du personnel qualifié.

Les aptitudes du personnel qualifié auxquelles se réfère ce manuel doivent être, au minimum, celles qui satisfont à toutes les normes, règlements et lois en matière de sécurité applicables aux travaux d'installation et à l'utilisation de cet appareil.

La responsabilité de désigner le personnel qualifié est toujours à la charge de l'entreprise à laquelle appartient ce personnel. Pour préserver la sécurité de l'employé tout en respectant la loi sur la sécurité au travail, c'est à l'entreprise de déterminer qui est apte ou non à réaliser un travail.

Ces entreprises sont responsables de former leur personnel sur les appareils électroniques ainsi que de le familiariser avec le contenu de ce manuel.

Veuillez tenir compte qu'il est obligatoire de respecter la législation en vigueur en matière de sécurité pour les travaux d'électricité. Il existe un danger de décharge électrique.

Le respect des instructions de sécurité exposées dans ce manuel ou de la loi n'exclut pas de se conformer aux autres normes spécifiées de l'installation, du lieu, du pays ou de toute autre circonstance qui affecte l'appareil.

L'ouverture de l'enveloppe n'implique pas qu'il n'y ait pas de tension à l'intérieur.

Il existe un risque de décharge électrique, y compris après la déconnexion de toutes les sources d'énergie du système.

Seul le personnel qualifié est autorisé à l'ouvrir en respectant les instructions de ce manuel.

Il est obligatoire de lire et de comprendre le manuel dans son intégralité avant de commencer à manipuler, installer ou mettre en marche l'appareil.

Les normes de sécurité de base à respecter obligatoirement pour chaque pays sont les suivantes :

- *RD 614/2001* en Espagne.
- *CEI 11-27* en Italie.
- *DIN VDE 0105-100* et *DIN VDE 1000-10* en Allemagne.
- *UTE C18-510* en France.

Pour contrôler l'absence de tension, utilisez impérativement des éléments de mesure de classe III-1 000 volts.

Ingeteam n'assume pas la responsabilité des dommages dérivant d'une mauvaise utilisation des bornes de recharge. Toute intervention réalisée sur l'une de ces bornes et supposant une modification du câblage électrique par rapport au câblage initial doit être préalablement présentée à Ingeteam. Ces modifications devront être étudiées et approuvées par Ingeteam.

Effectuez toutes les manœuvres et manipulations hors tension.

En tant que mesure minimale de sécurité pour cette opération, **5 règles d'or** doivent être observées :

1. Déconnecter.
2. Éliminer toute possibilité de rétroaction
3. Vérifier l'absence de tension
4. Mettre à la terre et court-circuiter
5. Le cas échéant, protéger des éléments sous tension à proximité et mettre en place une signalisation de sécurité pour délimiter la zone de travail

Tant que ces cinq étapes n'auront pas été réalisées, le travail ne sera pas autorisé en tant que travail hors tension, mais sera considéré comme travail sous tension dans la partie concernée.

Dangers potentiels pour les personnes

Tenez compte des avertissements suivants destinés à garantir votre sécurité.

DANGER : écrasement et lésions articulaires.

Suivez toujours les indications du manuel pour déplacer et mettre l'appareil en place.

Le poids de cet appareil peut produire des lésions s'il n'est pas correctement manipulé.

Dangers potentiels pour l'appareil

Tenez compte des avertissements suivants afin de protéger l'appareil.

L'appareil nécessite un flux d'air sans impuretés pendant son fonctionnement.

Il est indispensable de le maintenir en position verticale et de dégager les entrées de tout obstacle pour que ce flux d'air atteigne l'intérieur de l'appareil.

Après toutes les manipulations dûment autorisées, vérifiez que l'appareil est prêt à fonctionner. Seulement après, connectez l'appareil en suivant les instructions du manuel.

Ne touchez pas les cartes ni les composants électroniques. Les composants les plus sensibles peuvent être endommagés ou détruits par l'électricité statique.

Ne procédez pas à la déconnexion ou à la connexion d'une cosse lorsque l'appareil est en marche. Déconnectez-le et vérifiez l'absence de tension avant de procéder.

3.2. Équipements de protection individuelle (EPI)

Lors de la réalisation de travaux sur l'appareil, utilisez toujours, au minimum, l'équipement de sécurité suivant.

Dénomination	Explication
Chaussures de sécurité	Conformes à la norme *UNE-EN-ISO 20345:2012*
Casque	Conformes à la norme *EN 397:1995*
Casque avec visière de protection	Conforme à la norme *UNE-EN 166:2002*, à condition qu'il existe des éléments en tension directement accessibles.
Vêtements de travail	Ajustés, ignifugés, 100% coton
Gants diélectriques	Conformes à la norme *EN 60903:2005*

Les outils et/ou appareils utilisés pour les travaux sous tension doivent posséder, au moins, une isolation de classe III-1 000 volts. Dans le cas où la réglementation locale exige d'autres types d'équipements de protection individuelle, l'équipement recommandé doit être dûment complété.

4. Réception et stockage de l'appareil

4.1. Réception

Conservez l'appareil emballé jusqu'à son installation.

4.2. Identification de l'appareil

Le numéro de série de l'appareil permet de l'identifier de manière non équivoque.

Le numéro de série de l'appareil est également indiqué sur la plaque signalétique.

4.3. Dommages lors du transport

Si, pendant le transport, l'appareil a été endommagé, procédez comme suit :

1. Ne procédez pas à son installation.
2. Informez immédiatement le distributeur dans les 5 jours suivant la réception de l'appareil.

S'il est finalement nécessaire de renvoyer l'appareil au fabricant, utilisez le même emballage que celui dans lequel il vous a été livré.

4.4. Stockage

Le non-respect des instructions fournies dans cette section peut causer des dommages à l'appareil.

Si l'appareil n'est pas installé immédiatement après sa réception, prenez en compte les éléments suivants afin d'éviter qu'il ne se détériore :

- Afin de permettre une bonne conservation des bornes de recharge, ne retirez pas l'emballage d'origine avant de procéder à leur installation.
- La détérioration de l'emballage (déchirures, trous, etc.) empêche de conserver les bornes de recharge dans des conditions optimales avant leur installation.
- Maintenez l'appareil à l'abri de la saleté (poussière, copeaux, graisse, etc.) et des rongeurs.
- Évitez qu'il ne reçoive des projections d'eau, des étincelles de soudures, etc.
- Couvrez l'appareil avec un matériau de protection respirant afin d'éviter la condensation due à l'humidité ambiante.
- Les bornes de recharge entreposées ne doivent pas être soumises à des conditions climatiques différentes des suivantes :

Conditions environnementales	
Température minimale	-20 °C
Température minimale de l'air environnant	-20 °C
Température maximale de l'air environnant	70 °C
Humidité relative maximale sans condensation	95 %

- Il est essentiel de protéger l'appareil des produits chimiques corrosifs ainsi que des atmosphères salines.
- N'entreposez pas l'appareil à l'extérieur.

5. Transport de l'appareil

L'appareil doit être protégé, pendant son transport, contre les chocs mécaniques, les vibrations, les projections d'eau (pluie) et tout autre produit ou situation pouvant l'endommager ou altérer son comportement.

5.1. Transport

Transport par transpalette

Vous devez respecter au minimum les exigences suivantes :

1. Déposez les bornes de recharge emballées au centre des fourches.
2. Veillez à les placer le plus près possible de la jonction entre les fourches et le tireur.
3. Dans tous les cas, respectez le manuel d'utilisation du transpalette.

Transport par chariot élévateur

Vous devez respecter au minimum les exigences suivantes :

1. Déposez les bornes de recharge emballées au centre des fourches.
2. Veillez à les placer le plus près possible de la jonction entre les fourches et le tireur.
3. Assurez-vous que les fourches sont parfaitement nivelées afin d'éviter que l'appareil ne se renverse.
4. Dans tous les cas, respectez le manuel d'utilisation du chariot.

Une fois la borne de recharge transportée à l'endroit où elle sera placée, et uniquement au moment de son installation, déballez-la.

Il peut alors être transporté à la verticale ou sur une distance courte sans son emballage.

Transport de l'appareil déballé

Vous devez respecter au minimum les exigences suivantes :

1. Suivez les conseils ergonomiques nécessaires pour soulever des poids.
2. Ne lâchez pas l'appareil avant qu'il ne soit parfaitement fixé ou posé.
3. Demandez à une autre personne de vous guider sur les mouvements à réaliser.

5.2. Déballage

Il est essentiel de manipuler correctement les bornes de recharge afin de :

- Ne pas abîmer l'emballage, qui permet de conserver les appareils dans des conditions optimales depuis leur expédition jusqu'au moment de leur installation.
- Éviter les chocs et/ou chutes des bornes de recharge pouvant en altérer les caractéristiques mécaniques.
- Éviter, dans la mesure du possible, les vibrations qui peuvent provoquer un dysfonctionnement ultérieur.

Se débarrasser de l'emballage

Tout l'emballage peut être remis à un centre agréé de récupération des déchets non dangereux.

Dans tous les cas, les parties de l'emballage seront réparties de la manière suivante :

- Plastique (polystyrène, sac et papier bulle) : conteneur correspondant.
- Carton : conteneur correspondant.

6. Préparation pour l'installation de l'appareil

Au moment de décider de l'emplacement de l'appareil et de planifier son installation, vous devez suivre un ensemble de règles découlant de ses caractéristiques.

6.1. Environnement

- Placez les bornes de recharge dans un lieu accessible pour les travaux d'installation et de maintenance, et permettant leur maniement et la lecture des LED d'indication.
- Ne placez à proximité des sorties d'air aucun matériau sensible aux températures élevées.
- Évitez les environnements corrosifs qui peuvent affecter le bon fonctionnement de l'appareil.
- Il est formellement interdit de poser tout objet sur l'appareil.

6.2. Conditions environnementales

Vous devez tenir compte des conditions environnementales de fonctionnement de l'appareil pour choisir son emplacement.

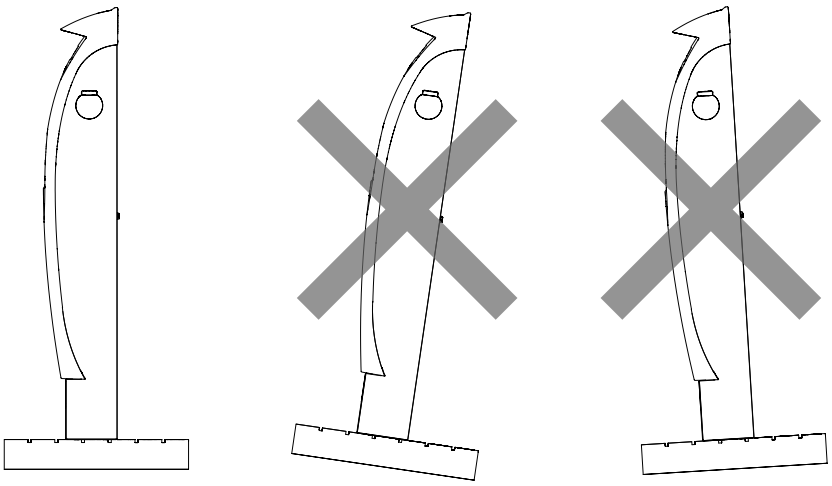
Conditions environnementales	
Température minimale	-20 °C
Température minimale de l'air environnant	-20 °C
Température maximale de l'air environnant	70 °C
Humidité relative maximale sans condensation	95 %

Il convient de prendre en compte que, de façon occasionnelle, il peut se produire une condensation modérée résultant des variations de température. Pour cette raison, et en marge de la protection de l'appareil, il est nécessaire de surveiller ces bornes de recharge, une fois mises en marche dans des lieux qui pourraient ne pas être conformes aux conditions décrites précédemment.

En cas de condensation, l'appareil ne doit en aucun cas être mis sous tension.

6.3. Surface d'appui et de fixation

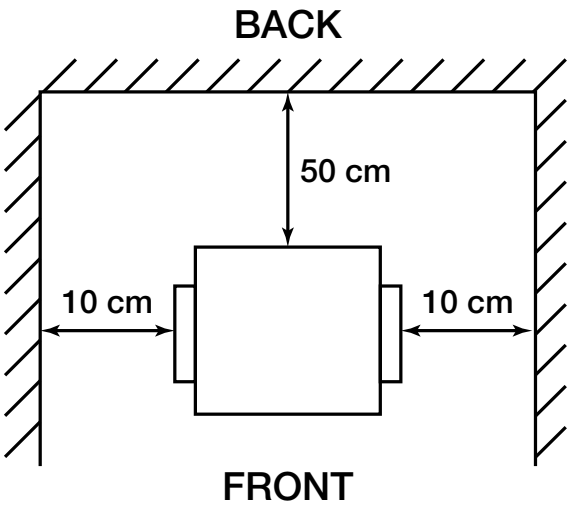
Vous devrez prévoir une surface régulière et solide pour fixer l'appareil en position parfaitement verticale.



La surface sur laquelle les produits doivent être installés doit être convenablement préparée et fabriquée en fonction du type de sol afin de garantir la bonne stabilité du produit pendant son utilisation.

A cet effet, il est conseillé de faire un stand où noyer les tirants de fixation (non fournis) à utiliser pour la fixation de la station de charge. Les tirants doivent être positionnés selon les dimensions du chapitre 7.2.

Procéder à la fixation de la station de charge sur la zone préparée de manière appropriée, en conservant les distances entre la station et l'environnement environnant, comme indiqué sur la figure.



REMARQUE: La surface, sur laquelle la station de charge sera installée, doit être conçue et construite conformément aux normes, aux normes en vigueur, afin de garantir la sécurité des utilisateurs quel que soit le type de surface.

7. Installation et raccordement de l'appareil

Avant de procéder à l'installation de l'appareil, retirez son emballage en prenant garde à ne pas endommager l'enveloppe.

Vérifiez l'absence de condensation à l'intérieur de l'emballage. En cas de signes de condensation, l'appareil ne doit pas être installé avant d'avoir entièrement séché.

Toutes les opérations d'installation devront être conformes à la réglementation en vigueur.

Toutes les opérations qui impliquent le déplacement de poids lourds doivent être réalisées par deux personnes.

La tâche de raccordement devra être réalisée sans tension et par un personnel qualifié.

Vous devrez contrôler avec attention l'absence de tension sur l'appareil lorsque vous accédez à l'intérieur.

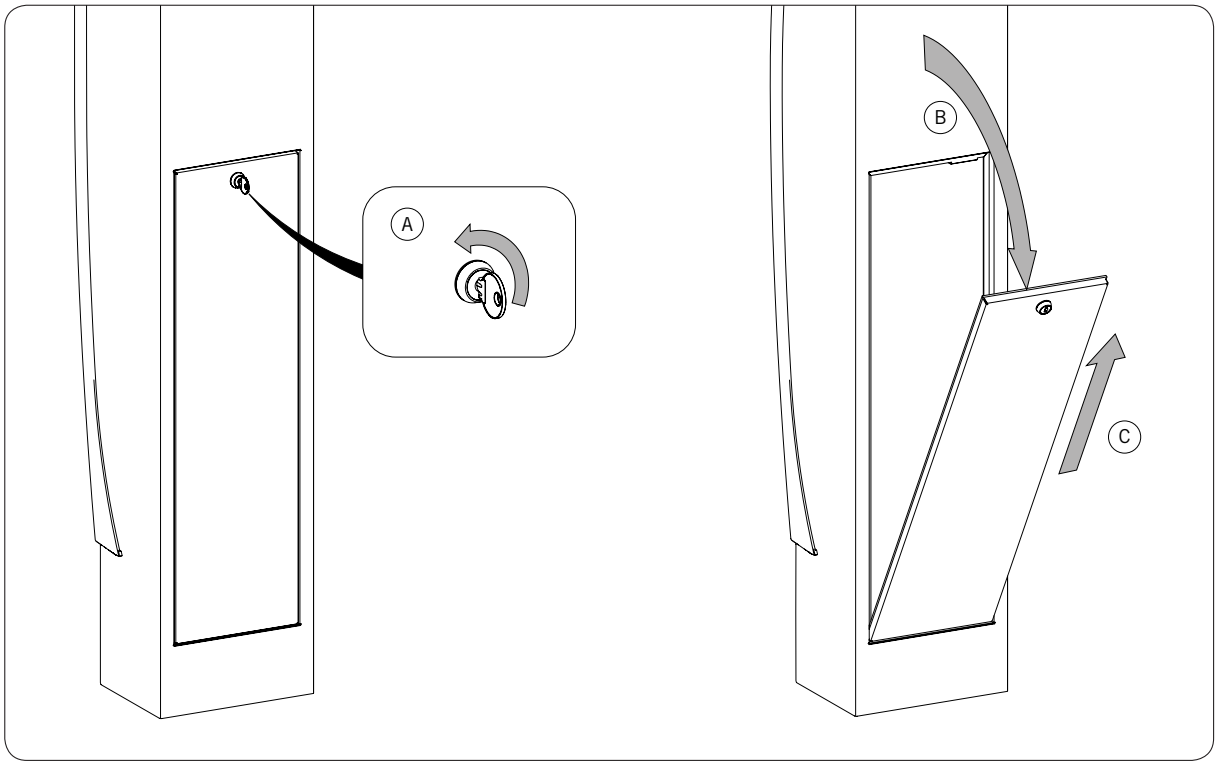
Pour mesurer l'absence de tension, il est obligatoire d'utiliser des gants diélectriques et des lunettes de sécurité homologuées contre le risque électrique.

7.1. Exigences générales d'installation

- L'environnement de l'appareil doit être adéquat et satisfaire aux directives prescrites dans le chapitre *« 6. Préparation pour l'installation de l'appareil »*. Par ailleurs, les éléments employés dans le reste de l'installation devront être compatibles avec l'appareil et conformes à la loi applicable.
- La ventilation et l'espace de travail devront être adéquats pour les travaux de maintenance conformément à la réglementation en vigueur.
- Les dispositifs extérieurs de connexion doivent être adéquats et suffisamment proches comme stipulé dans la réglementation en vigueur.
- La section des câbles d'alimentation doit être adaptée à l'intensité maximale.
- Veillez à ce qu'aucun élément extérieur ne se trouve à proximité des entrées et sorties d'air pouvant empêcher le bon refroidissement de l'appareil.

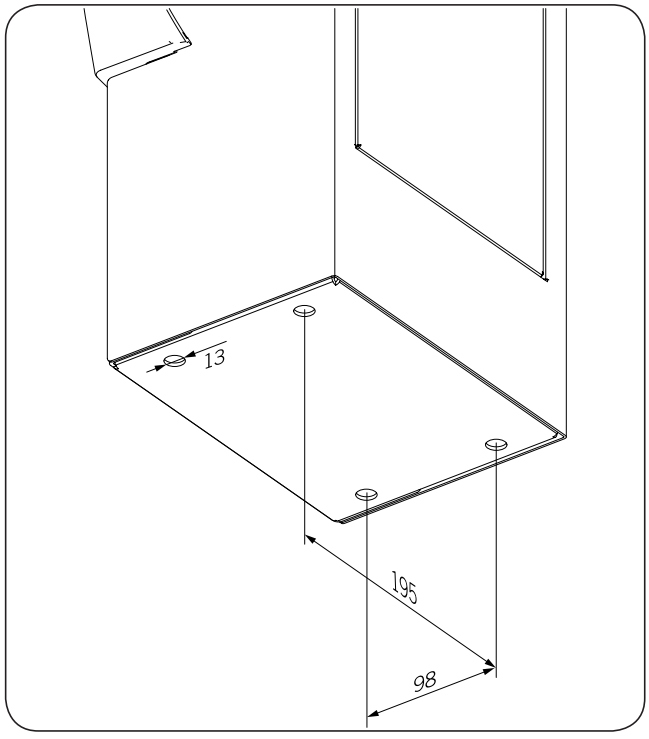
7.2. Installation de l’appareil

1. Ces bornes de recharge disposent d'un accès arrière via une ouverture à clé pour faciliter l'installation et les connexions. Ouvrez l'accès en utilisant la clé fournie.

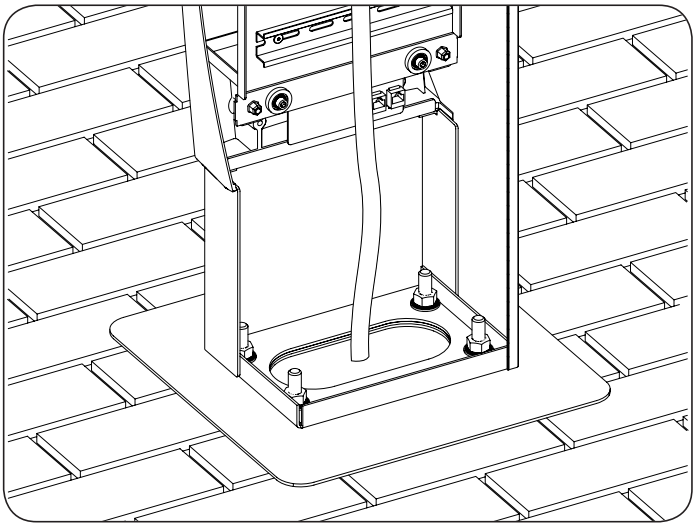


2. Accouplez la base de fixation de la zone de charge.

La figure suivante montre la position des points d’ancrage sur le produit.



Amenez le câblage vers l'intérieur de la borne de recharge, comme indiqué sur l'illustration suivante.



