

# RDC Charger

## Quick Start





## SAFETY INSTRUCTIONS

Use the following safety instructions to ensure personal safety and to protect your equipment and work environment from possible damage.

In installation of the device, it is necessary to observe all applicable local and national regulations, laws and regulations.

Installation and connection of the equipment may only be performed by a qualified and authorized person.

This product can only function properly if it is transported, stored and properly installed, operated and maintained as recommended in accordance with these instructions.

**⚠ DANGER** - Before installing, wiring, servicing or repairing the RDC Charger, ensure that the power supply is disconnected.

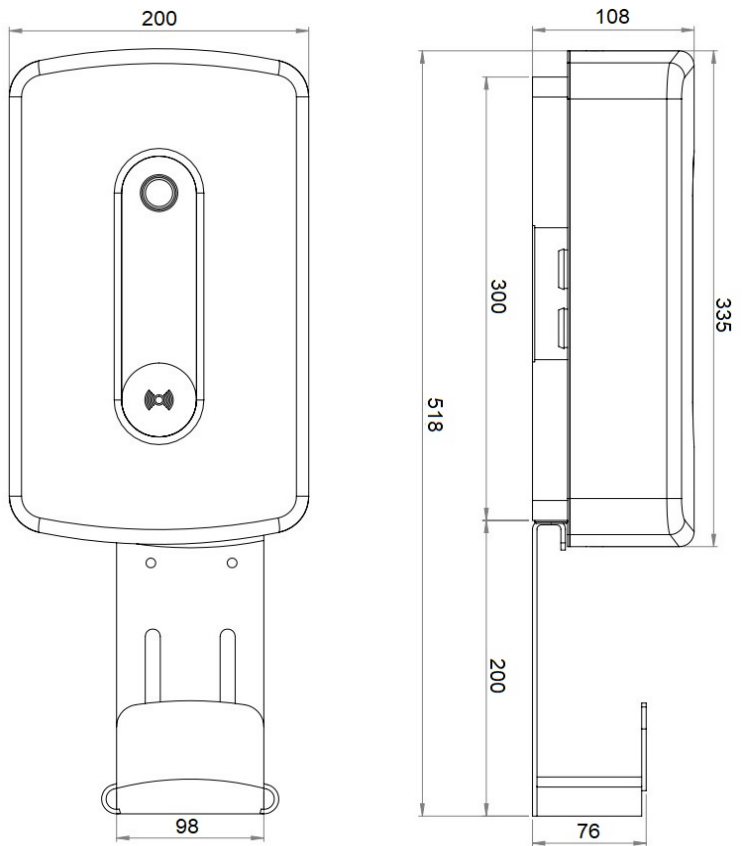
**⚠ ATTENTION** - Do not use the charging station if there is visible damage on it or on charging cable.

- The RDC Charger is only intended for charging electric vehicles and must not be used for charging other devices or for any other purpose.
- During operation, the device must not be exposed to high temperatures, direct sunlight, excessive dust, corrosive gases, vibrations or shocks.
- All connected cables must comply with the specifications of these instructions.
- The device must be properly grounded for safe operation. Several grounding systems are supported: TN-S, TN-C, TN-C-S and TT.
- Use only tools and equipment with non-conductive handles for installation.
- Do not operate the charging station with wet hands
- Do not use private electrical generators as a power source for charging

**The manufacturer assumes no responsibility for material or personal damage resulting from use or behavior that does not comply with these safety instructions.**






## TECHNICAL SPECIFICATIONS

Nominal voltage	1x230Vac 50/60Hz, 3x230/400Vac 50/60Hz
Maximum current	1x32A, 3x32A
Maximum charging power	Single-phase connection → 7.4kW Three-phase connection → 22kW
Connector	Type 2, lenght 5m
Network connection	Ethernet 100M RJ45 4G LTE (option)
Wireless range	300m open / 50m indoor *rage varies depending on actual conditions
Frequency band	868Mhz
Ingress protection	IP54
Impact resistance	IK10
Operating temperature	-20°C to +60°C
Insulation	1200Vac
Standards	IEC 61851-1: 2019 EN 300 220, EN 300 328 ERC-REC-70-03-41.2
Dimensions	 <p>The technical drawing shows two views of the charging station. The front view (left) shows a rectangular top panel with a width of 200 mm and a bottom mounting bracket with a width of 98 mm. The side view (right) shows a total height of 518 mm, a top panel height of 300 mm, a top panel width of 108 mm, a total depth of 335 mm, and a mounting bracket height of 200 mm with a width of 76 mm.</p>



## IDENTIFICATION LABEL



-  CHARGER MODEL
-  SERIAL NUMBER / NAD ADDRESS
-  RATED VOLTAGE AND MAXIMUM CURRENT

## MODELS

Oznaka	Opis
RDC-QR	Robotina Dynamic Charger with type 2 cable and QR Code (digital key) reader. Modbus TCP/IP connectivity
RDC-RF	Robotina Dynamic Charger with type 2 cable and standard RFID reader. Modbus TCP/IP connectivity
RDC-MI	Robotina Dynamic Charger with type 2 cable and MIFARE/RFID reader. Modbus TCP/IP connectivity
RDC-QR-R	Robotina Dynamic Charger with type 2 cable and QR Code (digital key) reader. Modbus TCP/IP connectivity. Built in residual current device
RDC-RF-R	Robotina Dynamic Charger with type 2 cable and standard RFID reader. Modbus TCP/IP connectivity. Built in residual current device
RDC-MI-R	Robotina Dynamic Charger with type 2 cable and MIFARE/RFID reader. Modbus TCP/IP connectivity. Built in residual current device
RDC-QR-I	Robotina Dynamic Charger with type 2 cable and QR Code (digital key) reader and IOT linker for Cloud connectivity. Modbus TCP/IP connectivity
RDC-RF-I	Robotina Dynamic Charger with type 2 cable and standard RFID reader and IOT linker for Cloud connectivity. Modbus TCP/IP connectivity
RDC-MI-I	Robotina Dynamic Charger with type 2 cable and MIFARE/RFID reader and IOT linker for Cloud connectivity. Modbus TCP/IP connectivity
RDC-QR-RI	Robotina Dynamic Charger with type 2 cable and QR Code (digital key) reader. Modbus TCP/IP connectivity. Built in residual current device and IOT linker for Cloud connectivity.
RDC-RF-RI	Robotina Dynamic Charger with type 2 cable and standard RFID reader. Modbus TCP/IP connectivity. Built in residual current device and IOT linker for Cloud connectivity.
RDC-MI-RI	Robotina Dynamic Charger with type 2 cable and MIFARE/RFID reader. Modbus TCP/IP connectivity. Built in residual current device and IOT linker for Cloud connectivity.



