

CHARGING STATIONS

# **MyBox Profi**

Users guide | Installation manual

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## IMPORTANT:

Read the manual carefully before use and keep it for future reference.

## Introduction

This product is designed exclusively for charging electric vehicles. The product must only be used with a charging cable according to IEC 62196.

The product must be firmly mounted on the wall according to the instructions in the installation section of the manual. The structure for placing the product must have sufficient load-bearing capacity. Alternatively, the MyBox stand designed for the PROFI station can be used for mounting. The product may only be operated with the approved operating parameters and under the specified environmental conditions.

Usage other than that specified here is not permitted.

## **Used symbols:**



#### **ELECTRICAL RISKS**

When performing electrical installation inside the equipment, take appropriate precautions. During installation, the equipment must be disconnected from all power sources.

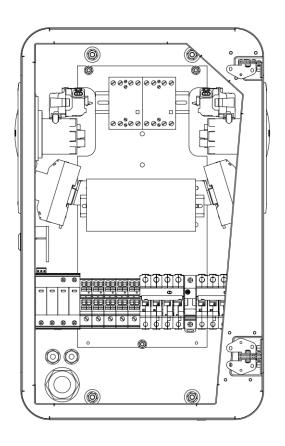


## **ATTENTION**

Indicates that damage to property may occur if adequate precautions are not taken.

## **Product overview**





## Front panel - door

Provides signalling, identification and also protection of the electrical part of the device against environmental influences.

## **Installation kit**

spacer pad	4 ks
insulating pad	4 ks
hexagonal nut with collar M8	4 ks

## **Body**

It is used for mounting on a solid base and connection to the mains. It contains all the electronic components needed for charging vehicles.







Spacer (left), Nut washer (middle), Nut M8 (right)

## **Function**



- 1. Smart **LED signalling:** a light bar informs about the status of the charging station during the charging process and also in service mode for installation purposes. For more information on the colour signaling, see "Light signaling" on page 17.
- **2. Area RFID:** The charging station can be equipped with an RFID reader, which allows identification of users and also secure start or end of the charging process using an RFID tag (card, chip, key fob, etc.). For more information, please visit our website at www.mybox.eco/support.
- **3.** Socket or integrated charging cable type 2: Type 2 sockets or universal charging cables allow you to charge any type of electric vehicle that is equipped with a Type 2 (Mennekes) input socket. The sockets or charging cables are firmly integrated into the charging station.

## Technical specification

	Model	Profi 2x 22 kW
	Coverage	IP54 (unplugged)
	Coverage	IP44 (plugged)
	Impact resistance	IK10 (whole station)
	Impact resistance	IK08 (windows - polycarbonate)
	Surface material	tempered glass, painted or stainless steel
	Status indication	RGB LED color indicator
	Operating temperature	-30°C to +50°C
	Dimensions (W x H x D)	390 x 630 x 180 mm
	Weight	25 kg
	Communication	Ethernet (TCP-IP), Micro-USB Typ C
	Protocol	OCPP 1.6J, Modbus/TCP, MQTT
	RFID reader	ISO-14443 A&B, NFC, Mifare, Legic,
		Frequency: 125 kHz, 134.2 kHz, 13.56 MHz
	Electricity meter	MID class 1 – EN50470-1, EN50470-3
	Power control	mode 3 PWM according to ISO/EIC 61851-1
	Multi-station connection	Master/slave connection (up to 12 charging points)
	Width Station Connection	including dynamic charging power control
		Protector with overcurrent protection char. B 32
	Combination circuit breaker/	2x Type A, (30 mA), 2x sensor RCM 6 mA DC leakage
	current protector	detector - equivalent to type B surge protector
	AC supply power	3P + N + PE
	AC voltage	400 V (±10%)
	Maxium input current	3x 64 A
	Maximum input power	44 kW
	Number of connectors	2
	Number of simultaneous charges	2
	Maximum output current	32 A
Α	Maximum output power	22 kW
	AC output voltage	400 V (3P + N + PE)
	Maximum output current	32 A
В	Maximum output power	22 kW
	AC output voltage	400 V (3P + N + PE)
	Connector	Type 2 - socket or integrated cable
	Socket protection Type 2	connector lock
	Surge category	III
	,	





## Important safety instruction



Before use, carefully read all instructions to ensure proper installation of the charging station.