3. Vérifiez que l’appareil est fermement fixé.

7.3. Connexion de l'alimentation de l'appareil

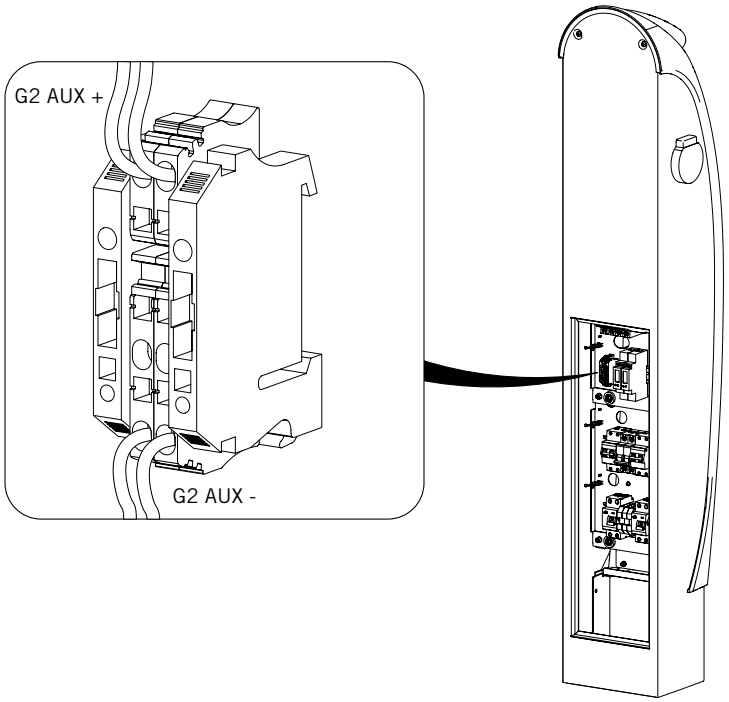
Exigences du câblage

L'alimentation devra respecter certaines exigences :

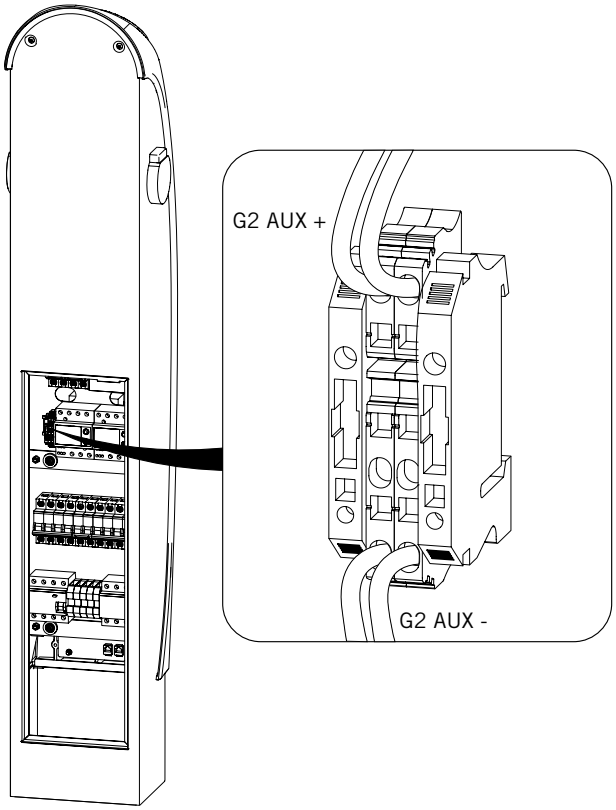
Spécifications de l'alimentation		
Type de raccordement	Monophasé	Triphasé
Nombre de conducteurs	2P + T	3P + N + T
Courant nominal	jusqu'à 64 A	jusqu'à 64 A
Diamètre maximum du conducteur	16 mm^2 (2 x 10 mm^2)	

Processus de raccordement

1. La connexion de l'appareil s'effectue via l'accès arrière. Vérifiez que le câblage de la batterie est correctement raccordé (*G2 AUX +* et *G2 AUX -*). Le câblage est sérigraphié pour éviter toute confusion.

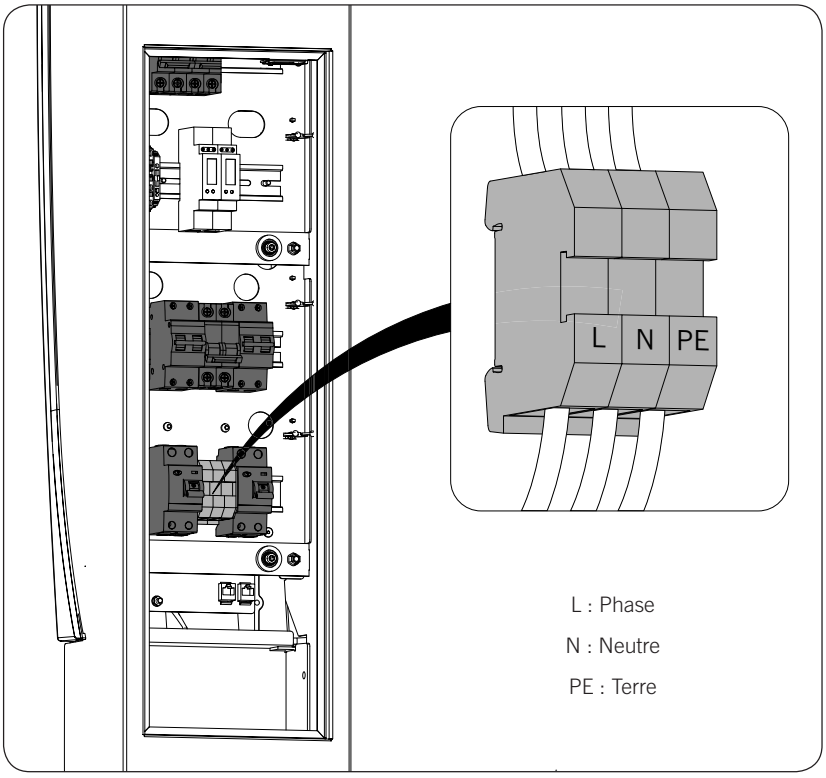


Borne de recharge monophasée

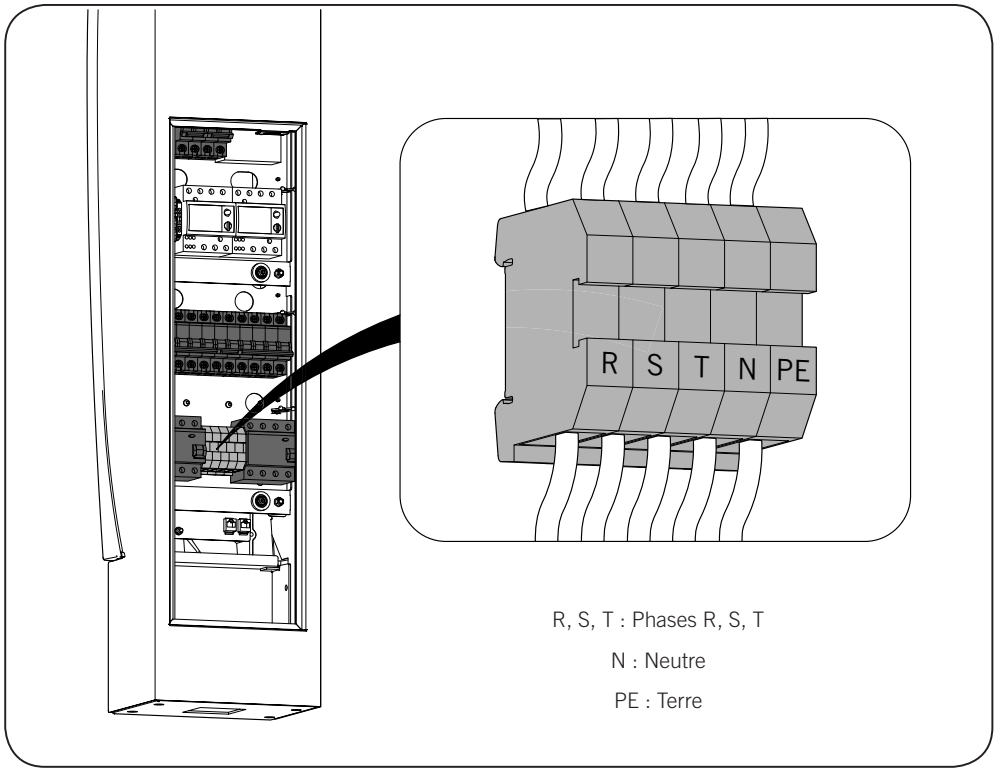


Borne de recharge triphasée

2. Branchez le câblage d'alimentation *L*, *N* et *PE* puis actionnez les protections différentielle et magnétothermique sur leur position ON (marquées en gris foncé sur l'illustration suivante).

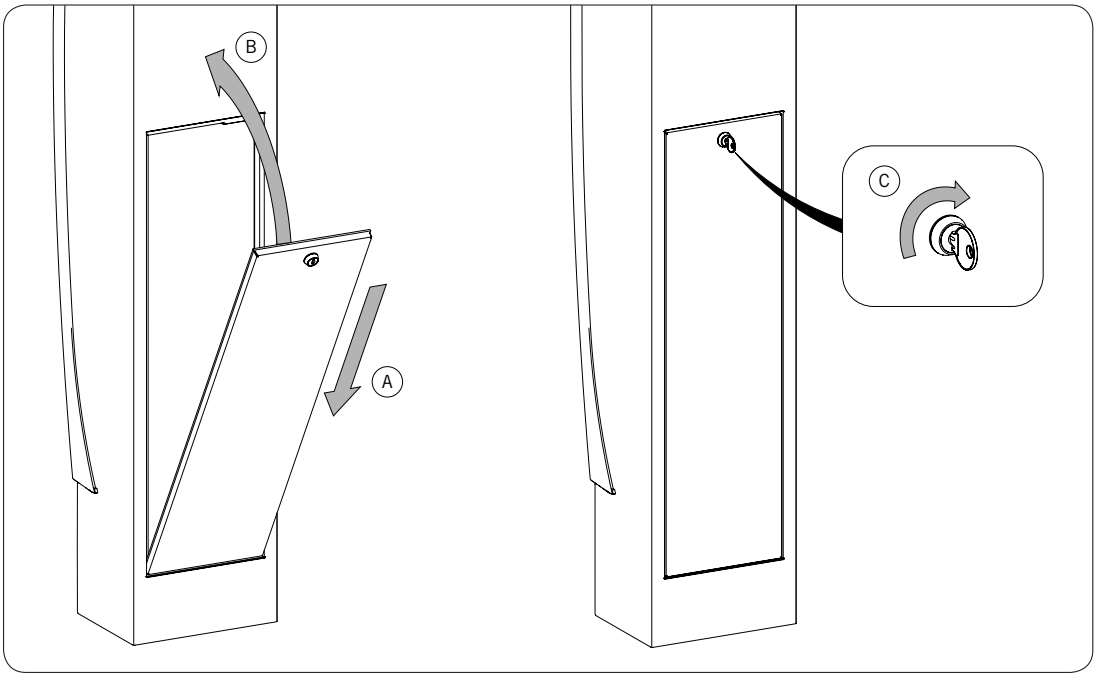


Borne de recharge monophasée



Borne de recharge triphasée

3. Fermez l'accès arrière et bloquez-le à clé.



Lorsque la borne de recharge est alimentée, les deux prises sont allumées. Après un bref contrôle de son état, l'éclairage passera au vert et son écran affichera un véhicule électrique et l'heure actuelle. La borne est prête et se place en attente d'identification d'un utilisateur pour procéder à la recharge.

Si la borne détecte un dysfonctionnement, l'éclairage de la prise correspondante, ou des deux en cas de dysfonctionnement simultané, passe au rouge et l'écran affiche le type d'incident (voir *« 9. Fonctionnement »*).

8. Accessoires de communication

Ces bornes de recharge disposent d'un bus de données RS-485 local permettant la connexion entre les différentes bornes.

L'accès à toutes les bornes de recharge pourra se faire localement ou à distance, en utilisant dans ce dernier cas un modem étranger à l'installation, ou celui fourni dans la borne de recharge, selon les conditions de la commande.

Cette section explique le processus de connexion locale, qui est possible de série.

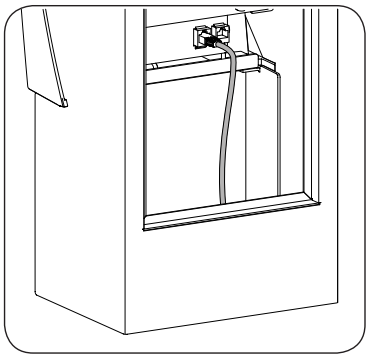
8.1. Communication locale

8.1.1. JOINON Parking+

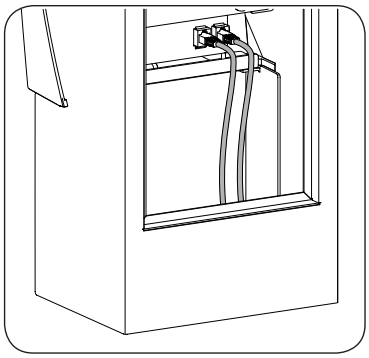
Pour réaliser la connexion locale, suivez les indications suivantes :

1. Connectez l'anneau de communication.

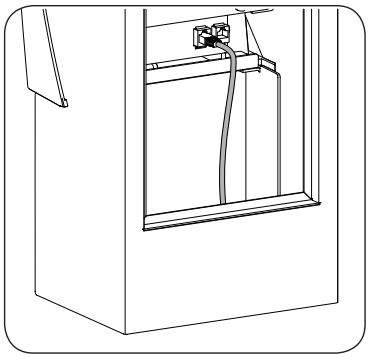
Première borne



Borne intermédiaire

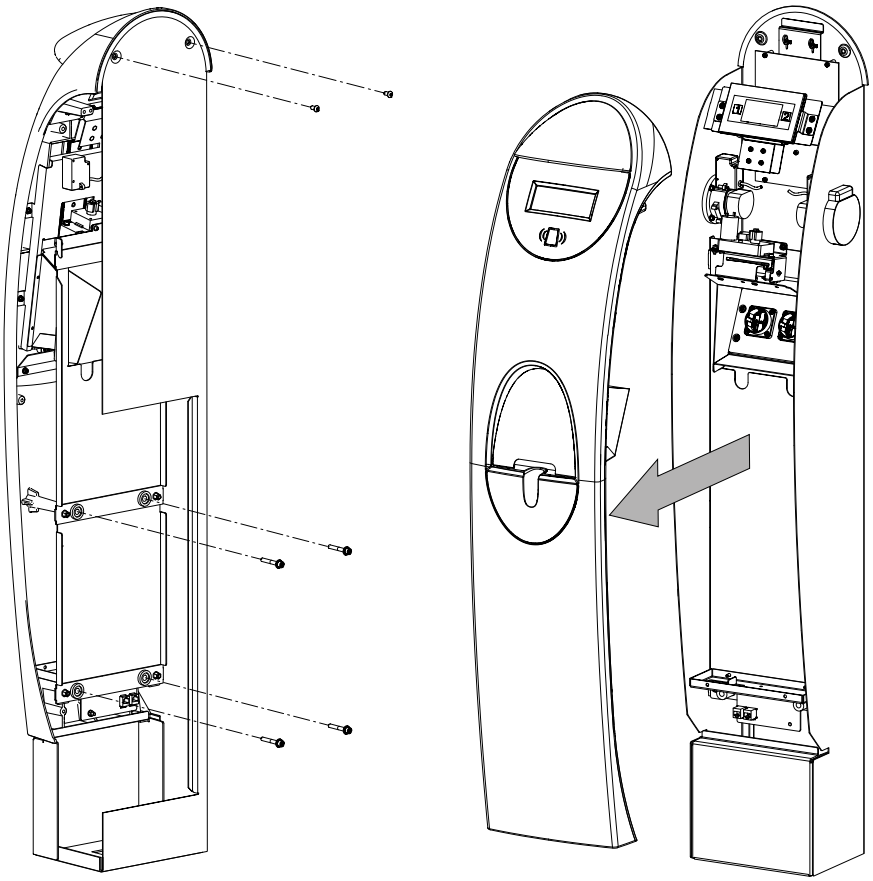


Borne finale

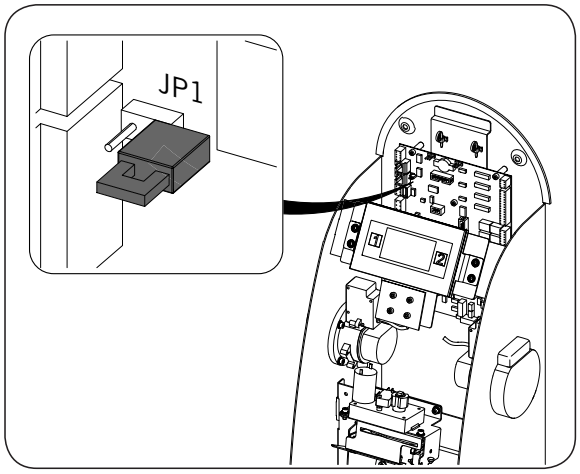


Le cavalier JP1 des cartes de commande est désinstallé de série. Il doit rester désinstallé sur toutes les bornes intermédiaires de l'anneau de communication, alors que sur les bornes des deux extrémités il faut l'installer.

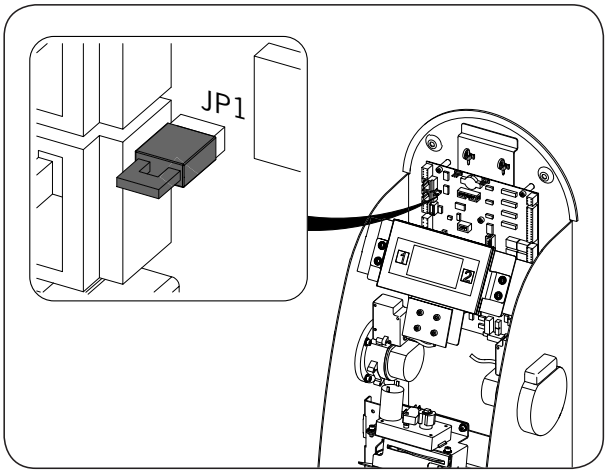
2. Pour installer le cavalier JP1 sur les bornes des extrémités, accédez à leur carte de commande. Sur ces bornes, désinstallez les six vis indiquées dans l'illustration suivante et retirez la façade.



3. Installez le cavalier JP1 sur la carte de commande des bornes de recharge des extrémités.

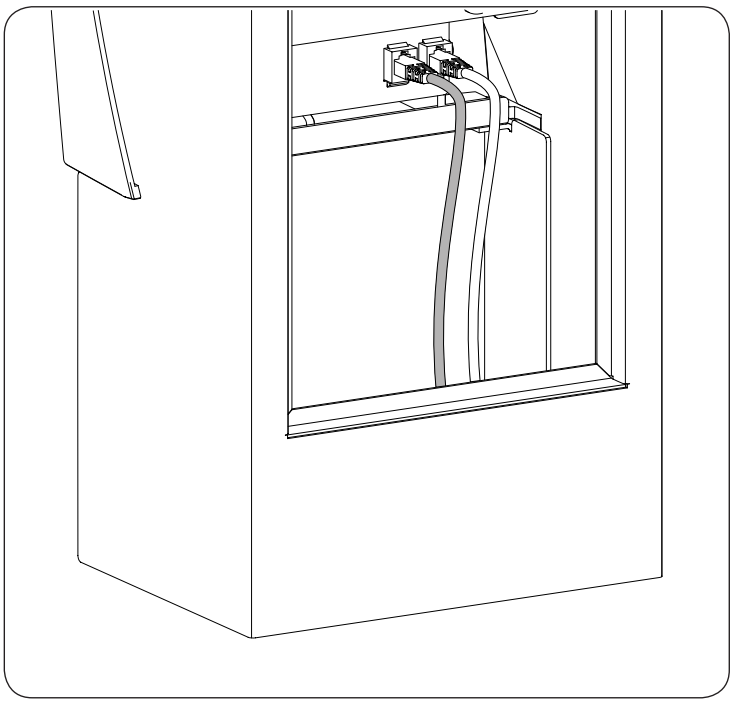


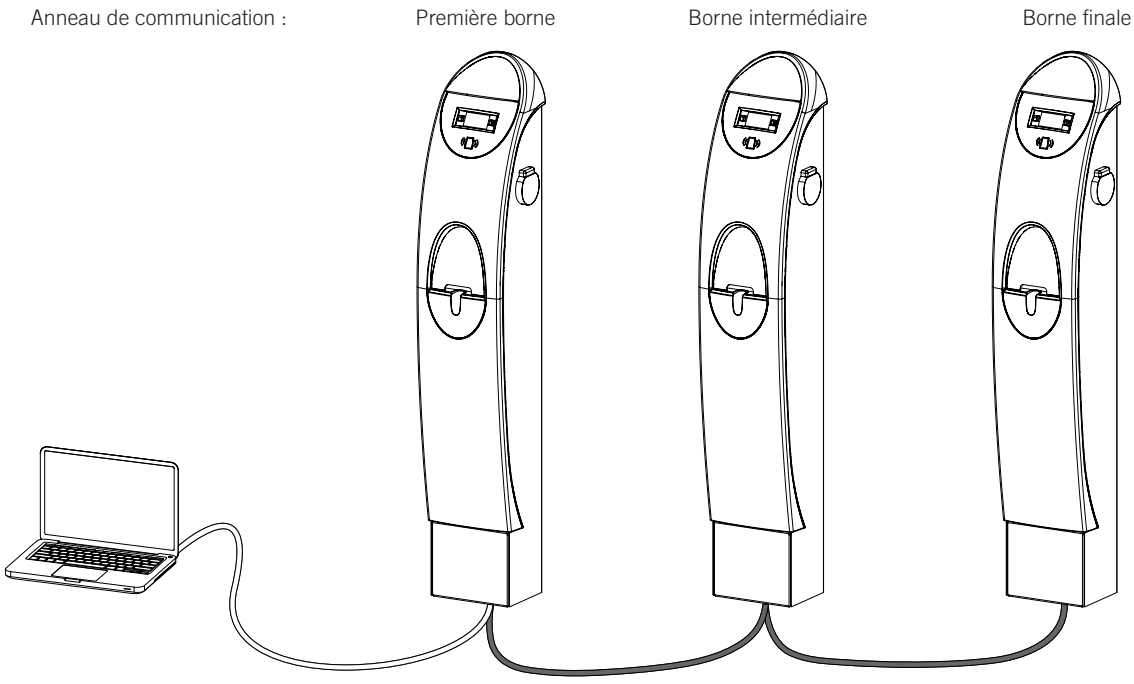
Cavalier JP1 désinstallé (bornes intermédiaires)



Cavalier JP1 installé (bornes des deux extrémités)

4. Utilisez un convertisseur USB-RS-485 avec une extrémité RJ45 (non fourni avec la borne de recharge) pour connecter l'ordinateur à la première borne de l'anneau de communication (câble blanc sur l'illustration suivante).





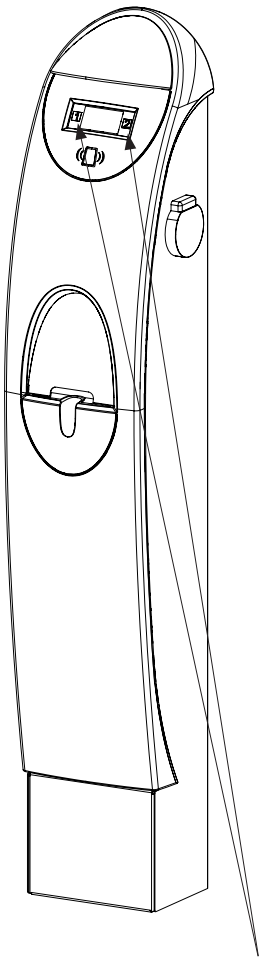
9. Fonctionnement

La fonction principale de la borne de recharge est l'alimentation et la mesure de l'énergie électrique pour des utilisateurs préalablement autorisés via un système de lecture de cartes RFID.

Cette section détaille le fonctionnement de la borne de recharge.