## ACCESSORIES

Oznaka	Opis
WPM1-E-D-CT	Wireless external single-phase Power sensor kit (with current transformer)
WPM3-E-D	Wireless external three-phase Power sensor kit
PM1-E-D-CT	External single-phase Power sensor (with current transformer)
PM3-E-D	External three-phase Power sensor
WM-1	Wireless Modbus bridge
WR-1	Wireless Relay, To control other loads in the building and optimize energy consumption
IOT-L2-W	4G LTE wireless modem for IOT linker
IOT-L2-2-HQ	High function linker (HIQ Universe)
IOT-L2-2-OC	High function linker (HIQ Universe and OCPP protocol)
RDC-PR	Protective roof for RDC
RDC-FS	Freestanding set for RDC charger (up to 2 Chargers)

## CONTENTS AND TOOLS

- RDC Charger with cable type 2 length 5m
- Mounting plate
- Quick start guide
- 4 x cross screws with wall inserts  $\phi$  8 x 60mm
- Allen key 2.5mm for screws of the plastic cover and for switching the RCD (only for models with the RCD)

## REQUIRED EQUIPMENT

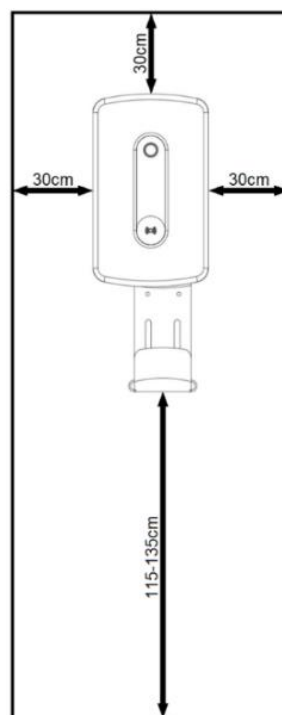
- Impact drilling machine and concrete drill  $\phi$  8mm
- Phillips screwdriver PH2 - Screws for attaching the mounting plate to the wall
- SL4 flat screwdriver – Screwing power supply cables on input terminals (model without RCD)
- Phillips screwdriver PZ2 - Screwing the power supply cables on RCD (model with RCD)
- Pliers for crimping cable glands and shoes
- Pliers and tools for removing insulation from cables and wires
- Water level



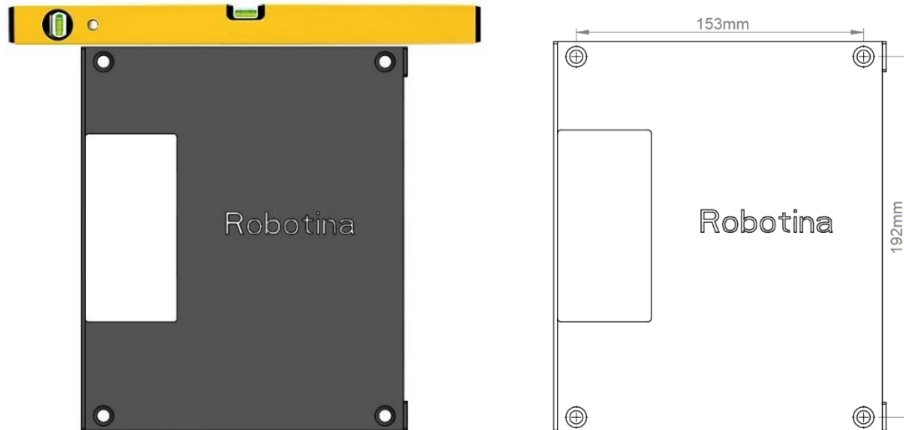
## MOUNTING

Before choosing a mounting location, consider the following:

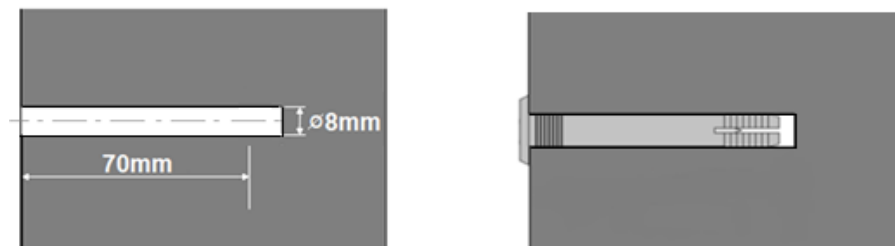
- Do not mount the RDC Charger on flammable building materials
- During operation, the device must not be exposed to high temperature and direct sunlight
- For better weather protection, we recommend installing RDC-PR protective roof
- Installation must be vertical
- Wall mounting must be done with the appropriate screws (which are included)
- Before installation, you must prepare the power supply and ethernet cable. It is necessary to observe all applicable local and national regulations, laws and regulations which regulate installation and use of the equipment. Depending on the power of the charger, choose the appropriate cross-section of the power supply cable and the appropriate fuse. The connection terminals in the charger enable the connection of a cable up to 10mm<sup>2</sup>. If you have a charger model without a RCD switch, you must install it before the power supply cable.
- The recommended mounting height is 115-135cm. (Measured from the floor). If the charger is approximately at eye level, it will be easier to monitor the operation. Leave at least 30cm of space on the left, right and top, so it will be easier to wind the charging cable onto the stand.



