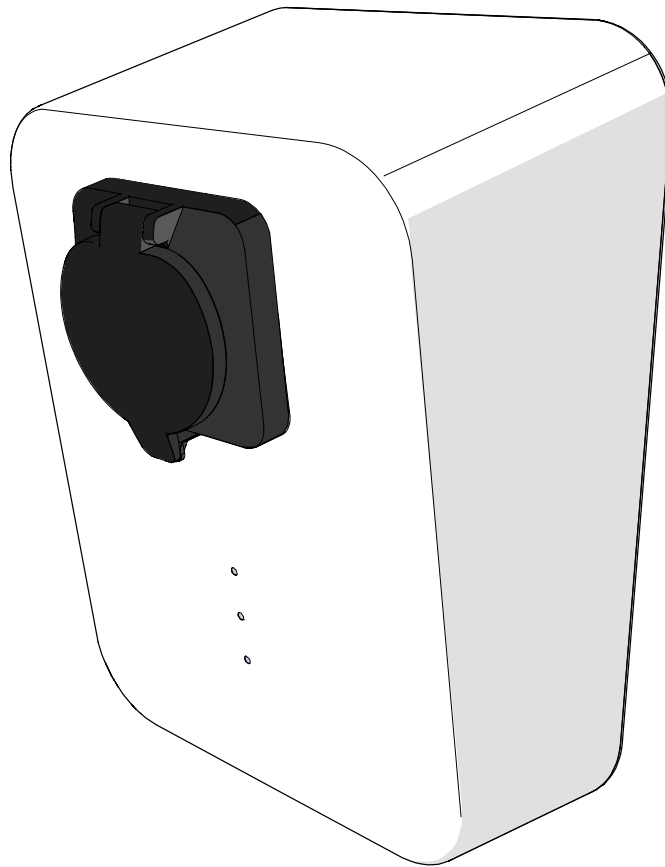




Charlie Electric Vehicle Charging Station



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Introduction






This manual provides installation, operating and maintenance instruction for Charlie electric vehicle charging station.


This user manual contains all the information necessary for safe installation and operation of the electric vehicle charging station. Electrical installations and connections must be carried out only by a qualified electrician and in compliance with local regulations. Read the instructions carefully before installation and use and keep the manual for future reference.


This manual is also available as online version at: ***Address and QR code will be updated later**


Safety

Safety signs used in the instructions


	Danger: Indicates a hazard that will result in death or serious injury if not avoided.
	Warning: Indicates a hazard that can result in death or serious injury if not avoided.
	Indicates a hazard that can result in damage to property or moderate injury.

 **Danger:** The electric vehicle charging station is not intended for use by children or by persons with reduced sensory, physical or mental capabilities, or whose lack of knowledge and experience do not ensure safe operation of the device.

 **Danger:** The electric vehicle charging station is meant only for charging electric vehicles.

 **Danger:** The electric vehicle charging station should only be used in a technically faultless condition and in compliance with the instructions in the installation and user guide.

Installation competence requirements

 Installation must be performed by a qualified electrician. Appropriate tools and testing equipment are required.

Communication with property owners and other relevant parties

Before the installation, communicate with the property owner or supervisor about the electrical systems of the site. The following items must be clarified before starting the work:

- Electrical features of the site such as the load capacities of the power supplies
- Location of the electrical distribution board of the site
- Availability of separating circuit breaker arrangements for charging station
- If the site requires an access permit, arrange it with the property owner or manager before installation

Work and electrical related safety

Safe work practices are mandatory. Only proper and described tools are allowed to be used. Personal protective equipment (PPE) is mandatory. At minimum, appropriately protective shoes, gloves and eye protection must be worn.

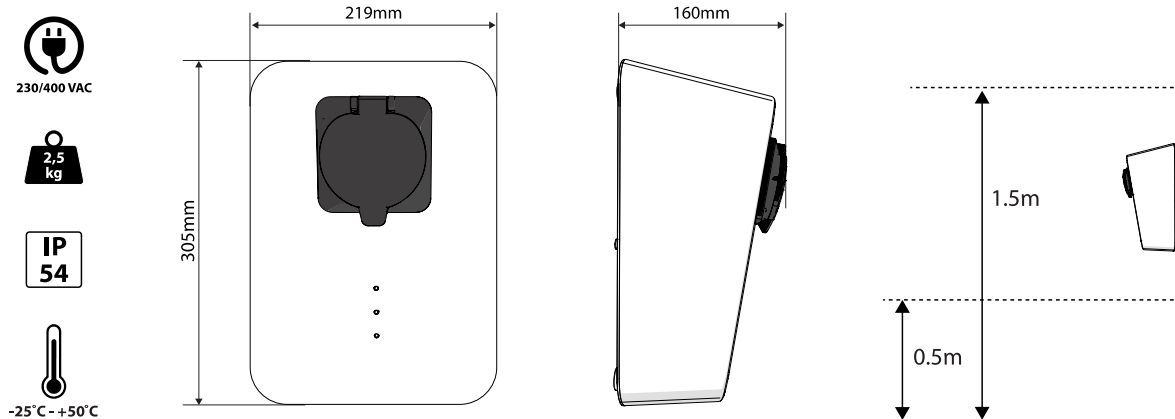


Intended use




Innohome Charlie is a wall mounted mode-3 electric vehicle charging station designed for charging electrically powered vehicles.

Product parts

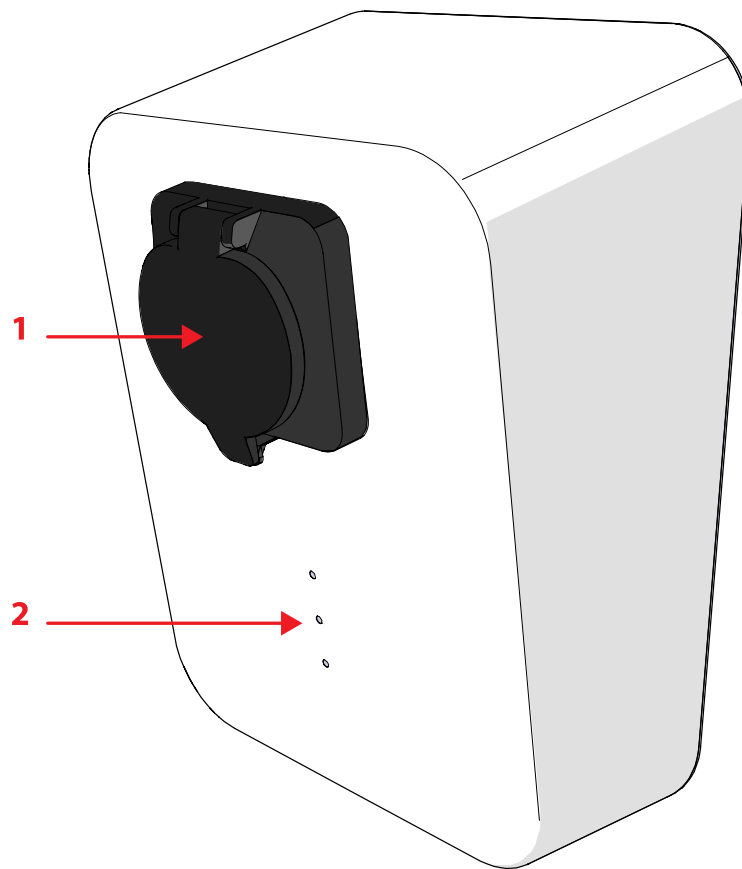
Charging station product details



Charlie VIN Plate

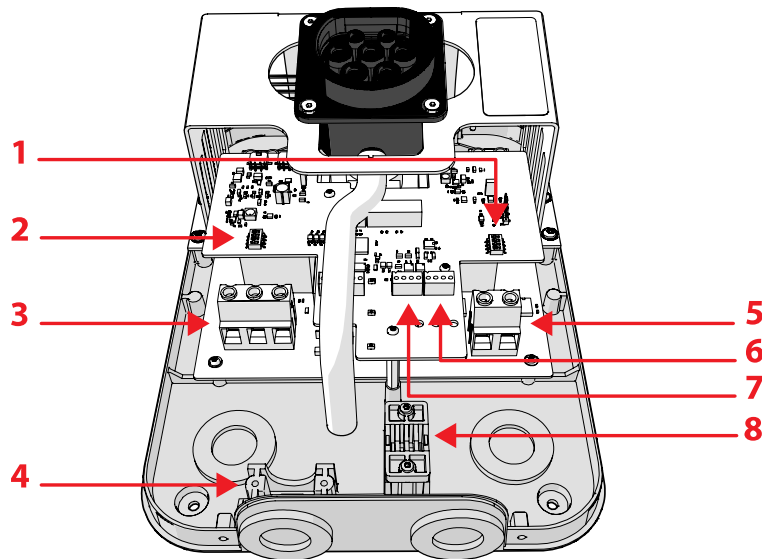
inno home	inno home	inno home
Charlie-1	Charlie-2	Charlie-3
230V~ 32A 50Hz 1/N/PE -25 to 50 °C	230V~ 32A 50Hz 1/N/PE -25 to 50 °C	230/400V~ 32A 50Hz 3/N/PE -25 to 50 °C
EN61851-1 IEC61439-7 AEVCS IP54	EN61851-1 IEC61439-7 AEVCS IP54	EN61851-1 IEC61439-7 AEVCS IP54
S/N: 000001 DA0314-02-A 2020-07-15	S/N: 000001 DA0314-01-A 2020-07-15	S/N: 000001 DA0314-00-A 2020-07-15
Innohome Oy PO Box 21 02601 Espoo Finland	Innohome Oy PO Box 21 02601 Espoo Finland	Innohome Oy PO Box 21 02601 Espoo Finland
		

