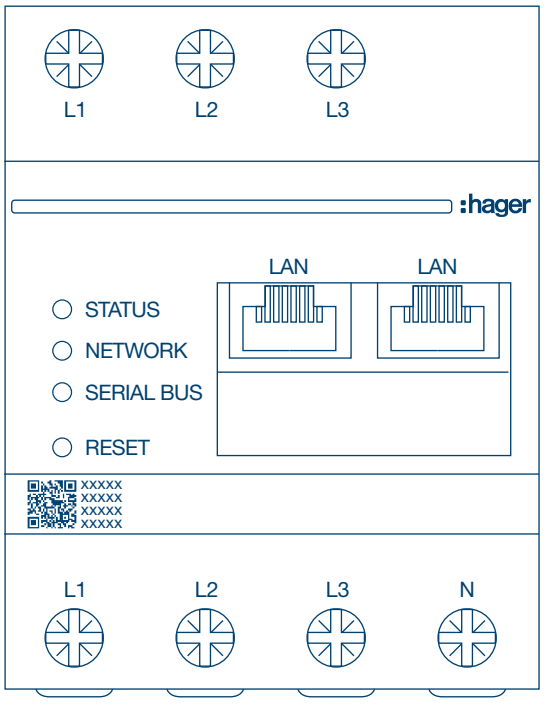
Configuration instructions

LLM
Local Load Manager



Local Load Manager, up to 10 charging points, local
XEM510

Local Load Manager, up to 40 charging points, with OCPP 1.6
XEM520

CE

:hager

EN

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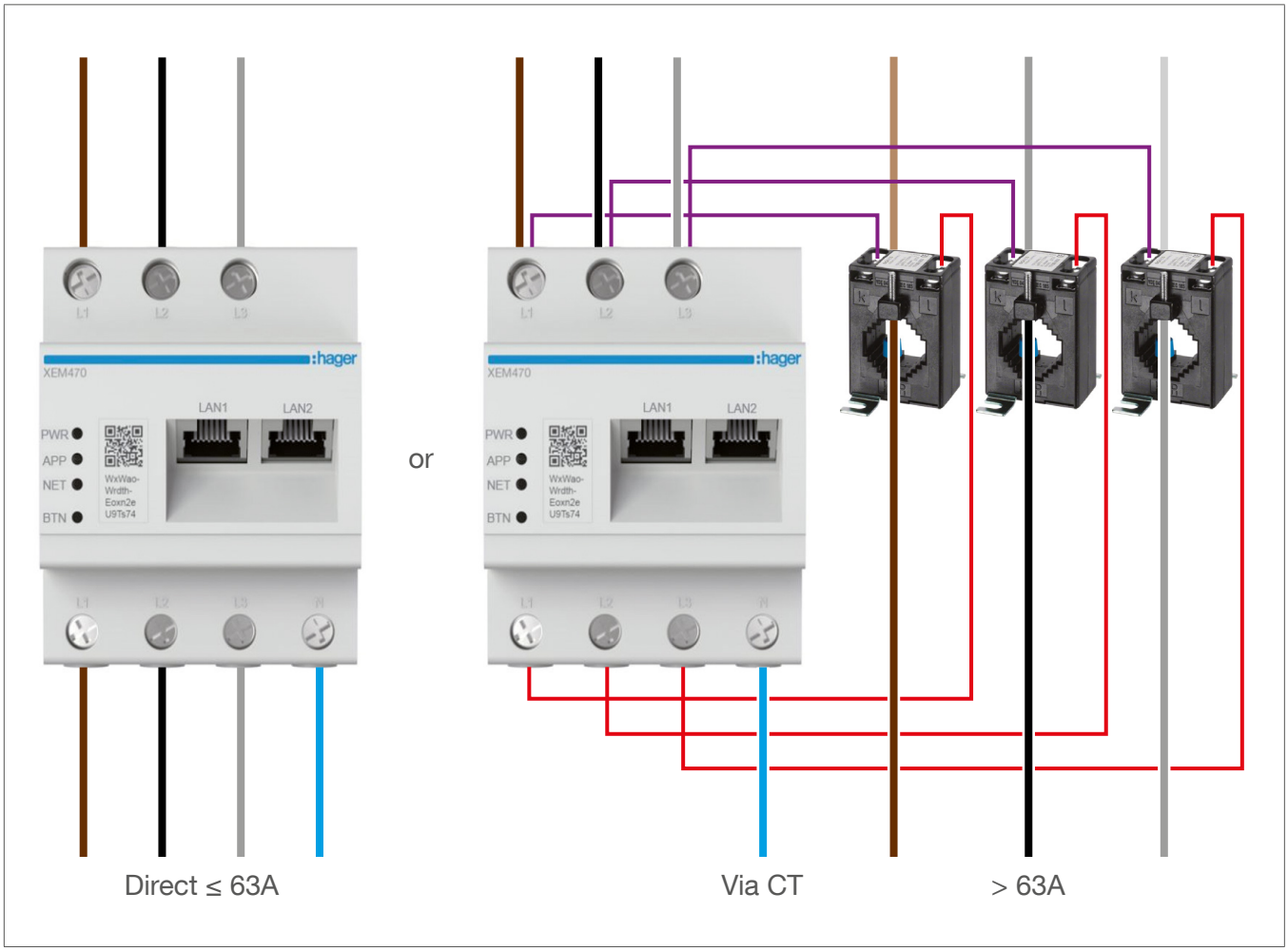
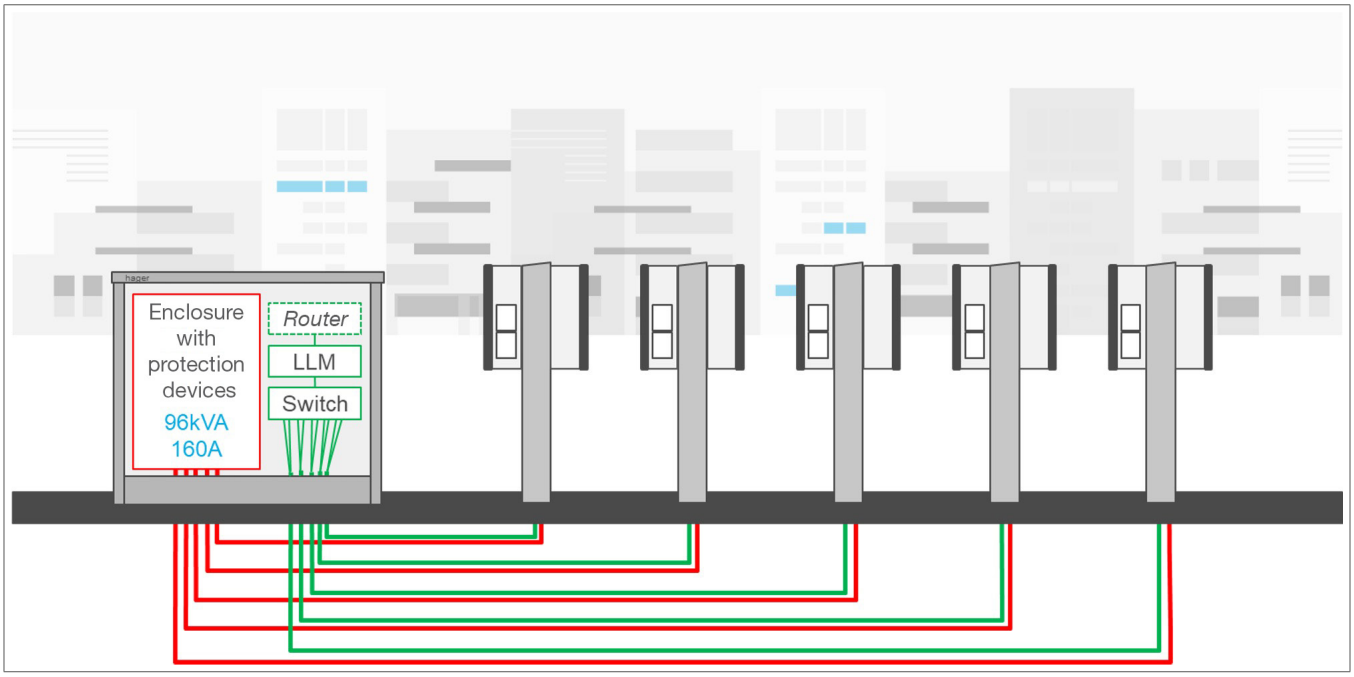
– For installation in distributors on a DIN rail
– Dynamic and static load management
– User and RFID card management
– Setting of charging station parameters
– Energy monitoring
– Monitoring of charging operations

02 Installation

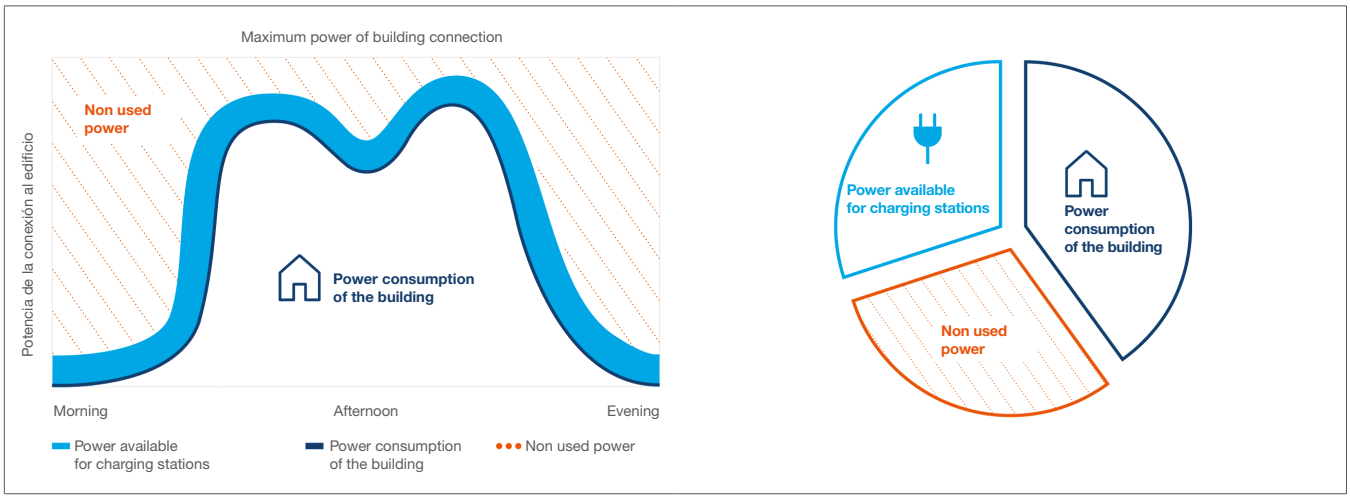


03 Connection example

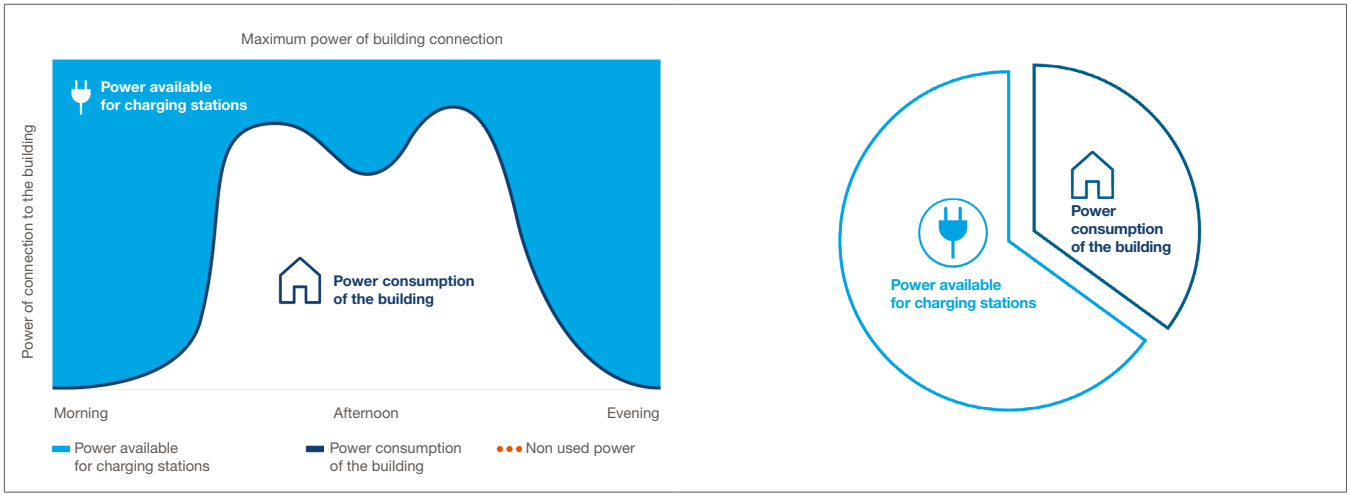


04 Load management

04.01 Static/dynamic load management



Static load management



Dynamic load management

For buildings with multiple charging points, the Local Load Manager (LLM) makes it possible to adjust the power used to charge electric vehicles based on the total power consumption of the building.
In the event of excessive consumption, corresponding protective mechanisms are triggered, avoiding a building-wide power failure. Using dynamic management, the available energy can be used to charge electric vehicles in full, without resulting in power failures.
In addition, dynamic management enables a greater number of charging stations to be supplied compared to a system with the same properties without the LM.