This charging station is designed for indoor and outdoor installation. The device must be installed safely. Adequate protection must be provided during the installation process, in accordance with all installation conditions.

- The charging station must not be installed in places with explosion hazard.
- Do not handle or repair the unit when the unit is energized.
- Do not install the charging station where it could be damaged by falling objects.
- Only trained and qualified personnel should handle low-voltage electrical components inside the unit.
- The surface on which the charging station is placed must be able to withstand mechanical forces.
- The installation must be inspected annually by a qualified technician.
- Remove from service and have serviced any defective part that poses a danger to the user (broken plugs, caps that cannot be closed...).
- Only use the unit for charging electric vehicles according to IEC 61851.
- In case of unauthorized modification of the control unit, ELEXIM, a.s. will not be liable for the charging station and the warranty will be void.
- Only use spare parts supplied by ELEXIM, a.s. for service.
- Strictly observe the electrical safety regulations applicable in your country.
- Do not use this product if the EV cover or connector is broken, cracked, open or shows any other sign of damage.
- The equipment must be disconnected from any power source during commissioning.
- The charging station may only be connected by a person qualified in electrical engineering in accordance with Decree No. 194/2022 and following, who is thoroughly familiar with these instructions and the function of the device.
- After wiring, the internal part of the device is an area that is accessible only to maintenance/ service or to a person qualified in electrical engineering according to Decree No. 194/2022 Coll. and following.
- The device is intended for permanent connection.

## Prepration for installation

#### Place of installation

The station must be fixed to a solid straight wall or a straight column (material brick, concrete, block), where the minimum distances from obstacles must be observed, see picture below.

Select a suitable location for mounting the charging station that meets the specified requirements.

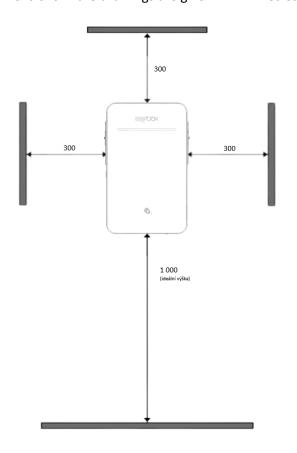
For standard mounting of the charging station, use the screws and dowels from the installation kit (in case of non-standard mounting, the corresponding mounting material must be used).

#### Minimum distances from obstacles

Space must also be available for the installation of the equipment to facilitate use, maintenance and compliance with safety regulations.

When installing the equipment, observe the specified minimum distances for maintenance and safety.

All dimensions in the drawings are given in millimetres.



#### Switchboard equipment

Circuit breaker 3-poles, characteristic B,

80 A

**Supply cable** CYKY 5x 16-25 mm<sup>2</sup> The

cable can be fed into the station from the rear or

from the bottom

#### **Data connection**

Data cable CYKY Data cable UTP

category 5 (max 100m)
Do not terminate the
cable with a connector.
It must extend at least
1.5 m at the point of

installation

#### **Tools and aids**

Drill drill pin 10 mm

Crimping pliers RJ45 Socket wrench 13 mm

Consumables	(not included)
Dowels Screws	4pcs, 10 mm 4pcs, 6x60 mm
Consumables	(not included)
<b>Consumables</b> Spacer pads	(not included) 4ks
	,

#### Installation height

The installation height of the station including the cable holder must be between 400 - 1500 mm from the ground.

## Installation guide



**ATTENTION!** This product may only be installed, repaired or serviced by an authorized electrician. All relevant local, regional and national regulations for electrical installations must be observed and respected.



**WARNING!** Turn off the power before starting the installation. Use extreme caution and follow the instructions carefully.

www.mybox.eco/support.

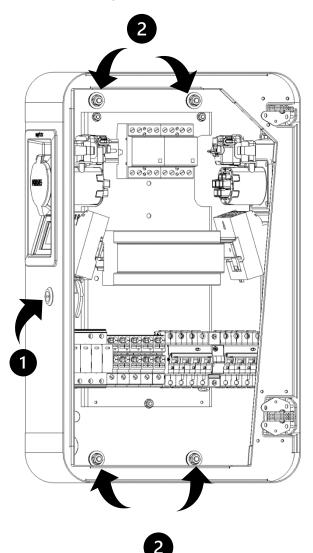


In addition to the instructions in the installation manual, we recommend watching the installation videos available on our website **mybox.eco** 

# 1 Opening

- 1. Use the included key to unlock the station
- 2. Remove the mounting bracket from inside the station that is used to attach the station to the wall.