Charging station main parts



- 1. Type 2 charging cable socket
- 2. LED indicators

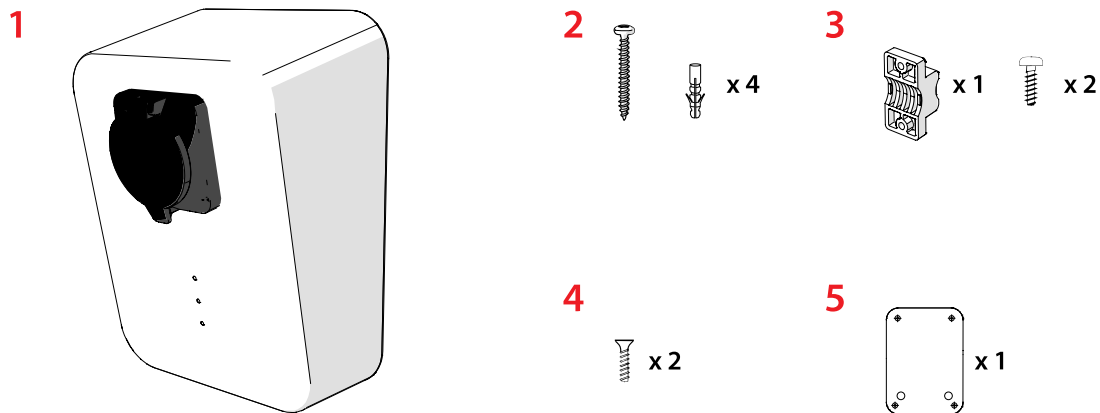
Charlie internal structure



1. DIP Switch S1 (see: Installation - Dip switch setting alternatives)
2. DIP Switch S2 (see: Installation - Dip switch setting alternatives)
3. 1-phase contacts (L1, N, PE)
4. Strain relief for bottom-side cable inlet
5. 3-phase contacts (L2, L3) (Charlie-3)
6. Load Balancing connector (Charlie-2 and Charlie-3)
7. External input connector
8. Strain relief for back-side cable inlet

Delivery contents

Before installation, make sure you have all the needed parts and accessories of the product. If you notice missing items, contact the reseller or product importer immediately. In the case of missing or broken parts, only replacement parts provided by the product reseller, importer or vendor are allowed to be used.



1. Charlie electric vehicle charging station
2. Wall mounting screws (Steel zinc plated full thread pan head TX25 ZP 4,5X30) and wall plugs (6X30 WIP)
3. Strain relief and installation screws (Pan head BN 20138).
4. Screws for closing the charging station cover (Hexalobular socket flat BN 2041)
5. Installation template

Warranty

Charlie electric vehicle charging station is meant to be used as described in this installation and user guide.

The warranty and liability exclude damage resulting from:

- Incorrect or inappropriate installation, setup or use of the product
- Neglect of instructions concerning transportation, installation, use, or maintenance
- Structural or electronic modifications, or changes made to the charging station that are not in accordance with the guidance provided in this document

Before installation

Installation checks




Before installation, make sure of the following:

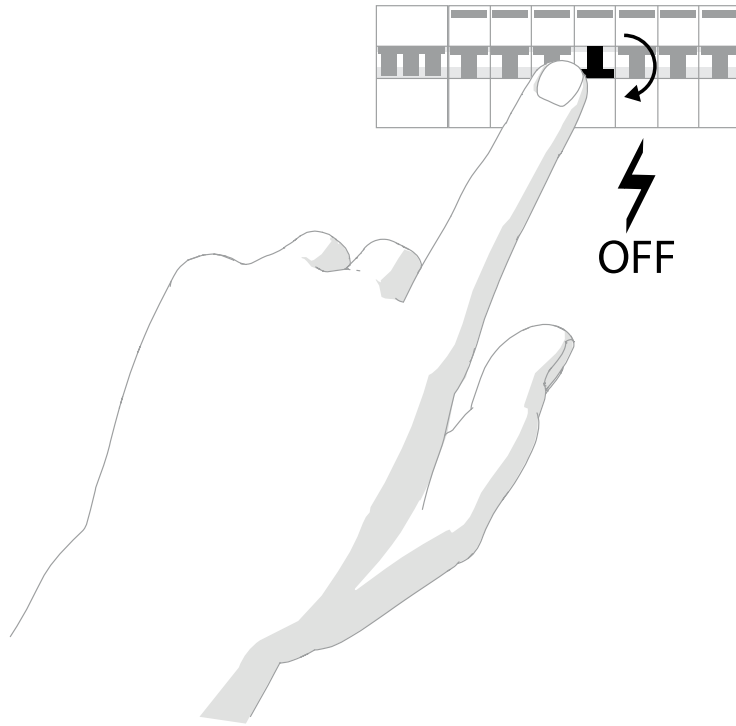
- Location for the electric vehicle charging station is already agreed with the property owner or supervisor
- The power supply cabling is rated according planned installation and local regulations
- Needed parts and accessories of the product are available
- Appropriate tools and accessories needed during installation are available
- Power supply is disconnected
- For current leakage protection, a Type-A RCD (Residual Current Device) is required for vehicle charging supply.
If not already available, it must be installed

Needed tools

- Comprehensive hand tool set including insulated screwdrivers
- Informative warning tags during the separation of the power supply, and preventive lock or other preventive measure for circuit breakers
- Power tools; an electrical power drill with drill bits
- Electrical testing tools:
 - Standard compliant multimeter (with accessories)
 - Standard compliant earth resistance meter (with accessories)
- Charging station installation template (included in the product sales package)

Disconnecting power supply

 **Danger:** Make sure the power supply for the charging station is disconnected before starting the installation.



To avoid both personal and equipment hazards, follow these installation steps:

1. Make sure that the power supply is disconnected by opening the circuit breaker (power supply OFF).
 - a. Lock the circuit breaker to open position (power supply OFF) by using a dedicated lock accessory or use other preventive means for reconnection prevention.
 - b. Place a prohibition sign stating "Do not connect" to the locked switch.
2. Make sure there is no power supply at the power supply cabling. Measure with multimeter.