9.1. Indication d'états

La borne de recharge indique l'état dans lequel elle se trouve via une signalisation lumineuse avec plusieurs LED. La borne JOINON Parking+ dispose d'indicateurs indépendants pour chaque prise de courant.



Éclairage des prises de courant 1 et 2

JOINON Parking+

État	Éclairage	Description
En attente d'un véhicule	Vert continu	La borne de recharge attend qu'un véhicule soit connecté pour le charger.
En attente de charge	Jaune clignotant	Un utilisateur a passé la carte dans le lecteur, a sélectionné la prise de recharge et la borne de recharge attend que ce dernier y connecte son véhicule.
Charge	Bleu continu	Un véhicule a été connecté à la borne de recharge.
Consommation réduite	Bleu clignotant	La consommation est réduite.
Fin de charge	Jaune clignotant	La charge est achevée et l'utilisateur a repassé sa carte, la borne de recharge attend qu'il déconnecte son véhicule.

État	Éclairage	Description
Incident	Rouge continu	Le processus de charge n'est pas réalisé correctement à cause d'un problème.
Veille	Aucun	La borne de recharge a été déconnectée à distance.
Fin de session	Blanche continue	La session de recharge est terminée.
Carte refusée	Blanche continue	La carte n'est pas valable ou n'a pas été reconnue.
Choix de prise	Éclairage de l'état actuel, clignotant.	Une fois la carte identifiée, l'appareil reste en attente du choix de prise pour démarrer le processus de recharge.

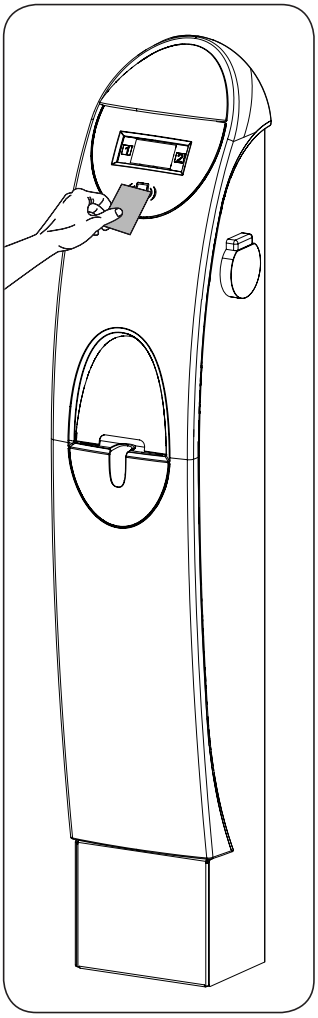
9.2. Processus de charge

9.2.1. JOINON Parking+

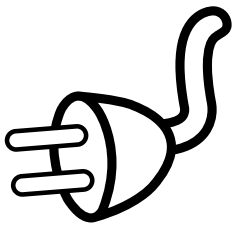
Le connecteur d'alimentation électrique ne doit pas être retiré du véhicule pendant la charge.

Début du processus de charge

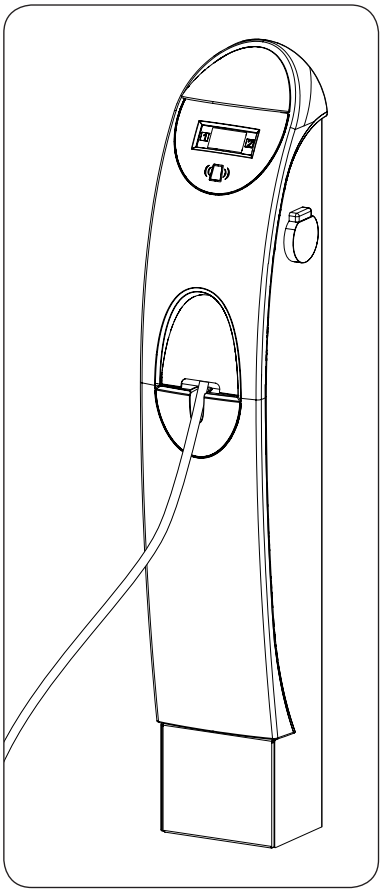
1. Vérifiez que la borne se trouve dans l'état attente véhicule avec l'éclairage vert.
2. Approchez la carte du lecteur de cartes situé dans la zone inférieure indiquée sous l'écran.



En cas de lecture correcte, et après avoir appuyé sur le numéro de la prise libre, la borne de recharge passe en *attente de charge*. Le symbole d'une prise clignotera sur l'écran.



3. Montez le cache manuellement, si vous souhaitez utiliser l'un des connecteurs intérieurs, et raccordez le câble à la prise électrique souhaitée. Si vous souhaitez utiliser l'un des connecteurs extérieurs, ouvrez son cache de protection et connectez le câble de charge.



En fonction du type de connecteur utilisé, le fonctionnement change légèrement :

Type de connecteur	Détection de la connexion	Réglementation s'appliquant à la séquence de charge
CEE 7/4 Type F (Schuko)	Détection automatique après abaissement du cache	CEI61851
CEI 62196-2 Type 2	Détection automatique instantanée	CEI61851

Au moment de la fermeture complète du cache, la borne le verrouillera et lancera l'alimentation électrique, en passant à l'état *charge*.

Fin du processus de charge

4. Pour terminer le cycle de charge, approchez à nouveau la carte du lecteur et sélectionnez la prise sur laquelle vous souhaitez terminer le processus de charge. La borne interrompt l'alimentation électrique et déverrouille le cache du réceptacle ou le connecteur.

5. Ouvrez le cache, et si vous utilisez l'un des connecteurs intérieurs, retirez le connecteur et fermez le cache. La borne verrouillera le cache et repassera à l'état *attente véhicule*.

Perte d'alimentation

La borne dispose d'une alimentation auxiliaire permettant de maintenir sa fonction de base en cas de pertes d'alimentation électrique. Dans cette situation, la borne indique l'anomalie sur l'écran.

Si la borne se trouve dans l'état *attente véhicule* et qu'une perte d'alimentation électrique survient, le message affiché est le suivant :

"INTERRUPTION DU COURANT"

Si la perte d'alimentation survient au cours de la charge d'un véhicule, le message est le suivant :

"INTERRUPTION DU COURANT. IDENTIFIEZ-VOUS POUR DEVERROUILLER ACCES"

L'utilisateur devra alors repasser sa carte d'identification dans le lecteur et sélectionner la prise utilisée pour que le cache soit déverrouillé et ainsi pouvoir déconnecter son véhicule. Une fois ce processus achevé, la borne s'éteint si l'autre prise n'est pas utilisée.

Un *Utilisateur maître* pourra déverrouiller le cache pour retirer le connecteur et pourra, après une identification ultérieure, mettre la borne hors tension avec le verrouillage actif, à condition qu'aucune des prises ne soit utilisée.

Lorsque l'alimentation est rétablie après une perte d'alimentation antérieure, la borne repasse à l'état précédant cette perte.

9.3. Langues

Les informations de chaque session d'utilisateur apparaîtront dans la langue configurée sur chaque carte, indépendamment de la langue configurée par défaut sur la borne.

Dans le cas des utilisateurs pour lesquels aucune langue n'a été configurée, la borne affichera les informations dans la langue dans laquelle elle aura été configurée par défaut.

9.4. Incidents

En cas d'incidents la borne passe à l'état *incident* en affichant celui-ci.

Défaut sur l'installation (code d'erreur 0001)

Les protections de la borne se sont déclenchées.

La borne détecte que le défaut persiste sur l'installation et ne procédera pas au réenclenchement des protections tant que le défaut n'aura pas disparu.

Le personnel qualifié devra réaliser une vérification de l'installation électrique.

Alimentation interrompue (code d'erreur 0002)

- Absence de réseau électrique. Aucune alimentation électrique. La borne se réinitialisera lorsque l'alimentation reviendra.
- Les protections se sont déclenchées. Les protections se sont déclenchées mais le défaut qui en est à l'origine a disparu.

Si des protections réenclenchables sont installées, la borne les réenclenchera dans quelques instants.

Position de la trappe incorrecte (code d'erreur 0004)

La trappe n'est pas dans la position correspondant à l'état de charge.

Vérifiez qu'aucun câble n'est desserré ou mal inséré sur la carte de commande.

Connecteur sous tension (code d'erreur 0008)

Le connecteur est sous tension ou hors tension alors qu'il ne devrait pas.

Vérifiez que toutes les protections sont sur ON.

Défaut de communication du compteur d'énergie (code d'erreur 0016)

La communication interne avec le compteur d'énergie n'est pas correcte, ce qui peut provenir du déclenchement des protections. Faire contrôler l'installation électrique par le personnel qualifié afin de vérifier si les protections se sont déclenchées.

Si les protections ne se sont pas déclenchées, informez le service technique de l'incident.

Défaut de communication RFID (code d'erreur 0032)

La communication interne avec le lecteur de cartes est défectueuse.

Informez le service technique de l'incident.

Alarme du capteur d'inclinaison (code d'erreur 0064)

Ces bornes de recharge peuvent disposer d'un capteur d'inclinaison.

Vérifiez que l'appareil est installé à la verticale par rapport au sol. Dans le cas contraire, modifiez l'installation.

Fuite de courant c.c. (code d'erreur 0128)

Les bornes de recharge peuvent disposer, selon le modèle, d'un capteur de fuite de courant c.c. pendant la charge. La fuite de courant déclenchant l'alarme est provoquée par le véhicule électrique en cours de charge, il ne s'agit donc pas d'une alarme de la borne de recharge, mais d'un arrêt de la charge pour des raisons de sécurité.

La limite supérieure admissible de fuite de courants c.c. a été dépassée.

Défaut de séquence de charge (code d'erreur 0256)

Séquence de charge incorrecte ou déconnexion du véhicule pendant la charge. L'alarme disparaît à la fin de la session.

Courant de charge maximale autorisée (code d'erreur 0512)

Le véhicule n'a pas respecté la limite maximale de courant de charge autorisé sur une durée maximale définie.

L'alarme disparaîtra à la fin de la procédure de charge du véhicule électrique qui a provoqué l'alarme.

Défaut de communication avec le gestionnaire de puissance (code d'erreur 1024)

Défaut de communication entre la borne et le gestionnaire de puissance. Cette erreur apparaît lorsque la borne est configurée pour travailler avec un gestionnaire de puissance et que celui-ci n'existe pas.

10. Déconnexion de l’appareil

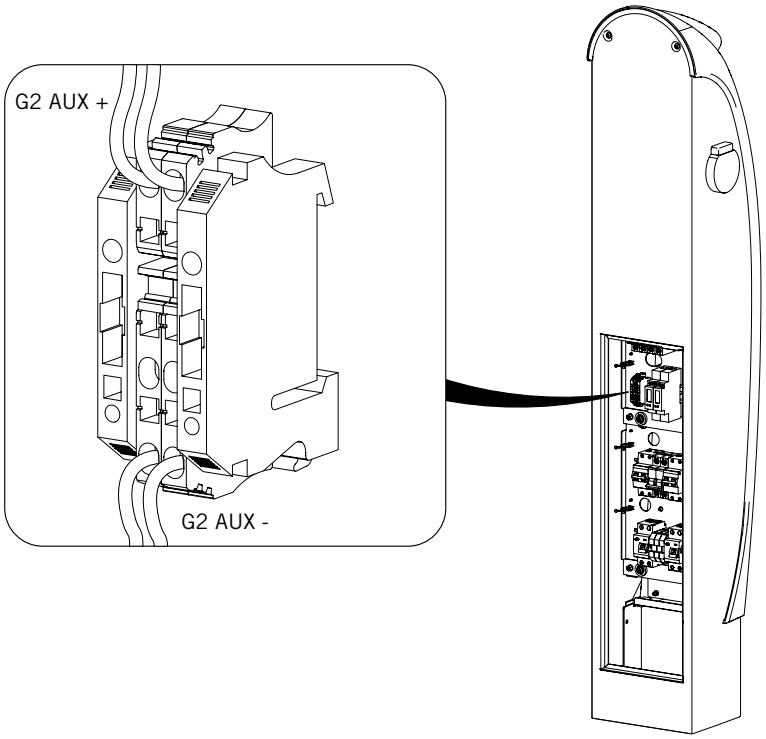
Cette section décrit le processus à suivre pour déconnecter l’appareil. Si vous souhaitez accéder à l’intérieur de l’appareil (uniquement pour le personnel qualifié), vous devez obligatoirement suivre ces instructions dans l’ordre où elles sont indiquées pour supprimer toute tension.

10.1. Processus de déconnexion de l’appareil

Si vous souhaitez éteindre ou désinstaller la borne de recharge, étant donné qu'elle dispose d'une alimentation auxiliaire, elle ne s'éteindra pas directement en lui ôtant l'alimentation électrique. Dans ce cas, la borne affichera le message d'alarme suivant :

”INTERRUPTION DU COURANT”

Pour éteindre complètement la borne, vous devrez approcher une carte d'utilisateur type maître du lecteur. Vous pourrez alors procéder à la déconnexion totale de la borne de recharge. En l'absence de carte type maître, déconnectez la batterie.



Il est expressément recommandé de réaliser une mise hors tension complète de la borne de recharge afin de prolonger la durée de vie de l'alimentation auxiliaire.

11. Maintenance préventive

11.1. Dispositifs de courant différentiel

Il est recommandé de contrôler tous les ans le dispositif de courant différentiel de la borne. Appuyez pour cela sur le bouton RESET du dispositif et attendez le réenclenchement.

L'ouverture du cache arrière doit intervenir dans le seul but de réaliser le test des deux dispositifs de courant différentiel, en évitant tout contact avec un autre dispositif ou câble à proximité.

Le travailleur qui accède à la partie inférieure de la porte d'accès aux protections devra être dûment formé par l'entreprise (exploitant de la borne de recharge) et autorisé par cette dernière à réaliser ces tâches.

11.2. Mise à la terre

Il est recommandé de contrôler tous les ans le raccordement correct de l'enveloppe métallique et autres composants métalliques situés à l'extérieur de la borne de recharge, au conducteur de terre de l'installation.

L'ouverture du cache arrière doit intervenir dans le seul but de réaliser un test de continuité entre l'arrivée du conducteur de terre de l'installation et l'enveloppe métallique et autres composants métalliques situés à l'extérieur de la borne de recharge.

Le travailleur qui accède à la partie inférieure de la porte d'accès aux protections devra être dûment formé par l'entreprise (exploitant de la borne de recharge) et autorisé par cette dernière à réaliser ces tâches.

12. Dépannage

Cette section détaille les problèmes que vous pouvez rencontrer lors de l'installation et de l'utilisation des bornes de recharge.

Les problèmes doivent être résolus par le personnel qualifié conformément aux conditions générales de sécurité expliquées dans ce manuel.

12.1. Alarmes

En cas d'alarme, la borne passe à l'état « alarme » et s'éclaire de couleur rouge.

Défaut sur l'installation (code d'erreur 0001)

Description

Les protections de la borne se sont déclenchées.

Si la borne est dotée de protections avec réenclenchement automatique, elle détecte si le défaut persiste sur l'installation et ne procédera pas au réenclenchement des protections tant que le défaut n'aura pas disparu.

Cette erreur n'intervient pas sur les bornes de recharge dépourvues de protections intérieures.

Solution

Si les protections sont à réenclenchement manuel, il faudra ouvrir la borne pour y accéder.

Procédez au réenclenchement des protections dont la commande ne se trouve pas dans la position correcte. Si le problème persiste :

- Vérifiez le câblage correct des protections et qu'aucun câble n'est desserré.
- Vérifiez le câblage du contact auxiliaire de la protection.

Alimentation interrompue (code d'erreur 0002)

Description

Les causes de cette erreur peuvent être les suivantes :

- Absence de réseau électrique. La borne se réinitialisera lorsque l'alimentation sera rétablie.
- Les protections se sont déclenchées.

Solution

Une fois le réseau électrique rétabli, si l'erreur persiste vérifiez la présence de tension au niveau de la prise de raccordement de la borne de recharge.

Si la cause de l'alarme est un déclenchement des protections internes de l'appareil, réglez le problème comme indiqué dans la section *« Défaut sur l'installation (code d'erreur 0001) »*.

Position du cache incorrecte (code d'erreur 0004)

Description

Le cache d'accès aux connecteurs n'est pas dans la position correspondant à l'état de charge.

Solution

- Vérifiez qu'aucun élément ne bloque le parcours du cache.

Si l'erreur persiste, contactez le service d'assistance téléphonique.

Connecteur sous tension (code d'erreur 0008)

Description

Le connecteur est sous tension ou hors tension alors qu'il ne devrait pas.

Solution

Mesurez avec un multimètre la présence de tension sur le ou les connecteurs. Vérifiez que toutes les protections sont sur ON.

En présence de tension

Vérifiez que la bobine d'activation du contacteur est alimentée à 230 Vac.

- Si tel est le cas, le problème peut venir de la carte de commande. Vérifiez qu'aucun câble n'est desserré ou mal inséré sur la carte de commande.
- Si elle n'est pas alimentée, vérifiez qu'aucun câble n'est desserré sur les contacteurs ou relais de puissance.

  Le remplacement du contacteur peut s'avérer nécessaire. Contactez le service d'assistance téléphonique.

En l'absence de tension

Le problème peut venir de la carte de commande. Vérifiez qu'aucun câble n'est desserré ou mal inséré sur la carte de commande.

Défaut de communication du compteur d'énergie (code d'erreur 0016)

Description

La communication interne avec le compteur d'énergie n'est pas correcte ou une protection non monitorée s'est déclenchée.

Solution

Vérifiez les protections et réenclenchez-les si nécessaire. Si le défaut persiste, vérifiez que la connexion est correcte.

Défaut de communication RFID (code d'erreur 0032)

Description

La communication interne avec le lecteur de cartes est défectueuse.

Solution

Contactez le service d'assistance téléphonique.

Alarme du capteur d'inclinaison (code d'erreur 0064)

Description

Ces bornes de recharge peuvent disposer d'un capteur d'inclinaison qui détecte si la borne n'est pas précisément installée à la verticale du sol.

Solution

Vérifiez que l'appareil est installé à la verticale par rapport au sol. Dans le cas contraire, modifiez l'installation.

Fuite de courant continu (code d'erreur 0128)

Description

La fuite de courant c.c. maximale autorisée en charge a été dépassée.

Les bornes de recharge peuvent disposer, selon le modèle, d'un capteur de fuite de courant continu pendant la charge. La fuite de courant déclenchant l'alarme est provoquée par le véhicule électrique en cours de charge, il ne s'agit donc pas d'une alarme de la borne, mais d'un arrêt de la charge pour des raisons de sécurité.

Solution

Si l'alarme persiste alors qu'aucun véhicule n'est connecté, contactez le service d'assistance téléphonique.

Défaut de séquence de charge (code d'erreur 0256)

Description

Séquence de charge incorrecte ou déconnexion du véhicule pendant la charge.

Solution

Si l'alarme se déclenche à cause de la déconnexion du véhicule pendant la session de charge, elle disparaît à la fin de chaque session.

Si l'alarme persiste alors qu'aucune session de charge n'est en cours, contactez le service d'assistance téléphonique.

Courant de charge maximale autorisée (code d'erreur 0512)

Description

Le véhicule n'a pas respecté la limite maximale de courant de charge autorisé sur une durée maximale définie.

Solution

L'alarme disparaîtra à la fin de la procédure de charge du véhicule électrique qui a provoqué l'alarme.

Défaut de communication avec le gestionnaire de puissance (code d'erreur 1024)

Description

Défaut de communication entre la borne et le gestionnaire de puissance. Cette erreur apparaît lorsque la borne est configurée pour travailler avec un gestionnaire de puissance et que celui-ci n'existe pas.

Solution

Vérifiez la communication entre la borne et le gestionnaire de puissance. En l'absence de gestionnaire de puissance, désactivez-le dans la configuration de la borne.

Le clavier ne fonctionne pas

Description

Le clavier de la borne de recharge ne répond pas.

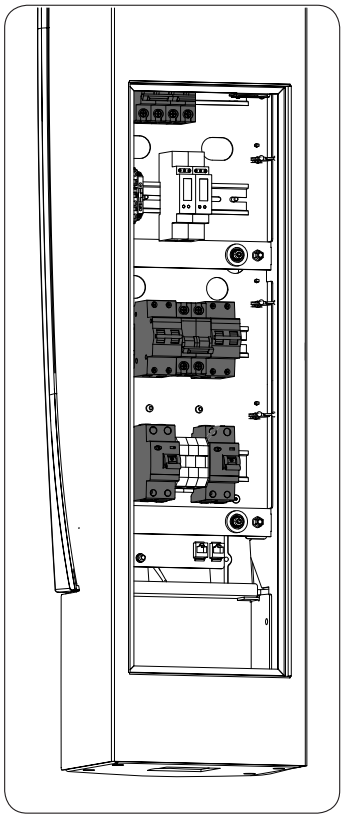
Solution

Vérifiez que le câble du clavier est correctement inséré à l'intérieur de l'appareil et qu'aucun câble n'est desserré ou mal inséré sur la carte de commande.

Si l'erreur persiste, contactez le service d'assistance téléphonique.

12.2. Réenclenchement des protections

Les illustrations suivantes indiquent l'emplacement des protections des bornes de recharge, afin de les réenclencher en cas de déclenchement.



13. Traitement des déchets

Ces bornes de recharge utilisent des composants nocifs pour l'environnement (cartes électroniques, batteries ou piles, etc.).

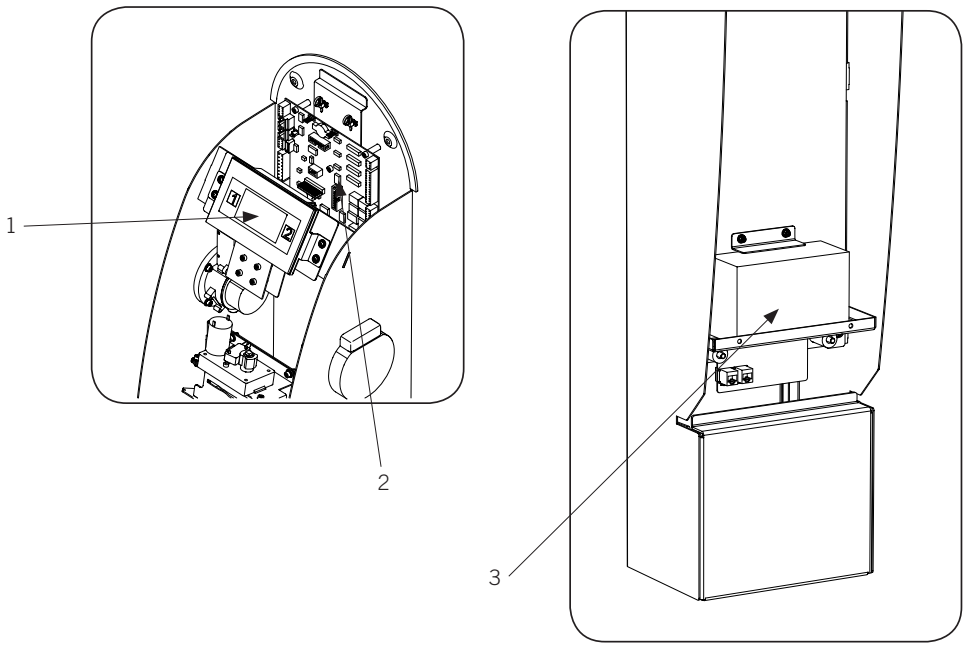
Une fois la vie utile de l'appareil terminée, les déchets doivent être confiés à un centre de récupération agréé pour le traitement des déchets dangereux.