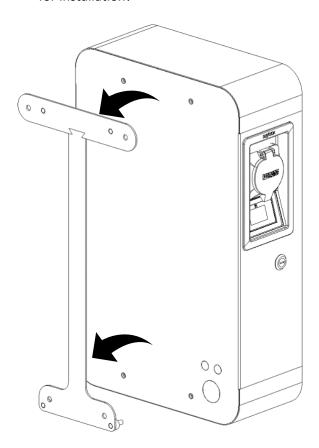
**ATTENTION!** The front panel is made of tempered glass, damage may occur if handled carelessly!



# 2 Preparation

- The mounting plate serves directly as a drilling template. So first mark and drill holes for the dowels and, if necessary, for the supply cable if you are going to run the cables through the wall.
- Attach the charging station mounting plate to a wall or structure with sufficient load capacity using the 4 screws supplied in the mounting kit.
- Use suitable dowels for mounting and observe the recommended mounting height
- 4. After attaching the mounting plate and tightening all screws.

**ATTENTION!** The use of a different anchoring material due to the building structure must be assessed by a technician due to the weight of the charging station and the future handling of the cable. Always use all 4 holes for installation!



# 3 Installation

In this step it is necessary to select the power and communication cable supply.

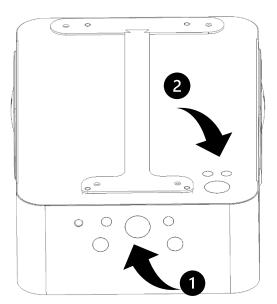
#### 1. Inlet from the underside

A 40 mm diameter hole must be punched in the bottom of the station and a 16 mm diameter hole for the data cable. An M40 cable gland is provided for the installation of the supply cable and an M16 gland for the communication cable with the dynamic power management evaluation unit. The 25 mm diameter holes are only for the cable version of the charging station.

#### 2. Rear inlet

In this case it is necessary to punch holes on the back of the station. The M40 cable gland is used for the installation of the supply cable and the M16 gland for the communication cable with the dynamic power management evaluation unit.

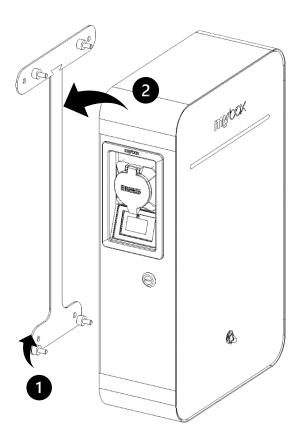
**WARNING!** The grommets must be installed inside the station.



# 4 Assembly

- 1. Place the spacers (4pcs) on the screws of the installation plate.
- Place the station on the 4 protruding threaded rods of the mounting plate. If the supply is made from the rear, pull the supply cables straight through the grommets.
- 3. From the inside of the station, place the insulating washers on the threaded rods and screw on the M8 nuts.
- 4. If you have chosen to feed from the underside, feed the supply cables through the cable glands.

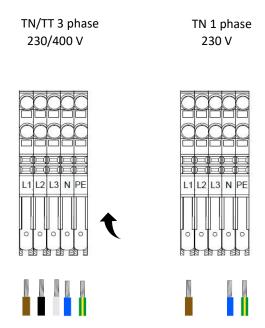
**ATTENTION!** Check that the M8 nuts are tightened correctly.



# 5 Wiring

- 1. Strip the individual wires by 13 15 mm. If the cable has salted conductors, it is recommended to use grommets. Use the correct tools to crimp them.
- 2. Connect the lead wires to the appropriate terminals. And connect the data cable to the control unit.
- 3. After the internal part of the station is connected, close the station with the key.