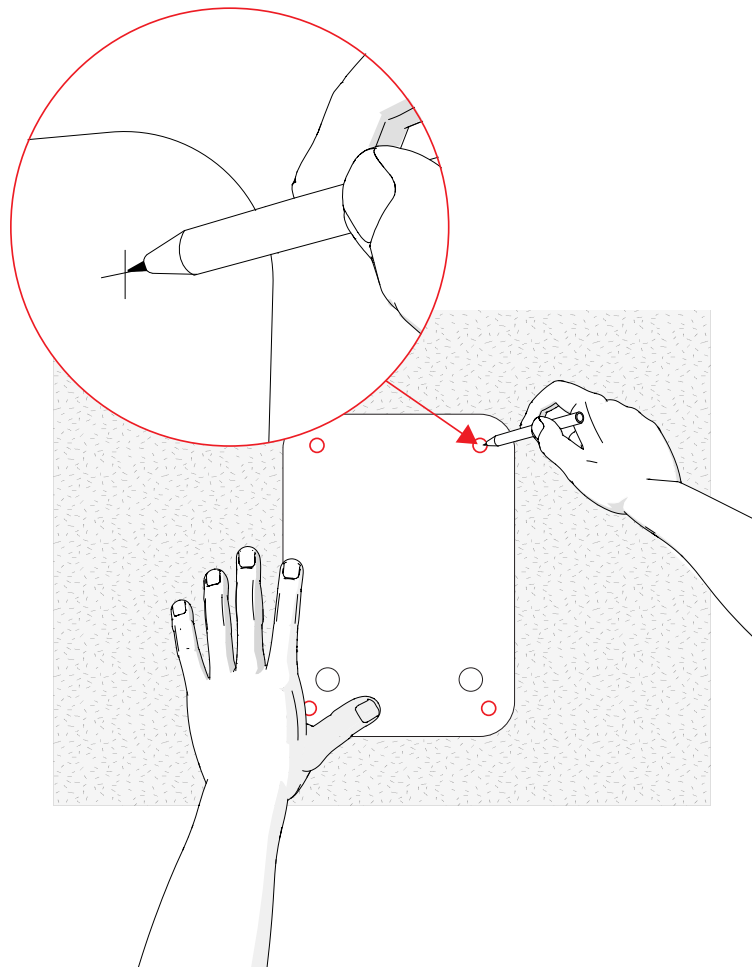
Installation

Wall mounting and electrical connections

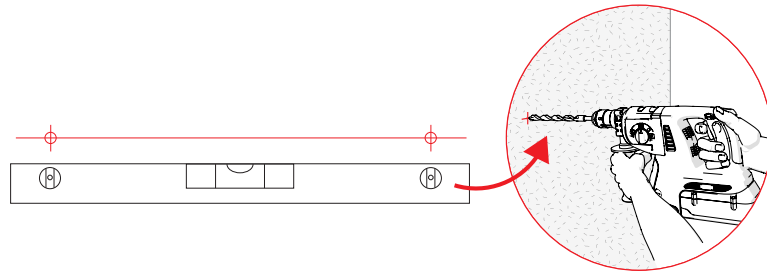
Note: Before the installation, the location for the charging station must have been agreed with the property owner or manager. The appropriate power supply cabling must also be available.

Note: Assure that wall material is capable to handle weight of charging station. In special materials please use appropriate fastening measures.

1. Select the correct installation height for the charging station. Mark the screw locations on the wall using the installation template included in the package.



2. Make sure the marked spots line up horizontally and drill holes according to the hole markings.



3. Remove the charging station cover.
4. Install the charging station following the option A) or option B) depending on the cable inlet.

Installing the charging station - Wiring Option A

When the cabling is installed through the bottom-side cable inlet

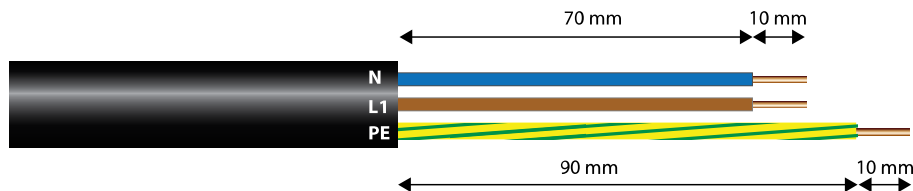


Danger: Make sure the power supply for the charging station is disconnected before installation. Do not turn power on until electrical wiring is finished.

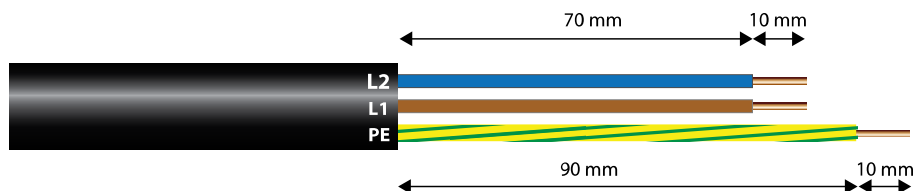
1. Before installation of the charging station, it is recommended that the power supply cabling is prepared at first.

Note: Leave PE wire 20 mm longer than the other wires. This ensures it will be the last remaining connection if the cable is pulled out by force.

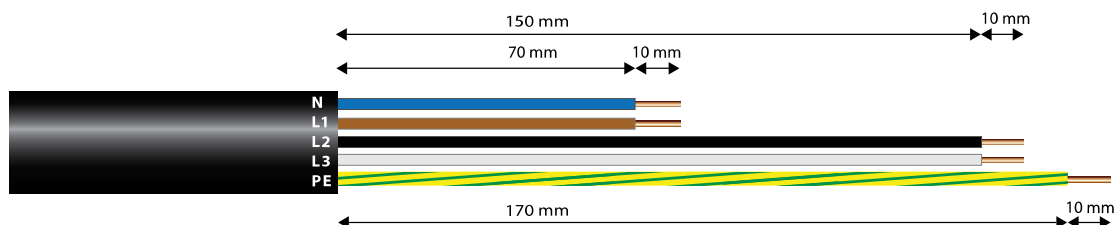
Recommended stripping length for wiring option A: 1-phase power supply



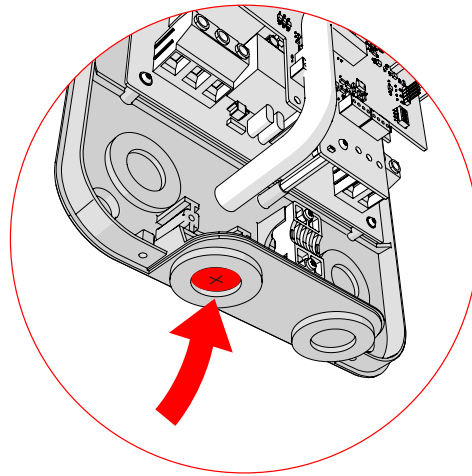
Recommended stripping length for wiring option A: 1-phase power supply for IT-network



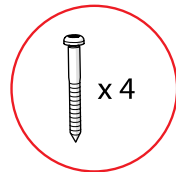
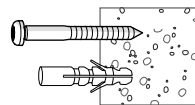
Recommended stripping length for wiring option A: 3-phase power supply



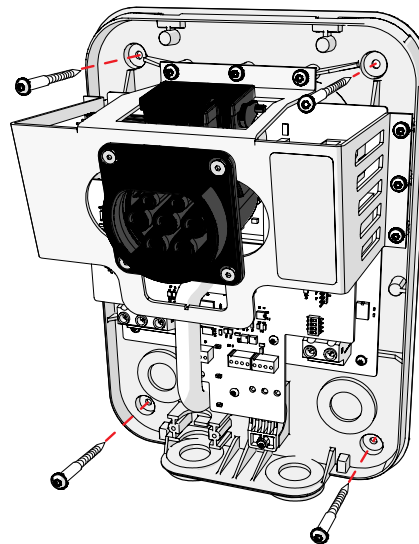
2. A rubber grommet is used to prevent dust and moisture entering the charging station. To prepare the grommet, make a small cross shaped cut where the power cable enters the grommet.



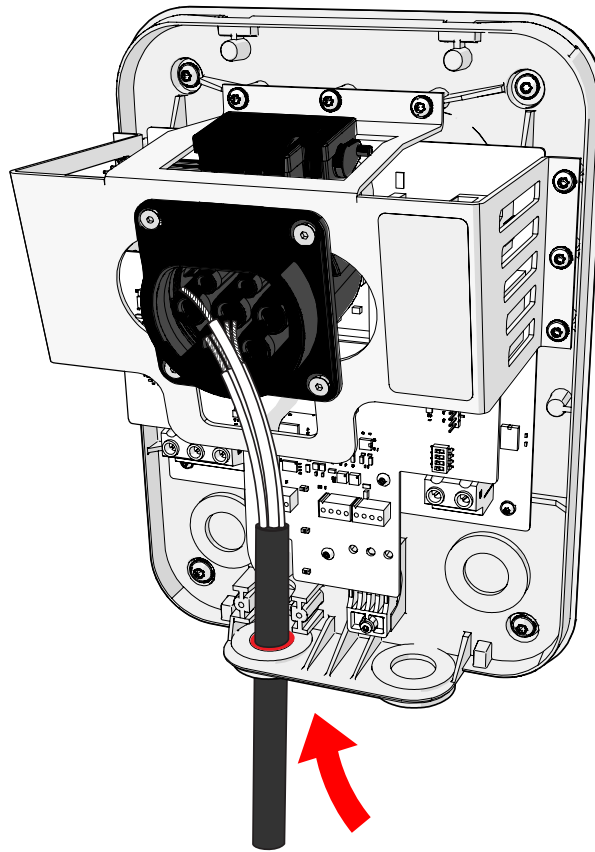
3. Place the charging station against the wall according to the markings. Mount the charging station on the wall before routing the cable.



x 4

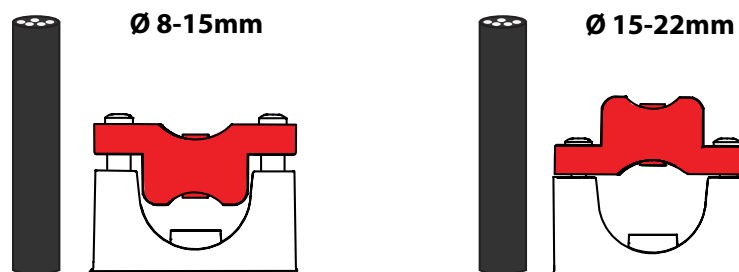


4. Pull the power supply cable through the cable inlet. Make sure the non-stripped part of the cable reaches past the strain relief. There must be enough cable for restrain fixing and the electrical connections.