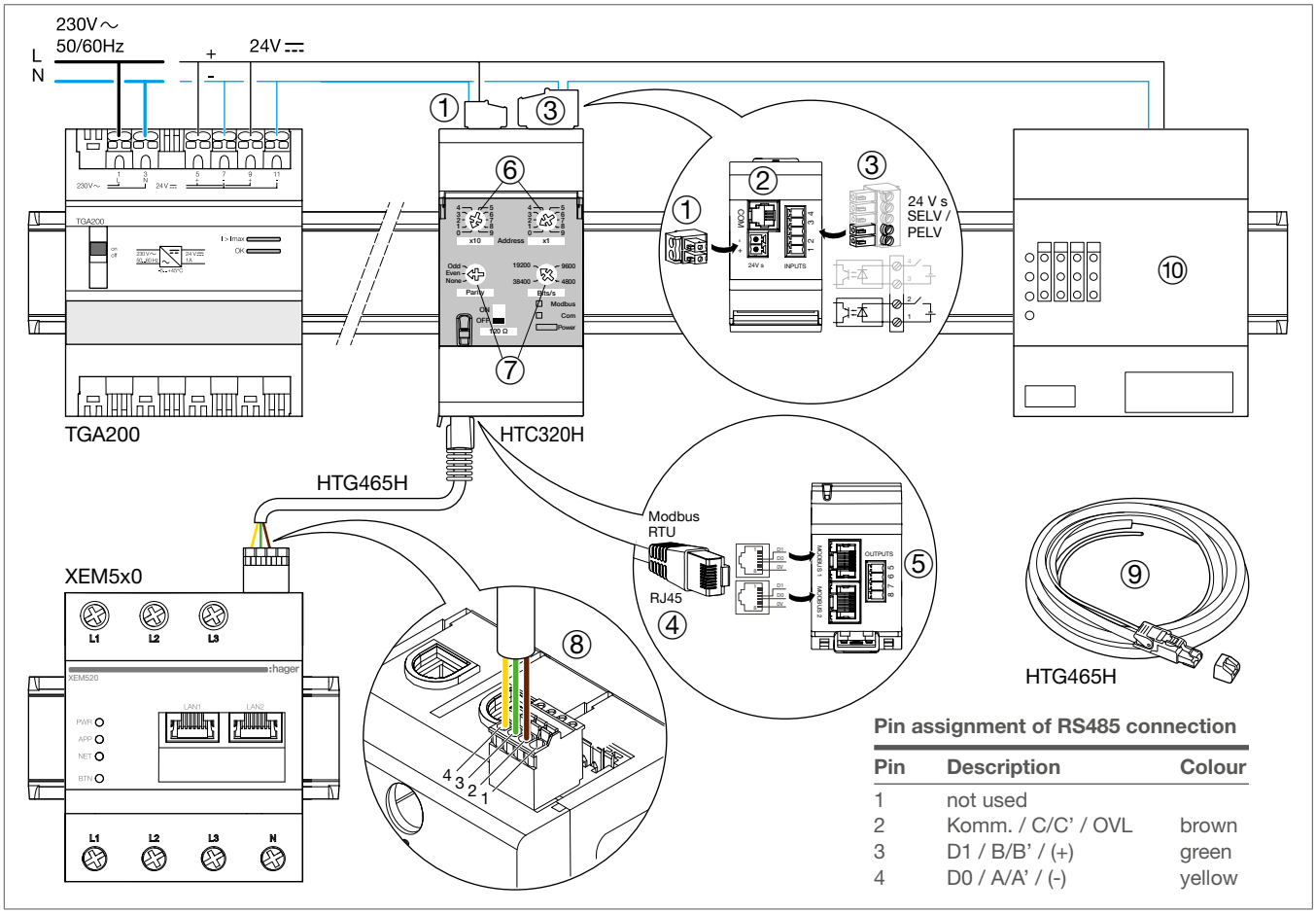
04.02 Load shedding by an external input signal

As an option, the Local Load Manager can be connected to an external input that can issue a signal to interrupt all ongoing charging operations (global load shedding).

Examples of application:

– If different tariffs (main/secondary tariff (day/night tariff)) or extremely variable electricity tariffs (electricity

exchange) are used, charging processes must be avoided at high-tariff times and permitted at low-tariff times.
– With a time switch as an external signal generator, charging operations must be limited to defined time intervals.
– When connected to a pre-triggering alarm signal generator such as a Hager H3+ main switch and triggering an alarm, the Building Energy Management System (BEMS) must be allowed to interrupt ongoing charging operations.



① Terminal and slot **+/-** for **24 V ⎓** power supply, e.g. TGA200 (required)
② **COM** port
③ PIN **1 … 4** for two digital **INPUTS**, only one (PIN **1** and **2**) required
④ RJ45 sockets for **MODBUS 1** and **2**
⑤ Two digital **OUTPUTS** (not required)
⑥ Two **address** potentiometers for the Modbus address **1 … 99 – x10** for the tens, **x1** for the ones
⑦ Two potentiometers for Modbus parameters **Parity** and **Bits/s** (signal speed)
⑧ RS485 interface with Modbus RTU connection
⑨ Modbus cable with RJ45 plug and earthing connection (HTG465H)
⑩ Smart meter controller or other external signal generator (input)

Important note
This load shedding function via an external input is available as of version **LLM_2023_08**.

Connect and set the communication module:

❶ Connect the communication module to a 24 V DC power supply.

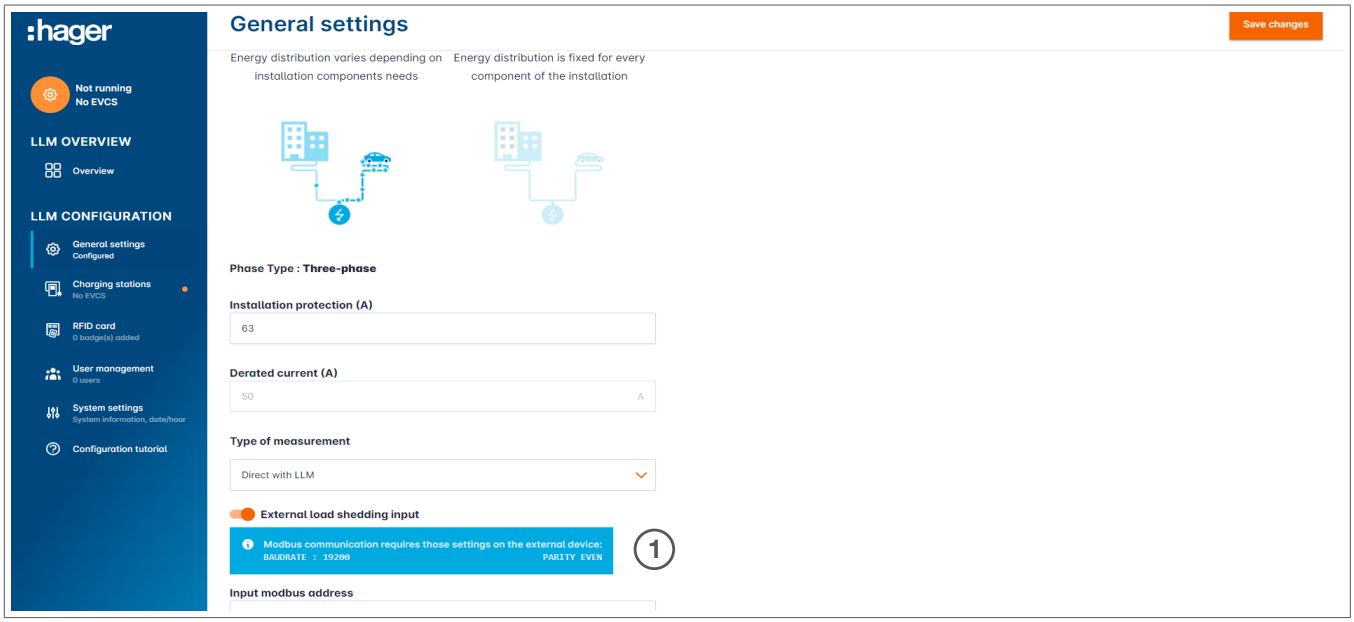
❷ Connect the communication module to an external signal generator.

❸ Connect the Modbus cable (HTG465H) together with the RJ45 plug to one of the ports on the bottom of the communication module and

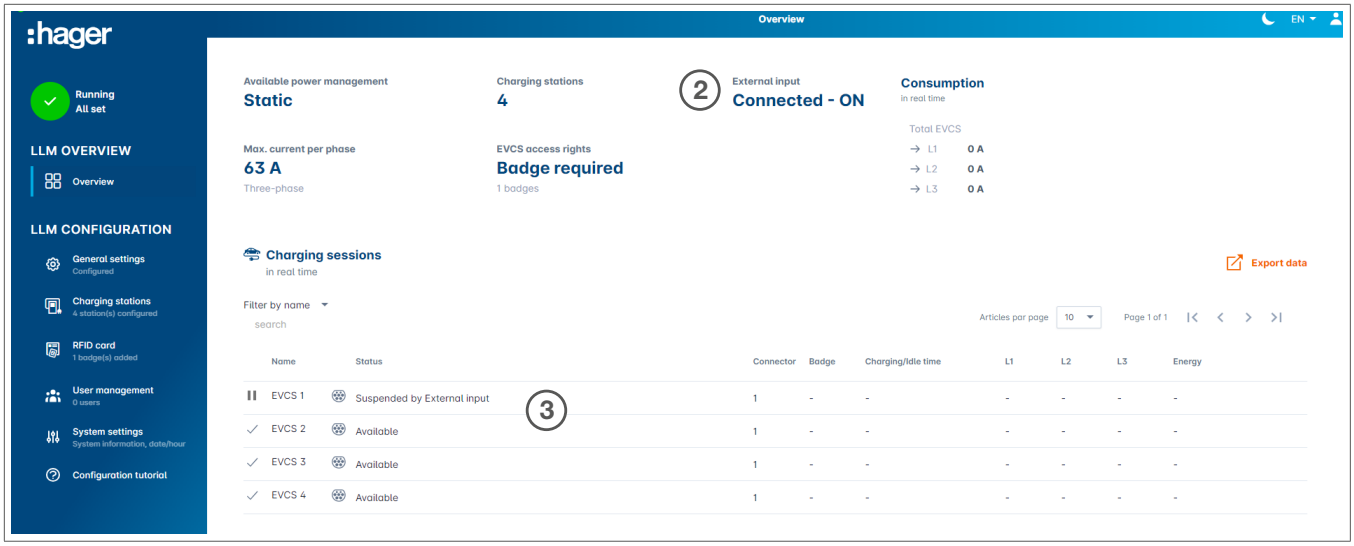
❹ connect the loose end of the cable to the RS485 interface of the Local Load Manager (Modbus RTU).

❺ Use the two upper **address** potentiometers on the HTC320H to set a Modbus address between **1** and **99**.

❻ On the two potentiometers of the HTC320H, it is essential to set the Modbus parameters **Parity** to **Even** and **Bits/s** to **19200** (speed).



① Activate/deactivate the function and enter the Modbus address



② I/O controller input status:
HTC320H not connected to Local Load Manager: **Not connected**
HTC320H connected to Local Load Manager and input active: **Connected – ON**
HTC320H connected to Local Load Manager and input inactive: **Connected – OFF**

③ Display **paused by external signal** when the external input is active.