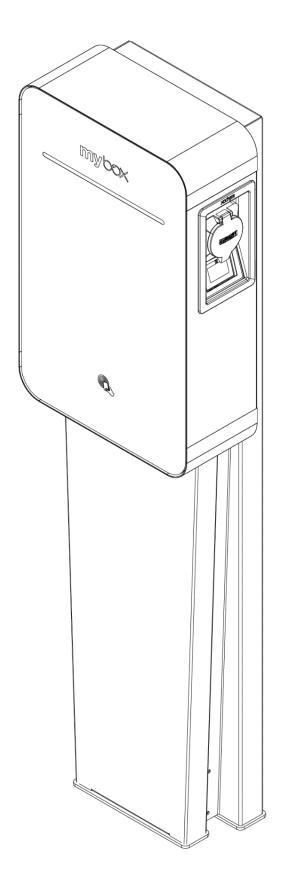
**ATTENTION!** Before switching on the power supply, check that all wires are connected correctly and that the glands and plugs are tightened.



**NOTICE!** It is recommended to follow the existing color coding of the wires used in the installation.

Depending on national standards, cable colors may differ from those shown. The illustrations in this manual follow the Czech national standards.

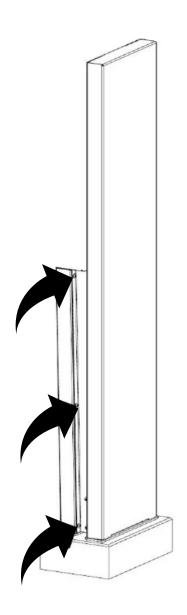
# PROFI Station installation (version with stand)



# 1 Opening

- 1. Unlock the station with the key provided.
- 2. Remove the mounting bracket from the inside of the station (see picture on page 10).
- 3. Remove the front cover from the rack.

**ATTENTION!** The mounting bracket will not be used for this installation.

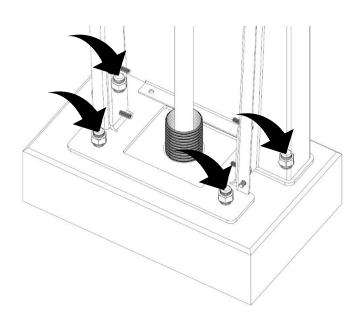


# 2 Preparation

1. The mounting bracket serves directly as a drilling template. Thus, first mark and drill the holes for the dowels.

Attach the mounting bracket including the stand with screws of sufficient strength to the concrete base.

**ATTENTION!** The use of a different anchoring material due to the construction of the substrate must be assessed by the technician due to the weight of the charging station and the future handling of the cable. Always use all 4 holes for installation!



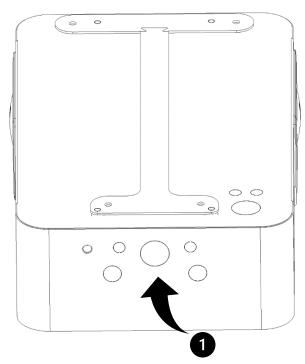
**ATTENTION!** Check that the screws are tightened correctly

# 3 Installation

When installing the station on a stand, the power and communication cable can only be fed from the underside of the station

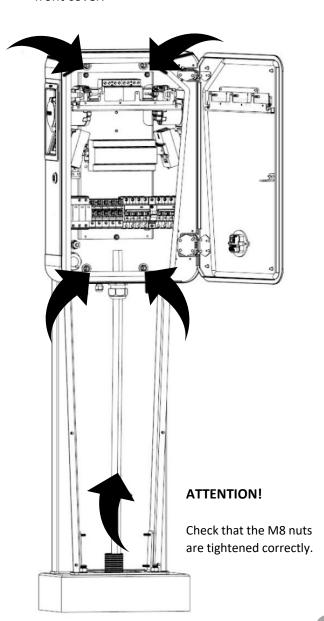
#### 1. Inlet from the underside

A 40 mm diameter hole must be punched in the bottom of the station and a 16 mm diameter hole for the data cable. An M40 cable gland is provided for the installation of the supply cable and an M16 gland for the communication cable with the dynamic power management evaluation unit. The 25 mm diameter holes are only for the cable version of the charging station.



# 4 Assembly

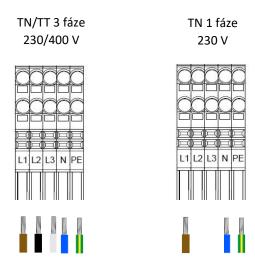
- 1. Mount the station on the 4 protruding threaded rods on the stand.
- 2. From the inside of the station, place the insulating washers on the threaded rods and screw on the M8 nuts.
- 3. Push the power and communication cable through the cable glands from the underside.
- 4. Replace the front cover of the rack and screw in the locking screws to secure the front cover.