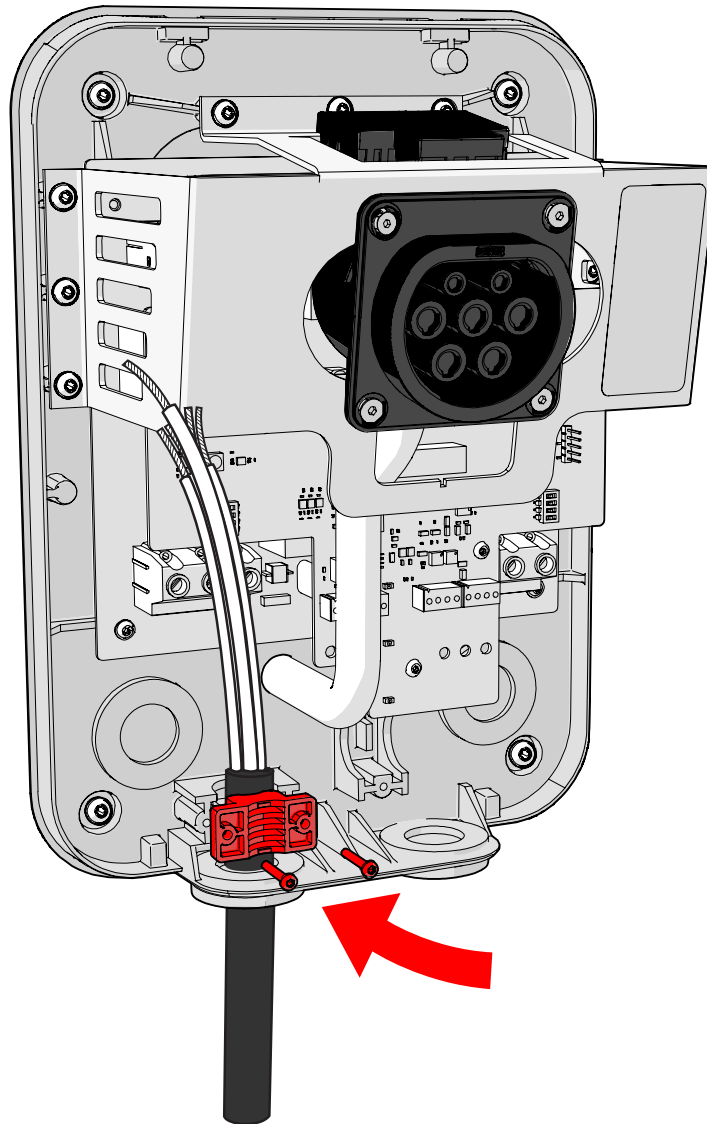


5. Route the cabling so that you are able to place the cable to the strain relief.
6. Fasten the strain relief.

Note: The strain relief can be used in two ways depending on the cable diameter.



7. Tighten the strain relief.



8. Separate the power supply wires and mark them if necessary.
9. Make sure the wires cannot come into contact with each other.

Installing the charging station - Wiring Option B

When the cabling is installed through the back-side cable inlet

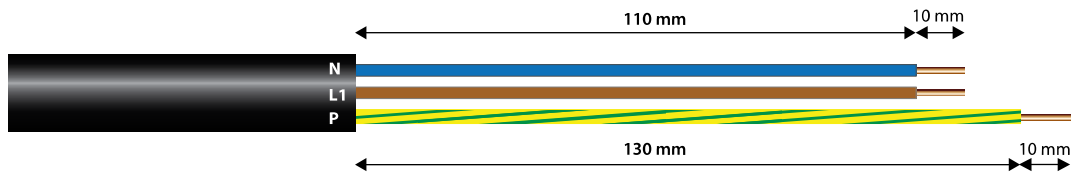


Danger: Make sure the power supply for the charging station is disconnected before installation. Do not turn power on until electrical wiring is finished.

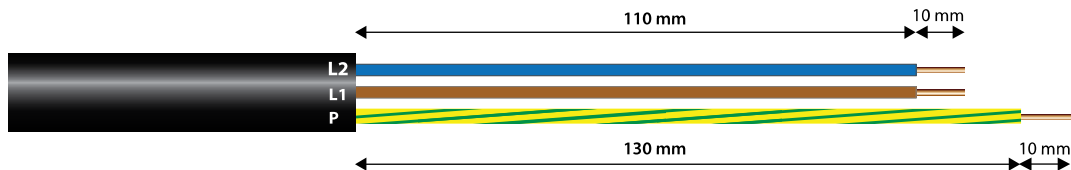
1. Before installation of the charging station, it is recommended that the power supply cabling is prepared at first.

Note: Leave PE wire 20 mm longer than the other wires. This ensures it will be the last remaining connection if the cable is pulled out by force.

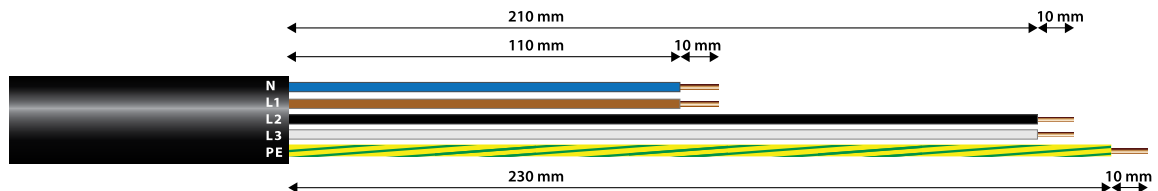
Recommended stripping length for wiring option B: 1-phase power supply



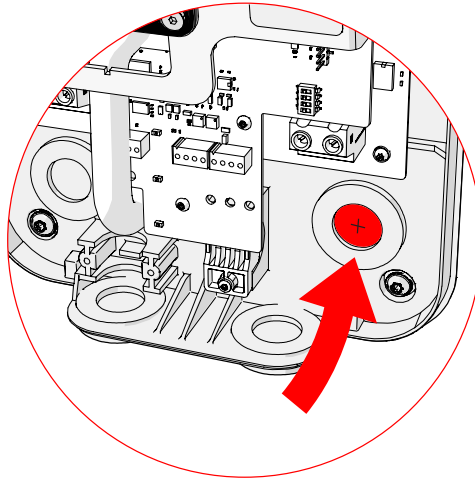
Recommended stripping length for wiring option A: 1-phase power supply for IT-network