05 Configuration

05.01 Preparation

Access the configuration page:

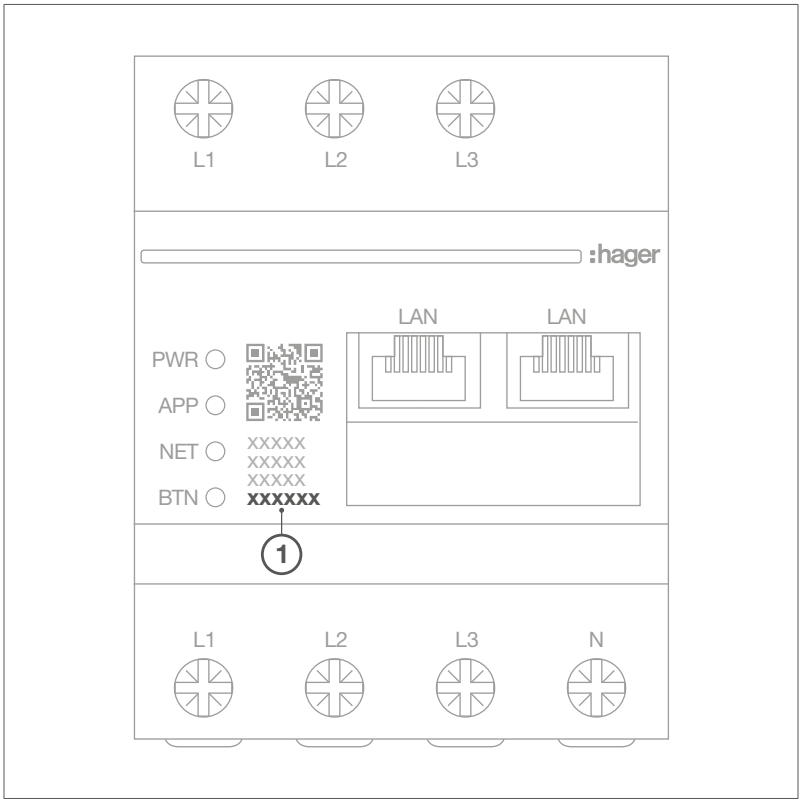
❶ Open a web browser.

❷ Then type the following into the address bar:

– http://hager-llm-[the_last_6_characters_of_the_UID]/
Example: http://hager-llm-ab4df5/

Information

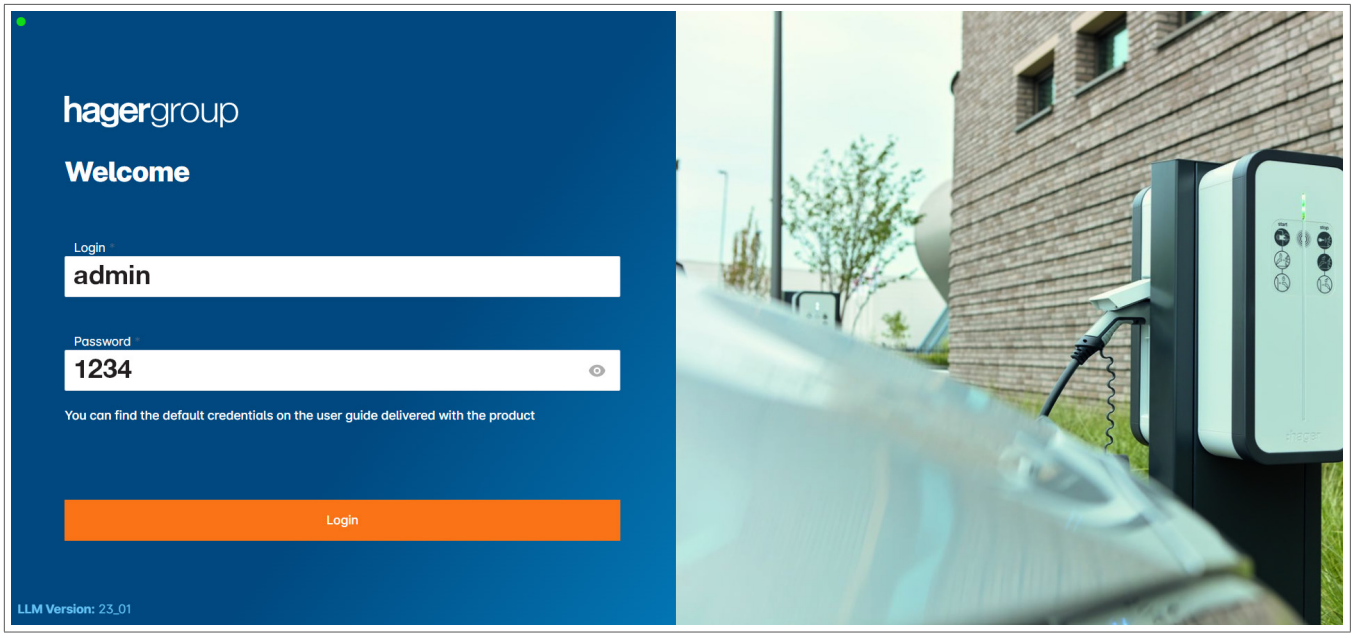
The last six characters are located on the front of the product under the “QR code” (last line) ①.



05.02 Logging in for the first time

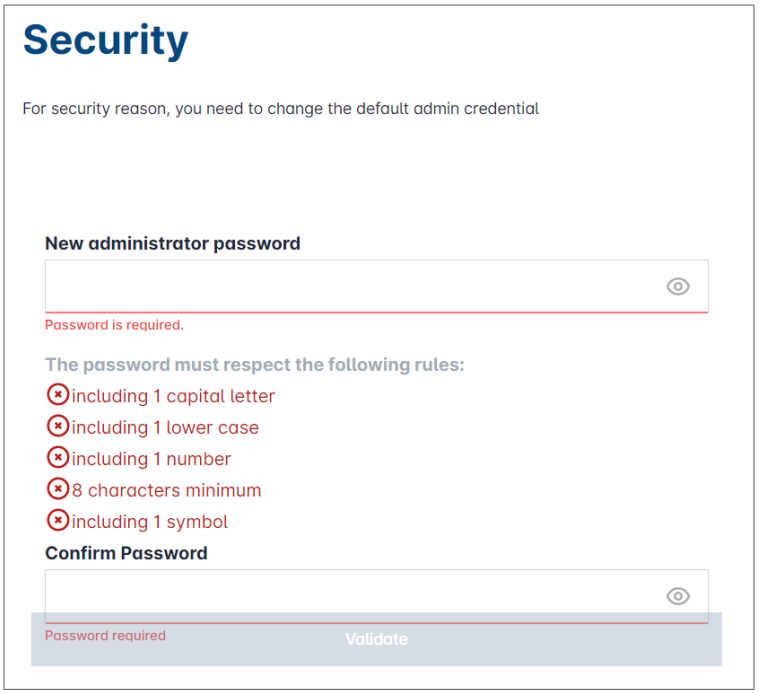
❶ Enter the following username and password:

– Username: admin
– Password: 1234

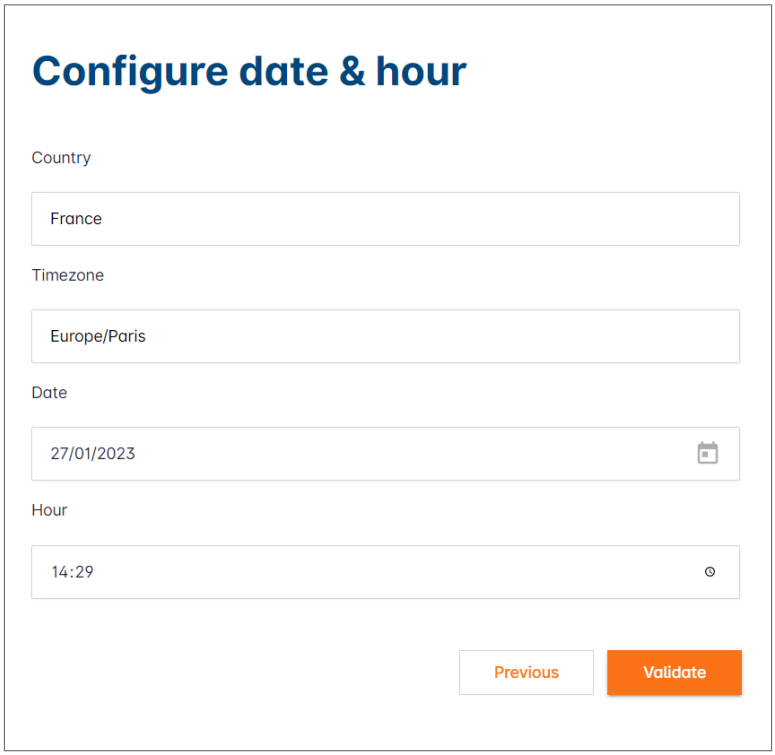


❷ Then click **Register**. You will be asked to enter a new password.
This must meet the following minimum requirements:

– one uppercase letter
– one lowercase letter
– one number
– eight characters
– one special character.

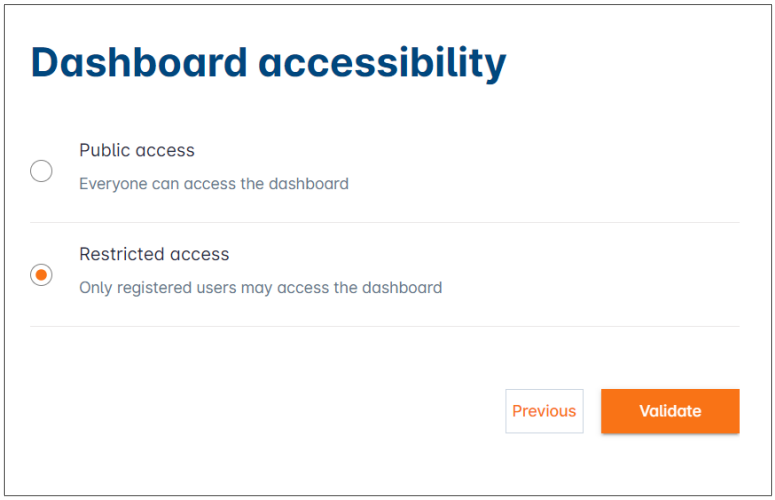


❸ Set the date and time.

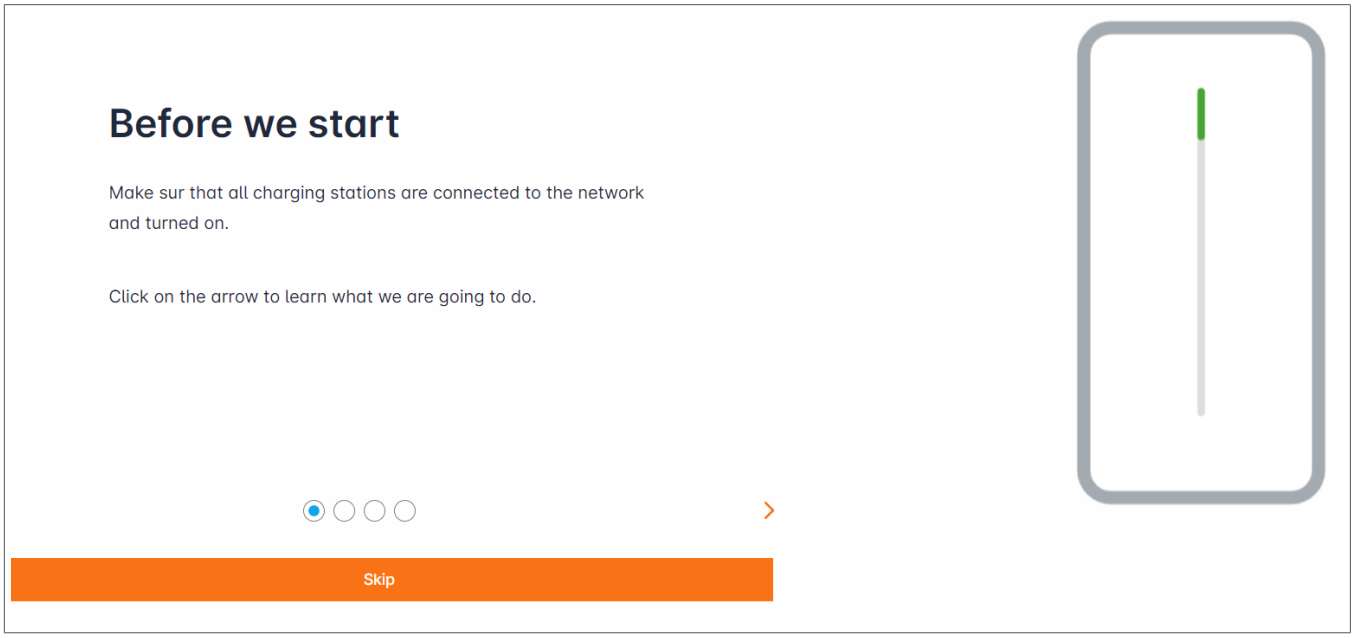


❹ Select the required access setting for the dashboard page.

Public access:
Everyone on the same network as the Local Load Manager can access the dashboard.
Private:
Only users created in the Local Load Manager have access to the dashboard page.