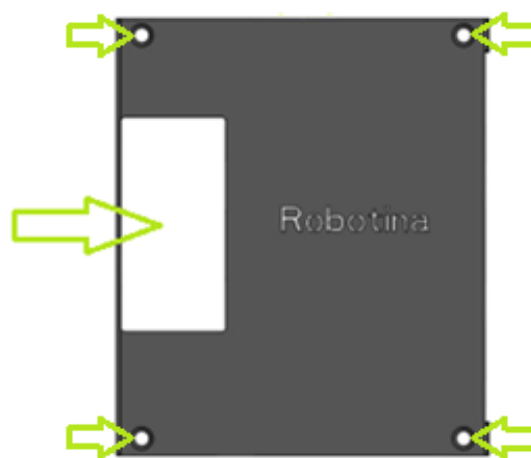
1. Lean the mounting plate against the wall and mark all 4 holes. For perfect horizontality help yourself with the water level.



2. Drill 4 holes with a diameter of 8 mm and a depth of 70 mm in the marked places and insert the supplied inserts into all 4 holes.

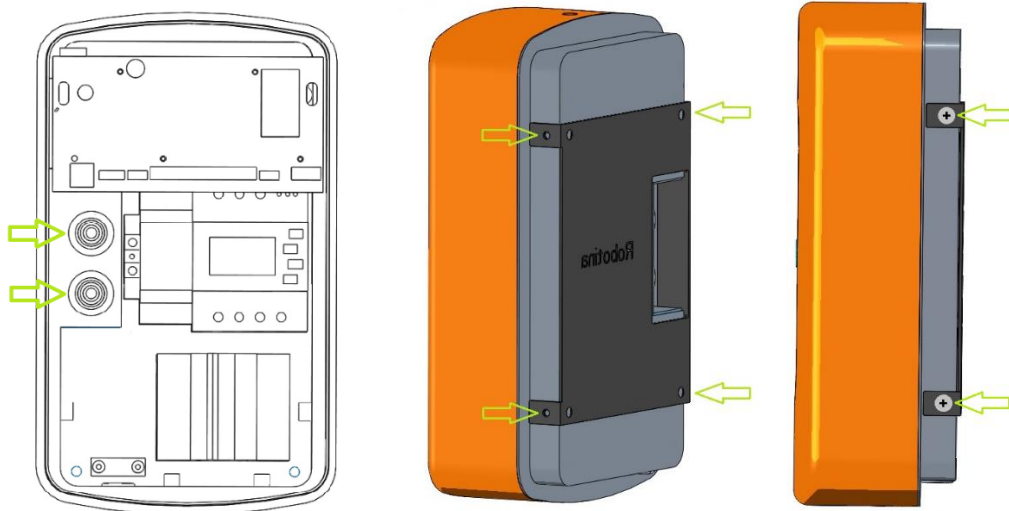


3. Pass the power supply and ethernet cable through the rectangular opening on the mounting plate. Screw in all 4 screws. (Phillips screwdriver PH2)





- Open the cover and gently put it down. Thread the power supply and ethernet cable through the rubber plugs. Place the RDC Charger against the mounting plate and screw in all four M5 side screws. (Phillips screwdriver PH2)

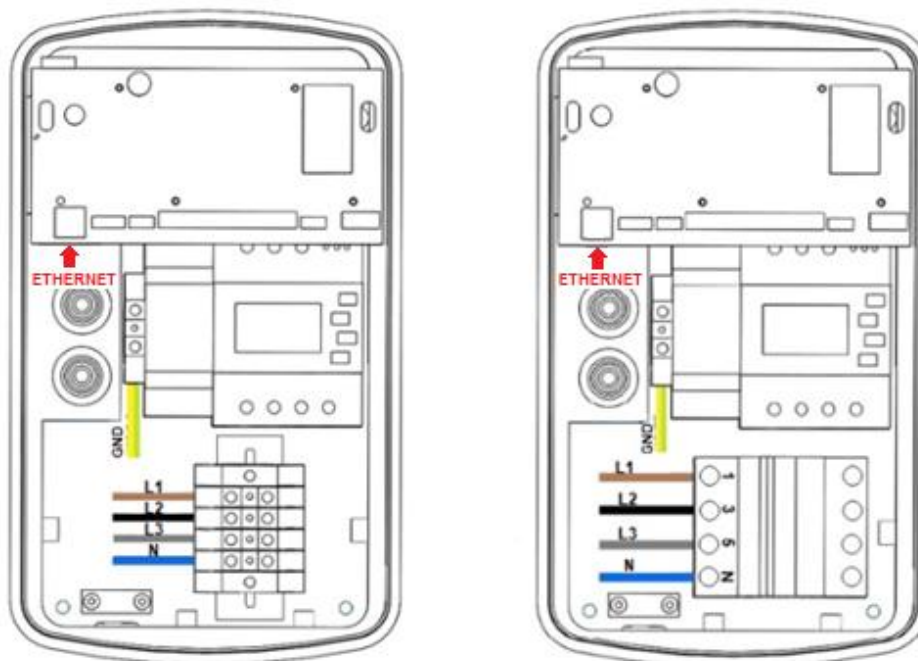


- Connect the Ethernet and the power supply cables as shown in the picture below. (For a model with an IOT linker, connect the Ethernet cable to the IOT linker in the left corner below the pcb)