# 5 Wiring

- 4. Strip the individual wires by 13 15 mm. If the cable has salted conductors, it is recommended to use grommets. Use the correct tools to crimp them.
- 5. Connect the lead wires to the appropriate terminals. And connect the data cable to the control unit.
- 6. After the internal part of the station is connected, close the station with the key.

**ATTENTION!** Before switching on the power supply, check that all wires are connected correctly and that the glands and plugs are tightened.



**WARNING!** It is recommended to follow the existing colour marking of the wires used in the installation.

Depending on national standards, cable colours may differ from those shown. The illustrations in this manual follow the Czech national standards.

# Operating Instructions charging station

(uživatelská příručka)

## START OF CHARGING

- 1. The first step is to connect the charging cable to the vehicle, select an available socket and connect the cable to the charging point.
- 2. Once the charging cable is plugged in, the LED indicator lights up blue on the half of the visor.
- Next, identification must be made by attaching a contactless RFID card to the reader to start the charging process.
   If the proximity card reader is deactivated, the charging process starts automatically when the vehicle is detected.
- 4. During the charging process, the LED signal lights intermittently in blue see charging station status indication.

## 2 END OF CHARGING

- 1. 1. The first step to complete the charging process is to unlock the car's charging socket according to the specification of each electric car (e.g. on the car's dashboard, with the keys, etc.).
- 2. Disconnect the cable on both sides the LED signalling is green.
- 3. When finished, the connector is available.



#### **RFID AUTHORIZATION**

The charging station can be operated in two modes.

Charging process without RFID identification - the charging connector is freely available and can be used by simply connecting the charging connector (socket / cable) in conjunction with an electric vehicle dedicated to this charging.

The charging process including RFID identification - of the charging connector is not freely available and it is necessary to make an identification using RFID card/chip and this will initiate the charging process.

Note: The described state corresponds to RFID identification not to other forms of identification such as backend / OCPP protocol / application etc.

## **Charging station status indication**

Indication of the station status is provided by a view on the front panel of the station.



**Description of the traffic lights** 

**Green** (permanently lit)

Blue

**Blue** (lights intermittently)

Red

Indication of the station status is provided by a view on the front panel of the station.

After each charging point, the signalling is divided into two halves.

**WARNING!** If the red light is still on, disconnect the charging cable, turn off the circuit breaker for the charging station and contact technical support.

#### **Status**

The station is ready for charging

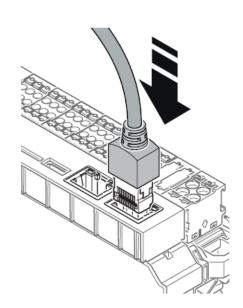
Charging cable is connected

Charging process is underway

Charging station error. Disconnect the station from the power supply by switching off the circuit breaker and contact a service technician.

# To build the charging station control unit

- PC and charging station connection for setting up the control unit
  - Use the ETH0 port on the controller to connect
  - Set up the PC within the same IP address range - see documentation Setting up and installing the charge controller
  - The IP address of the control unit is factory set to 192.168.1.100



- Opening the WBM web interface
  - Entering the IP address of the control unit 192.168.1.100 into the web browser
  - Login to the WBM of the control unit user: manufacturer
     pass: manufacturer