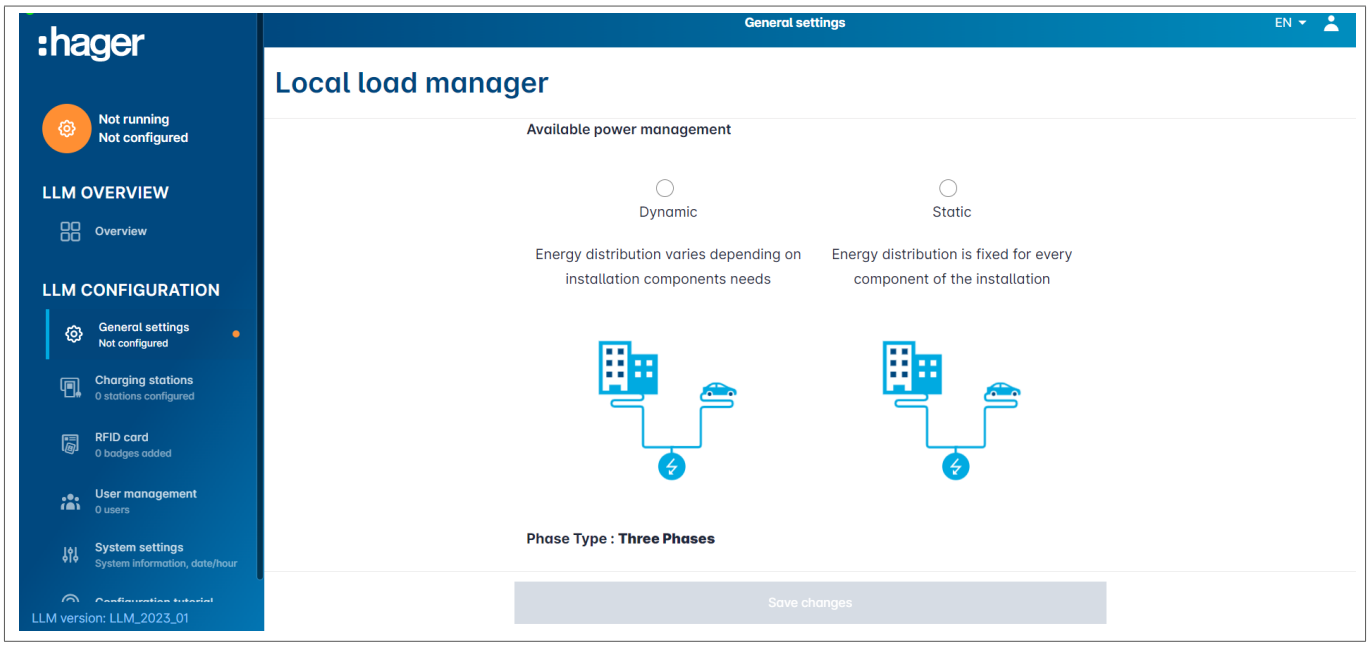


Continuing the configuration process

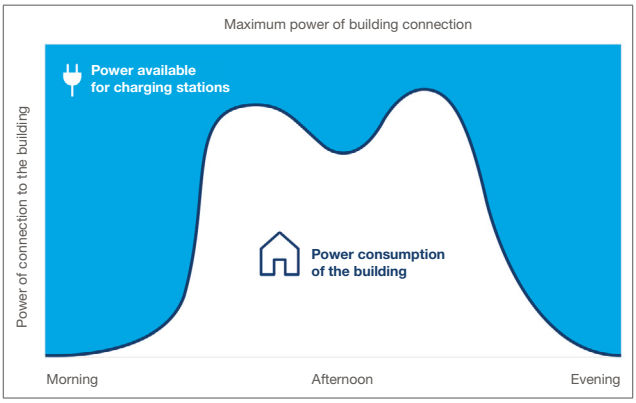


1. Make sure that all charging stations are switched on and connected to the network.
   To do this, scan the network and check whether all charging stations are visible on the network.
   If they are not visible, check all physical wiring.
2. Define the charging station operating mode (static or dynamic).
3. Scan for charging stations on the IP network.
4. Define the access strategies for the charging stations (users, RFID cards).

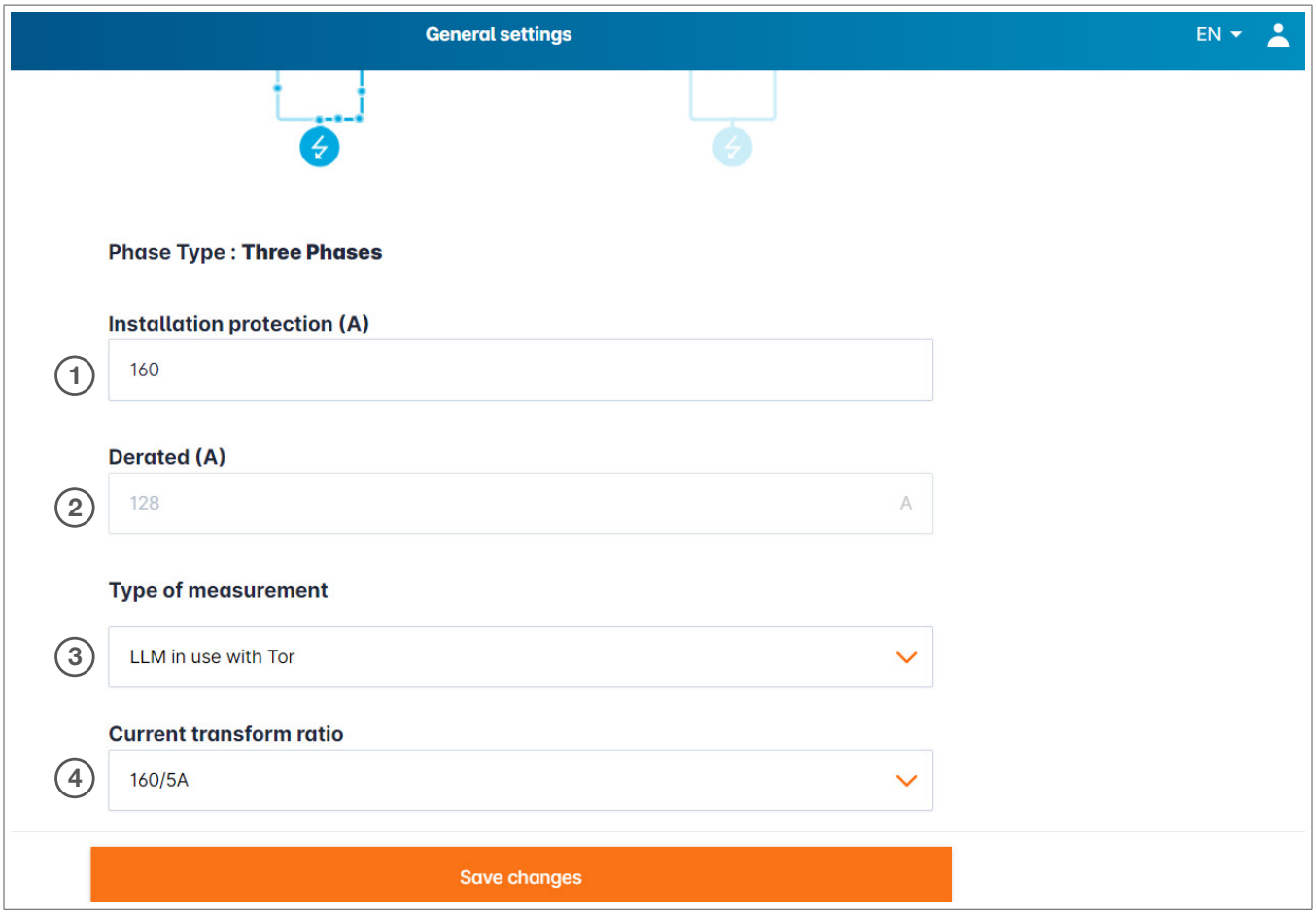
05.03 Defining the distribution strategy



Dynamic charging:
The maximum power depends on the power consumption of the building. The remaining power available is divided between the charging stations (a current measurement via the Local Load Manager or current transformer is required).



Dynamic load management



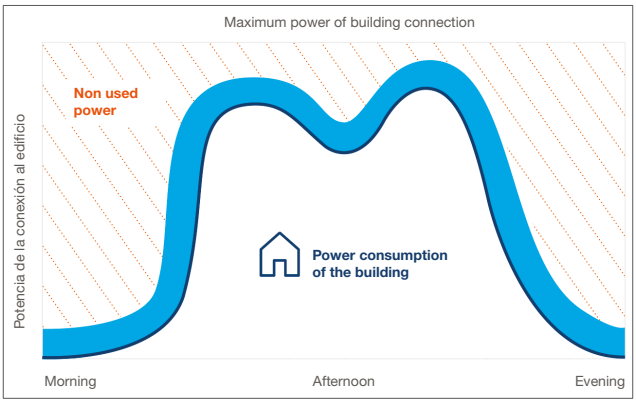
① Fuse protection for the installation: enter the value of the maximum supply current (backup fuse for the building entry point) in amps.

② Reduced current: backup fuse minus 20%

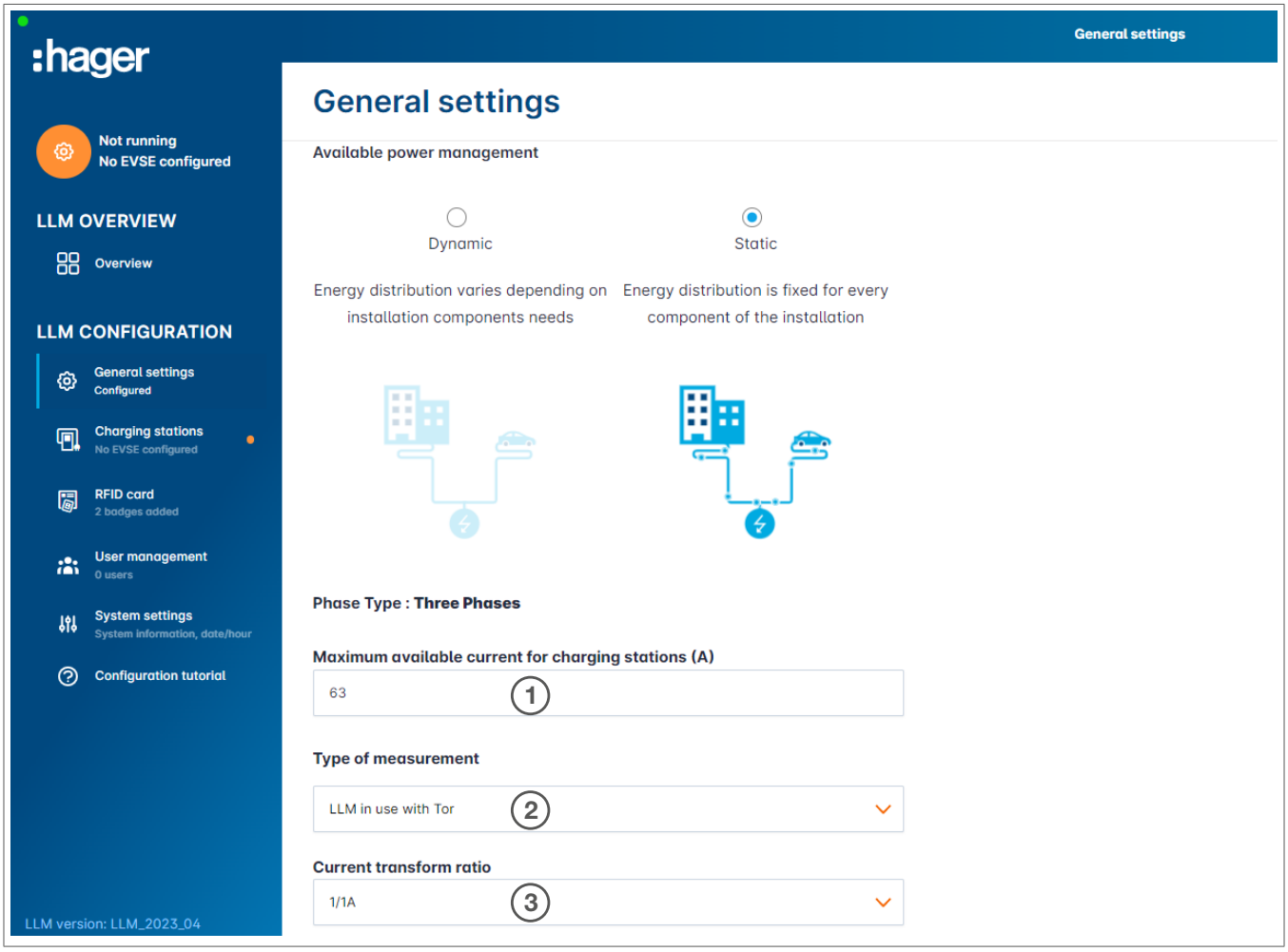
③ Type of measurement: direct measurement ≤ 63 A
or
via current transformer (ratio of /1 A or /5 A)

④ Current transformer ratio: possible values: from 75 A to 6000 A

Static charging:
The maximum power is a fixed value which is divided between the charging stations as required.