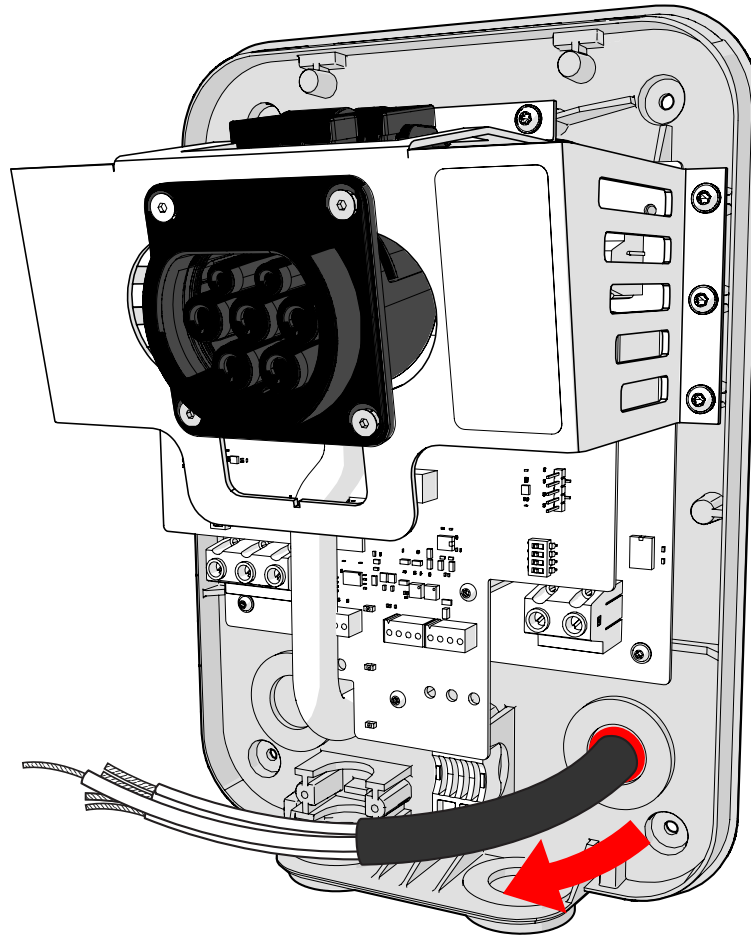
Recommended stripping length for wiring option B: 3-phase power supply



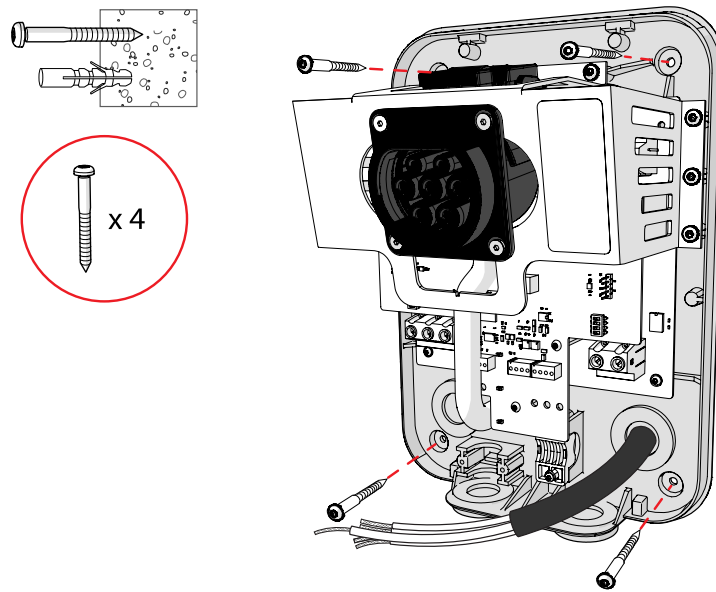
2. A rubber grommet is used to prevent dust and moisture entering the charging station. To prepare the grommet, make a small cross shaped cut where the power cable enters the grommet.



3. Pull the power supply cable through the right hand side power inlet before fixing the charging station to the wall.
Make sure the non-stripped part of the cable reaches past the strain relief. There must be enough cable for restrain fixing and the electrical connections. Do not tighten the fixings yet.



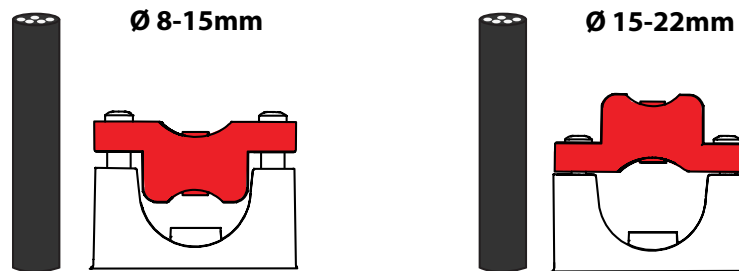
4. Make sure the device is in a correct position according to the markings and mount the charging station.



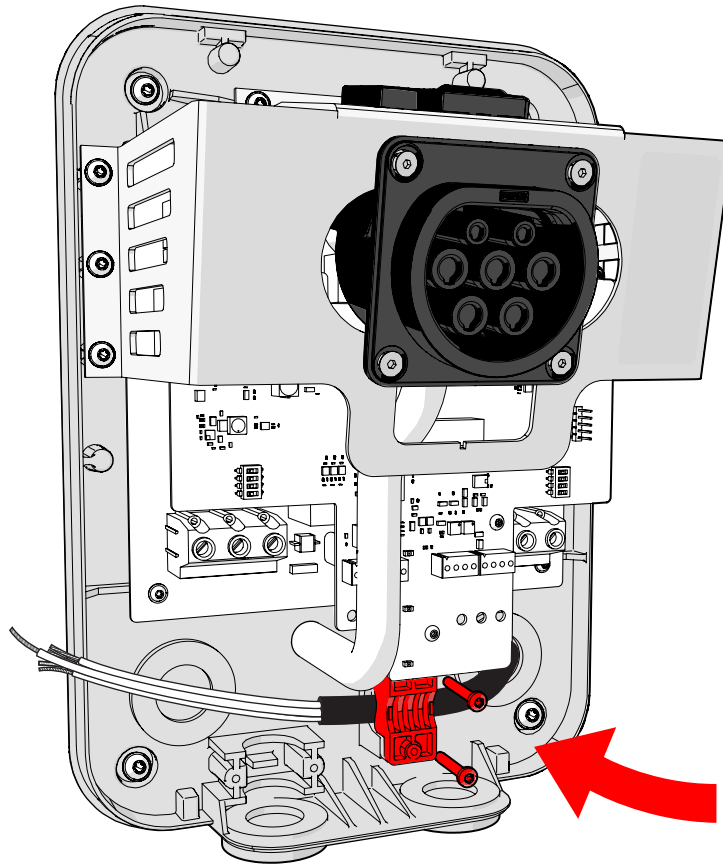
5. Route the cabling so that you are able to connect the cable to the strain relief.

6. Attach the strain relief.

Note: The strain relief can be used in two ways depending on the cable diameter.



7. Tighten the strain relief.

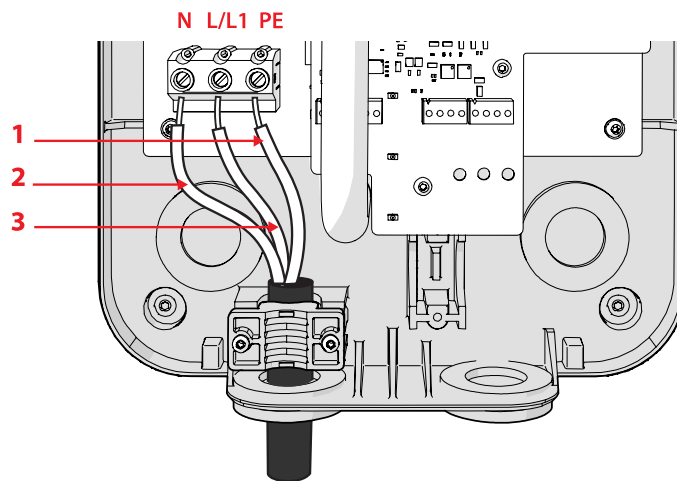


8. Separate the power supply wires and mark them if necessary.
9. Make sure the wires cannot come into contact with each other.

Wiring

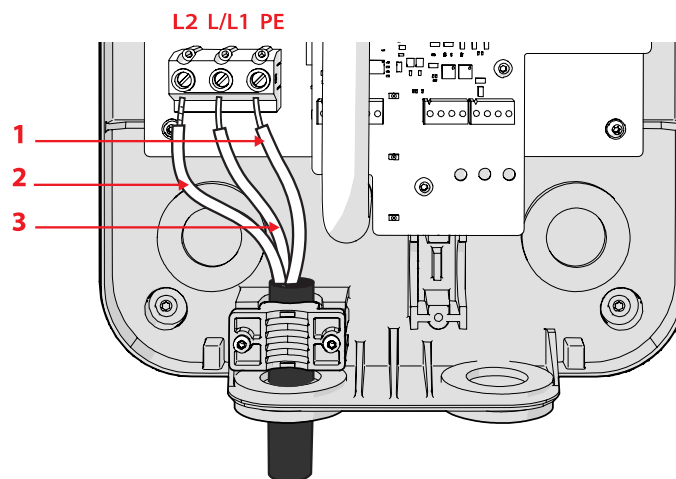
Wiring for 1-phase power supply

1. Protective earthing wire (PE)
2. Neutral wire (N)
3. Phase wire (L/L1)



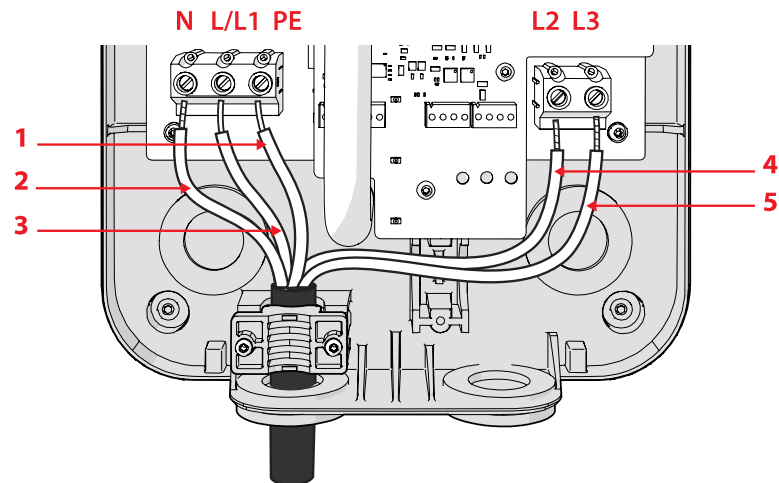
Wiring for 1-phase power supply for IT network:

1. Protective earthing wire (PE)
2. Phase wire (L2)
3. Phase wire (L/L1)




Wiring for 3-phase power supply:

1. Protective earthing wire (PE)
2. Neutral wire (N)
3. Phase wire (L1, L2, L3)



4. Make sure that the wires cannot come into contact with each other.
5. Make sure all the wires are connected firmly to charging station's connectors.

DIP switch configuration

 **Danger:** Make sure the power supply for the charging station is disconnected before installation. Do not turn power on until electrical wiring is finished.

1. Make sure all the wires are connected firmly to charging station's connectors.
2. Set the DIP switches for appropriate power grid network topology and supply rating according to site setup.

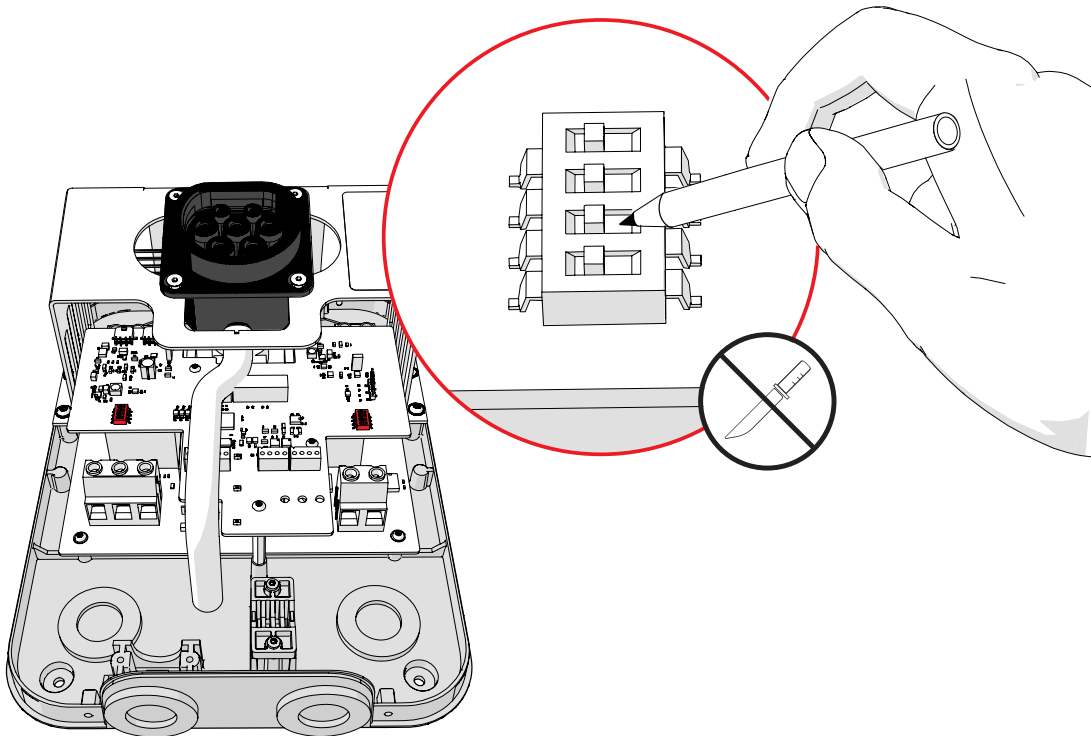










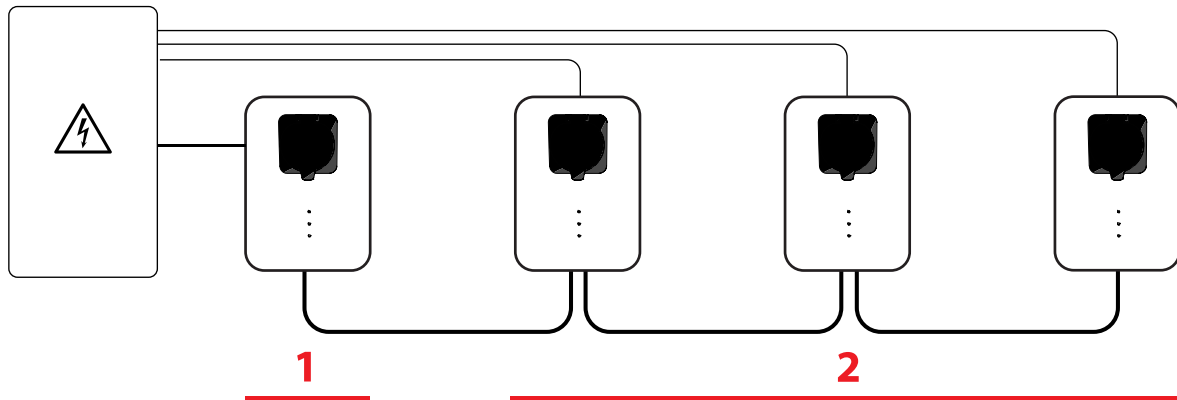


Table 1. DIP switch configuration

Check that host mode is selected	Set current setting according supply fuse and cabling capacity. Do not exceed power supply connection capability. If current settings are not done, charger will not operate.
<p data-bbox="337 466 634 489">Host / Client mode setting (DIP S1)</p> <div data-bbox="355 537 436 663">  </div> <p data-bbox="618 590 659 611">Host</p> <div data-bbox="355 726 436 852">  </div> <p data-bbox="613 779 664 800">Client</p>	<p data-bbox="943 466 1263 489">Current setting in host mode (DIP S2)</p> <div data-bbox="980 537 1062 663">  </div> <p data-bbox="1182 590 1222 611">10A</p> <div data-bbox="980 726 1062 852">  </div> <p data-bbox="1182 779 1222 800">13A</p> <div data-bbox="980 915 1062 1041">  </div> <p data-bbox="1182 968 1222 989">16A</p>
<p data-bbox="289 1106 672 1129">Configure used network topology</p> <p data-bbox="329 1215 647 1239">TN/TT or IT network settings (DIP S1)</p> <div data-bbox="355 1287 436 1413">  </div> <p data-bbox="565 1339 711 1360">TN or TT network</p> <div data-bbox="355 1476 436 1602">  </div> <p data-bbox="597 1518 678 1539">IT network</p>	<div data-bbox="980 1098 1062 1224">  </div> <p data-bbox="1182 1157 1222 1178">20A</p> <div data-bbox="980 1287 1062 1413">  </div> <p data-bbox="1182 1339 1222 1360">25A</p> <div data-bbox="980 1476 1062 1602">  </div> <p data-bbox="1182 1518 1222 1539">32A</p>