### Three-phase connection

Model without RCD

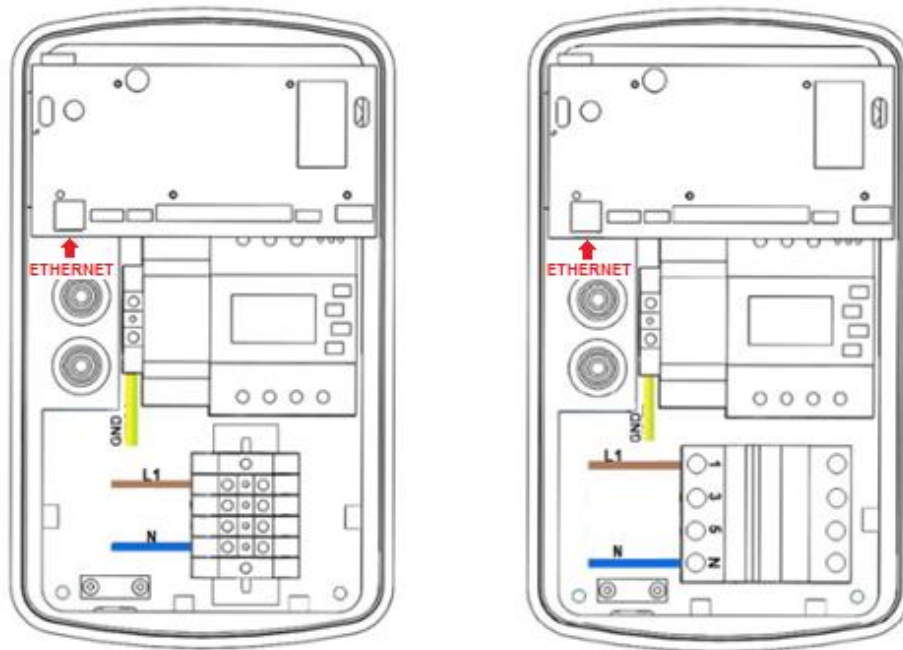
Model with RCD



Single-phase connection

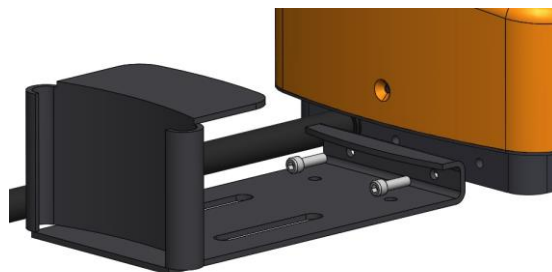
Model without RCD

Model with RCD

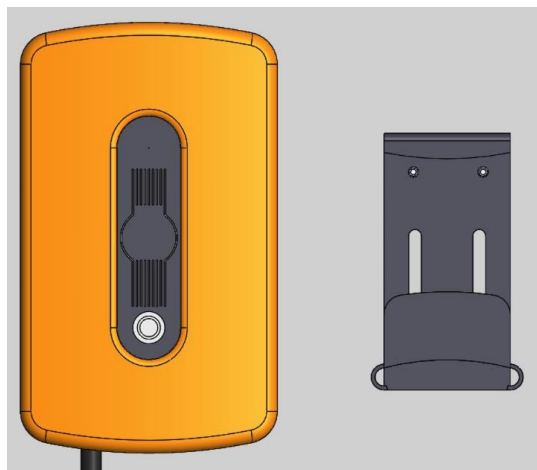


6. Charging cable holder has two mounting options:

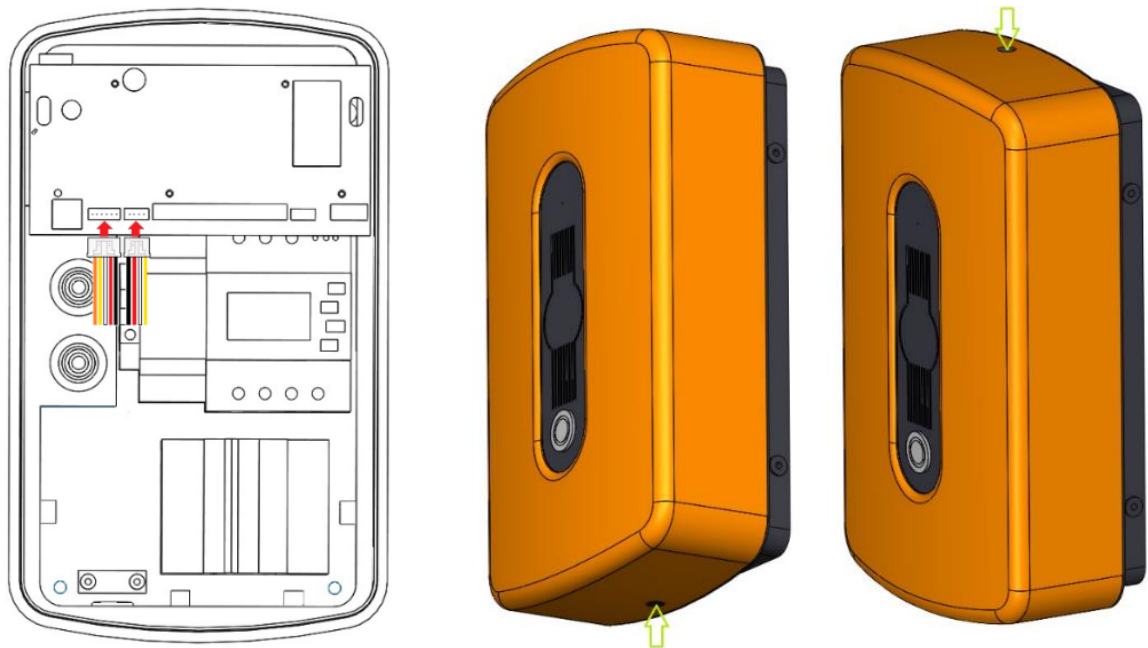
It can be installed directly on the RDC Charger



Or it can be installed independently on the wall



7. Connect the connectors as shown in the picture below, close the cover of the charger and screw in the lower and upper M4 screws. (Enclosed Allen key 2.5mm)



## OPERATION

To establish and operate a charging station, it is necessary:

1. Connect power supply cables
2. Connect RDC Charger to your local area network via ethernet cable\*
3. Download and run the latest version of the RDC Charger user interface

The RDC Charger user interface and instructions for use can be found at the following link: [https://wiki.robotina.com/doku.php?id=wiki:20\\_rdc\\_charger:50\\_download:start](https://wiki.robotina.com/doku.php?id=wiki:20_rdc_charger:50_download:start)

*\*Configuration with user interface is required for the first run. Without the first configuration, the charger will not work properly. First configuration can be done directly on RDC Charger with a PC. RDC Charger does not require connection to internet for operation*

## User Interface

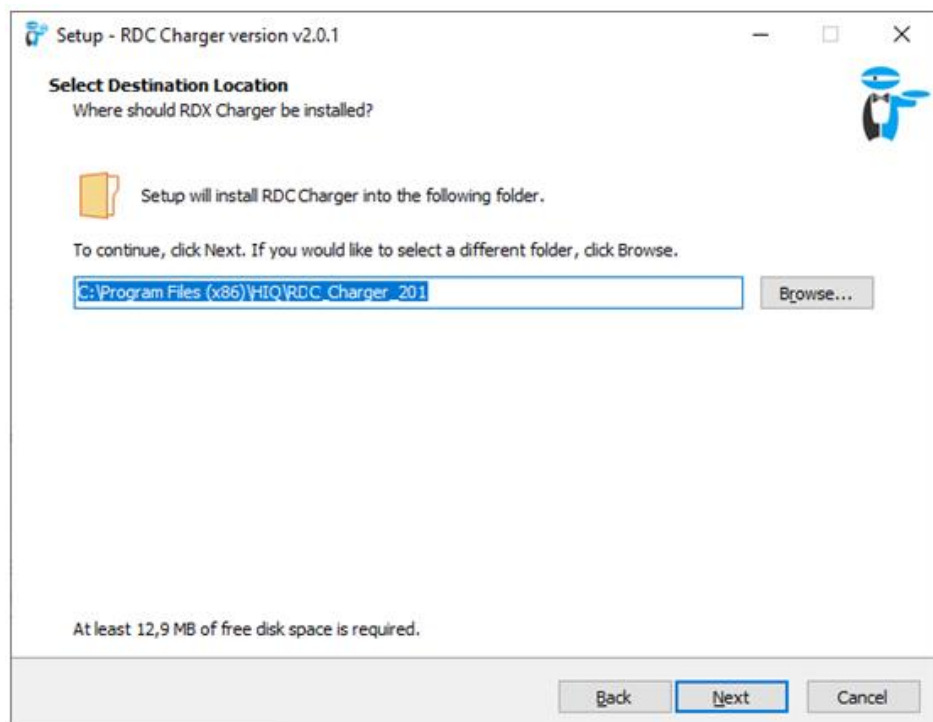
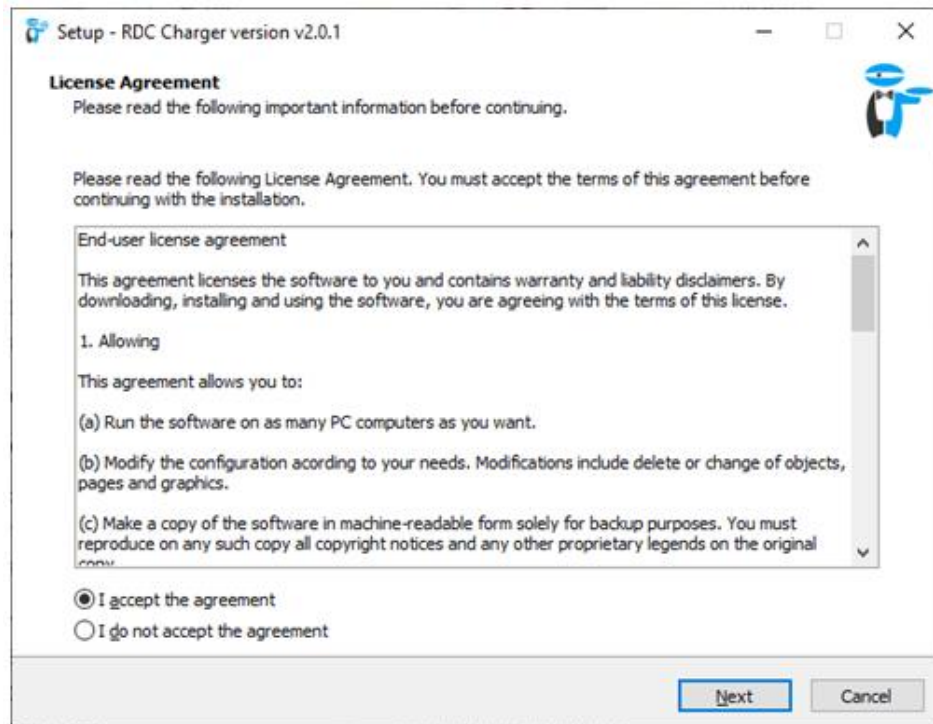
The interface allows easy management of the charging station, basic settings and access to the HEMS configurator to enable additional functionalities. In the following process of launching the interface and managing the charger will be described.