Static management



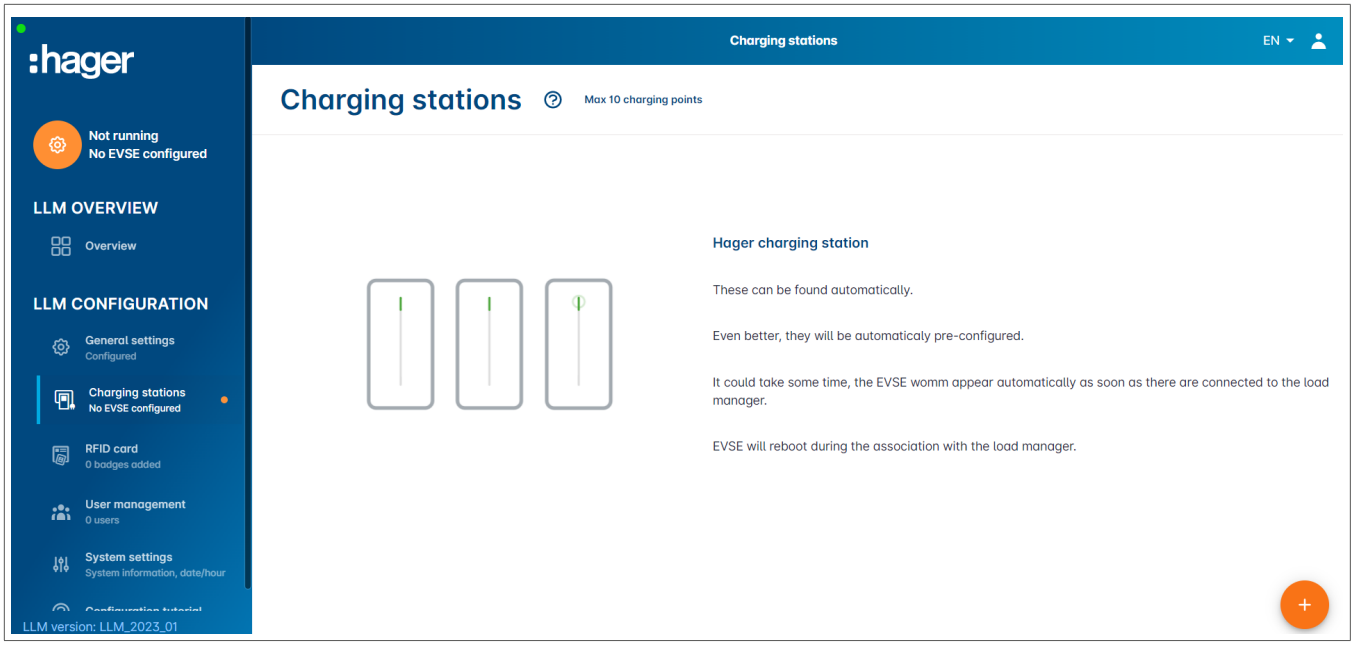
① Fuse protection for the installation: enter the value of the maximum supply current (backup fuse for the building entry point) in amps.

② Type of measurement: direct measurement ≤ 63 A
or
via current transformer (ratio of /1 A or /5 A)

③ Current transformer ratio: possible values: from 75 A to 6000 A

Note:
For complete visualisation and in order to continue configuring the settings, the measurement type and CT ratio must be provided.

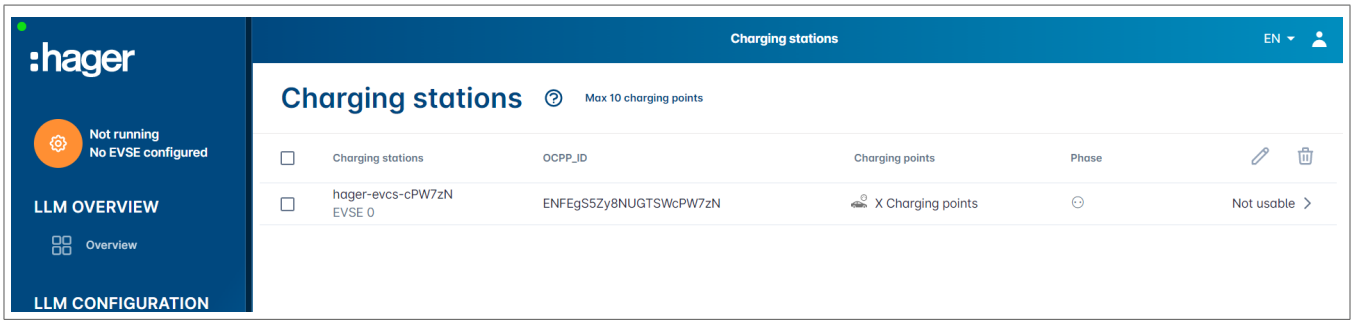
05.04 Finding the charging stations

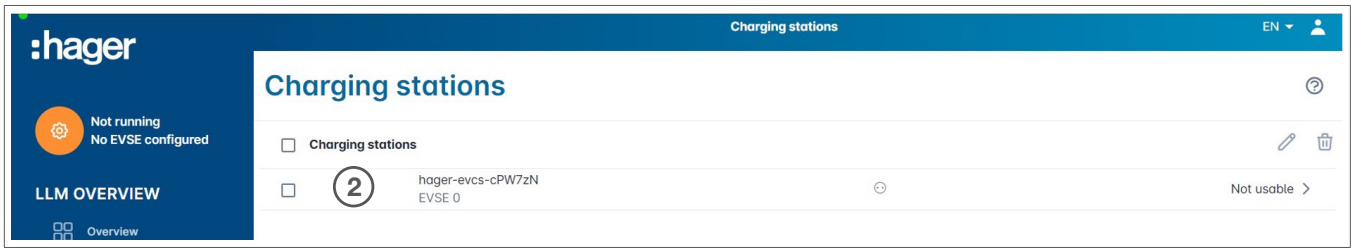


❶ To start searching for the charging stations, click +

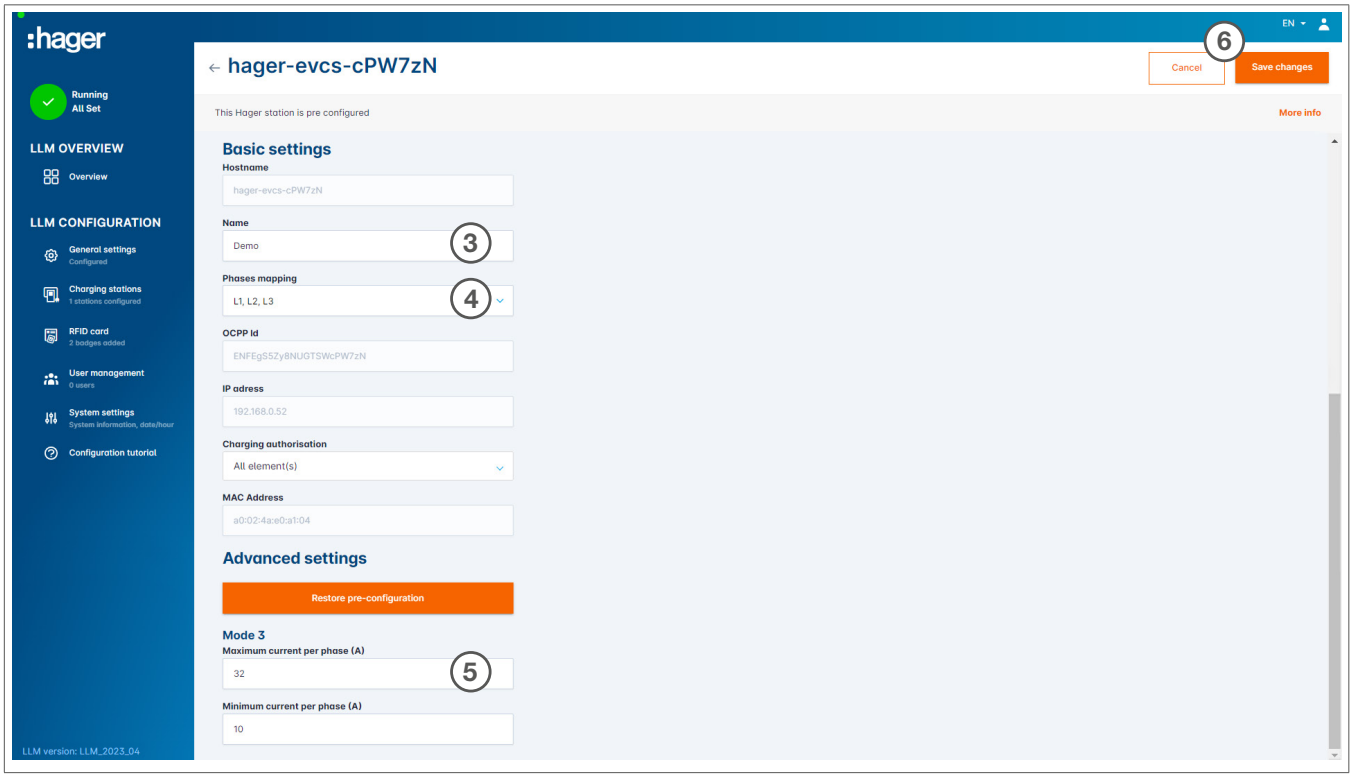
Information
This search may take some time (2–3 minutes). The charging stations are displayed automatically as soon as they are connected to the Local Load Manager.

This step is used to preconfigure the charging stations.
The following figure shows an example of a charging station that was found during the search.





❷ Select one or more charging stations to configure them.



❸ **Name:**

Enter a name for the charging station. This name will be shown on the dashboard.

❹ **Phase sequence (mandatory):**

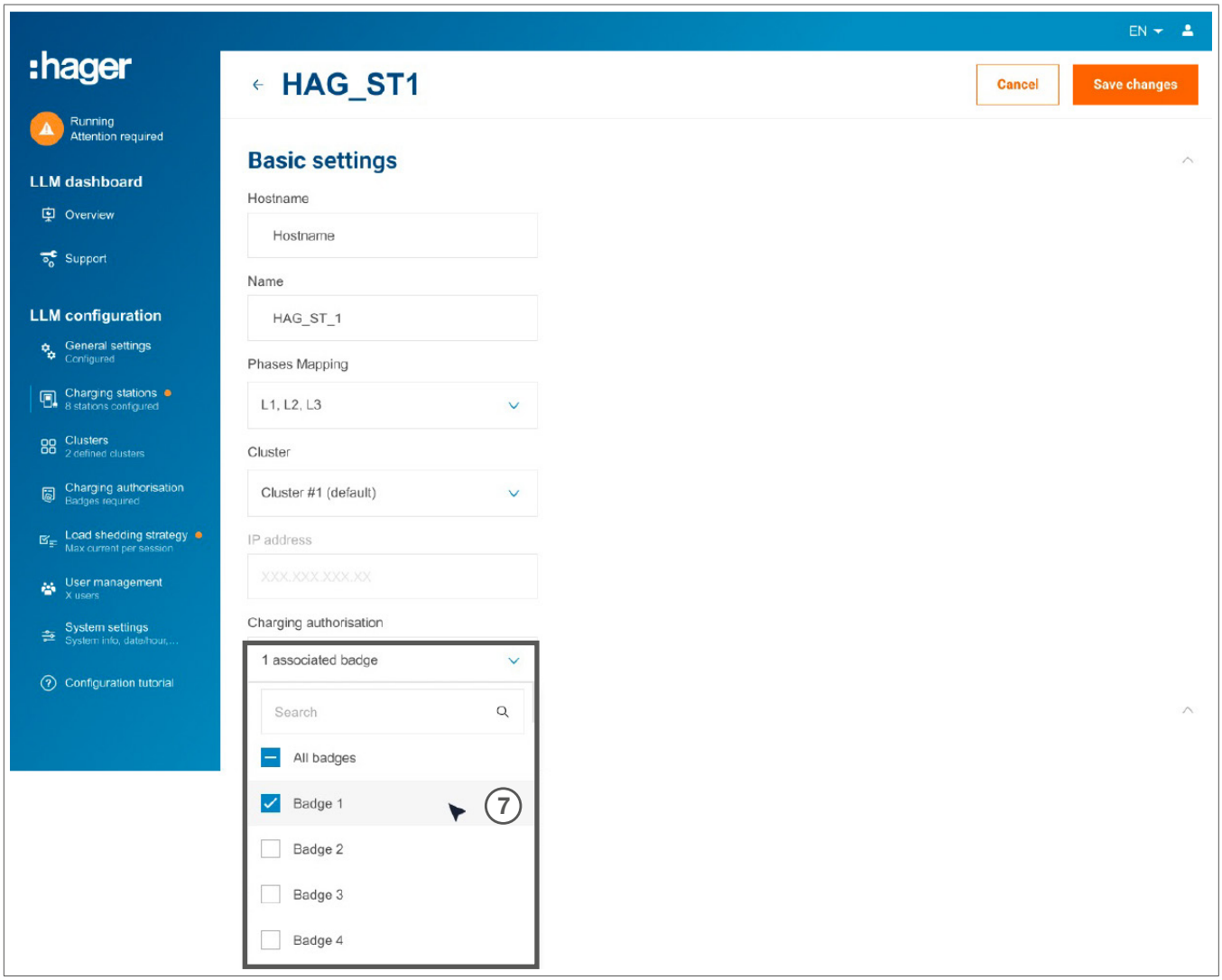
Specify how the phases are connected to the charging station. For 1-phase charging, a phase shift is recommended to reduce current imbalance in the network.