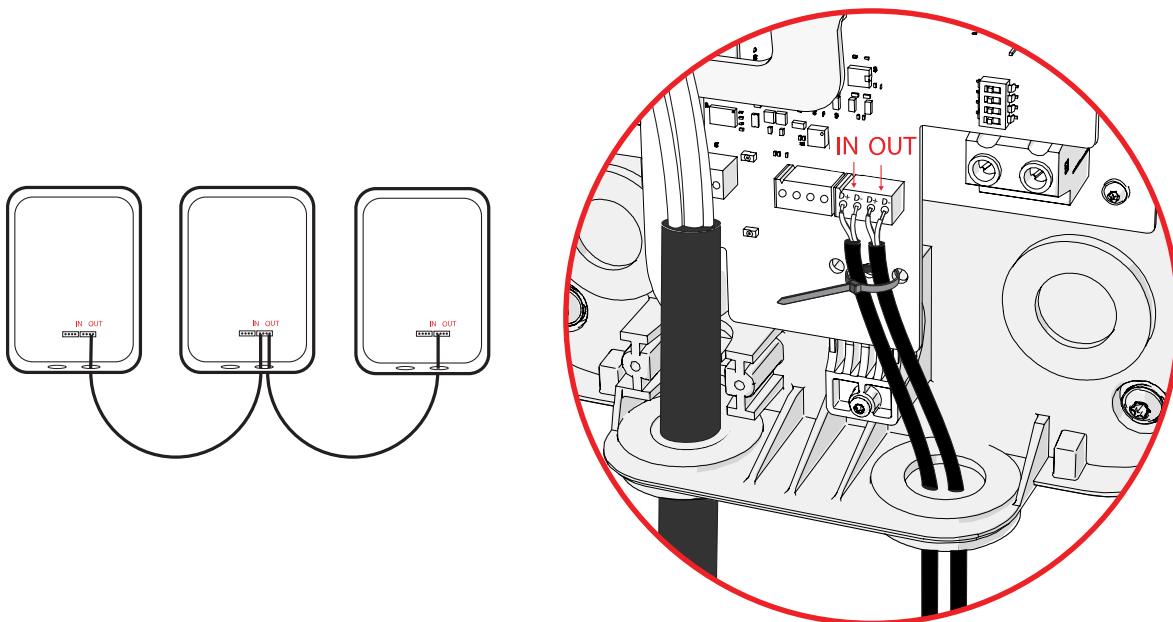
Load balancing (Charlie-2 and Charlie-3)

Load balancing set up consists of a host charging station unit (1) and up to three client units (2).









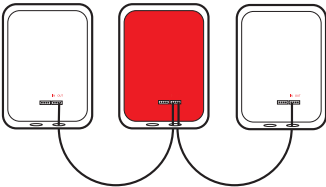

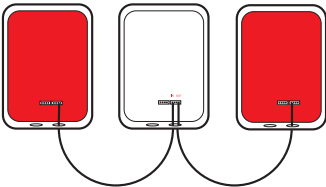
Wiring for load balancing

The client charger units are connected to the host charger using the right hand side cable inlet. **Recommended cable type used for load balancing wiring is RS485.**



Setting up DIP switches for load balancing (Charlie-2 and Charlie-3)

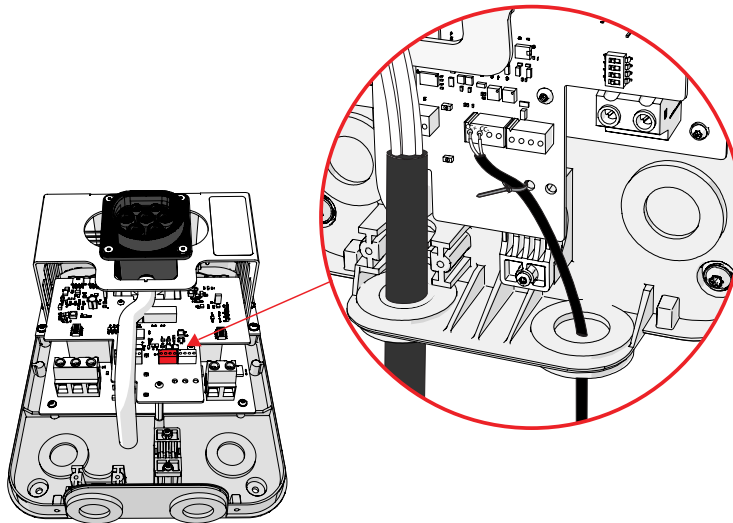
Table 2. DIP switches for load balancing

Set up host and client units	Set up different address for each client unit
<div>Host / Client mode setting (DIP S1)</div> <div><div><div>Host</div></div><div><div>Client</div></div></div>	<div>Device address setting in client mode (DIP S2)</div> <div><div><div>Client 1</div></div><div><div>Client 2</div></div><div><div>Client 3</div></div></div>
<div>RS-485 termination setting DIP S1</div> <div><div><div>OFF, if the device is in the middle of the RS-485 bus</div></div><div></div></div>	
<div><div><div>ON, if the device is in either end of RS-485 bus</div></div><div></div></div>	

External input connection (Charlie-2 and Charlie-3)

Charlie-2 and Charlie-3 products have input connector for potential free control signal from 3rd party units. When signal occurs in input Charlie-2 and Charlie-3 will limit maximum charging current into 6A. When signal returns to normal state, maximum charging current returns into predefined value.

Connect potential free output of control unit to connector pins CC+ and CC-



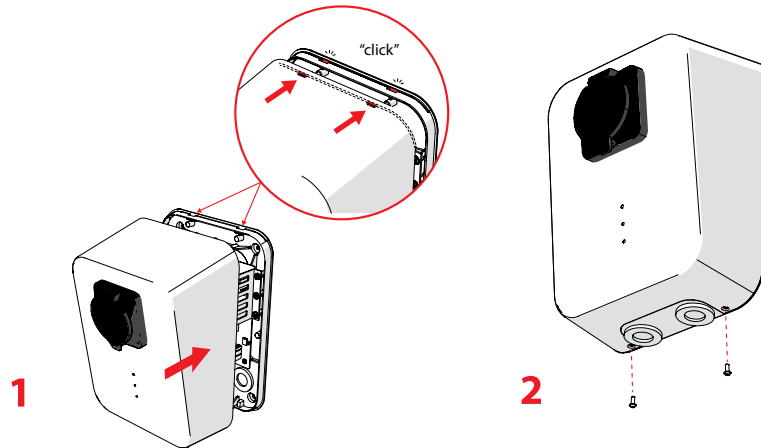
Setup DIP switch position for Normally Closed or Normally Open output of 3rd party control unit.

Table 3.

External charge mode (Host only) (DIP S2)	
	External charge control enabled when relay is open (NC, Normally Closed)
	External charge control enabled when relay is closed (NO, Normally Open)

Closing the charging station cover


After the wiring installation is done, close the charging station cover.



1. Push the cover on horizontally towards the back part of the charging station. Make sure the clips inside the top part of the cover attach properly in the holes on the back part of the unit.
2. Attach the screws on the bottom of the charging station cover.

Taking the charging station into use

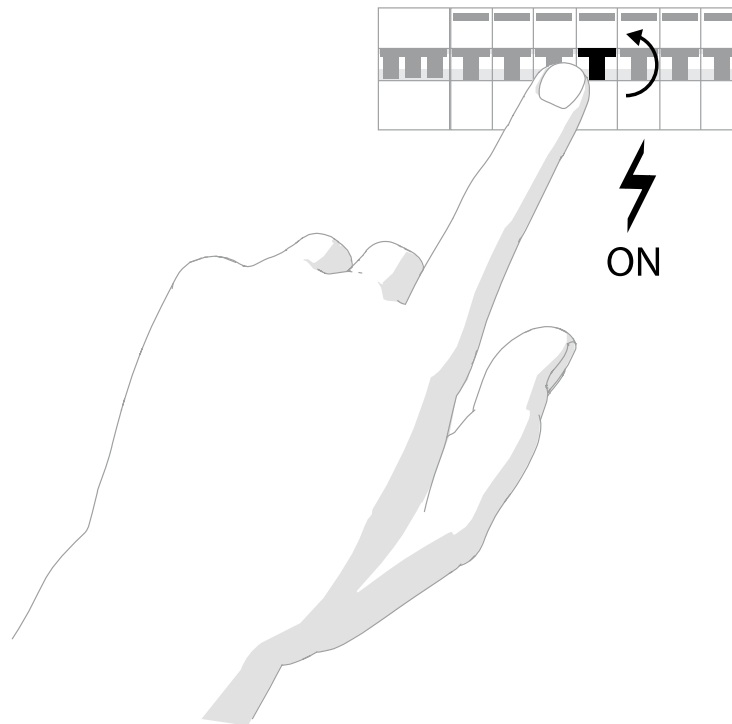
Test measurements must be performed before taking the charging station into use.

 **Danger:** Test measurements are performed using high voltages.

Connecting the power supply

Before connecting the power supply, make sure that all the needed cable installations are completed and that the earth resistance measurements have been made according to local regulations.