### Installation and start-up

1. Run the latest version of the interface (.exe file) from the link above.

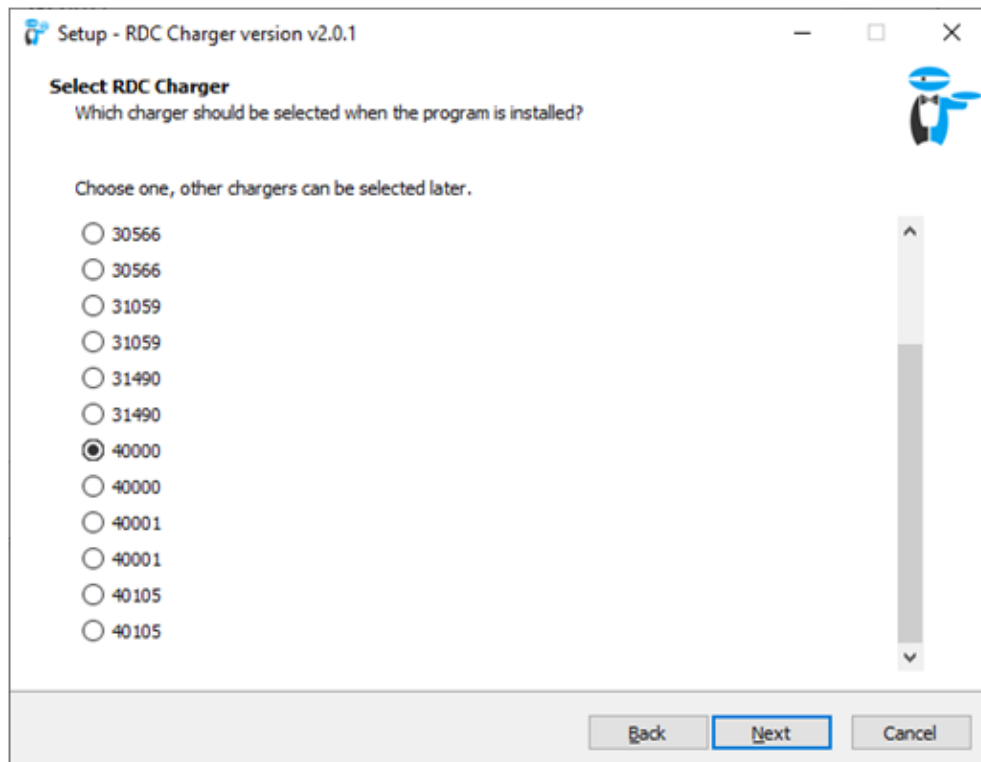


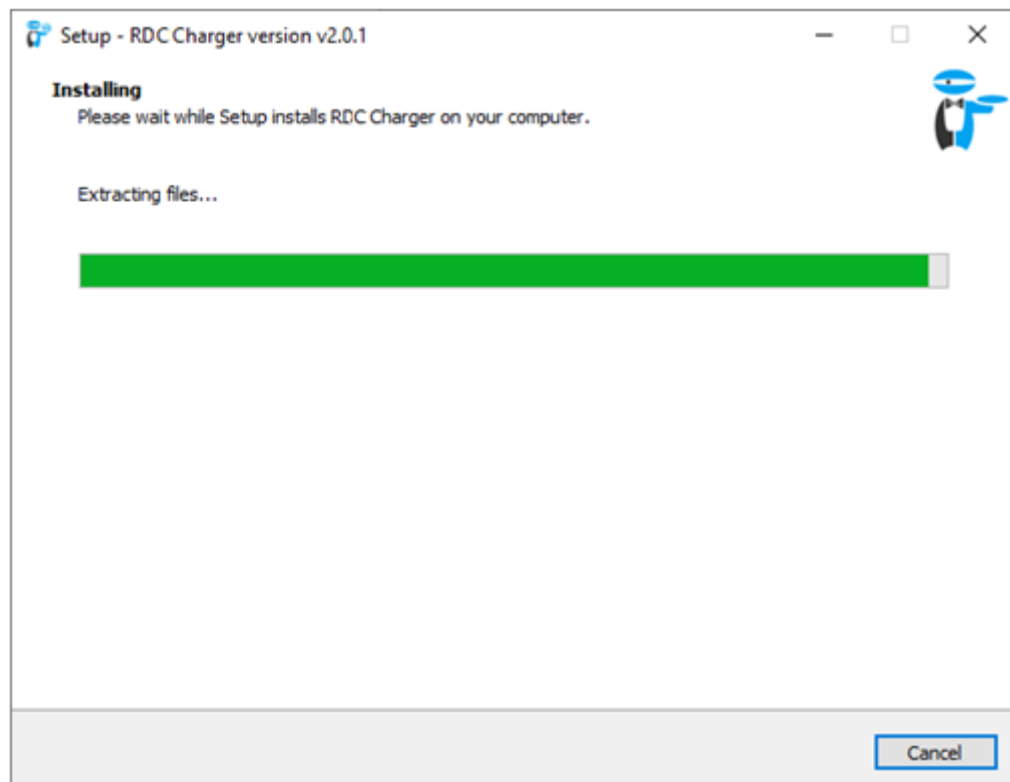
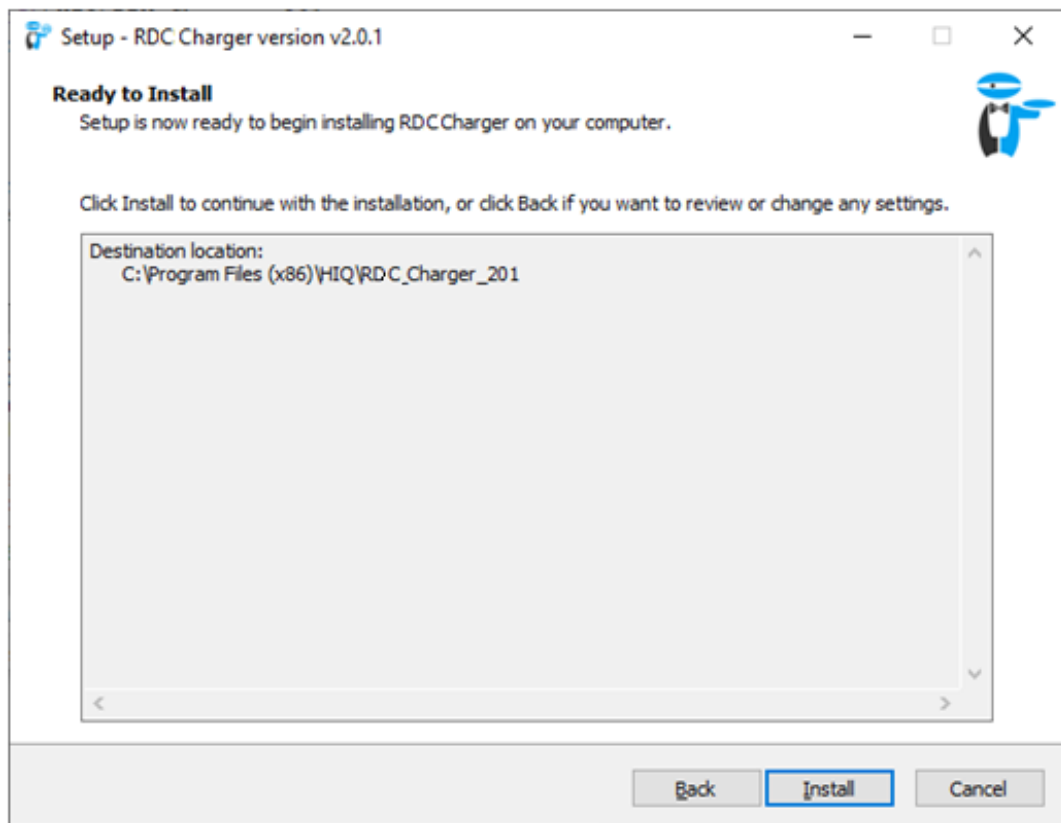
2. Depending on the version, the default installation folder will be "Program Files (x86)\HIQ\RDC\_Charger\_version". In the example in the picture, this is the location Program Files (x86)\HIQ\RDC\_Charger\_201. But you can also set another arbitrary location.