❺ **Max. current per phase:**

Specify the maximum current per phase at which a vehicle can be charged at the charging station (16 A -> 11 kW; 32 A -> 22 kW).

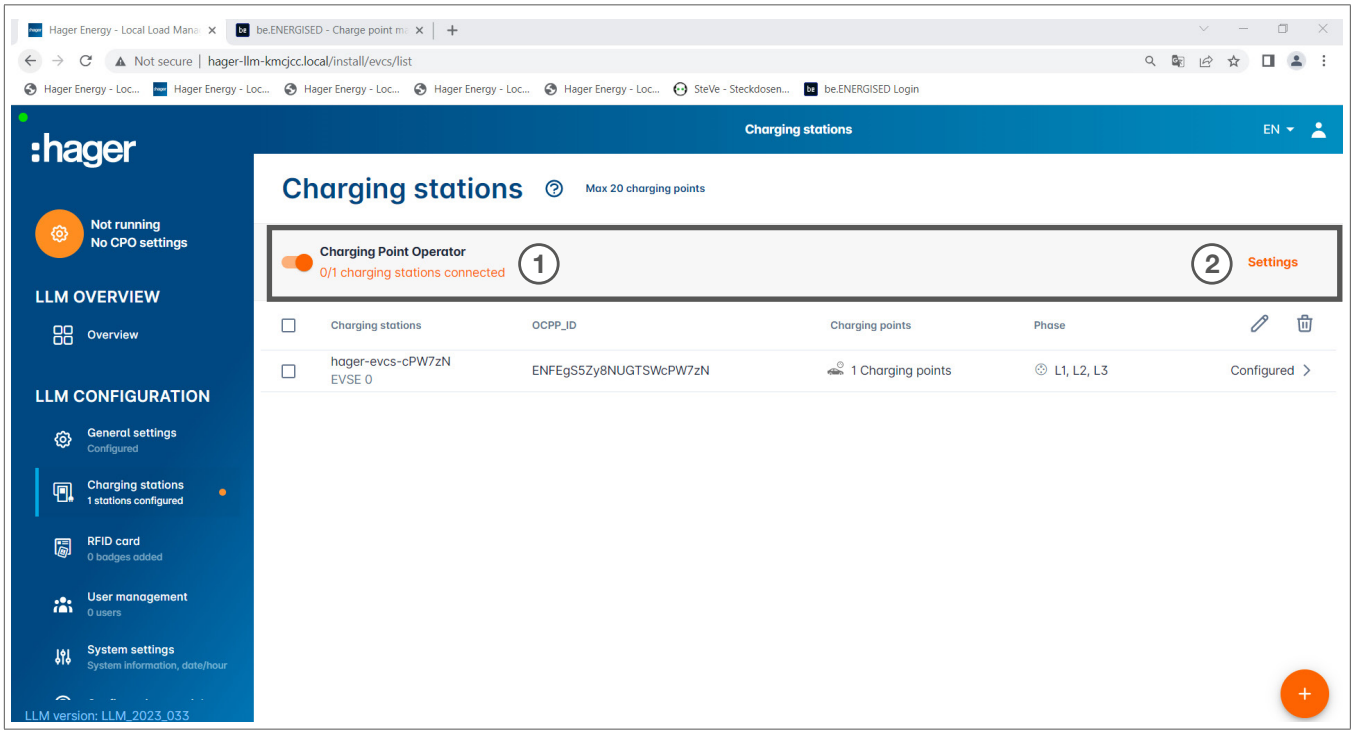
❻ Save the configuration.

Assigning RFID cards



❼ Authorise all or some RFID cards to charge at this specific charging station.
Example: only **RFID card 1** can be used for charging at this charging station.

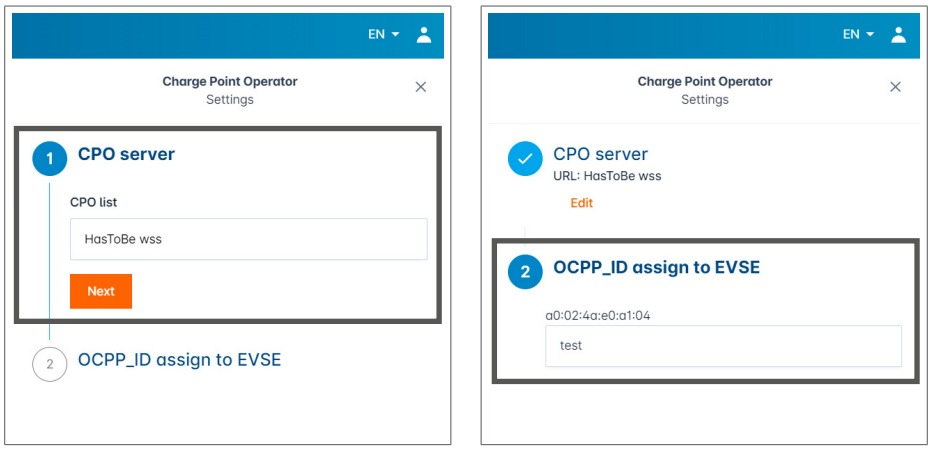
05.05 Connecting to the charging station operator (only available for XEM520)



❶ As soon as the charging stations are detected and configured, activate the **Charge point operator (CPO)** function.

❷ Select the CPO (charging station operator/billing service provider) and the corresponding settings by going to **Settings**.

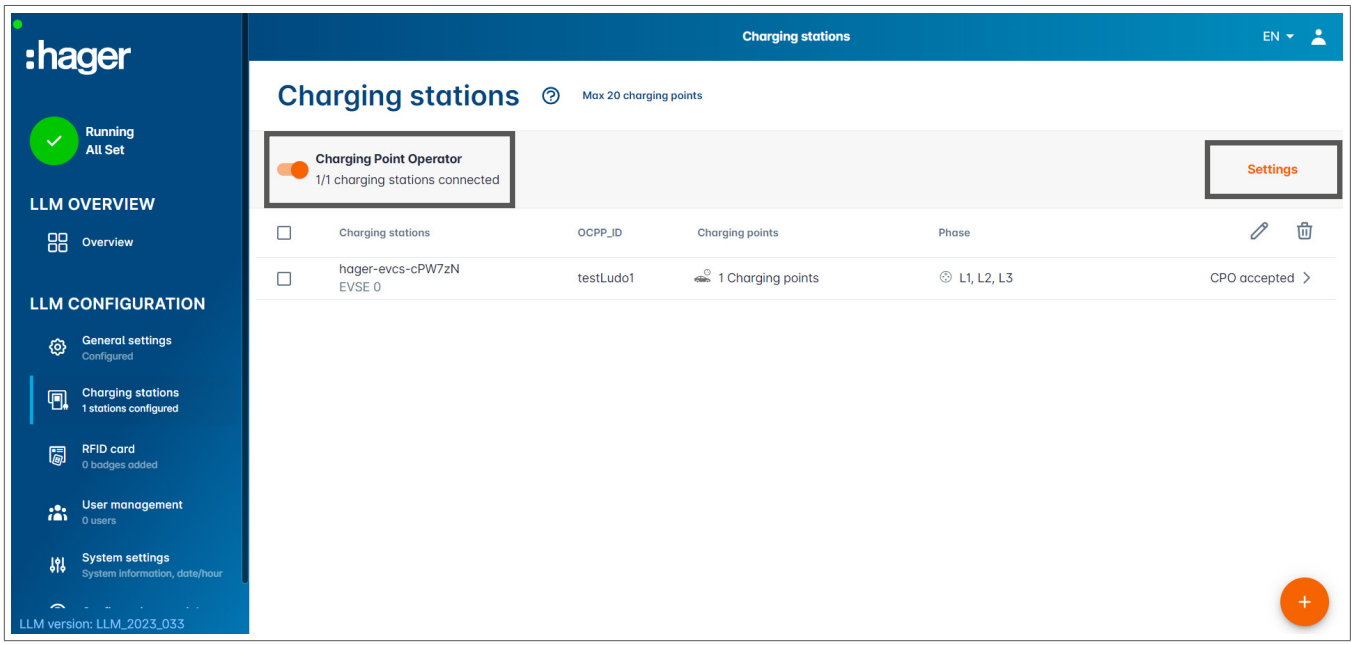
Charge point operator



❶ Select the **CPO server** to connect to, and click **Next**.

All previously detected charging stations are displayed here.

❷ Enter the unique **OCPP ID** for each charging station, and establish the connection via **Connect to CPO**.

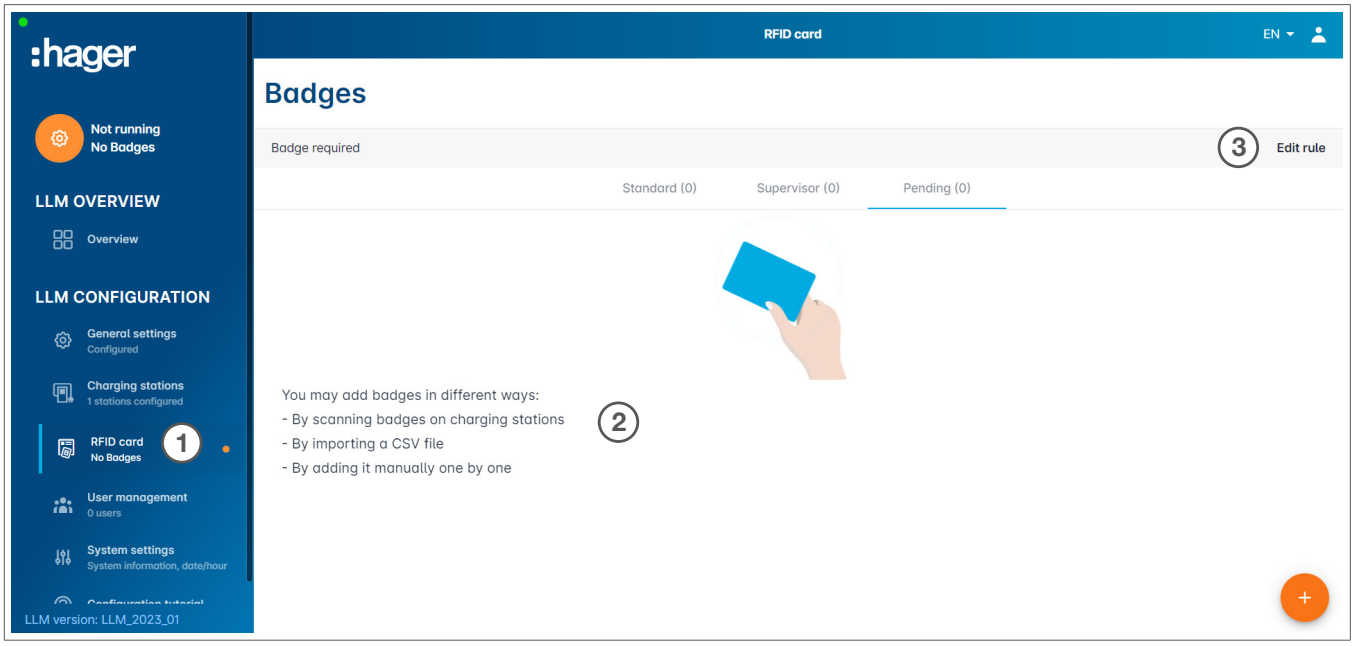


If the operation is successful, the message **Accepted by service provider** will appear to confirm that the charging stations are registered in the billing system of the operator.

Information

In this mode, the billing service provider takes over access management via RFID cards. The locally entered RFID cards are no longer active.

05.06 RFID card teach-in



❶ Select **RFID cards** in the menu.