1. Remove the signaling warning tag from the circuit breaker or power supply switch of the charging station.
2. Remove the dedicated lock or other preventive measures from the circuit breaker or power supply switch.
3. Connect the power supply to the charging station by operating the circuit breaker.



4. Test the functionality of Type-A RCD by pressing RCD test button.

Measurements after power supply connection

Verify the operation of the charging station after the power supply has been connected.



Danger: Test measurements are performed using high voltages.

1. Check the indicators of the charging station. Refer to LED descriptions for more details.
2. It is recommended to use EV charging station installation tester to ensure functionality.

Testing the charging station in normal use



Before this test, make sure that the charging station has been tested by using testing equipment.

1. Make sure all the wires have been connected correctly and the charging station cover is attached.
2. Connect vehicle charging cable to the charging station.
3. Connect charging cable to vehicle
4. Make sure that the LED in the charging station switches to charging mode. See LED indicators for more details.
5. Check that the charging indicator of the vehicle is activated.

User Guide

The Charlie electrical vehicle charging station is easy to use. It is ready to use straight after installation. Simply connect the charging station and vehicle with the charger cable. LED indicators show the status of the charging station.

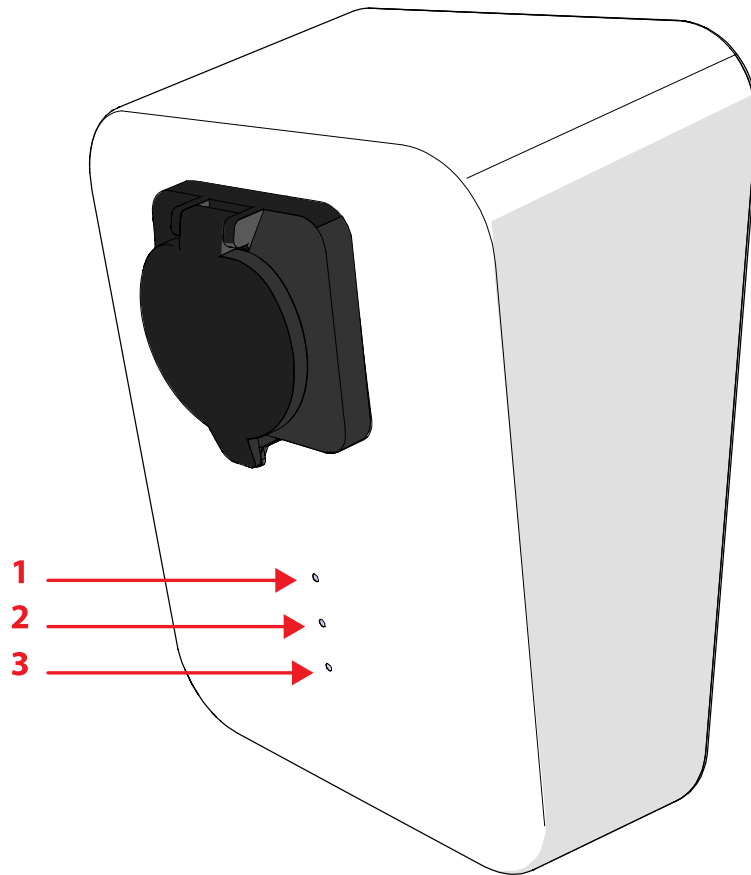
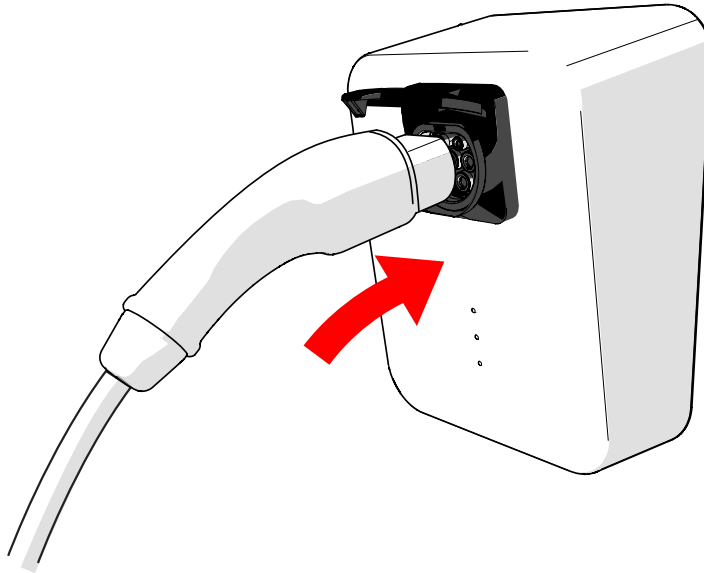


Table 4. LED descriptions and their explanations

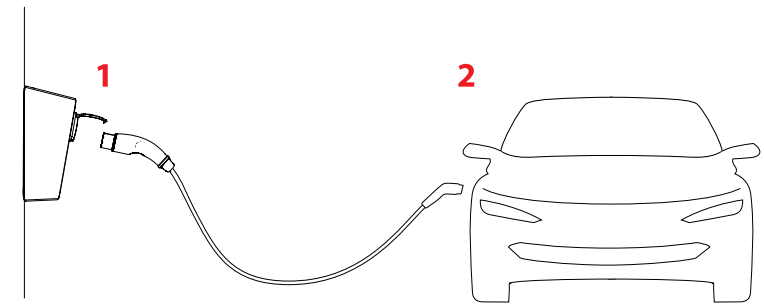
Function	1. LED Green	2. LED Blue	3. LED Red
Device not operational	OFF	OFF	OFF
Initialization	BLINKING	OFF	OFF
Standby/Ready	ON	OFF	OFF
EV connected, not charging	ON	ON	OFF
EV connected, charging	ON	PULSING	OFF
Error	X	X	See Troubleshooting


Charging


Connect the vehicle to the charging station.



Connect the charging cable first on the charging station, then to the vehicle.



 **Danger:** Do not open the charging station cover!

 **Danger:** Do not use a damaged charging station or charging cable.

LED functions and troubleshooting

standard plug in

ErrorID	Error description	LED Green	LED Blue	LED Red	Visual trouble code	Manual text	Instructions
0	DIP error		BLINK		● - ● - ● - ● - ● - ● - ● - ● - ● -	DIP switches configured incorrectly	Switch off the device by switching off the and reconfigure the DIP switches
1	charging current limit due high temp	ON	PULSING	1 BLINK + 2 sec OFF	● - ● -	Charging current has been limited due to high temperature	
2	CP signal error	ON	OFF	2 BLINKS + 2 sec OFF	● - ● -	The communication between vehicle fails *	
3	non conductive of protective earth	ON	OFF	3 BLINKS + 2 sec OFF	● - ● - ● -	**	
4	RCD err	ON	OFF	4 BLINKS + 2 sec OFF	● - ● - ● - ● -	RCD device is faulty	
5	Relay err	ON	OFF	5 BLINKS + 2 sec OFF	● - ● - ● - ● - ● -	Power relay is faulty	Power off
6	Lock Motor fault	ON	OFF	6 BLINKS + 2 sec OFF	● - ● - ● - ● - ● - ● -	Cable locking motor is stuck	
7	Communication init error	ON	OFF	7 BLINKS + 2 sec OFF	● - ● - ● - ● - ● - ● - ● -	RS-485 communication error	Check that the connections are ok, between devices. Check that there is no multiple masters on the bus. Check that there is no duplicate addresses
8	Driver error	ON	OFF	8 BLINKS + 2 sec OFF	● - ● - ● - ● - ● - ● - ● - ● -	Internal HW error	
9	PP signal error	ON	OFF	9 BLINKS + 2 sec OFF	● - ● - ● - ● - ● - ● - ● - ● - ● -	The current value of the cable is incorrect	
10	Faulty cable	ON	OFF	10 BLINKS + 2 sec OFF	● - ● - ● - ● - ● - ● - ● - ● - ● - ● -	Locking mechanism goes too far	Check that the cable connector is intact
11	Slave communication timeout	ON	OFF	11 BLINKS + 2 sec OFF	● - ● - ● - ● - ● - ● - ● - ● - ● - ● - ● -	No connection to master	

Conformity Certificates

Declaration of Conformity

Declaration of Conformity

[Content will be added later]

Certificates

Certificates

[Content will be added later]

Disposal (WEEE)



In compliance with European Directive WEEE (2012/19/EU) on waste and reduction of hazardous substances of electrical and electronic equipment, it must not be disposed of as unsorted municipal waste. Instead this device must be collected separately in accordance with local recycling regulations.

Contact



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