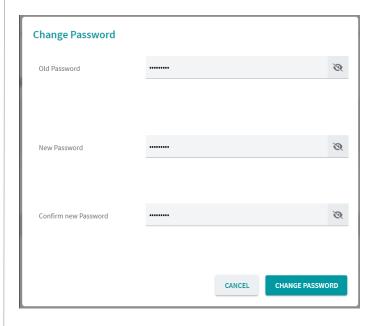


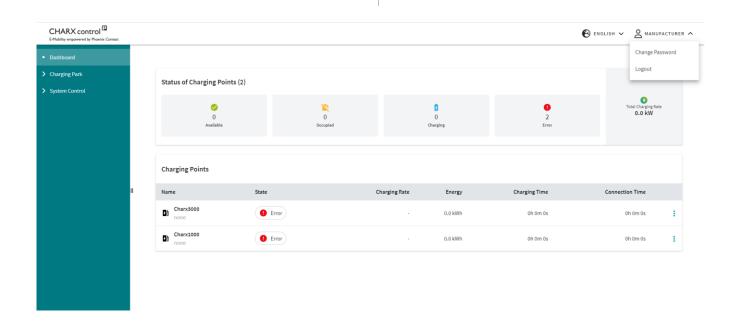
## **Change password**

Change your password regularly to prevent misuse and invalid device settings, change passwords at startup. At the latest at the installation site. Assign a new password for your user role by clicking on the "Profile" button.

If you do not use WBM, to prevent misuse and invalid device settings within your user profile, log out by clicking the button.

If you are temporarily not using WBM, press the "Logout" button.







## IP address reconfiguration

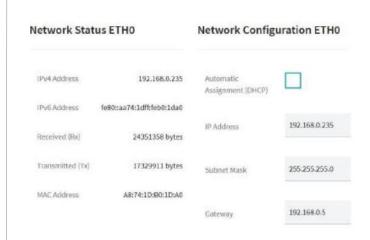
## Station IP Address Reassignment -Automatic Assignment (DHCP) is not enabled

- From the menu, select System Control > Network
- Change the IP Address and Subnet Mask
- Save

#### Enter IP address - if the IP address is not known

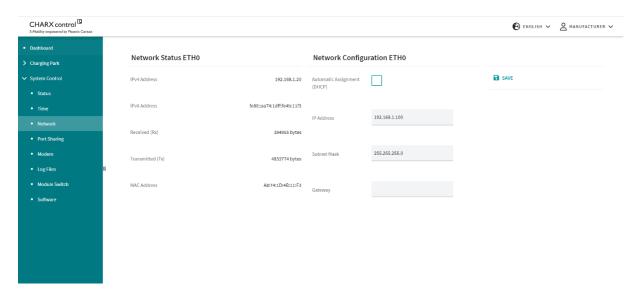
For connection to the control unit, a cable connection between the PC and the control unit can be used using a **USB C cable**. A virtual **network interface is created**.

- access to the station always under IP 192.168.5.1
- regardless of the Ethernet network settings (both drive and PC)



## The driver must be installed for proper functionality:

- unpack the drivers (2 files)
- open Device Manager
- connect the PC to the controller using a USB C cable
- find the appropriate interface and select the option to update the driver from the PC
- select the folder with the drivers
- the virtual network of the station is now available at IP address 192.168.5.1



# Control unit configuration

## Nastavení nabíjecího proudu

- The charging current setting can be changed in Charging park > Overview
  - Selecting the charging point e.g. Charx3000 > Configuration > Energy

## **Charging current**

Charging Current Minimum – 6 A Charging

Current Maximum – 32 A Fallback Charge

Current – 6 A

(settings for offline mode)

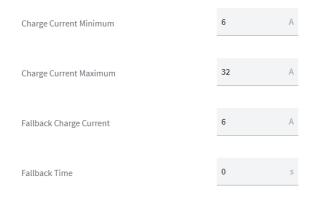
## Fallback Time (s)

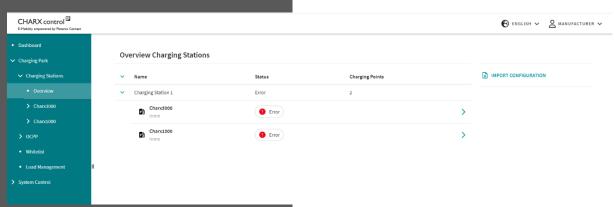
(in case of communication failure = time to go offline)



#### Energy

#### **Charge Currents**





**Note:** From the factory, the control unit is already set to values corresponding to charging 22 kW / charging point, i.e. Min 6 A, Max 32 A.