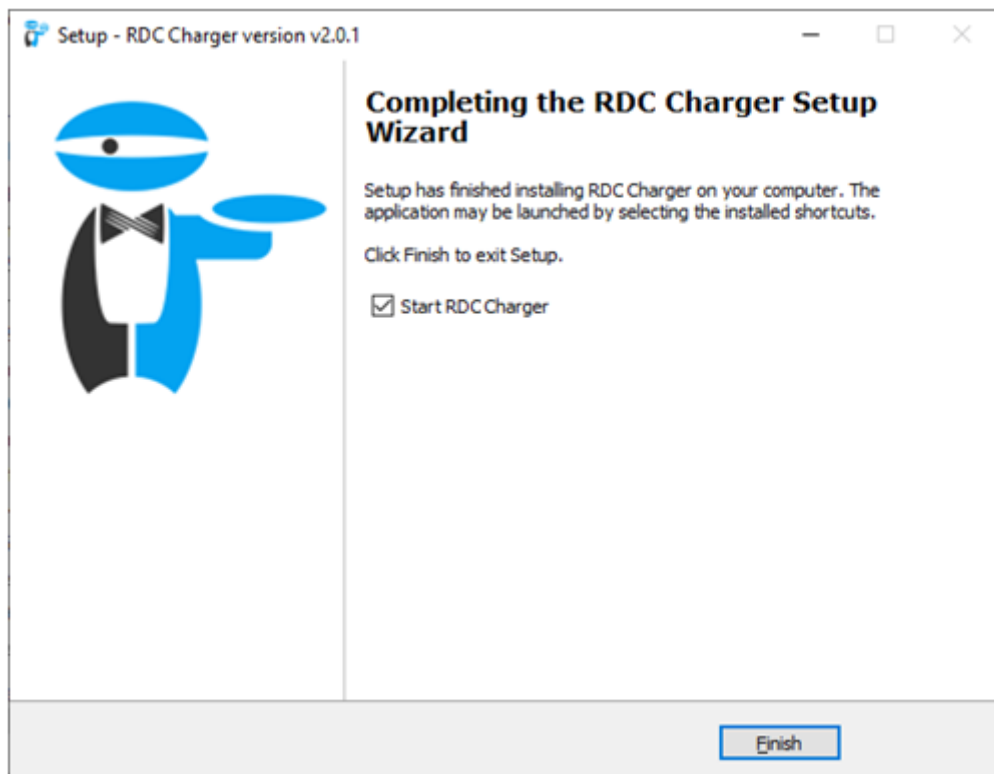


3. Select the serial number of the charging station (visible on the cover). \*
4. Run *install*

*\* If the window for selecting the serial number of the charger does not appear during installation, it means that the interface did not recognize the RDC Charger. Possible causes are that the charger is not connected to same network as the user interface, or that an IP address is not assigned.*