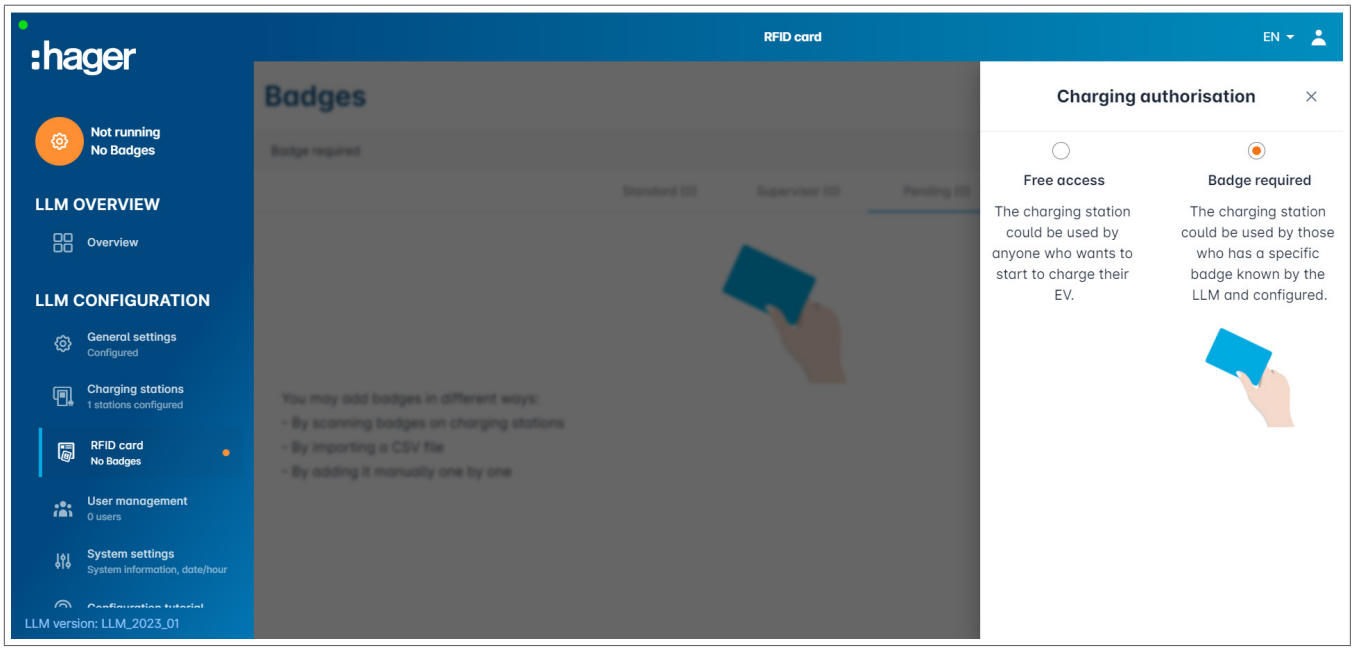
❷ Teach in **RFID cards** by:

– scanning the RFID card directly at the charging stations connected to the Local Load Manager

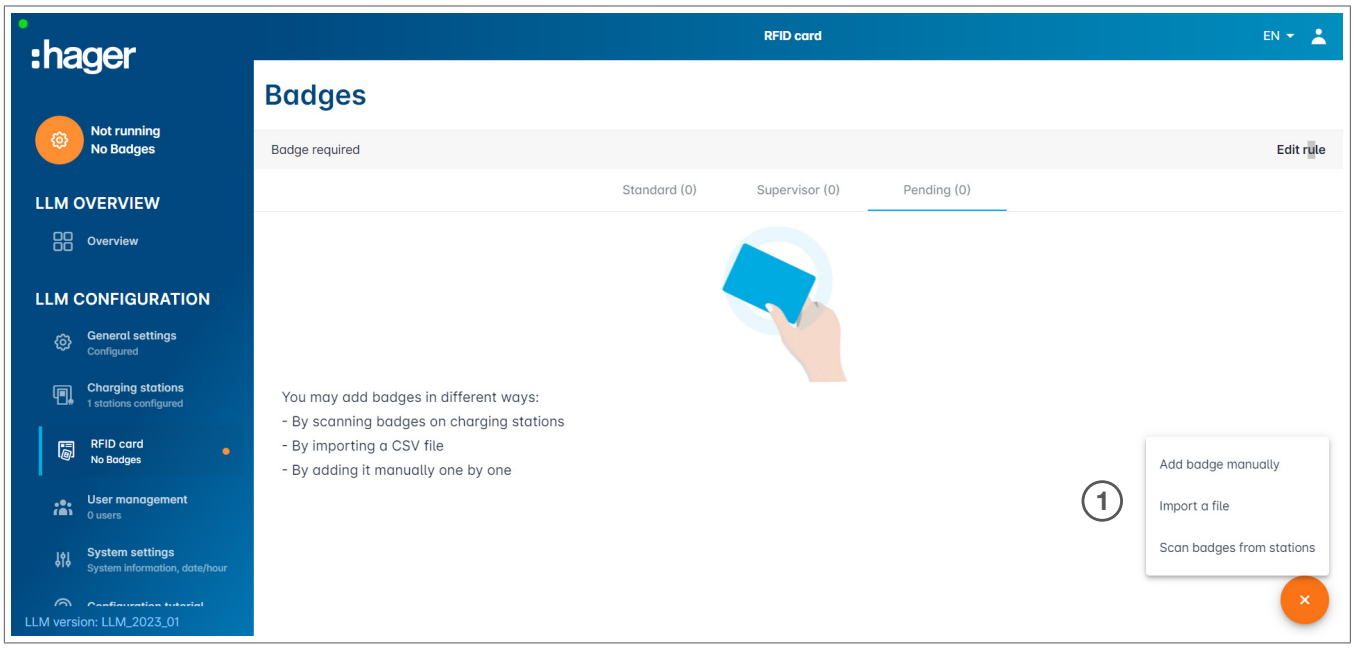
– importing a .csv file
– manually entering the RFID card ID

❸ Define the access rule for the charging station by selecting **Edit rules**.

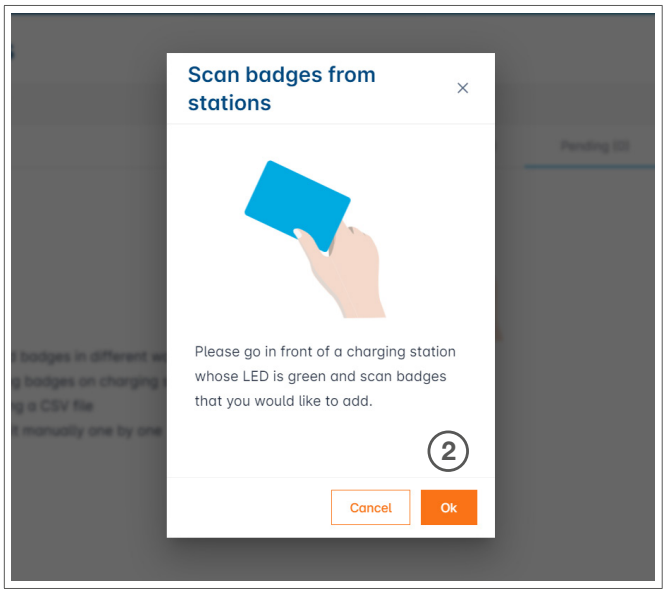
– Free access
– Access via RFID card

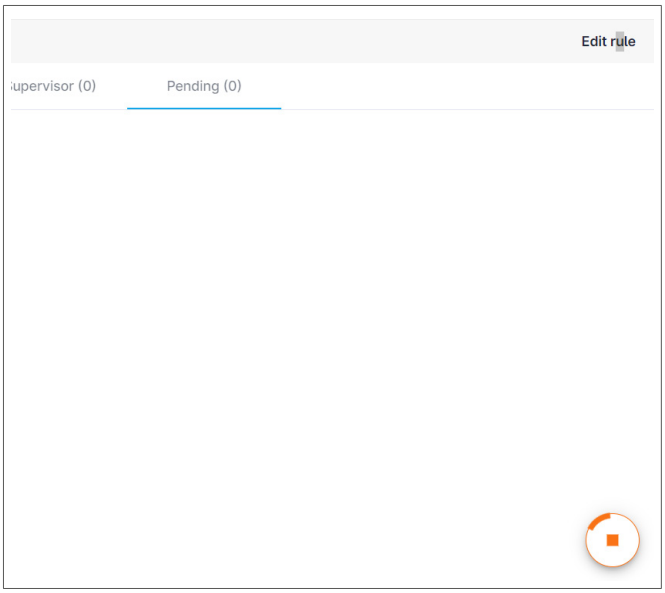


Scanning RFID cards



❶ Click + and select **Scan RFID card**.

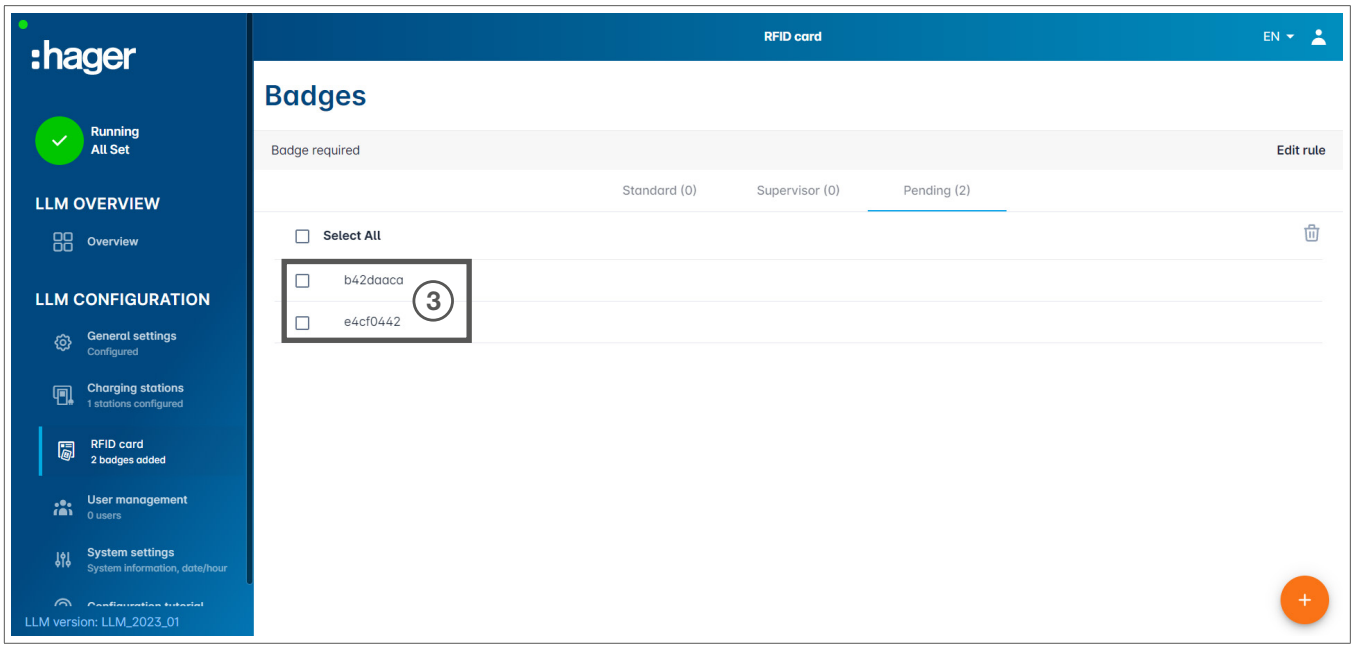




❷ Confirm by clicking **OK**.

❸ Then hold one or more RFID cards in front of the reader to scan them.

Information
Clicking ⏹ will stop the RFID card(s) being scanned.



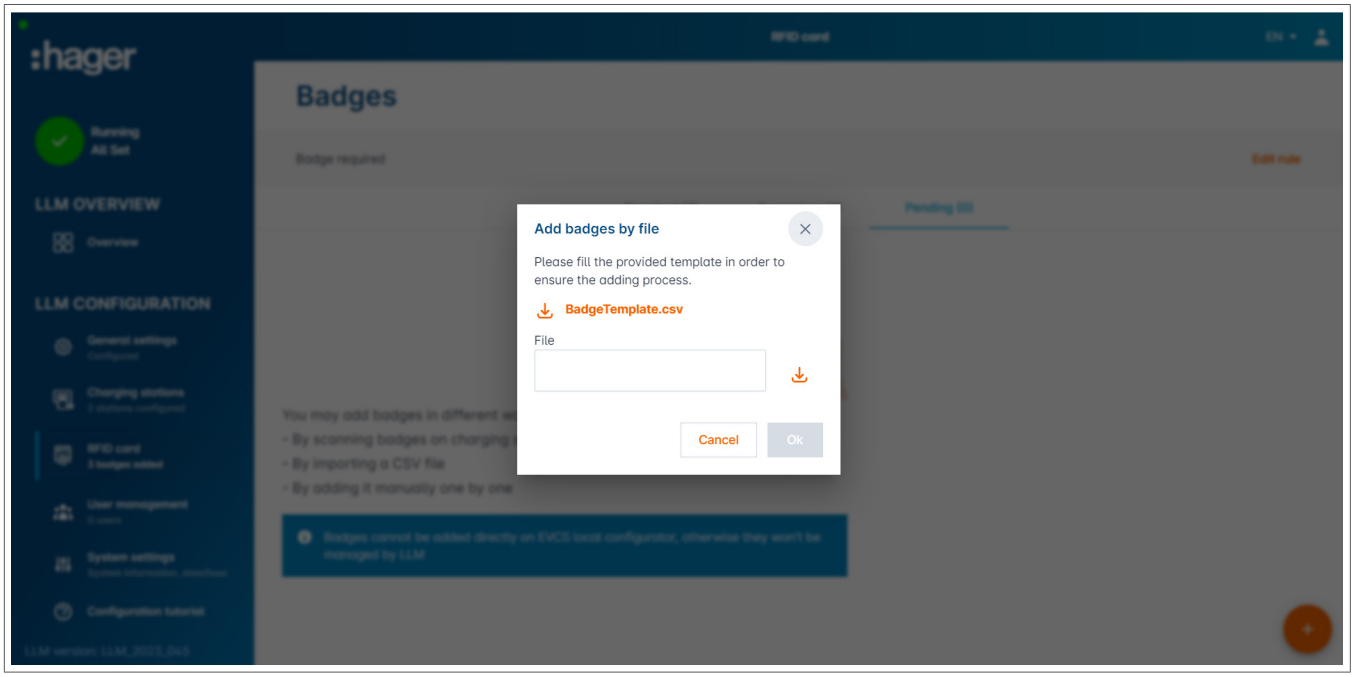
RFID card(s) found.