Par le biais de cette section, et conformément à une politique respectueuse de l'environnement, le centre de récupération agréé est informé de la localisation des composants à décontaminer.

Les éléments présents à l'intérieur de l'appareil et qui doivent être traités spécifiquement sont :

1. Écrans à cristaux liquides
2. Cartes de circuits imprimés
3. Batteries ou accumulateurs.

Les images suivantes indiquent où se trouvent ces éléments.



Résidus assimilables aux collectes de déchets conventionnels

La majeure partie de ces déchets proviennent de l'emballage de l'appareil qui doit être trié et traité de manière appropriée.

Tout l'emballage peut être remis à un centre agréé de récupération des déchets non dangereux.

Dans tous les cas, les parties de l'emballage seront réparties de la manière suivante :

- Plastique (polystyrène, sac et papier bulle) : Container correspondant (plastique et emballages).
- Carton : Container correspondant (papier et carton).

Contenuti

1. Informazioni su questo manuale

1.1. Campo di applicazione

Il presente manuale è valido per le seguenti stazioni di ricarica:

JOINON Parking+ GW68105 (monofase)

JOINON Parking+ GW68105R (monofase)

JOINON Parking+ GW68106C (trifase)

1.2. Destinatari

Il presente documento è rivolto a personale qualificato.

Quando nel presente manuale si parla di personale qualificato, si fa riferimento a personale che risponde a tutte le norme, le direttive e le leggi in materia di sicurezza, applicabili agli interventi di installazione e funzionamento di questo dispositivo.

La selezione del personale qualificato è sempre responsabilità della società della quale tale personale fa parte, in quanto la società in questione decide se un lavoratore è adatto o meno a svolgere un determinato lavoro, tutelandone così la sicurezza e rispettando la legge applicabile in materia di sicurezza sul lavoro.

Tali società devono impartire una formazione adeguata sui dispositivi elettrici al proprio personale, e fare in modo che questo prenda dimestichezza con il contenuto del presente manuale.

1.3. Simbologia

Nel presente manuale sono utilizzati diversi simboli per sottolineare e mettere in evidenza determinate indicazioni. Di seguito ne viene spiegato il significato generale.

Attenzione generale.

Informazioni generali.

Rischio elettrico.

Consultare la sezione indicata.

Divieto.

2. Descrizione del dispositivo

2.1. Modelli

JOINON Parking+ GW68105 (monofase)

JOINON Parking+ GW68105R (monofase)

JOINON Parking+ GW68106C (trifase)

2.2. Adempimento alla normativa

Marchio CE

Il marchio CE è indispensabile per commercializzare qualsiasi prodotto nell'Unione Europea, fatte salve le norme o leggi dei singoli Paesi. Le stazioni di ricarica sono dotate del marchio CE in quanto rispettano le seguenti direttive:

- *Direttiva Bassa Tensione 2014/35/UE*.
- *Direttiva sulla compatibilità elettromagnetica 2014/30/UE.*

Per rispettare ogni direttiva, è sufficiente adempiere alle parti delle relative norme armonizzate applicabili a questo dispositivo.

Direttiva Bassa Tensione

Le stazioni di ricarica sono conformi a questa direttiva, in quanto adempiono alle parti applicabili della norma armonizzata *EN 61851 Apparecchiature elettroniche da utilizzare negli impianti di potenza*.

Direttiva sulla compatibilità elettromagnetica

Le stazioni di ricarica sono conformi a questa direttiva in quanto adempiono alle parti applicabili delle norme armonizzate:

- *EN 61000-6-1 Compatibilità elettromagnetica*. Parte 6-1: Norme generiche - Immunità per gli ambienti residenziali, commerciali e dell'industria leggera.
- *EN 61000-6-3 Compatibilità elettromagnetica*. Parte 6-3: Norme generiche - Emissioni per gli ambienti residenziali, commerciali e dell'industria leggera.

L'adempimento di queste norme obbliga a rispettare i requisiti e le procedure di altre norme della medesima serie.

2.3. Requisiti EMC

Queste stazioni di ricarica sono dotate degli elementi filtranti necessari per l'adempimento dei requisiti EMC per applicazioni domestiche, allo scopo di evitare radiodisturbi in altri dispositivi esterni all'impianto.

2.4. Grado di protezione

Queste stazioni di ricarica presentano un grado di protezione IP54 contro gli agenti esterni.

Questo dispositivo è progettato per uso interno ed esterno.

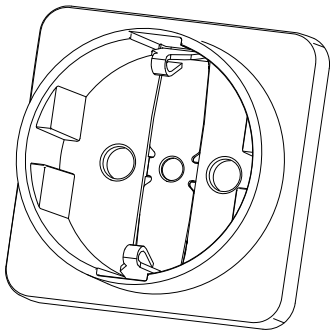
2.5. Grado di inquinamento

Il grado di inquinamento per il quale sono predisposte queste stazioni di ricarica è il grado PD3.

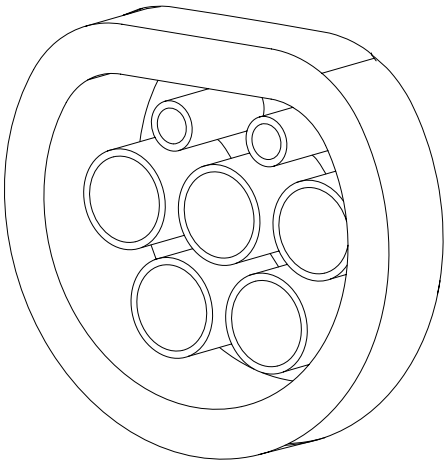
2.6. Prese di corrente

Le stazioni di ricarica possono essere fornite con diverse configurazioni dei connettori secondo le necessità del cliente.

I connettori a disposizione sono i seguenti:

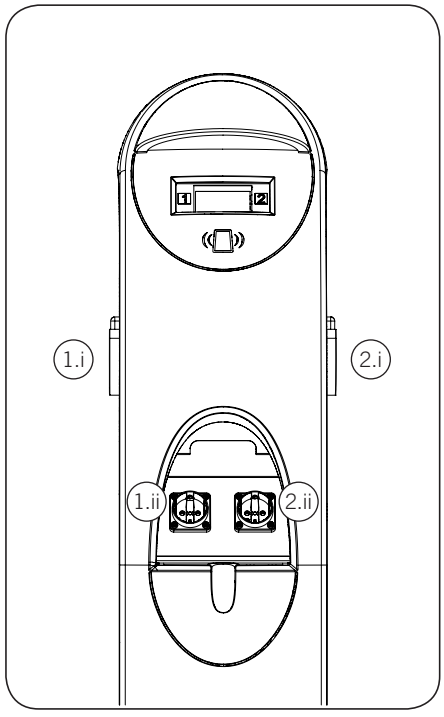


CEE 7/4 Tipo F



IEC 62196-2 Tipo 2

Le stazioni di ricarica JOINON Parking+ dispongono di due prese di corrente che possono essere utilizzate contemporaneamente. La configurazione di queste due prese di corrente e i diversi tipi di connettori disponibili per ogni presa sono i seguenti:



1.i. Presa 1	IEC 62196-2 Tipo 2	2.i. Presa 2	IEC 62196-2 Tipo 2
1.ii. Presa 1	CEE 7/4 Tipo F	2.ii. Presa 2	CEE 7/4 Tipo F

NOTA: L'accesso e l'utilizzo delle prese CEE 7/4 Tipo F è garantito solo in contesti privati o con limitazioni di accesso. L'uso pubblico della stazione di ricarica permetterà la ricarica solo mediante le prese Tipo 2.

3. Sicurezza

In questa sezione sono descritti gli avvisi di sicurezza e il dispositivo di protezione individuale.

3.1. Condizioni di sicurezza

Avvisi generali

Le operazioni riportate nel presente manuale possono essere eseguite solo da personale debitamente qualificato.

Quando nel presente manuale si parla di personale qualificato, si fa riferimento a personale che risponde a tutte le norme, le direttive e le leggi in materia di sicurezza, applicabili agli interventi di installazione e funzionamento di questo dispositivo.

La selezione del personale qualificato è sempre responsabilità della società della quale tale personale fa parte, in quanto la società in questione decide se un lavoratore è adatto o meno a svolgere un determinato lavoro, tutelandone così la sicurezza e rispettando la legge applicabile in materia di sicurezza sul lavoro.

Tali società devono impartire una formazione adeguata sui dispositivi elettrici al proprio personale, e fare in modo che questo prenda dimestichezza con il contenuto del presente manuale.

È obbligatorio rispettare la legge applicabile in materia di sicurezza per quanto riguarda i lavori elettrici. Esiste il pericolo di possibili scosse elettriche.

Il rispetto delle istruzioni di sicurezza esposte nel presente manuale o della legislazione indicata, non esime dal rispetto di altre norme specifiche relative a installazione, luogo, paese o altre circostanze che riguardino il dispositivo.

L'apertura dell'involucro non implica l'assenza di tensione all'interno.

Esiste pericolo di possibili scosse elettriche anche dopo il disinserimento di tutte le fonti di energia del sistema.

Può essere aperta solo da personale qualificato seguendo le istruzioni riportate nel presente manuale.

È obbligatorio leggere e comprendere il presente manuale in ogni sua parte prima di cominciare a manipolare, installare o utilizzare l'unità.

La normativa di sicurezza di base obbligatoria per ogni Paese è la seguente:

- *RD 614/2001* in Spagna.
- *CEI 11-27* in Italia.
- *DIN VDE 0105-100* e *DIN VDE 1000-10* in Germania.
- *UTE C18-510* in Francia.

Per verificare l'assenza di tensione è obbligatorio usare dispositivi di misura che rientrano nella categoria III-1000 Volt.

Ingeteam declina ogni responsabilità per i danni eventualmente causati da un uso inappropriato delle stazioni di ricarica. Ogni intervento realizzato su queste stazioni di ricarica che comporti una modifica dell'assetto elettrico originale, deve essere previamente autorizzato da Ingeteam. Le proposte devono essere esaminate e approvate da Ingeteam.

Per qualsiasi manovra e intervento, l'impianto deve essere disinserito dalla tensione.

Come misura minima di sicurezza per questa operazione occorre rispettare le cosiddette **5 regole d'oro**:

1. Disinserire.
2. Prevenire qualsiasi eventuale reinserimento dell'alimentazione.
3. Verificare che non vi sia tensione.
4. Mettere a terra e in cortocircuito.
5. Proteggersi da elementi in tensione in prossimità ed, eventualmente, collocare segnali di sicurezza per delimitare la zona di lavoro.

Prima del completamento di queste cinque operazioni, la parte interessata dovrà essere considerata in tensione, pertanto l'intervento senza tensione non potrà essere autorizzato.

Pericoli potenziali per le persone

Al fine di tutelare la propria sicurezza, rispettare le seguenti avvertenze.

PERICOLO: schiacciamento e lesioni delle articolazioni.

Seguire sempre le indicazioni fornite dal manuale per movimentare e collocare il dispositivo.

Il peso del dispositivo può provocare lesioni se non viene manipolato in modo corretto.

Potenziali pericoli per il dispositivo

Al fine di proteggere il dispositivo, rispettare le seguenti avvertenze.

Durante il funzionamento, il dispositivo richiede un flusso d'aria privo di impurità.

È indispensabile mantenere la posizione verticale e le entrate sgombre da qualsiasi ostacolo, per consentire che il flusso d'aria penetri all'interno del dispositivo.

Prima dell'inserimento, dopo qualsiasi intervento debitamente autorizzato, verificare che il dispositivo sia pronto per cominciare a funzionare. Successivamente, procedere a collegarlo seguendo le istruzioni del manuale.

Non toccare le schede né i componenti elettronici. I componenti più sensibili potrebbero risultare danneggiati o distrutti dall'elettricità statica.

Non disinserire né collegare alcun terminale mentre il dispositivo è in funzione. Disinserire e verificare l'assenza di tensione prima di eseguire qualsiasi operazione.

3.2. Dispositivo di protezione individuale (DPI)

Quando si lavora sul dispositivo, utilizzare almeno le seguenti dotazioni di sicurezza.

Denominazione	Spiegazione
Calzature di sicurezza	In conformità alla norma *UNE-EN-ISO 20345:2012*
Elmetto	Conforme alla norma *EN 397:1995*
Elmetto con maschera per il volto	Conforme alla norma *UNE-EN 166:2002*, se esistono elementi con tensione direttamente accessibili.
Indumenti da lavoro	Aderenti, non infiammabili, 100% cotone
Guanti dielettrici	Conforme alla norma *EN 60903:2005*

Le attrezzature o i dispositivi utilizzati in attività in tensione devono disporre almeno di isolamento di categoria III-1000 Volt. Nel caso in cui le normative del luogo di installazione esigano un altro tipo di dispositivo di protezione individuale, è necessario completare in modo adeguato il dispositivo.

4. Ricevimento del dispositivo e stoccaggio

4.1. Ricevimento

Conservare il dispositivo imballato fino all'installazione.

4.2. Identificazione del dispositivo

Il numero di serie del dispositivo lo identifica in modo inequivocabile.

Il numero di serie del dispositivo è indicato anche sulla targhetta che riporta le caratteristiche del dispositivo stesso.

4.3. Danni durante il trasporto

Se il dispositivo ha subito danni durante il trasporto:

1. Non procedere all'installazione.
2. Notificare immediatamente il fatto al proprio rivenditore entro 5 giorni dal ricevimento del dispositivo.

Se fosse necessario restituire il dispositivo al costruttore, si dovrà usare l'imballaggio originale.

4.4. Stoccaggio

L'inosservanza delle istruzioni fornite in questa sezione può provocare danni al dispositivo.

Se il dispositivo non viene installato immediatamente dopo il ricevimento, per evitarne il deterioramento occorre procedere come indicato di seguito:

- Per la corretta conservazione delle stazioni di ricarica, non rimuovere l'imballaggio originale fino al momento dell'installazione.
- Il deterioramento dell'imballaggio (tagli, fori, ecc.) impedisce una corretta conservazione delle stazioni di ricarica prima dell'installazione.
- Mantenere pulito il dispositivo (eliminare polvere, trucioli, grasso, ecc.), ed evitare la presenza di roditori.
- Proteggerlo da schizzi d'acqua, scintille di saldatura, ecc.
- Coprire il dispositivo con un materiale protettivo traspirante per evitare la condensa provocata dall'umidità ambientale.
- Le stazioni di ricarica conservate in magazzino non devono essere sottoposte a condizioni climatiche diverse rispetto a quelle indicate di seguito:

Condizioni ambientali	
Temperatura minima	-20 °C
Temperatura minima dell'aria circostante	-20 °C
Temperatura massima dell'aria circostante	70 °C
Umidità relativa massima senza condensa	95%

- È molto importante proteggere l'impianto da prodotti chimici corrosivi e dagli ambienti salini.
- Non stoccare il dispositivo sottoponendolo a intemperie.

5. Movimentazione del dispositivo

Durante il trasporto, il dispositivo deve essere protetto da urti meccanici, vibrazioni, schizzi d'acqua (pioggia) e da qualsiasi altro prodotto o situazione in grado di danneggiarlo o alterarne il comportamento.

5.1. Trasporto

Movimentazione con transpallet

Devono essere rispettate almeno le seguenti prescrizioni:

1. Depositare le stazioni imballate e in posizione centrale rispetto alle forche.
2. Sistemarle il più vicino possibile all'attacco delle forche al montante.
3. In ogni caso, rispettare le istruzioni del manuale d'uso del transpallet.

Movimentazione con carrello elevatore

Devono essere rispettate almeno le seguenti prescrizioni:

1. Depositare le stazioni imballate e in posizione centrale rispetto alle forche.
2. Sistemarle il più vicino possibile all'attacco delle forche al montante.
3. Controllare che le forche siano perfettamente livellate, per evitare possibili ribaltamenti del dispositivo.
4. In ogni caso, rispettare le istruzioni del manuale d'uso del carrello.

Disimballare la stazione di ricarica solo al momento dell'installazione, dopo averla sistemata nella posizione di destinazione.

In questo momento è possibile trasportarlo verticalmente senza l'imballaggio, ma solo per una breve distanza.

Movimentazione del dispositivo disimballato

Devono essere rispettate almeno le seguenti prescrizioni:

1. Seguire i consigli ergonomici fondamentali per evitare lesioni sollevando pesi.
2. Non rilasciare il dispositivo finché non è perfettamente fissato o appoggiato.
3. Seguire le indicazioni di un'altra persona che faccia da guida nei movimenti da eseguire.

5.2. Disimballo

La corretta movimentazione delle stazioni di ricarica è di vitale importanza per:

- Non danneggiare l'imballaggio che consente di mantenerli in condizioni ottimali, dalla spedizione al momento in cui vengono installati.
- Evitare colpi o cadute delle stazioni meccaniche dato che possono deteriorarne le caratteristiche meccaniche.
- Evitare, per quanto possibile, le vibrazioni, che potrebbero provocare un successivo funzionamento anomalo.

Smaltimento dell'imballaggio

L'imballaggio può essere consegnato a un gestore autorizzato di rifiuti non pericolosi.

In ogni modo, la destinazione di ogni parte dell'imballaggio sarà:

- Plastica (polistirolo, borsa e fogli di plastica a bolle): relativo contenitore.
- Cartone: relativo contenitore.

6. Preparazione per l'installazione del dispositivo

Per decidere l'ubicazione del dispositivo e programmarne l'installazione si devono seguire una serie di indicazioni vincolate alle caratteristiche del dispositivo stesso.

6.1. Ambiente

- Collocare le stazioni di ricarica in un luogo accessibile per gli interventi di installazione e manutenzione, che ne consenta l'uso e la lettura degli indicatori a LED.
- Non collocare nelle immediate vicinanze dell'uscita dell'aria alcun materiale sensibile alle alte temperature.
- Evitare ambienti corrosivi che possono influenzare il corretto funzionamento del dispositivo.
- È proibito lasciare qualsiasi oggetto sul dispositivo.

6.2. Condizioni ambientali

Per scegliere l'ubicazione più adatta occorre tenere in considerazione le condizioni ambientali di funzionamento del dispositivo.

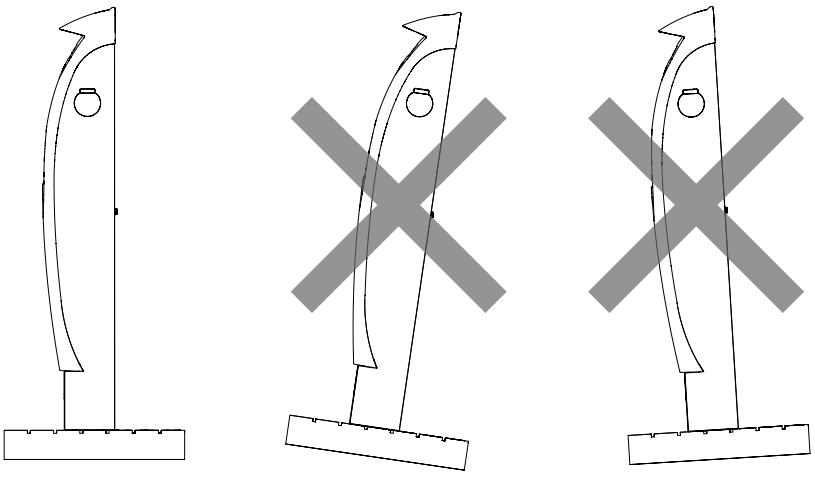
Condizioni ambientali	
Temperatura minima	-20 °C
Temperatura minima dell'aria circostante	-20 °C
Temperatura massima dell'aria circostante	70 °C
Umidità relativa massima senza condensa	95%

È opportuno ricordare che, occasionalmente, si potrebbe produrre una condensa moderata come conseguenza degli sbalzi di temperatura. Perciò, oltre alla protezione di cui dispone l'apparato, è necessario monitorare le stazioni di ricarica quando vengono messe in servizio in luoghi in cui è probabile che non siano soddisfatte tutte le condizioni descritte in precedenza.

Non applicare mai tensione al dispositivo in presenza di condensa.

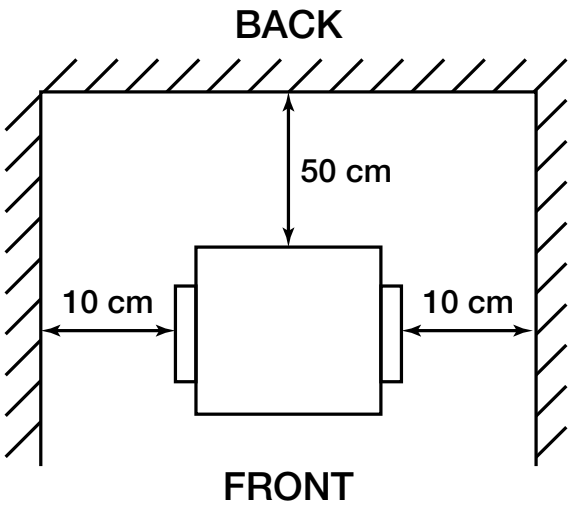
6.3. Superficie di appoggio e fissaggio

Riservare una superficie regolare e solida per ancorare il dispositivo, che deve essere perfettamente verticale.



La superficie su cui installare i prodotti deve essere opportunamente preparata e realizzata in funzione della tipologia di terreno al fine di garantire la corretta stabilità del prodotto durante il suo utilizzo. A tale scopo si consiglia di realizzare un basamento dove annegare i tiranti di fissaggio (non forniti) da utilizzare per il fissaggio della stazione di ricarica. I tiranti devono essere posizionati seguendo le quote al capitolo 7.2.

Procedere con il fissaggio della stazione di ricarica sull'area opportunamente preparata, mantenendo le distanze tra la stazione e l'ambiente circostante come indicato in figura.



NOTA: La superficie sulla quale verrà installata la stazione di ricarica deve essere opportunamente progettata e realizzata in conformità agli standard, alle norme vigenti con il fine di garantire la sicurezza degli utilizzatori indipendentemente dal tipo di superficie.

7. Installazione e collegamento del dispositivo

Prima di procedere all'installazione del dispositivo, occorre rimuovere l'imballaggio, prestando particolare attenzione a non danneggiare l'involucro.