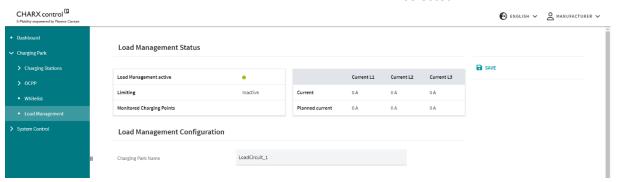
## **Power division settings (Load Management)**

- Charging Park > Load Management The top of the page shows the current status of load management. Below that, you can define configurations and add charging points to load management.
- Load circuit fuse (A) here it is possible to set the value of the preset circuit breaker, which must not be exceeded by the station.
  - The circuit breaker value applies to all charging points connected to the supply
  - This value determines the maximum amount of current that all connected charging points can receive
- High Level Measuring Device

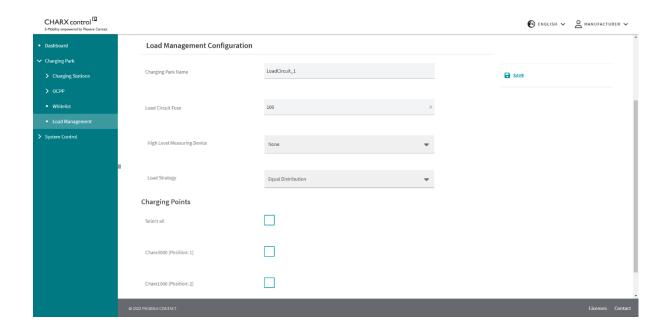
   the measuring device is configured by connection type. If other loads are connected to the same fuse as the charging park, the total current can be recorded by the higher level measuring device. This ensures that the value of the load circuit fuse is maintained even if the charging points are well below this current value.

## The measuring device is configured by connection type:

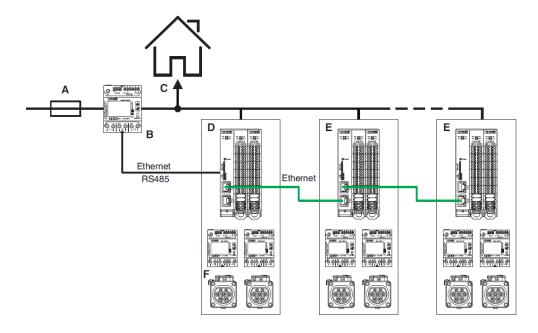
- None: No master measuring device is connected.
- **IP Address:** The parent measuring instrument is connected via a network connection.
  - IP Address: The IP address of the parent measuring device is entered here
  - Measuring Device Type: Here you can select the type of energy measuring device for measuring devices configured with an IP address.
  - Phoenix Contact EEM377
    - o EEM-EM377, 2908590
  - Phoenix Contact MA370
    - o EEM-MA370-R, 2907980
    - o EEM-MA370-24DC, 1127059
    - o EEM-MA370, 290798
- RS-485 Modbus: The master meter is connected to the charging interface of the charge controller via an RS-485 connection. When using a DLM with RS-485, the master meter must also be RS485. The Modbus address of the parent meter must be set to an address 1 greater than the meter in the station.
  - Configured RS485 Controller: Here, the charging point to which the measuring device is connected is selected.



- Load Strategy: Even distribution: all charging points receive an even distribution of energy. Charging points do not have priority.
- Charging points: It is always necessary to select and tick which charge points the DLM applies to.



Example of connecting multiple control units to each other - always from port ETH 1 to port ETH0



## **Charging authorization settings:**

Here are the main authorisations used

Charging authorisation settings can be changed in Charging park > Select charging point e.g. Charx3000 > Configuration > **Release charging** 

Each charging point must be set individually (e.g. Charx3000 and then Charx1000).

# Release Charging Release Mode By local Whitelist Type of RFID Reader ELATEC TWN4 RFID Timeout 60 S Renew previous Charging Release after System Restart

- Always release Charging: Charging starts automatically when the car is connected.
- By local Whitelist: Charging is initiated via RFID card authorisation. The RFID card list is stored locally in the unit. The following must be selected in the fields:
- RFID Reader setting which unit the RFID card reader is connected to (always connected to the Charx3000 from the factory)
- Type of the RFID Reader: MyBox uses Elatec TWN4
- RFID Timeout: The time after which the release of charging via RFID is cancelled if no vehicle is connected. The time is given in seconds.

- Renew previous Charging Release after System Restart: When checked, resumes previous charging after restarting the unit.
- By OCPP: Authorization via OCPP. NOTE:
   If you change settings or switch from OCPP to local Whitelist, you must restart the OCPP agent in System Control > Status.
  - For OCPP 1.6, click the arrow (restart and wait for recovery).