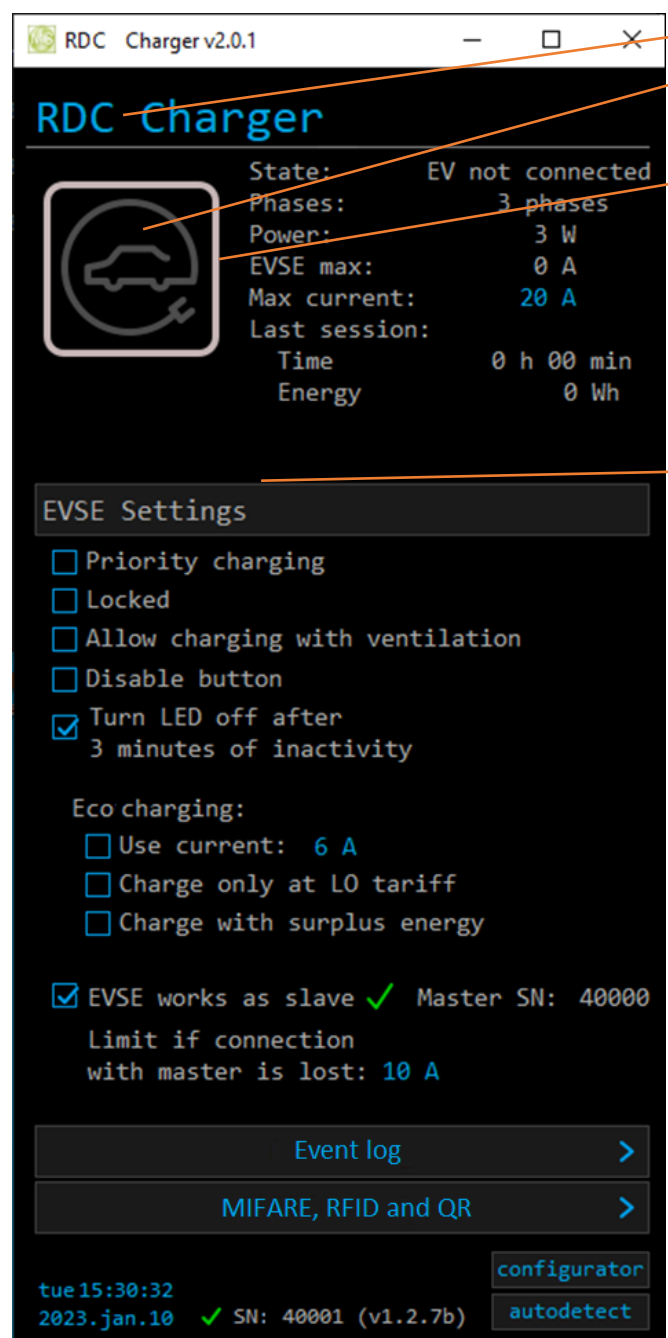




Installation was successful (shown above). User interface and its description is on the next page.



## User interface with description



**Configurable charger name**

**Short press** on the icon toggles between enable and pause **Long press** switches between priority and eco charging profile

**LED indicator** status of the charging station, more in the table below

**Phases** current charging is performed in (1, 2 or 3 phases) with **Power** expressed in Watts

**EVSE max** current charging current

**Max current** adjustable allowable charging current

**Last session** charging time and energy used

**Error display**

**Priority charging \***

**Locked** the charger is software locked. Use RFID or QR to enable charging

**Allow charging with ventilation** enables charging if the electric vehicle requires ventilation

**Disable button** disable the operation of the button on the housing

**Turn LED** turn off the LED indicator after 3 min

**Eco charging**

Use adjustable charging current

Charging at a lower tariff (setting via the configurator)

Charging with excess energy

**EVSE works as slave**

Charger works as a (slave) and is managed by another charger (master) in the case of two or more chargers (ev fleet). In case of loss of connection, it charges with the set current

**Event log** display of the last 10 charges

**RFID and QR** management of RFID and QR devices

**Autodetect** find a charging station in the local network

**Configurator \*\***

**Adjustable date, day and time**

Current software version

\***Priority charging** enables preferential charging of the vehicle with the highest permitted charging current. It does not take into account any settings for eco charging. In the case of dynamic charging, the charger will be the last to limit

\*\***Configurator** starts the HEMS configurator. More at the web link

[http://wiki.robotina.com/doku.php?id=wiki:20\\_rdc\\_charger:30\\_software:start#hems\\_configurator](http://wiki.robotina.com/doku.php?id=wiki:20_rdc_charger:30_software:start#hems_configurator)



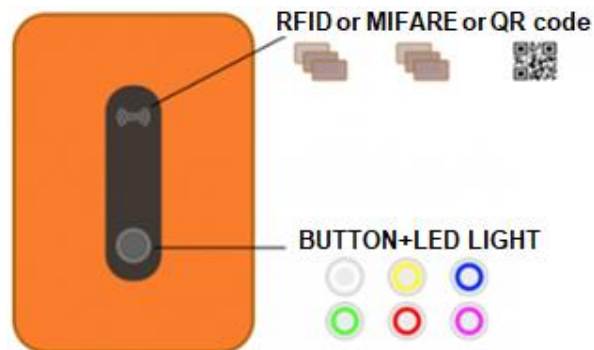


## Using RDC Charger

RDC Charger allows easy operation by simply pressing a button on the housing.










Connect the electric vehicle -> charge -> drive

*Button on the housing and the icon of the electric vehicle on the user interface have the same functionality*



### Charging process

1. Charging of the vehicle starts as soon as the vehicle is connected with the charging cable
2. **Short press** of the button switches between enable/pause charging
3. **Long press** of the button switches between priority/eco charging
4. **LED light** shows the charging status

LED light	Lights (solid line on us. interface)	Blinking (dashed line on us. interface)
	EV not connected	Charger paused
	EV connected, not charging	Charger paused
	EV connected, charging	/
	EV connected, charging ended	/
	/	Error
	/	Locked
	/	Priority charging
	/	Priority charging paused
	/	Priority charging ended



## DESCRIPTION OF POSSIBLE ERRORS

Error	Possible causes	Solution
CP positive voltage CP negative voltage	The voltage on the CP connector is out of permitted range	Check the charging cable and connector and reconnect the electric vehicle
RCD sensor trip	Switch has detected a DC differential current	If is problem with only one vehicle, please call an authorized vehicle service. If is problem with other vehicles, please call service of the charger
RCD sensor malfunction	RCD is damaged or not connected	Please call service of the charger
Undervoltage Overvoltage	The voltage at the input of the charger is out of permitted range	Please call service of the charger
Charge with ventilation	The vehicle requires charging with ventilation and "Charging with ventilation" is not enabled on the user interface	Enable "Charging with ventilation" on the user interface if the electric vehicle is charged in a ventilated area or outdoor
PS reading error	There is no connection to the power sensor in the charger housing	Please call service of the charger
Current is higher than allowed	The vehicle is charged with higher current that is allowed	Try charging another electric vehicle and if the error is still present, please call the charger service. Otherwise, call authorized service of your vehicle
Internal temperature too high	Excessive temperature inside the housing of the charger	Check that RDC charger is not directly exposed to the sun light. Please call the charger installer



## SYSTEM OVERVIEW