Verificare l'assenza di condensa all'interno dell'imballaggio. In caso contrario, installare il dispositivo solo quando sarà completamente asciutto.

Tutte le operazioni di installazione devono essere eseguite rispettando la direttiva in vigore.

Tutte le operazioni che comportano lo spostamento di pesi ingenti devono essere realizzate da due persone.

L'operazione di collegamento deve essere eseguita con l'impianto privo di tensione e da personale qualificato.

Controllare scrupolosamente che non sia presente tensione nel dispositivo quando si accede al suo interno.

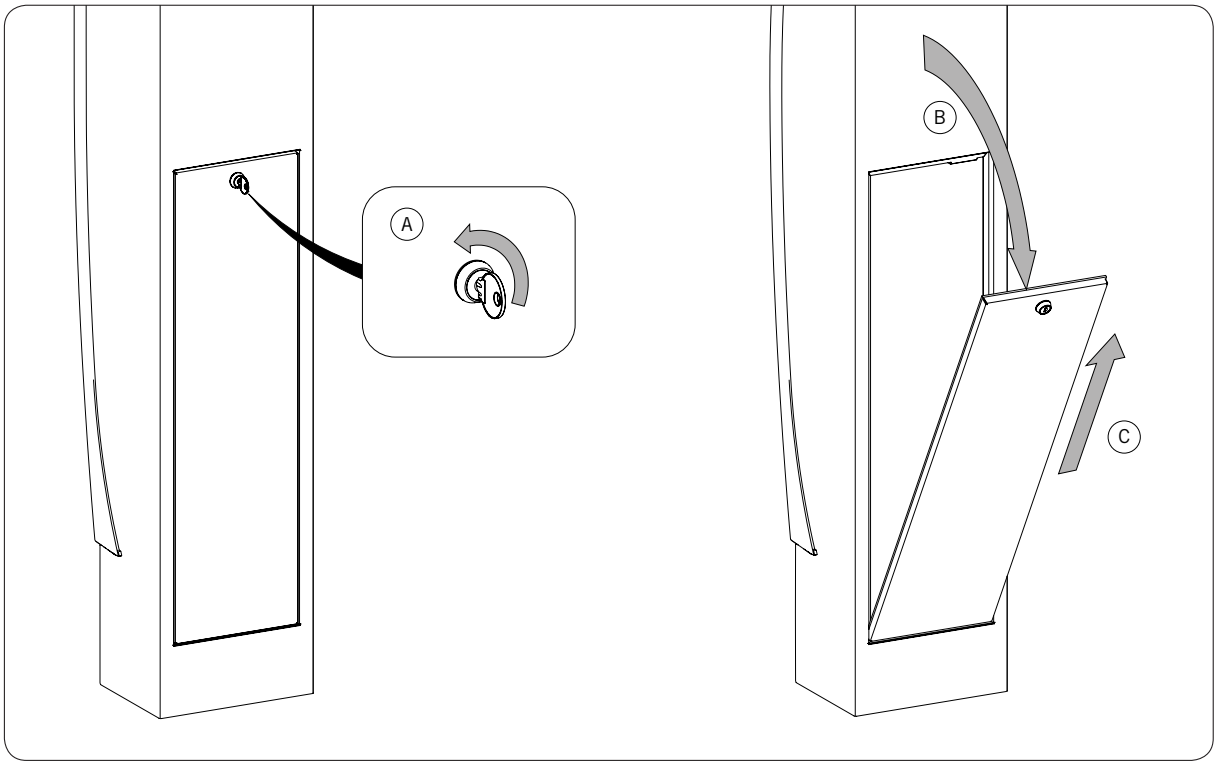
Per misurare l'assenza di tensione è obbligatorio l'uso di guanti dielettrici e occhiali di sicurezza omologati per i rischi elettrici.

7.1. Requisiti generali di installazione

- Il dispositivo deve essere installato in un ambiente adatto, che soddisfi le indicazioni descritte nel capitolo *"6. Preparazione per l'installazione del dispositivo"*. Inoltre, gli elementi utilizzati nel resto dell'installazione devono essere compatibili con il dispositivo e in conformità alla legge applicabile.
- La ventilazione e lo spazio di lavoro devono essere adeguati agli interventi di manutenzione secondo la direttiva in vigore.
- I dispositivi esterni di connessione devono essere adatti e rispettare la distanza stabilita dalla direttiva in vigore.
- La sezione dei cavi di allacciamento deve essere adeguata all'intensità di corrente massima.
- Evitare la presenza di elementi esterni vicino alle entrate e uscite d'aria, in quanto potrebbero impedire la corretta ventilazione del dispositivo.

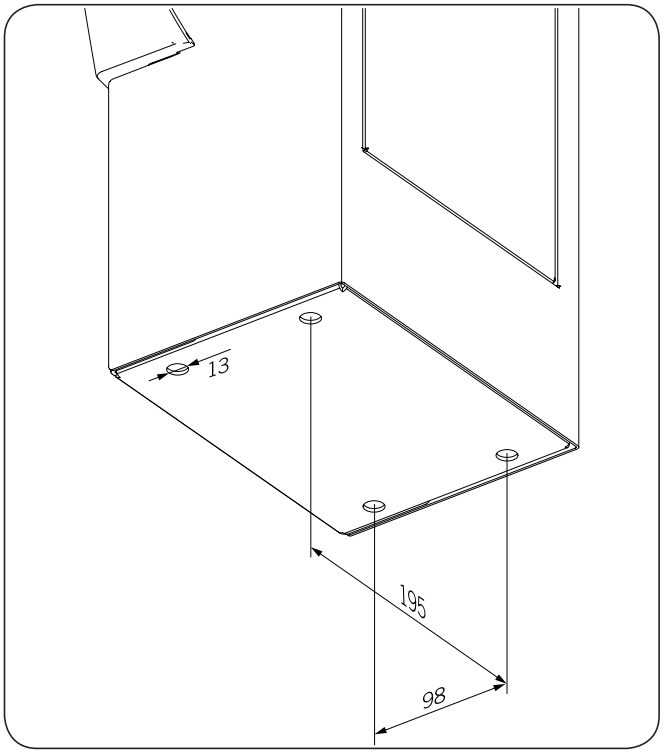
7.2. Installazione del dispositivo

1. Queste stazioni di ricarica dispongono di un accesso posteriore con apertura a chiave per rendere più facile l'installazione e i collegamenti. Aprire l'accesso mediante la chiave fornita.

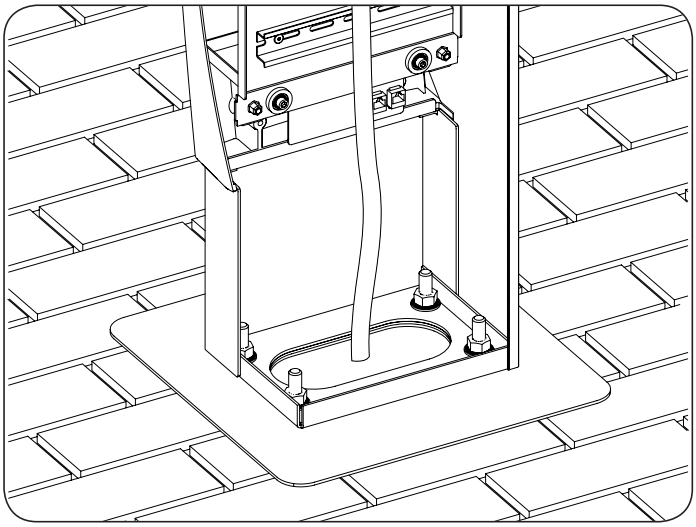


2. Accoppiare il basamento di fissaggio della stazione di ricarica con l'area preparata

Nella figura seguente viene indicata la posizione dei punti di ancoraggio presenti sul prodotto al fine di preparare opportunamente l'area di montaggio.



Portare il cavo verso l'interno della stazione di ricarica come indicato nella figura seguente.



3. Verificare che il dispositivo sia stato fissato in modo corretto.

7.3. Collegamento dell'alimentazione del dispositivo

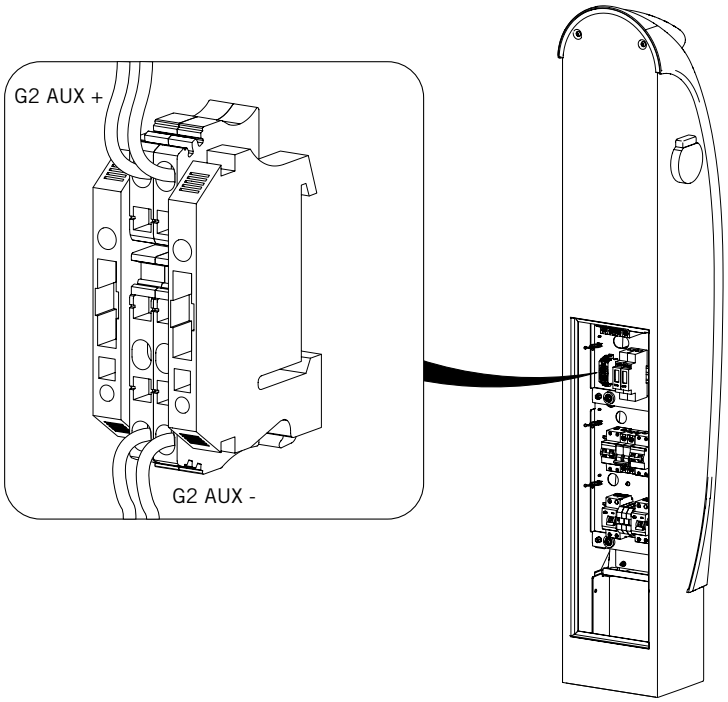
Requisiti di cablaggio

L'allacciamento deve soddisfare alcuni requisiti:

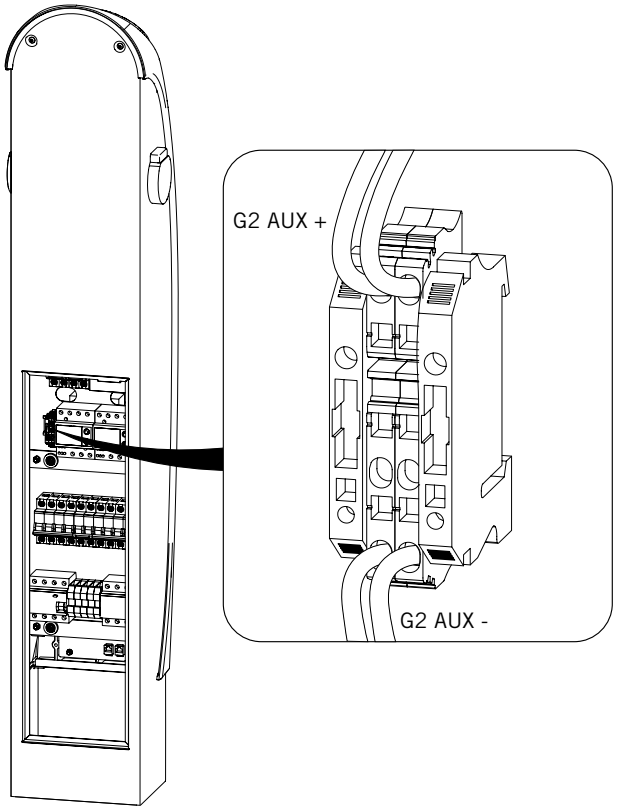
Specifiche allacciamento		
Tipo di collegamento	Monofase	Trifase
Numero di conduttori	2P + T	3P + N + T
Corrente nominale	fino a 64 A	fino a 64 A
Diametro massimo conduttore	16 mm^2 (2 x 10 mm^2)	

Procedura di collegamento

1. Il collegamento del dispositivo avviene dall'accesso posteriore. Controllare che i cavi della batteria siano collegati correttamente (*G2 AUX +* e *G2 AUX -*). I cavi sono dotati di serigrafie per evitare confusioni.

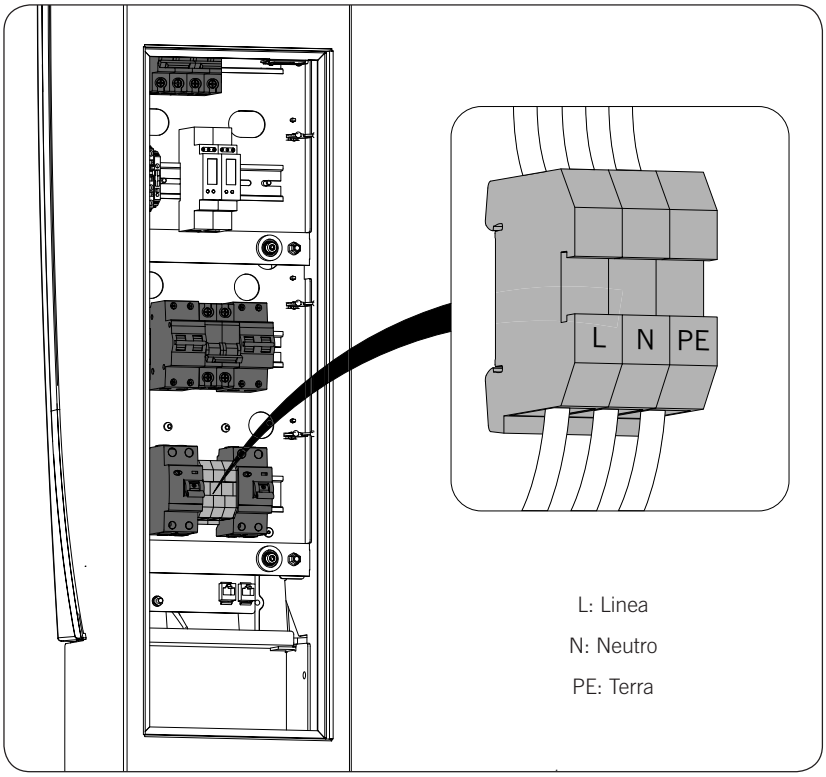


Stazione di ricarica monofase

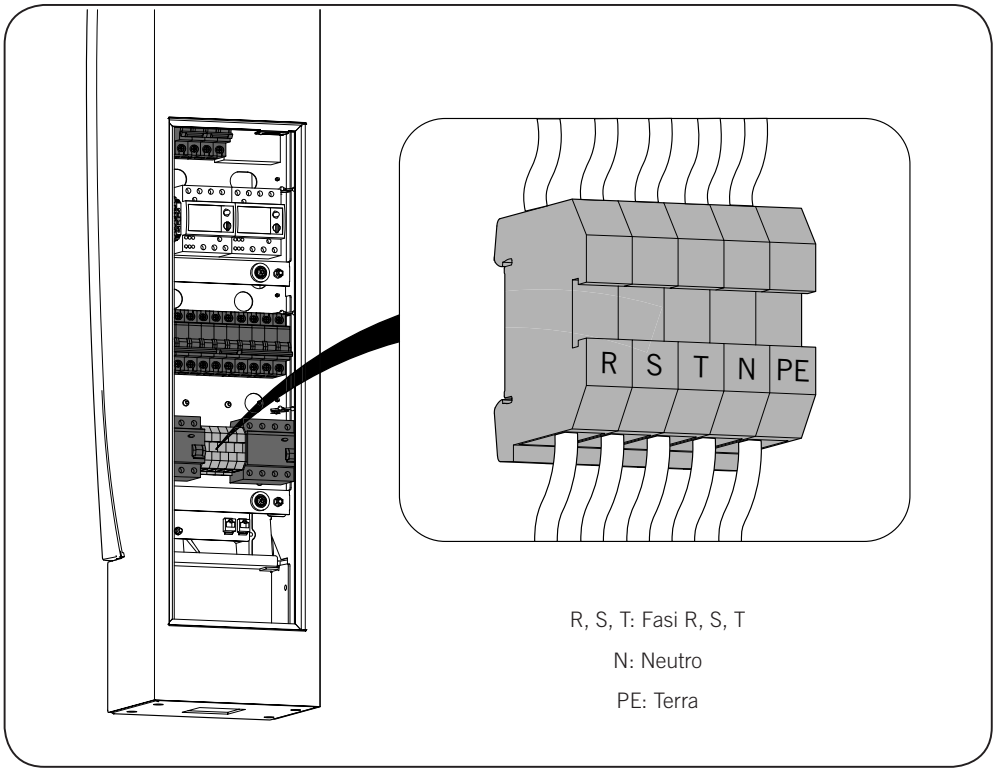


Stazione di ricarica trifase

2. Collegare i cavi di alimentazione *L*, *N* e *PE* e azionare le protezioni differenziale e magnetotermica in posizione ON (contrassegnati con il colore grigio oscuro nella figura seguente).

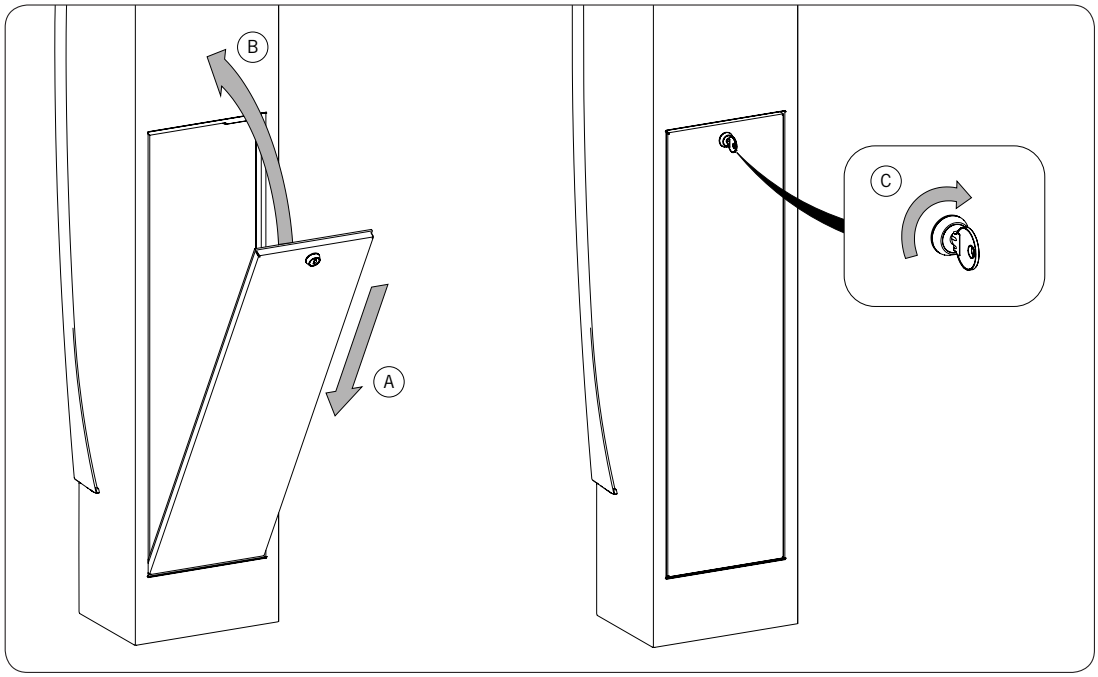


Stazione di ricarica monofase



Stazione di ricarica trifase

3. Chiudere a chiave l'accesso posteriore.



Quando la stazione di ricarica viene alimentata, entrambe le prese si illuminano. Dopo un breve controllo dello stato, l'illuminazione diventa verde e sul display viene visualizzato un veicolo elettrico e l'ora corrente. La stazione è pronta e resta in attesa di identificazione dell'utente per procedere alla ricarica.

Se la stazione individua qualche difetto di funzionamento, l'illuminazione della presa corrispondente o di entrambe, diventa di colore rosso e il tipo di evento è indicato sul display (vedere *"9. Funzionamento"*).

8. Accessori per la comunicazione

Le stazioni di ricarica sono dotate di bus di dati RS-485 locale che consente il collegamento tra diverse stazioni.

L'accesso a tutte le stazioni di ricarica potrà avvenire in locale o da remoto, utilizzando in quest'ultimo caso un modem esterno proprio dell'impianto o quello fornito con la scheda di ricarica se è stato richiesto.

Questa sezione descrive il processo di connessione per la connessione locale, la quale è possibile seriale.

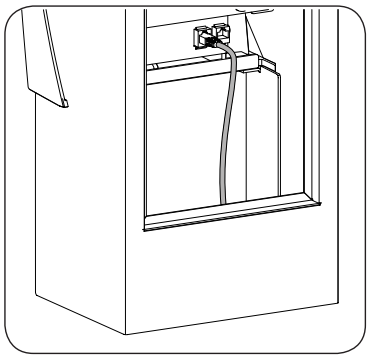
8.1. Comunicazione locale

8.1.1. JOINON Parking+

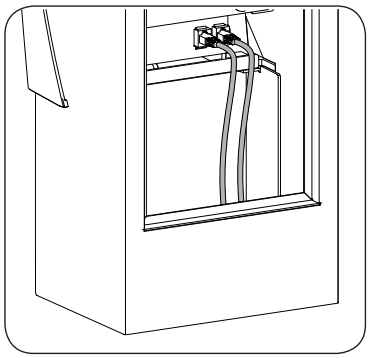
Per eseguire il collegamento locale, procedere come indicato di seguito:

1. Collegare l'anello di comunicazione.

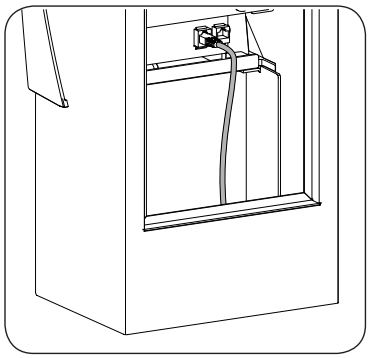
Prima stazione



Stazione intermedia

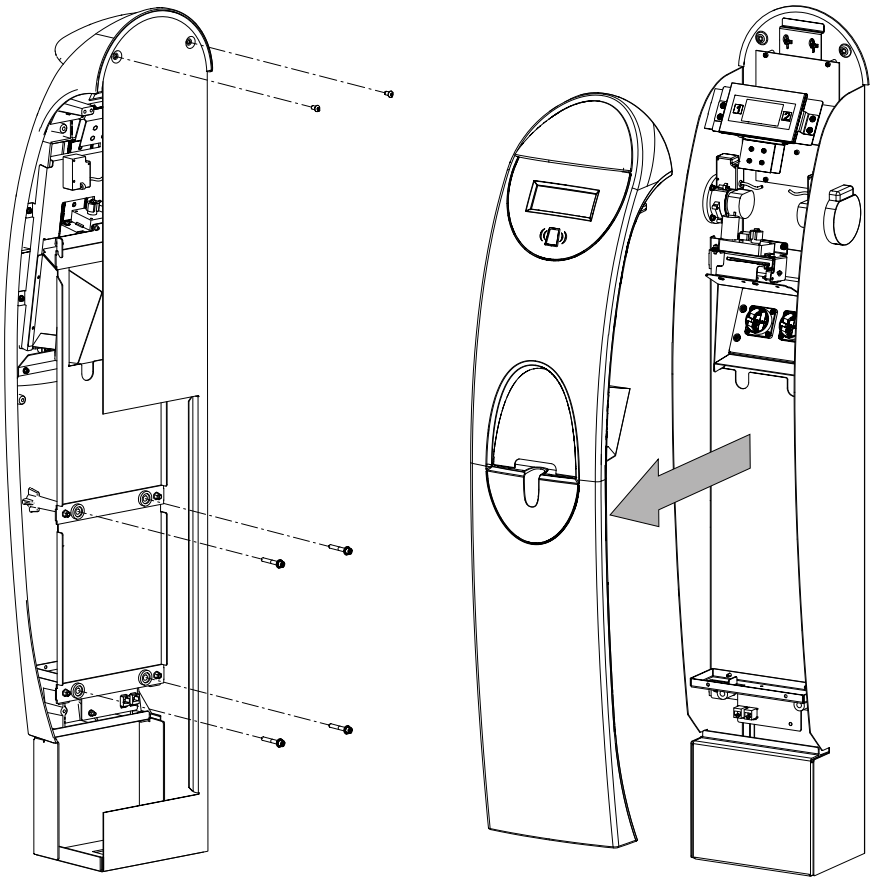


Stazione finale

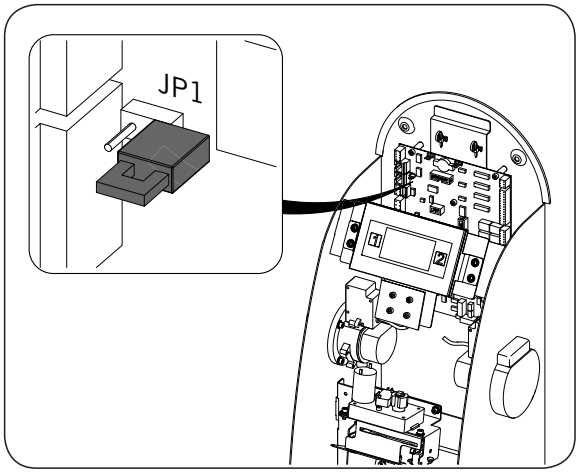


Il Jumper JP1 della scheda di controllo disinstallato di serie. In tutte le stazioni intermedie dell'anello di comunicazione deve restare disinstallato, mentre nelle stazioni alle due estremità deve essere installato.