    Compared to the RFID option, there is a new window in By OCPP:
- must enter an ID here; this ID must be unique in the charging park. You must enter an ID starting with 1. The ID represents the ID in the OCPP backend. NOTE: The ID is required on the OCPP backend for OCPP operation. You must set each charge point individually, e.g., you must enter the OCPP ID value into the Charx1000: 2).

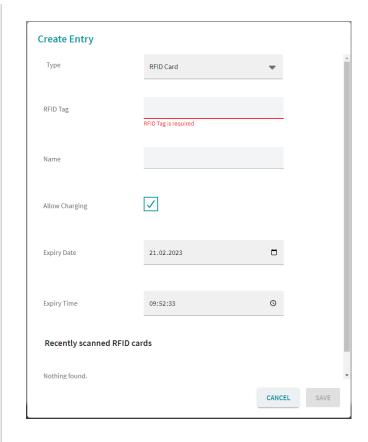


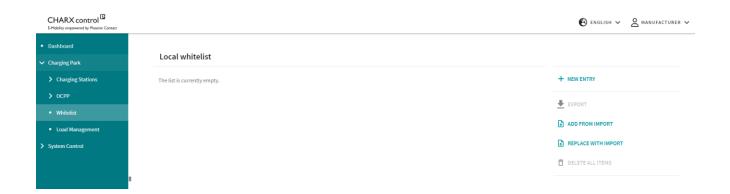
## **Local Whitelist (RFID cards) settings**

Whitelist settings can be done in Charging park > Whitelist - add/remove RFID cards individually. Also available is the function to import and export RFID cards in bulk.

#### **NEW ENTRY – adding** a new RFID card

- RFID Tag: card number manual input or by attaching it to an active RFID reader (Elatec TWN4 - audible signalling when the card is attached), the loaded card appears at the bottom, then click on it and give Import, thus the RFID Tag is automatically filled in.
- Allow charging setting whether the card should allow charging
- **Expiry date** it is **necessary** to enter the date when the card stops working
- Expiry time as well as Expiry date





# 4 OCCP Setings

OCPP settings can be done in Charging park > OCPP > Configuration.

Charging authorization must be set to OCPP, see. Point 3.

Charging authorization settings. The station must be connected to the internet - the Connection status should be green in the OCPP > Status field.

 Backend URL - setting the endpoint of the station that is specified in the backend There is also a station identifier in the backend, which must also be written at the end of this endpoint after the slash in this Backend URL field.

**Example**: backend identifier - station1 URL of endpoint - .../station1 wss://uuapp-dev.plus4u.net:443/uu-chargeupcpo mockg01/941100150ac84b2c99e98a22070398c4/json/stanice1

## **Optional OCPP settings**

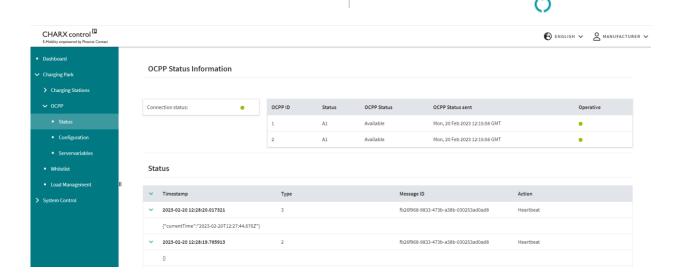
These parameter values are not mandatory - they are set according to the backend requirement

- Setting variable values Charging park
- > OCPP > SERVERVARIABLES

The parameters must be set according to the requirements of the backend supplier.

Possibility to set station parameters:

- WebSocketPingInterval = 50
  - if not set status notification is repeatedly sent to the backend
- ConnectionTimeOut = 90
- MeterValueSampleInterval = 60
- he recommended values are.
- At the end of the setup, it is necessary to restart OCPP
- System Control > Status OCPP 1.6 click on the icon to reset



Complete settings of the control unit can be found in the manual - MyBoxProfi\_2x22kW\_settings\_RJ https://elexim.net/elektromobilita/wp-content/uploads/sites/2/2022/10/MyBoxProfi\_2x22kW\_nastaveni\_RJ.pdf

## Manufacturer's declaration

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