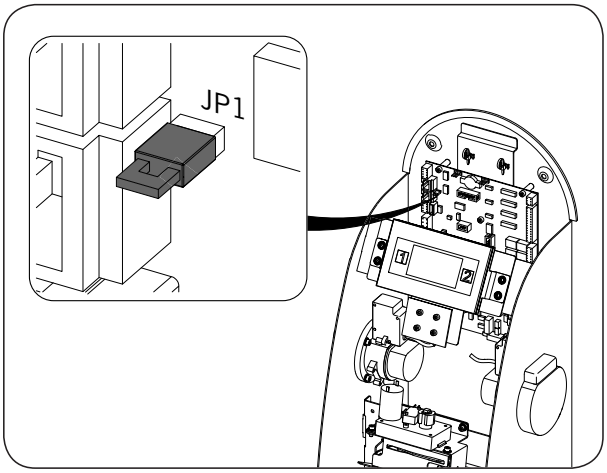
2. Per installare il jumper JP1 nelle stazioni delle due estremità occorre accedere alla scheda di controllo delle stesse. Svitare le sei viti e rimuovere la parte frontale delle stazioni in questione, come indicato nella figura seguente.



3. Installare il JP1 nella scheda di controllo delle stazioni di ricarica delle due estremità.

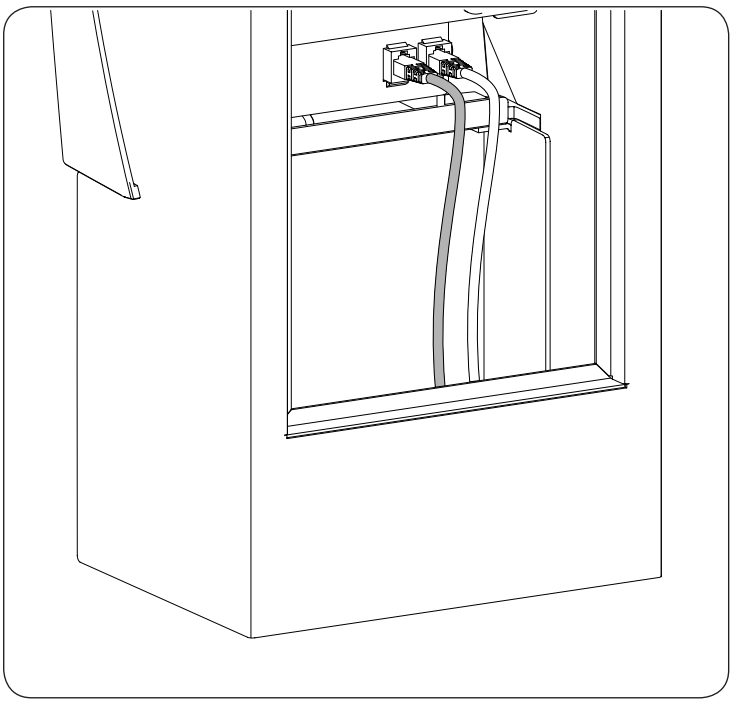


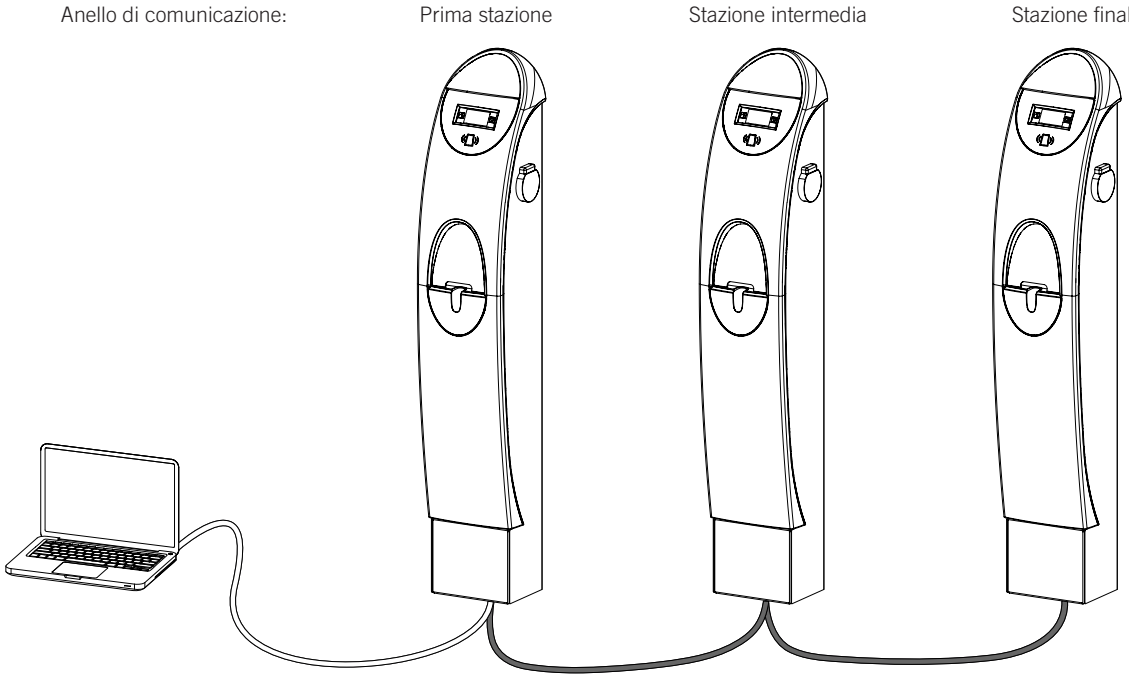
Jumper JP1 disinstallato (stazioni intermedie)



Jumper JP1 installato (stazioni delle due estremità)

4. Utilizzare un convertitore da USB a RS-485 con terminazione RJ45 (non fornita insieme alla stazione di ricarica) per collegare il computer alla prima stazione dell'anello di comunicazione (cavo bianco nella figura seguente).





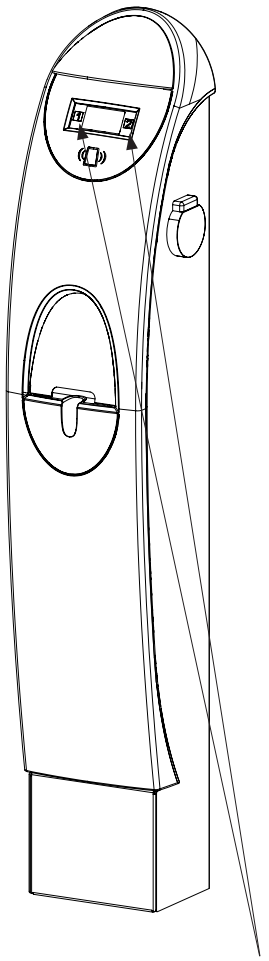
9. Funzionamento

La funzione principale della stazione di ricarica è l'erogazione e misurazione di energia elettrica ad utenti precedentemente autorizzati tramite un sistema di lettura di schede RFID.

La presente sezione descrive in dettaglio il funzionamento della stazione di ricarica.

9.1. Indicazioni di stato

La stazione di ricarica indica lo stato in cui si trova tramite una segnalazione luminosa con vari LED.La stazione JOINON Parking+ dispone di indicatori indipendenti per ogni presa di corrente.



Illuminazione prese di corrente
1 e 2

JOINON Parking+

Stato	Illuminazione	Descrizione
Attesa veicolo	Verde continuo	La presa di ricarica è in attesa che un veicolo si colleghi per la ricarica.
Attesa ricarica	Giallo lampeggiante	Un utente ha passato la scheda sul lettore, ha selezionato la presa per la ricarica e quest'ultima è pronta affinché l'utente colleghi il veicolo.
Ricarica	Blu fisso	Un veicolo è stato collegato alla presa di ricarica.
Consumo ridotto	Blu lampeggiante	Il consumo è ridotto.
Fine ricarica	Giallo lampeggiante	Dopo la ricarica, l'utente ha passato la scheda e la stazione di ricarica è in attesa che il veicolo venga scollegato.
Evento	Rosso fisso	La procedura di ricarica non viene eseguita correttamente per qualche problema.

Stato	Illuminazione	Descrizione
Stand by	Nessuna	La stazione di ricarica è stata scollegata a distanza.
Fine della sessione	Bianco fisso	La sessione di ricarica è terminata.
Scheda rifiutata	Bianco fisso	La scheda SD non è valida o non è stata riconosciuta.
Selezione della presa	Illuminazione dello stato attuale, lampeggio	Dopo aver riconosciuto la scheda, la stazione rimane in attesa che venga selezionata una presa per cominciare il processo di ricarica.

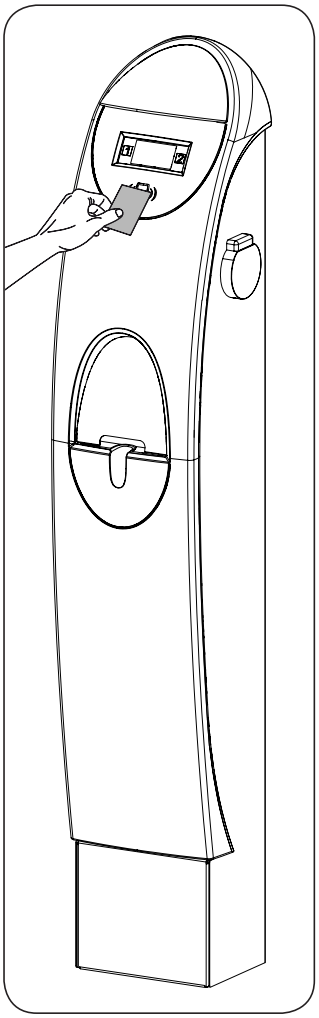
9.2. Processo di ricarica

9.2.1. JOINON Parking+

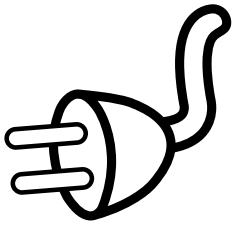
Il connettore di erogazione elettrica non deve essere estratto dal veicolo durante l'operazione di ricarica.

Inizio del processo di ricarica

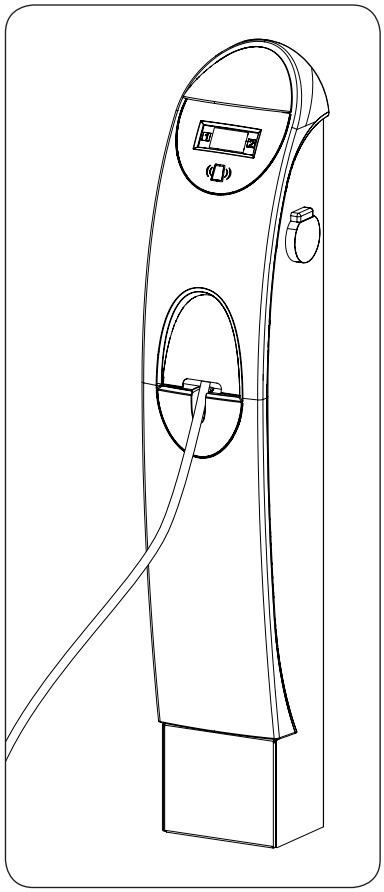
1. Controllare che la stazione si trovi nello stato attesa veicolo con la luce verde.
2. Avvicinare la scheda al lettore posto sulla zona indicata sotto al display.



Se la scheda viene letta correttamente, dopo aver premuto il numero della presa libera, la stazione di ricarica passa allo stato di *Attesa ricarica*. Sul display compare lampeggiando l'immagine di una presa.



3. Per utilizzare uno dei connettori interni, sollevare manualmente il coperchio e collegare il cavo alla presa elettrica desiderata. Per utilizzare uno dei connettori esterni, aprirne il coperchio protettivo e collegare il cavo per la ricarica.



Il funzionamento varia leggermente in funzione del tipo di connettore usato:

Tipo di connettore	Rilevamento della connessione	Normativa che regola la sequenza di ricarica
CEE 7/4 Tipo F (Schuko)	Rilevamento automatico dopo aver abbassato il coperchio	IEC61851
CEE 7/7 (Schuko)	Rilevamento automatico dopo aver abbassato il coperchio	IEC61851
IEC 62196-2 Tipo 2	Rilevamento automatico immediato	IEC61851
IEC 62196-2 Tipo 3A	Rilevamento automatico immediato	IEC61851

Tipo di connettore	Rilevamento della connessione	Normativa che regola la sequenza di ricarica
CEE 7/4 Tipo F (Schuko)	Rilevamento automatico dopo aver abbassato il coperchio	IEC61851

Tipo di connettore	Rilevamento della connessione	Normativa che regola la sequenza di ricarica
IEC 62196-2 Tipo 2	Rilevamento automatico immediato	IEC61851

Alla completa chiusura del coperchio, la stazione blocca il coperchio e inizierà l'erogazione di energia passando allo stato *ricarica*.

Fine del processo di ricarica

4. Per concludere il ciclo di ricarica, avvicinare di nuovo la tessera al lettore e selezionare la presa di cui si vuole terminare il processo di ricarica. La stazione interrompe l'erogazione di energia elettrica e sblocca il coperchio dell'alloggiamento o il connettore.
5. In caso di utilizzo di uno dei connettori interni, aprire il coperchio, estrarre il connettore e chiudere il coperchio. La stazione blocca di nuovo il coperchio e pass allo stato *attesa veicolo.*

Perdita di erogazione

La stazione è dotata di alimentazione ausiliare che consente di mantenere la funzionalità base della stazione in caso di perdita di fornitura elettrica. In tale situazione, la stazione indica l'anomalia sul display.

Nel caso in cui la stazione si trovi nello stato *attesa veicolo* e venisse meno l'erogazione di energia elettrica verrebbe visualizzato il messaggio:

”GUASTO AC”

Se la perdita di erogazione compare durante un processo di ricarica di un veicolo il messaggio sarebbe:

”GUASTO AC. Nuova identificazione per sbloccare porta”

In questo caso l'utente deve ripassare la scheda identificativa sul lettore, selezionare la presa in uso per sbloccare il coperchio e scollegare il veicolo. A questo punto, se l'altra presa non e utilizzata la stazione si spegne.

Un *Utente Master* potrà sbloccare il coperchio per estrarre il connettore e a seguito di identificazione potrà spegnere la stazione con il blocco attivo, qualora nessuna delle prese sia in funzione.

Prima di ripristinare la fornitura di energia elettrica in seguito a una perdita, la stazione tornerà allo stato precedente alla perdita.

9.3. Lingue

Le informazioni di ogni sessione dell'utente verranno visualizzate nella lingua configurata in ogni scheda, indipendentemente dalla lingua di default configurata nella stazione.

Nel caso di utenti senza lingua configurata, la stazione visualizzerà le informazioni nella lingua configurata di default.

9.4. Guasti

In caso di guasti la stazione passa allo stato *guasto* indicando a display l'evento in questione.

Guasto nell'impianto (codice errore 0001)

Sono scattate le protezioni della stazione.

La stazione rileva che il guasto persiste nell'impianto e non procederà al riarmo delle protezioni fino a che non scompare il guasto.

Si dovrà provvedere alla revisione dell'impianto elettrico da parte di Personale qualificato.

Alimentazione interrotta (codice di errore 0002)

- Assenza di rete elettrica. Non c'è erogazione elettrica. La stazione si riavvierà quando si ristabilisce l'erogazione.

- Sono scattate le protezioni. Sono scattate le protezioni ma il guasto che ha causato lo scatto è scomparso.

Se l'apparecchio dispone di protezioni ripristinabili, la stazione riarmerà le protezioni entro alcuni istanti.

Posizione botola non corretta (codice di errore 0004)

La botola non è nella posizione che corrisponde allo stato di ricarica.

Controllare che non ci siano cavi staccati o mal inseriti nella scheda di controllo.

Connettore sotto tensione (codice di errore 0008)

Il connettore presenta tensione quando non dovrebbe e viceversa.

Controllare che tutte le protezioni siano su ON.

Errore comunicazione contatore energia (codice di errore 0016)

Anomalia riguardante la comunicazione interna con il contatore di energia, è possibile che sia causata dall'attivarsi delle protezioni. Procedere alla revisione dell'installazione elettrica da parte di personale qualificato per controllare se si sono attivate le protezioni.

Se le protezioni non si sono attivate, avvisare il servizio tecnico.

Errore comunicazione RFID (codice di errore 0032)

La comunicazione interna con il lettore di schede non è corretta.

Avvisare del guasto il servizio tecnico.

Allarme sensore di inclinazione (codice di errore 0064)

Le stazioni di ricarica possono disporre di un sensore di inclinazione.

Controllare che il dispositivo sia installato verticalmente rispetto al pavimento. In caso contrario correggere l'installazione.

Fuga di corrente DC (codice di errore 0128)

Le stazioni di ricarica prevedono a seconda del modello, un sensore per fughe di corrente DC in ricarica. La fuga di corrente che fa scattare l'allarme è provocata dal veicolo elettrico sotto ricarica, pertanto non si tratta di un allarme della stazione di ricarica ma di un arresto della ricarica per motivi di sicurezza.

È stato superato il limite superiore ammissibile per la fuga di corrente DC

Errore sequenza di ricarica (codice errore 0256)

Sequenza di ricarica anomala o disconnessione del veicolo durante la ricarica. L'allarme scompare al termine della sessione.

Corrente di carica massima ammessa (codice di errore 0512)

Il veicolo non ha rispettato il limite massimo di corrente di carica ammesso per il tempo massimo stabilito.

L'allarme scompare quando si termina la sessione di ricarica del veicolo elettrico che ha provocato l'allarme.

Guasto di comunicazione con il gestore di potenza (codice di errore 1024)

Guasto di comunicazione tra la stazione e il gestore di potenza. Questo errore compare nel caso in cui la stazione sia configurata per lavorare insieme a un gestore di potenza e quest'ultimo non sia presente.

10. Scollegamento del dispositivo

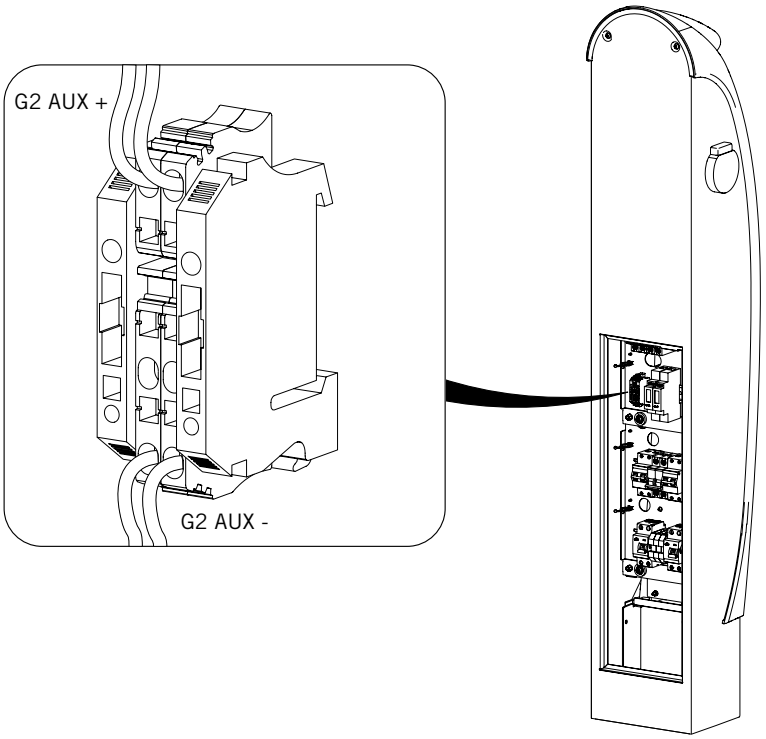
In questa sezione è descritta la procedura di scollegamento del dispositivo. Se si desidera operare all'interno del dispositivo (solo personale qualificato), per scollegare la tensione è obbligatorio seguire l'ordine delle operazioni qui riportato.

10.1. Processo di scollegamento del dispositivo

Se la stazione di ricarica è dotata di alimentazione ausiliaria non si spegnerà direttamente quando si toglie l'erogazione di energia. In questo caso, la stazione mostrerà il seguente messaggio di allarme:

"GUASTO AC"

Per spegnere completamente la stazione, avvicinare una scheda utente tipo Master al lettore. Si potrà quindi procedere allo scollegamento totale della stazione di ricarica. Se non si dispone di una scheda tipo Master scollegare la batteria.



Si raccomanda di spegnere completamente la stazione di ricarica per prolungare la vita dell'alimentazione ausiliare.

11. Manutenzione preventiva

11.1. Dispositivi di corrente differenziale

Si raccomanda un controllo annuale del dispositivo di corrente differenziale della stazione. Premere il pulsante RESET del dispositivo e attendere il riarmo.

Il coperchio posteriore deve essere aperto solo per eseguire il test di entrambi i dispositivi di corrente differenziale, evitando il contatto con qualsiasi altro dispositivo o cavo accessibile.

L'operatore che acceda dalla parte inferiore della porta di accesso alle protezioni dovrà aver ricevuto l'opportuna formazione dall'impresario (operatore della stazione di ricarica) ed essere da esso autorizzato ad eseguire queste operazioni.

11.2. Collegamento a terra

Si consiglia un controllo annuale del corretto collegamento della scatola e degli altri componenti metallici posti all'esterno della stazione di ricarica al conduttore a terra dell'impianto.

Il coperchio posteriore deve essere aperto solo per eseguire un test di continuità tra l'arrivo del conduttore di terra dell'impianto e la scatola e gli altri componenti metallici posti all'esterno della stazione di ricarica.

L'operatore che acceda dalla parte inferiore della porta di accesso alle protezioni dovrà aver ricevuto l'opportuna formazione dall'impresario (operatore della stazione di ricarica) ed essere da esso autorizzato ad eseguire queste operazioni.

12. Risoluzione dei problemi

Questa sezione offre una guida alla risoluzione di problemi che potrebbero eventualmente verificarsi durante l'installazione e il funzionamento delle stazioni di ricarica.

La risoluzione dei problemi deve essere eseguita da personale qualificato rispettando le indicazioni generali sulla sicurezza riportate nel presente manuale.

12.1. Allarmi

In caso di allarme la stazione passa allo stato "allarme" illuminandosi di colore rosso.

Guasto nell'impianto (codice errore 0001)

Descrizione

Sono scattate le protezioni della stazione.

Se è dotata di protezioni con riarmo automatico, la stazione rileva che il guasto persiste nell'impianto e non procederà al riarmo delle protezioni fino a che non scompare il guasto.

Tale errore con si verifica nelle stazioni di ricarica prive di protezioni all'interno.

Soluzione

Nel caso in cui le protezioni siano a riarmo manuale, aprire la stazione per avere accesso alle protezioni.

Ripristinare le protezioni il cui comando non sia nella posizione corretta. Se il problema persiste,

- Controllare il corretto cablaggio delle protezioni e controllare che non ci siano cavi staccati o mal serrati.
- Controllare il cablaggio del contatto ausiliare della protezione.

Alimentazione interrotta (codice di errore 0002)

Descrizione

Tale errore può dipendere da:

- Assenza di rete elettrica. La stazione si riavvierà quando si ristabilisce la fornitura.
- Sono scattate le protezioni.

Soluzione

Se dopo aver ristabilito la rete elettrica l'errore persiste, controllare la presenza di tensione nella presa di allacciamento della stazione di ricarica.

Se la causa dell'allarme è stata prodotta dall'attivazione delle protezioni interne del dispositivo, risolvere il problema come indicato nella sezione *"Guasto nell'impianto (codice errore 0001)"*.

Posizione del coperchio non corretta (codice di errore 0004)

Descrizione

Il coperchio di accesso ai connettori non si trova nella posizione che corrisponde allo stato di ricarica.

Soluzione

- Controllare che non ci sia alcun elemento che ostacoli il percorso del coperchio.

Se l'errore persiste, contattare il servizio assistenza telefonica.

Connettore sotto tensione (codice di errore 0008)

Descrizione

Il connettore presenta tensione quando non dovrebbe e viceversa.

Soluzione

Misurare con un multimetro la presenza di tensione nel(i) connettore(i). Controllare che tutte le protezioni siano su ON.

Se è presente tensione

Verificare che la bobina di attivazione del contatore sia alimentata a 230 Vac.

- Se è alimentata il problema potrebbe essere originato dalla scheda di controllo. Controllare che non ci siano cavi staccati o mal inseriti nella scheda di controllo.
- Se non è alimentata, controllare che non ci siano cavi staccati o mal inseriti nei connettori o relè di potenza.

  Può essere necessaria la sostituzione del contatore. Contattare il servizio assistenza telefonica.

Se non è presente tensione

Il problema potrebbe essere originato dalla scheda di controllo. Controllare che non ci siano cavi staccati o mal inseriti nella scheda di controllo.

Errore comunicazione contatore energia (codice di errore 0016)

Descrizione

Anomalia riguardante la comunicazione interna con il contatore di energia o si è attivata una protezione non monitorata.

Soluzione

Controllare le protezioni e ristabilirle se necessario. Se l'anomalia persiste, controllare che non vi siano problemi di connessione.

Errore comunicazione RFID (codice di errore 0032)

Descrizione

La comunicazione interna con il lettore di schede non è corretta.

Soluzione

Contattare il servizio assistenza telefonica.

Allarme sensore di inclinazione (codice di errore 0064)

Descrizione

Le stazioni di ricarica possono disporre di un sensore di inclinazione che rileva se la stazione è installata non perpendicolarmente al suolo.

Soluzione

Controllare che il dispositivo sia installato verticalmente rispetto al pavimento. In caso contrario correggere l'installazione.

Fuga di corrente continua (codice di errore 0128)

Descrizione

È stata superata la fuga di corrente DC massima consentita in ricarica.

Le stazioni di ricarica prevedono a seconda del modello, un sensore per fughe di corrente continua in ricarica. La fuga di corrente che fa scattare l'allarme è provocata dal veicolo elettrico sotto carica, pertanto non si tratta di un allarme della stazione di ricarica ma di un arresto della ricarica per motivi di sicurezza.

Soluzione

Se l'allarme persiste in assenza di un veicolo elettrico collegato, contattare il servizio di assistenza telefonica.

Errore sequenza di ricarica (codice errore 0256)

Descrizione

Sequenza di ricarica anomala o disconnessione del veicolo durante la ricarica.

Soluzione

Se l'allarme si attiva per la disconnessione del veicolo durante la sessione di ricarica, essa scomparirà al termine della sessione.

Se l'allarme persiste anche quando non è più in corso nessuna ricarica, contattare il servizio di assistenza telefonica.

Corrente di carica massima ammessa (codice di errore 0512)

Descrizione

Il veicolo non ha rispettato il limite massimo di corrente di carica ammesso per il tempo massimo stabilito.

Soluzione

L'allarme scompare quando si termina la sessione di ricarica del veicolo elettrico che ha provocato l'allarme.

Guasto di comunicazione con il gestore di potenza (codice di errore 1024)

Descrizione

Guasto di comunicazione tra la stazione e il gestore di potenza. Questo errore compare nel caso in cui la stazione sia configurata per lavorare insieme a un gestore di potenza e quest'ultimo non sia presente.

Soluzione

Controllare la comunicazione tra la stazione e il gestore di potenza. Se non è presente un gestore di potenza, disabilitarlo nella configurazione della stazione.

La tastiera non funziona.

Descrizione

La tastiera della stazione di ricarica non risponde.

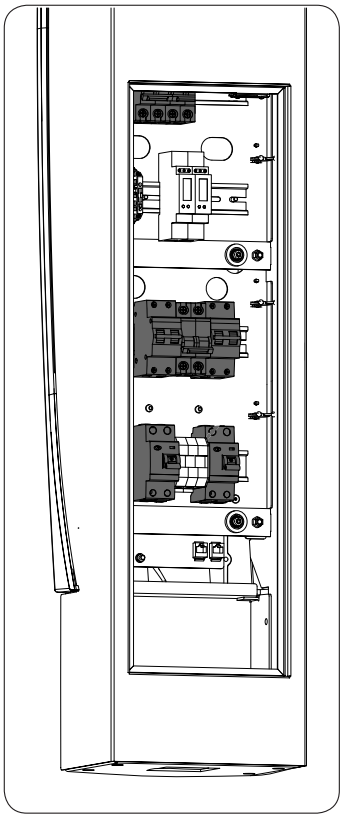
Soluzione

Controllare che il cavo della tastiera sia correttamente inserito all'interno del dispositivo e che non ci siano cavi staccati o mal inseriti nella scheda di controllo.

Se l'errore persiste, contattare il servizio assistenza telefonica.

12.2. Ripristino delle protezioni

Nella figura seguente viene mostrata la posizione delle protezioni delle stazioni di ricarica per poter procedere a ripristinarle in caso di attivazione.



13. Smaltimento dei rifiuti

Queste stazioni di ricarica utilizzano componenti nocivi per l'ambiente (schede elettriche, batterie o pile, ecc.).

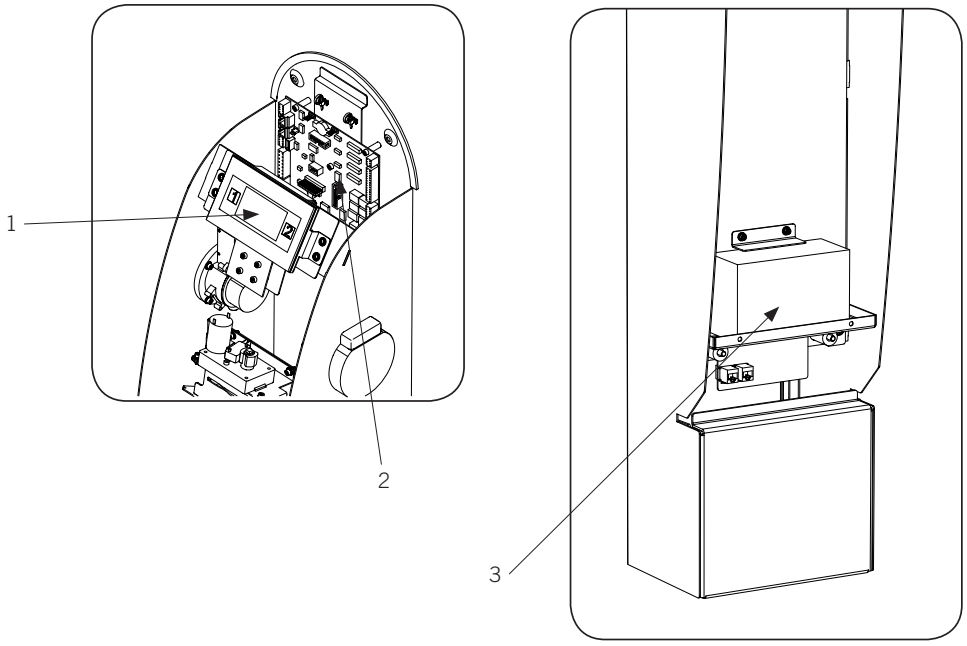
Al termine della sua vita utile, il dispositivo deve essere consegnato a un centro di raccolta autorizzato per il corretto smaltimento dei rifiuti pericolosi.

Seguendo una politica rispettosa dell'ambiente, attraverso la presente sezione, si informa il centro di raccolta e smaltimento autorizzato sull'ubicazione dei componenti da decontaminare.

Gli elementi presenti all'interno del dispositivo che devono essere trattati in modo specifico sono:

1. Schermi a cristalli liquidi.
2. Schede dei circuiti stampati.
3. Batterie o accumulatori

Nella seguente immagine ne viene mostrata l'ubicazione.



Rifiuti assimilabili a raccolte rifiuti tradizionali

La maggior parte di questi rifiuti è prodotta dall'imballaggio del dispositivo, che deve essere trattato ed eliminato nel modo adeguato.

L'imballaggio può essere consegnato a un gestore autorizzato di rifiuti non pericolosi.

In ogni modo, la destinazione di ogni parte dell'imballaggio sarà:

- Plastica (polistirolo, borsa e fogli di plastica a bolle): Contenitore corrispondente (plastica e imballaggi).
- Cartone: Contenitore corrispondente (carta e cartone).

Annex - Anexo - Annexe - Allegato

Title : **VALVE REGULATED LEAD ACID BATTERY**

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name & Use: Valve regulated lead acid battery for stationary applications as stand by energy, immobilised electrolyte.

Company Identification: FIAMM S.p.A.
Viale Europa, 63 I - 36075 Montecchio Maggiore (Vicenza) Italy
Telephone +39 0444 709311; Telex 480295 FIAMM Fax +39 0444 699237

Production Plant:
a) FIAMM S.p.A.
Via Dovaro, 8 I - 36045 Almisano di Lonigo (Vicenza) Italy
b) FIAMM ENERTECH CO., LTD.
Hannan Road 458, Shamao Town, Hannan District
Wuhan City, Hubei Province, P.R.China
c) FIAMM Technologies, Inc.
One FIAMM Way
Waynesboro, GA 308830 – USA
d) AKUMA – AKUMA, a.s.
Nadrazni 84
293 62 Mlada Boleslav - Czech Republic

MSDS Responsible: Alberto Chilese c/o FIAMM S.p.A. (vedi sopra) – alberto.chilese@fiamm.com

2. HAZARDS IDENTIFICATION

Danger of Explosion
A mixture of explosive gases, containing hydrogen, can be produced inside the battery during charging. Naked flames, lit cigarettes, sparks or incandescent materials must be avoided in the immediate vicinity of the battery. Avoid short circuits between the terminals. Use antistatic materials when cleaning. Do not store the product in sealed container; maintain a fresh, well-ventilated environment protected from direct sunlight and away from heat sources.

Contact Danger
The dilute sulphuric acid solution, density 1.22 - 1.30 kg/l contained in the battery is corrosive and irritant to the eyes and skin.

Health Risks
Under normal conditions of use there is no danger, however, inside the battery are lead parts that could be harmful if ingested or breathed-in.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	% Weight	EINECS# - CAS#	Danger - Symbol	R/S Phrases	EU Limits
Metallic lead and lead compounds	60-70	Lead and lead compounds (active mass) 231-100-4/7439-92-1	Toxic - T	R20/22 R33 R61 R62 R52/53 S53 S45 S60 S61	Lead in Air: 0,15 mg/m^3 Lead in Blood: 60 µg/dl (Italy) 70 µg/dl (EU)
Sulphuric Acid solution	20-30	231-639-5 7664-93-9	Corrosive - C	R35 S2 S26 S30 S45	
Glass felt separator		266-046-0/ 65997-17-3	Harmful - Xn	R40 R36/37/38	
Thermoplastic Polymer	6-9				

4. FIRST AID MEASURES

The first aid measures described below are concerned with sulphuric acid exposure; the other components are solid and do not present substantial risk under normal conditions of use.

a) inhalation
Inhalation is not considered to be likely for this product. Remove the patient from the contaminated zone, to an area of fresh air. In the case of breathing difficulties seek medical advice.
b) Skin contact
Wash the effected zone immediately with copious amounts of water. Remove contaminated clothing. If the irritation persists seek medical advice.
c) Eye Contact
Wash with copious amount of water, while keeping the eyelid open. Seek medical advice immediately
d) Swallowing
Rinse the mouth with water. Give water to drink. Do not induce vomiting. Seek medical advice immediately.

- First aid resources for specific treatment to keep available: Eye wash bottles or emergency eye wash fountains, Shower.

5. FIRE FIGHTING MEASURES PREVENTION

The lead batteries are weakly combustible due to their construction that includes polymeric thermoplastic comprising 6-9% of the total weight. In instances of fire wear adequate means of respiratory protection.

a) APPROPRIATE EXTINGUISHING MEDIA.
Use dry powder, foam extinguisher, CO2.

b) INAPPROPRIATE EXTINGUISHING MEDIA
Water, which in contact with acid can develop heat.

6. ACCIDENTAL RELEASE MEASURES

a) Personal Precautions
In the case of electrolyte leak prevent contact with skin and eyes by wearing appropriate protective equipment. Rubber gloves, rubber boots, safety goggles/face shield and acid resistant clothing.
b) Environmental precautions
Keep the electrolyte and possible lead powder away from drains or surface water.
c) Procedure for containment and collection
Neutralise with Caustic Soda or Calcium Carbonate
Contain the spill with sand, earth or other absorbent material.
Do not use Water (sulphuric acid solution can react exothermically with water).

7. HANDLING AND STORAGE

Keep away from heat sources, sparks and open flames.
Do not store the product in sealed containers; maintain a in a well ventilated area away from direct sunlight and well away from sources of heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

With the exception of safety shoes, the other means of personal protection are all related to preventing contact with electrolyte. The solid components do not represent an appreciable risk factor (apart from voluntary or accidental ingestion of lead components).
Personal Protection:
Rubber gloves resistant to sulphuric acid. Safety Glasses (mask or visor), acid resistant clothing, rubber boots.

Title : **VALVE REGULATED LEAD ACID BATTERY**

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid state prismatic type
Electrolyte: Sulphuric Acid in aqueous Solution
Corrosive
Density 1.22 - 1.30 kg/l
Odourless
Non-flammable.

10. STABILITY AND REACTIVITY

The product is normally stable and inert.
A minute quantity of hydrogen and oxygen gas are produced when the units are left in a stable environment, avoid open flame sources and sparks in the proximity of the product.

11. TOXICOLOGICAL INFORMATION

Inapplicable to the finished product 'lead acid battery', applicable to its constituents (in normal condition of batteries there is no contact with this material):

Sulphuric Acid:

Acute toxicity data:
- LD50(oral, rat) 2140 mg/Kg
- LC50 (inhalation, rat) 510 mg/mc/2h

Acts intensely corrosive on skin and mucous membranes. The inhalation of mists may cause damage to the respiratory tract.

Lead and its inorganic compounds:

Exposure to lead and its compounds may cause damage to blood, nerves (central nervous system) and kidneys. Lead compounds are considered hazardous to reproduction (pregnant women should be protected from excessive exposure).

Glass felt separator:

This product has not been tested as a whole entity. Information on components of this product is provided below:
Acute: glass fibre is an irritant of the upper respiratory tract, skin and eyes.
Chronic: based on the data from the artificial exposure studies in animals, IARC (International Agency for Research on Cancer) classified glass wool as possibly carcinogenic to humans Group 2B (Car, Cat. 3 EEC Directive 97/69 CE 13th dec.1997).

12. ECOLOGICAL INFORMATION

The electrolyte solution reacts with water and organic substances causing damage to flora and fauna. The Batteries also contain soluble components of lead than can be harmful to aquatic environments.

13. DISPOSAL CONSIDERATIONS

Lead batteries are classified "dangerous waste" and the user is obliged by law to arrange for their disposal or recycling. It is prohibited to abandon this type of refuse to the environment.
For additional information and to locate your nearest collection centre contact the local consortium for the disposal of used and scrap lead containing batteries. FIAMM Batteries are 100% recyclable.

14. TRANSPORT INFORMATION

Land Transport (ADR/RID, U.S. DOT)

UN N°:	UN2800
Classification ADR/RID:	Class 8
Proper Shipping Name:	BATTERIES, WET, NON SPILLABLE electric storage
Packing Group ADR:	-
Label required:	Corrosive

ADR/RID: New batteries are excepted from all ADR/RID (special provision 598).
U.S. DOT: Batteries which have met the test requirements for "non spillable wet electric storage batteries", as provided in 49 CFR 173.159(d), are non regulated by DOT when protected against short circuits and securely packaged.

Sea Transport (IMDG Code)

UN N°:	UN2800
Classification:	Class 8
Proper Shipping Name:	BATTERIES, WET, NON SPILLABLE electric storage
Packing Group:	-
EmS-FIRE:	F-A
EmS-SPILL:	S-B
Label required:	Corrosive

If non-spillable batteries meet the Special Provision 238, they are excepted from all IMDG Code provided that the batteries' terminals are protected against short circuits.

Air Transport (IATA-DGR)

UN N°:	UN2800
Classification:	Class 8
Proper Shipping Name:	BATTERIES, WET, NON SPILLABLE electric storage
Packing Group:	-
Label required:	Corrosive

If non-spillable batteries meet the Special Provision A67, they are excepted from all IATA DGR provided that the batteries' terminals are protected against short circuits.

15. REGULATORY INFORMATION

Symbols

Explosive Gas

16. OTHER INFORMATION

R/S Phrases (indicative since this is not directly applicable to the product, but the electrolyte contained therein which represents the major risk of the product):
R35 Can produce severe chemical burns.
S2 Keep out of reach of Children.
S16 Keep away from sparks or naked flame - No smoking.
S26 In case of contact with eyes wash immediately with abundant quantity of water and seek medical advice.
S30 Do not put water on the product.
S45 In case of accident or if you feel unwell, seek medical advice immediately.

Read the instructions for use contained in the guarantee/warrantee certificate.

The information contained herein is accurate to the best of our knowledge as of the date of writing given above. The references refer only to the product indicated and do not constitute a guarantee of quality. The user is held responsible and must ensure the maintenance and completeness of such information with respect to the products specific final application.

INFORMATION ONLY - Please read Section X

SECTION I - Product and Manufacturer Identity

Product Identity:

Revision Date: May 7, 2004
Supersedes: June 29, 2001

Sealed Lead Battery

Cyclon®, Genesis®, SBS, SBS J, Hawker XE™ or Odyssey®

Manufacturer's Name and Address:
EnerSys Energy Products Inc. (formerly Hawker Energy Products Inc.)
617 North Ridgeview Drive
Warrensburg, MO 64093-9301

Emergency Telephone Number:
(660) 429-2165
Customer Service Telephone Number:
800-964-2837

SECTION II - Ingredients

Hazardous Components	CAS #	OSHA PEL-TWA	% (By weight)
Lead	7439-92-1	50μg/m^3	45 - 60 %
Lead Dioxide	1309-60-0	50μg/m^3	15 - 25 %
Sulfuric Acid Electrolyte	7664-93-9	1.0 mg/m^3	15 - 20 %
Non-Hazardous Materials	N/A	N/A	5 - 10 %

SECTION III - Physical/Chemical Characteristics

Boiling Point - N/A
Vapor Pressure (mm Hg.) - N/A
Solubility in Water - N/A
Specific Gravity (H_2O=1) - NA
Melting Point - N/A
Appearance & Color - N/A

SECTION IV - Fire & Explosion Hazard Data

Flash Point (Method Used): N/A Flammable Limits: N/A LEL: N/A UEL: N/A
Extinguishing Media: Multipurpose Dry chemical, CO_2 or water spray.
Special Fire Fighting Procedures: Cool Battery exterior to prevent rupture. Acid mists and vapors in a fire are toxic and corrosive.
Unusual Fire and Explosion Hazards: Hydrogen gas may be produced and may explode if ignited. Remove all sources of ignition.

SECTION V- Reactivity Data and Shipping/Handling Electrical Safety

Conditions to Avoid: Avoid shorting, high levels of short circuit current can be developed across the battery terminals. Do not rest tools or cables on the battery. Avoid over-charging. Use only approved charging methods. Do not charge in gas tight containers.

Requirements for Safe Shipping and Handling of Cyclon® Cells:
Warning – Electrical Fire Hazard – Protect Against Shorting

- Terminals can short and cause a fire if not insulated during shipping.
- Cyclon® product must be labeled "NONSPILLABLE" during shipping. Follow all federal shipping regulations. See section IX of this sheet and CFR 49 Parts 171 through 180, available anytime online at wwww.gpoaccess.gov.

Requirements for Shipping Cyclon® Product as Single Cells

- Protective caps or other durable inert material must be used to insulate each terminal of each cell unless cells are shipping in the original packaging from EnerSys, in full box quantities.
- Protective caps are available for all cell sizes by contacting EnerSys Customer Service at 1-800-964-2837.

Requirements for Shipping Cyclon® Product Assembled Into Multicell Batteries

- Assembled batteries must have short circuit protection during shipping.
- Exposed terminals, connectors, or lead wires must be insulated with a durable inert material to prevent exposure during shipping.

SECTION VI - Health Hazard Data

Routes of Entry: N/A
Emergency & First Aid Procedures:

Health Hazards (Acute & Chronic): N/A
Battery contains acid electrolyte which is absorbed in the separator material. If battery case is punctured, completely flush any released material from skin or eyes with water.

SECTION VI - Health Hazard Data (Continued)

Proposition 65:	Warning: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. Wash hands after handling.

SECTION VII - Precautions for Safe Handling & Use

Steps to be taken in case material is released or spilled:	Avoid contact with acid materials. Use soda ash or lime to neutralize. Flush with water.
Waste Disposal Method:	Dispose of in accordance with Federal, State, & Local Regulations. Do not incinerate. Batteries should be shipped to a reclamation facility for recovery of the metal and plastic components as the proper method of waste management. Contact distributor for appropriate product return procedures.

SECTION VIII - Control Measures - Not Applicable

SECTION IX – Transportation, Shipping and Handling

EnerSys Energy Products Inc. batteries are starved electrolyte batteries which means the electrolyte is absorbed in the separator material. The batteries are also sealed. As of September 30, 1995, EnerSys Energy Products Inc. batteries were classified as "nonspillable batteries", and as such are not subject to the full requirements of 49 CFR § 173.159. The previous exempt classification, "Dry Batteries, Not Restricted" was discontinued effective September 30, 1995. "Nonspillable" batteries are excepted from the regulation's comprehensive packaging requirements if the following conditions are satisfied: (1) The battery is protected against short circuits and is securely packaged. (2) For batteries manufactured after September 30, 1995, the battery and outer packaging must be plainly and durably marked "NONSPILLABLE" or "NONSPILLABLE BATTERY". (3) The battery is capable of withstanding vibration and pressure differential tests specified in 49 CFR § 173.159(d). (4) At a temperature of 55 ºC (131ºF), the battery must not contain any unabsorbed free-flowing liquids, and is designed so that electrolyte will not flow from a ruptured or cracked case.

EnerSys Energy Products Inc. batteries have been tested by WYLE Scientific Services & Systems Laboratories Group and determined to be in compliance with the vibration and pressure differential tests contained in 49 CFR § 173.159(d), and therefore as of September 30, 1995, excepted from the DOT requirements set forth in 49 CFR § 173.159, other than paragraph (d).

Battery shipments from EnerSys Energy Products Inc. Warrensburg location, will be properly labeled in accordance with applicable DOT regulations.
Packaging changes performed at other locations may require additional labeling, since in addition to the battery itself containing the required marking, the outer packaging of the battery must also contain the required marking: "NONSPILLABLE" OR "NONSPILLABLE BATTERY". Because the batteries are classified as "Nonspillable" and meet the three conditions above, [from § 173.159(d)] they do not have an assigned UN number nor do they require additional DOT hazard labeling.

The regulation change effective September, 1995, was to clarify and distinguish to shippers and transporters, all batteries that have been tested and determined to be in compliance with the DOT Hazardous Material Regulations, the International Civil Aeronautics Organization (ICAO), and the International Air Transport Association (IATA) Packing Instruction 806 and Special Provision A67, and therefore excepted from all other requirements of the regulations and classified as a "nonspillable battery".

Per 42 USC Section 14322 (US Code Title 42 – The Public Health and Welfare), packaging must be marked with the following: “Contains Sealed Lead Battery” and “Battery Must Be Recycled”.

SECTION X - Additional Information

The EnerSys Energy Products Inc. sealed lead acid battery is determined to be an "article" according to the OSHA Hazard Communication Standard and is thereby excluded from any requirements of the standard. The Material Safety Data Sheet is therefore supplied for informational purposes only.

The information and recommendations contained herein have been compiled from sources believed to be reliable and represent current opinion on the subject. No warranty, guarantee, or representation is made by EnerSys Energy Products Inc., as to the absolute correctness or sufficiency of any representation contained herein and EnerSys Energy Products Inc. assumes no responsibility in connection therewith, nor can it be assumed that all acceptable safety measures are contained herein, or that additional measures may not be required under particular or exceptional conditions or circumstances.

N/A or Not Applicable - Not applicable for finished product used in normal conditions.

Informational MSDS Part Number 2602-0043 Rev. 1 (05/07/04)

Panasonic®

BATTERY SALES GROUP

MATERIAL SAFETY DATA SHEET

LC SEALED LEAD ACID BATTERY SERIES

Section I: Chemical Product and Company Identification

Product Identity: Sealed Lead Acid Battery

Trade Name: Panasonic LC Valve Regulated Lead Acid Battery Series

Distributor:
Panasonic Industrial Company - Battery Sales Group
Two Panasonic Way/7A-1, Secaucus, New Jersey 07094

Manufacturer:
Matsushita Battery Industrial
Osaka, 570, Japan

For Chemical Emergency
Spill, Leak, Fire, Exposure or Accident
Call CHEMTREC – Day or Night - 24 hours
1-800-424-9300
Outside the USA: 1-703-527-3887 (collect)

Telephone Number for General Information
Toll Free 1-800-793-3772
Internet: www.panasonic.com/batteries

Section II: Hazardous Ingredients / Identity Information

Component	Common Name	Chemical Name	Approximate % by wt. or vol.	OSHA PEL	ACGIH TLV	CAS#
Lead	(Negative Electrode and Grid)	Pb	48~53 wt%	0.05 mg/m^3	0.15 mg/m^3	7439-92-1
Lead Oxide	(Positive Electrode)	PbO_2	23~26%	0.05 mg/m^3	0.15 mg/m^3	1309-60-0
Lead Sulfate	(Positive and Negative Electrode)	$PbSO_4$	< 1. wt%	0.05 mg/m^3	0.15 mg/m^3	7446-14-2
Sulfuric Acid	(Electrolyte)	H_2SO_4	7~10 wt%	1.0 mg/m^3	1.0 mg/m^3	7664-93-9

Percentages of components are dependant both on the model of the battery and state of charge/discharge of the battery. Sulfuric Acid is reportable under Sections 302, 311, 312 and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA). Reportable Quantity: 500 lbs for sulfuric acid and 10,000 lbs for lead. See Section XII, Page 3 for more information.

Overall Chemical Reaction: $PbO2 + Pb + 2H_2SO_4 \rightleftharpoons 2PbSO_4 + 2H_2O$

Note: Panasonic Sealed Lead Acid batteries are a sealed, non-spillable design. Under normal use and handling the customer has no contact with the internal components of the battery or the chemical hazards. Under normal use and handling these batteries do not emit regulated or hazardous substances. Warning: Battery terminals/posts and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands thoroughly after working with batteries and before eating, drinking or smoking.

Section III: Physical / Chemical Characteristics

Boiling Point:	Electrolyte 110°C - 112°C
Vapor Pressure:	Electrolyte 11.7 mm Hg. at 20°C
Vapor Density (AIR = 1):	Electrolyte 3.4
Solubility in Water:	Lead, Lead Oxide and Lead Sulfate are insoluble in water. Sulfuric Acid is 100% soluble in water.
Appearance and Odor:	The entire battery is a solid article consisting of an opaque plastic case with two protruding lead terminals. The battery is odorless. Sulfuric Acid is a liquid.
Specific Gravity (H2O = 1)	Electrolyte 1.300

Health Hazard Information (Acute and Chronic) - Sulfuric Acid only.

The International Agency for Research on Cancer (IARC) has classified “strong inorganic acid mist containing sulfuric acid” as a Category I carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within the battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may however result in the generation of sulfuric acid mist.

Routes of Entry:	By inhalation (mist), skin and eyes, ingestion.
Acute:	Tissue destruction on contact. May cause 2nd and 3rd degree burns or blindness. Ingestion will cause corrosive burns on contact. May be fatal if swallowed.
Chronic:	Inhalation of mists may cause upper respiratory irritation.
Signs and Symptoms:	Irritation and burning of exposed tissues.
Medical Conditions:	Respiratory disorders may be aggravated by prolonged inhalation of mists.

Section IV: Emergency and First Aid Procedures

Battery Electrolyte

Inhalation:	Remove to fresh air. Give oxygen or artificial respiration if needed. **Get immediate medical attention.**
Eye Contact:	Flush with plenty of water for at least 15 minutes. **Get immediate medical attention.**
Skin Contact:	Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes.
Ingestion:	Do not induce vomiting. Dilute by giving large quantities of water. If available give several glasses of milk. Do not give anything by mouth to an unconscious person. **Give CPR if breathing has stopped. Get immediate medical attention.**

Section V: Fire and Explosion Hazard Data

Flash Point:	Not Applicable
Flammable Limits:	Lower 4.10% (Hydrogen gas) Upper 74.20%
Extinguishing Media:	Dry chemical, foam, halon or CO_2.

Special Fire Fighting Procedures:
If batteries are on charge, turn off power. Use positive pressure, self-contained breathing apparatus in fighting fire. Water applied to electrolyte generates heat and causes it to splatter. Wear acid resistant clothing. Ventilate area well.
Unusual Fire and Explosion Hazards:
Hydrogen and oxygen gases are generated in cells during normal battery operation or when on charge. (Hydrogen is flammable and oxygen supports combustion). These gases enter the air through the vent caps during battery overcharging. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries. Ventilate area well.

Section VI: Reactivity Data

Stability:	Stable under normal conditions.
Conditions to Avoid:	Sparks and other sources of ignition. Prolonged overcharge. Fire or explosion hazard due to possible hydrogen gas generation.

Incompatibility:
Combination of sulfuric acid with combustibles and organic materials may cause fire and explosion. Avoid strong reducing agents, most metals, carbides, chlorates, nitrates, picrate.
Hazardous Decomposition Products: Hydrogen gas may be generated in an overcharged condition, in fire or at very high temperatures. CO, CO_2 and sulfur oxides may emit in fire.
Hazardous polymerization will not occur.

Section VII: Precautions for Safe Handling and Use

Steps to be Taken in Case of Broken Battery Case or Electrolyte Leakage:
Neutralize any electrolyte or exposed internal battery parts with soda ash (sodium bicarbonate) until fizzing stops. Keep untrained personnel away from electrolyte and broken battery. Place broken battery and clean-up materials in a plastic bag or non-metallic container. Dispose of clean-up materials as a hazardous waste. Ventilate area as hydrogen gas may be given off during neutralization.
Waste Disposal Method:
Federal and State laws prohibit the improper disposal of all lead acid batteries. The battery end users (owners) are responsible for their batteries from the date of purchase through their ultimate disposal. The only legally acceptable method of disposal of lead acid batteries is to recycle them at a Resource Conservation and Recovery Act (RCRA) approved secondary lead smelter. The Panasonic SAV-LEAD Recycling Program allows for the recycling of lead-acid batteries in an environmentally sound manner. For more information on the SAV-LEAD Recycling Program call toll-free, 1-800-SAV-LEAD (1800-728-5323). These batteries are chemically identical to common automotive starter batteries and can be recycled with automotive lead-acid batteries.
HAZARDOUS WASTE CODES: D002, D008.
Precautions to be Taken in Handling, Storing and Transportation:
Store in cool, dry area away from combustible materials. Do not store in sealed, unventilated areas. Avoid overheating and overcharging.
Other Precautions:
Do not charge in unventilated areas. Do not use organic solvents or other than recommended chemical cleaners on battery.

Section VIII: Control Measures / Personal Protection

General:
Normal room ventilation is sufficient during normal use and handling. Recommend 2 to 3 room air changes per hour to prevent buildup of hydrogen gas.
Personal Protective Equipment (In the Event of Battery Case Breakage):
Always wear safety glasses with side shields or full face shield.
Use rubber or neoprene gloves.
Wear acid resistant boots, apron or clothing.
Work/Hygienic Practices:
Remove jewelry, rings, watches and any other metallic objects while working on batteries. All tools should be adequately insulated to avoid the possibility of shorting connections. DO NOT lay tools on top of battery. Be sure to discharge static electricity from tools and individual person by touching a grounded surface in the vicinity of the batteries, but away from cells. Batteries are heavy. Serious injury can result from improper lifting or installation. DO NOT lift, carry, install or remove cells by lifting or pulling the terminal posts for safety reasons and because terminal posts and post seals may be damaged. DO NOT wear nylon clothes or overalls as they can create static electricity. DO KEEP a fire extinguisher and emergency communications device in the work area.
IMPORTANT:
Wash hands thoroughly after working with batteries and before eating, drinking or smoking.

Section IX: Regulatory Information

NFPA Hazard Rating for Sulfuric Acid:
Flammability (Red) = 0 Health (Blue) = 3 Reactivity (Yellow) = 2

Section X: Transportation Information

Identification and Proper Shipping Name:
Batteries – Wet, Non-Spillable, Electric Storage, UN 2800.
DOT - Unregulated, meets the requirements of 49 CFR 173, 159 (d).
IATA/ICAO - Unregulated, meets the requirements of Special Provision A67.
IMO - Unregulated.
***For all modes of transportation, each battery and outer package must be labeled: "Non-Spillable" or "Non-Spillable Battery." This label must be visible during transportation. * Batteries must be securely packed to prevent short-circuiting.**

Section XI: California Proposition 65 Information

The State of California has determined that certain battery terminals contain lead and lead compounds, *and handling this product may also expose you to sulfuric acid mist*, chemicals known to the State of California to cause cancer and reproductive harm. IMPORTANT: WASH HANDS THOROUGHLY AFTER WORKING WITH BATTERIES AND BEFORE EATING, DRINKING OR SMOKING.

Section XII: Other Information - Notice to Readers

General Product Description – LC VRLA Batteries
Panasonic LC Batteries are **sealed** (valve regulated) non-spillable lead-acid batteries with pasted lead-calcium plates. The electrolyte is held captive in an Absorbed Glass Mat (AGM) separator between plates that immobilize the electrolyte in the cell. AGM separator material is a highly porous, absorbent micro fiberglass mat mixed with polymer fibers. There is no "free" electrolyte to leak out if the cell is tipped over (cell case and cover are sealed together) or if the cell is punctured. The AGM separator material immobilizes the electrolyte and creates a situation where the spill of electrolyte is highly unlikely. Typical accidents where a battery case is punctured results in a slight drip or a slow ooze of material out of the cell that cannot be characterized as a spill.

Panasonic LC VRLA batteries are also different from conventional **unsealed** (wet/flooded) cells because they contain only a minimum amount of electrolyte. VRLA battery electrolyte is a dilute mixture of sulfuric acid in water, which typically has a specific gravity between 1.270 and 1.3. Specific Gravity is a measure of the density of a liquid as compared to that of water, which has a specific gravity of 1.000. Pure sulfuric acid has a specific gravity of 1.835.

NOTE: Panasonic LC batteries do not contain a gel electrolyte.

General Product Description - LC VRLA Batteries (continued)

During normal battery installation, operation and maintenance, the user has NO contact with the internal components of the battery or its internal hazardous chemicals.

Panasonic LC batteries are UL recognized under the file number: Matsushita Electric Industrial Co. Ltd., Matsushita Electric Corp. of America, File #MH13723, 1 Panasonic Way, Secaucus, NJ 07094.

NOTICE TO READERS: DISCLAIMER

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein. This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his own particular use. Matsushita Battery Industrial Co., Ltd., Panasonic Industrial Company and Panasonic Sales Companies do not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information nor do we offer warranty against patent infringement. Cell and battery product(s) or information contained herein are subject to change without notice. No liability is assumed as a result of their use or application.

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Preparer: Charles P. Monahan Director, Regulatory Compliance 201-392-6464
Printed in the U.S.A.

Supplemental Information on Panasonic Valve-Regulated Lead Acid Batteries

Transportation

All Panasonic valve-regulated lead acid batteries are considered "non-spillable" for purposes of transportation by the U.S. Department of Transportation (DOT), International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA) and the International Maritime Dangerous Goods regulations (IMDG). They are considered "non-spillable" by DOT by passing the Vibration Test and Pressure Differential Test as required in 49 CFR 173.159(d). They are also considered to be "non-spillable" by both ICAO and IATA by exceeding the requirements of Special Provisions "A67" as defined in their 1998 Handbooks.

Our batteries are authorized for transportation on deck or under deck storage on either a passenger or cargo vessel by passing the Vibration and Pressure Differential Tests as described in the International Maritime Dangerous Goods Regulations (IMDG).

To transport these batteries as "non-spillable" they must be shipped in a condition that would protect them from short-circuits and be securely packaged so as to withstand conditions normal to transportation. For transportation by a consumer, in or out of a device, they are unregulated thus requiring no additional special handling or packaging.

All of our lead acid batteries and their outside packaging, manufactured after September 30, 1995 are labeled "NON-SPILLABLE" per 49 CFR 173.159(d). If you repackage our batteries either as batteries or as a component of another product you must label the outer package "NON-SPILLABLE" per 49 CFR 173.159(d).

Assure Proper Recycling!

Valve-Regulated Lead Acid batteries destined for recycling can be managed under the federal *Universal Waste Rule* codified at 40 CFR Part 273.

In the event of disposal, dispose only in accordance with federal, state and local regulation. Batteries generated as a waste are subject to the Resource Conservation and Recovery Act (RCRA) as a D008 (lead) hazardous waste.

Panasonic VRLA Recycling Program

The Panasonic 1-800-SAV-LEAD Recycling Program for the collection and recycling of valve-regulated lead acid batteries (VRLA) covers all Panasonic Valve-Regulated Lead Acid Batteries. The proper disposal of spent VRLA batteries is becoming more of a critical issue, both from the viewpoint of environmental stewardship and from compliance with federal and state environmental regulations. Panasonic recognizes the burdens and responsibilities that have been placed on our customers to properly dispose of spent VRLA batteries and is proud to offer this voluntary nationwide battery recycling program.

Federal and State Requirements for Proper Disposal

Federal and State laws prohibit the improper disposal of all lead acid batteries. The battery end users (owners) are responsible for their batteries from the date of purchase through their ultimate disposal. The only legally acceptable method of disposal of lead acid batteries is to recycle them at Resource Conservation and Recovery Act (RCRA) approved secondary lead smelter. This Panasonic 1-800-SAV-LEAD Recycling Program will allow for you to arrange for the recycling of your VRLA batteries from anywhere in the United States. The Program will accept Panasonic and other VRLA batteries regardless of manufacturer. Panasonic will handle all VRLA batteries returned in an environmentally sound manner designed to comply with all applicable Federal and State laws and regulations. Panasonic will send batteries only to fully-permitted secondary lead smelters that we believe meet the highest environmental standards. Once the VRLA batteries are received by Panasonic, the cost to transport the batteries to the secondary lead smelter and the actual recycling costs will be borne by Panasonic.

See the next page for How the 1-800-SAV-LEAD Recycling Program Works

Supplemental Information on Panasonic Valve-Regulated Lead Acid Batteries (Cont.)

How the 1-800-SAV-LEAD Recycling Program Works

1) We encourage all of our customers to serve as VRLA collection centers for your customers, thereby establishing a reverse distribution network between the end user and the secondary lead recycling facility.
2) All shipments to our national consolidation facility must be prepaid. No freight collect shipments will be accepted. All freight collect and non-VRLA batteries will be returned to the shipper.
3) Panasonic will maintain on file all necessary documentation for EPA reference. A copy will be provided upon request.
4) All batteries must be shipped, prepaid to Ebco Battery Company that serves as our national consolidation facility. (See *exception* below).

SHIPPING ADDRESS:
Ebco Battery Company
4017 Warm Springs Road
Columbus, Georgia 31909

5) Only VRLA batteries that meet the U.S. Department of Transportation (DOT) "NON-SPILLABLE" (49 CFR 173.159d) requirements will be accepted by this program.
6) Panasonic reserves the right to alter or discontinue this program at any time.

Packaging Requirements

1) All VRLA batteries must be fully discharged and packaged in a manner as to insure safe handling and conform to all applicable DOT regulations. (49 CFR 173.159d). A dab of silicon caulking or non-conductive tape on each terminal will ensure that no direct shorts occur during shipment.
2) VRLA battery shipments should be made in pallet quantities whenever possible.
3) Palletized shipments should be secured with metal bands or poly-wrapped with stack height limited to four (4) feet.
4) VRLA batteries shipped on pallets should be of uniform size or be stacked with the larger batteries on the bottom.
5) VRLA batteries should be stacked upright in a head-to-base arrangement. Each layer should be separated by cardboard to prevent accidental shorting.
6) Smaller quantities of VRLA batteries may be shipped via standard UPS. Be sure that each box does not exceed the UPS weight limit of 70 lbs. A dab of silicon caulking or non-conductive tape on each terminal will ensure that no shorts occur during shipment.
7) The outside of every pallet and individual box must be labeled "NON-SPILLABLE" as required by DOT regulations. This label must be visible during transportation.

Exception:

Full-Truck-Loads – All full-truck-load shipments of VRLA batteries must be scheduled 48 hours in advance. To schedule shipments to our consolidation site, please be sure to fax a scheduling request (including contact name and phone number) to Ebco Battery Company at fax: (706) 569-6774.

Consumer Users of Panasonic VRLA Batteries

All Panasonic VRLA batteries are chemically identical to common automotive starter batteries and can be returned to any site that accepts automotive lead acid batteries for recycling. Examples include retailers of automotive batteries, automotive service centers, scrap metal dealers, etc…

For additional information on this program or information on how to recycle other Panasonic batteries please call your local Panasonic Battery Sales Group sales office.

Panasonic Batteries

Panasonic Industrial Company
A Division of Matsushita Electric Corporation of America
Two Panasonic Way
Secaucus, NJ 07094
Toll Free: 877-726-2228
Fax: 847-468-5750
e-mail: oembatteries@panasonic.com
Internet: www.panasonic.com/batteries

Notes - Notas - Remarques - Note

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Punto di contatto indicato in adempimento ai fini delle direttive e regolamenti UE applicabili:
Contact details according to the relevant European Directives and Regulations:
GEWISS S.p.A. Via A.Volta, 1 IT-24069 Cenate Sotto (BG) Italy tel: +39 035 946 111 E-mail: qualitymarks@gewiss.com

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