Note:
Scanned RFID cards are initially listed under **Pending** and must then be assigned to a user group.

Importing RFID cards via a .csv file

A .csv template is available for quickly importing a large number of RFID cards (max. 250).

❶ Go to **RFID cards** in the menu, click + and select the **Import a file** option.



❷ Download the template required for importing RFID card IDs via the link highlighted in orange. Fill out the .csv file with your own data and RFID card IDs, and save it on your computer.

A	B	C	D	E
badgeId	type	comment	expirationDate	email
a1b2c3	STANDARD	example	30.01.2023	example@llm.fr

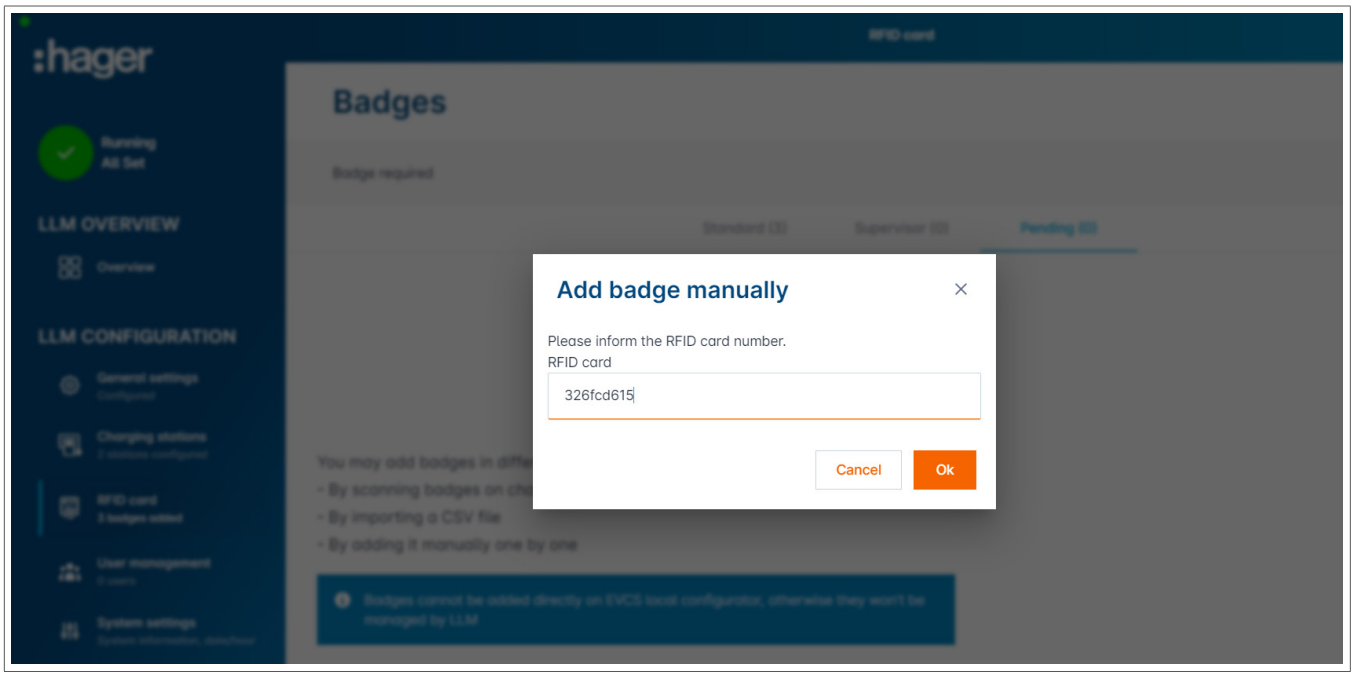
❸ Find and select the .csv file on your computer.

❹ Confirm your selection by clicking **OK**.

The RFID card data will then be uploaded. If the import is successful, the number of RFID cards added will be displayed in the message **x badges added** under **RFID cards** in the active menu. The RFID cards and their IDs will be displayed in the overview.

Manually entering RFID cards

❶ Go to **RFID cards** in the menu, click + and select the **Manually add RFID card** option.

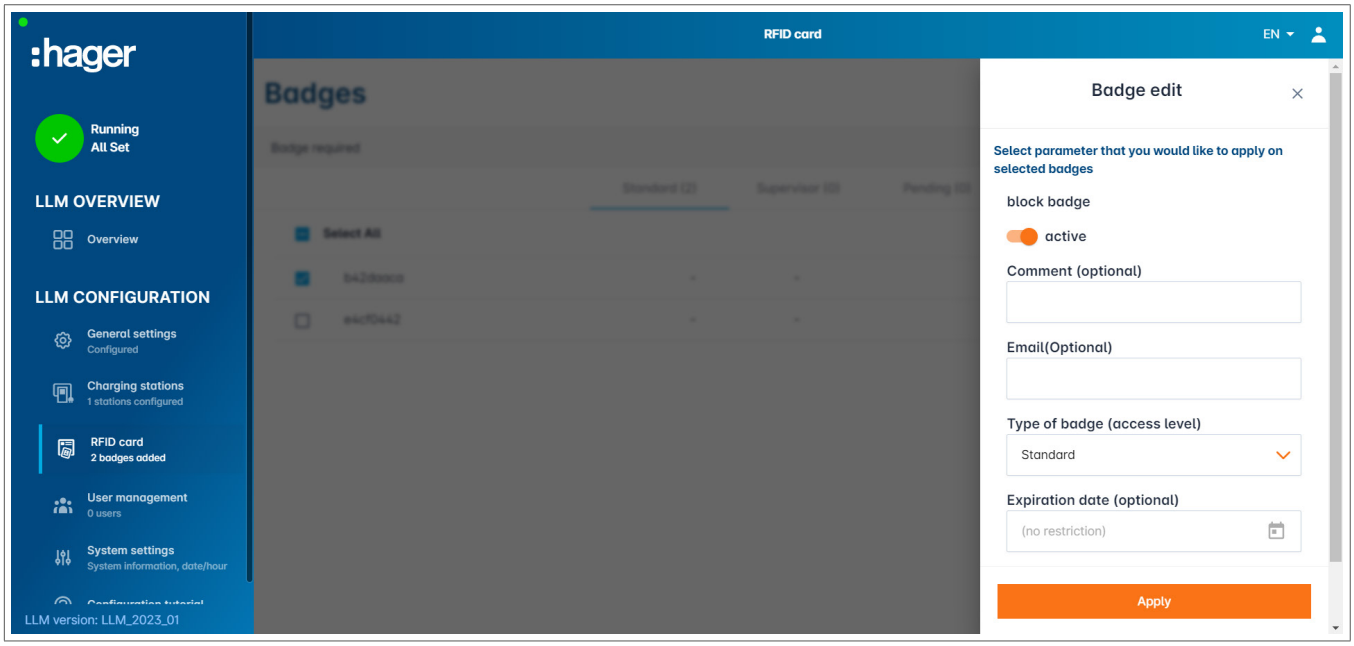


❷ Enter the RFID card ID.

❸ Confirm by clicking **OK**.

The RFID card ID will be uploaded. If the import is successful, the message **1 badge added** will be displayed under **RFID cards** in the active menu. The RFID card and its ID will be displayed in the overview.

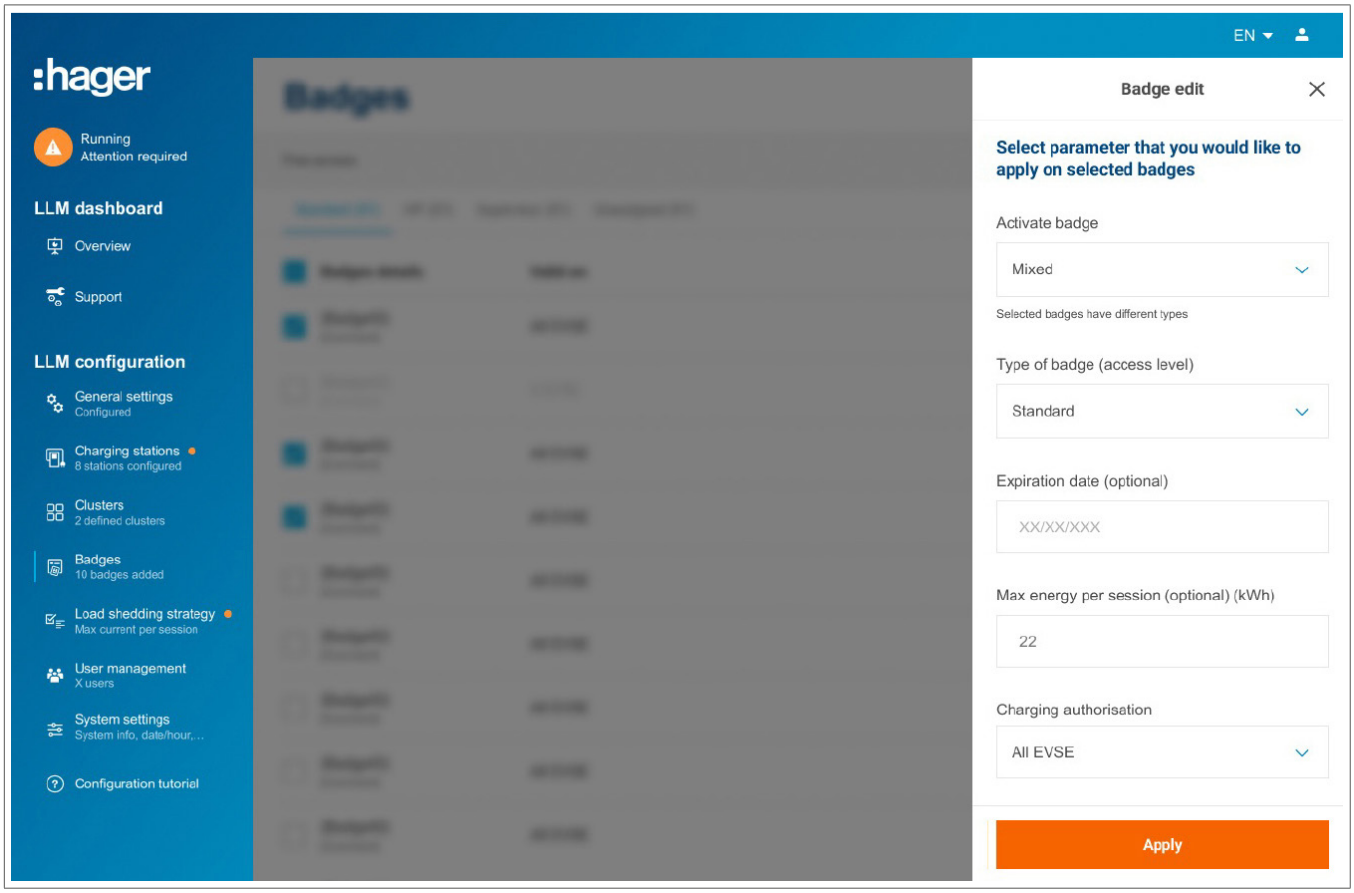
Setting the RFID card parameters



❶ Select one or more RFID cards to configure their settings:

– **active**: RFID card can be used for charging.
not active: RFID card cannot be used for charging.

– **Comment (optional)**:
  Assign a comment or name to the RFID card (e.g. Müller family, Pool vehicle 4, etc.).
– **Email (optional)**:
  Enter the email address that is assigned to the RFID card (for information purposes only).
– **Type of RFID card (access level)**:
  A **Standard** user can start a charging operation and also stop it.
  A **Super user** can start a charging operation and stop any charging operation.
– **Expiration date (optional)**:
  Define a time when the RFID card status will automatically switch from **active** to **not active**.

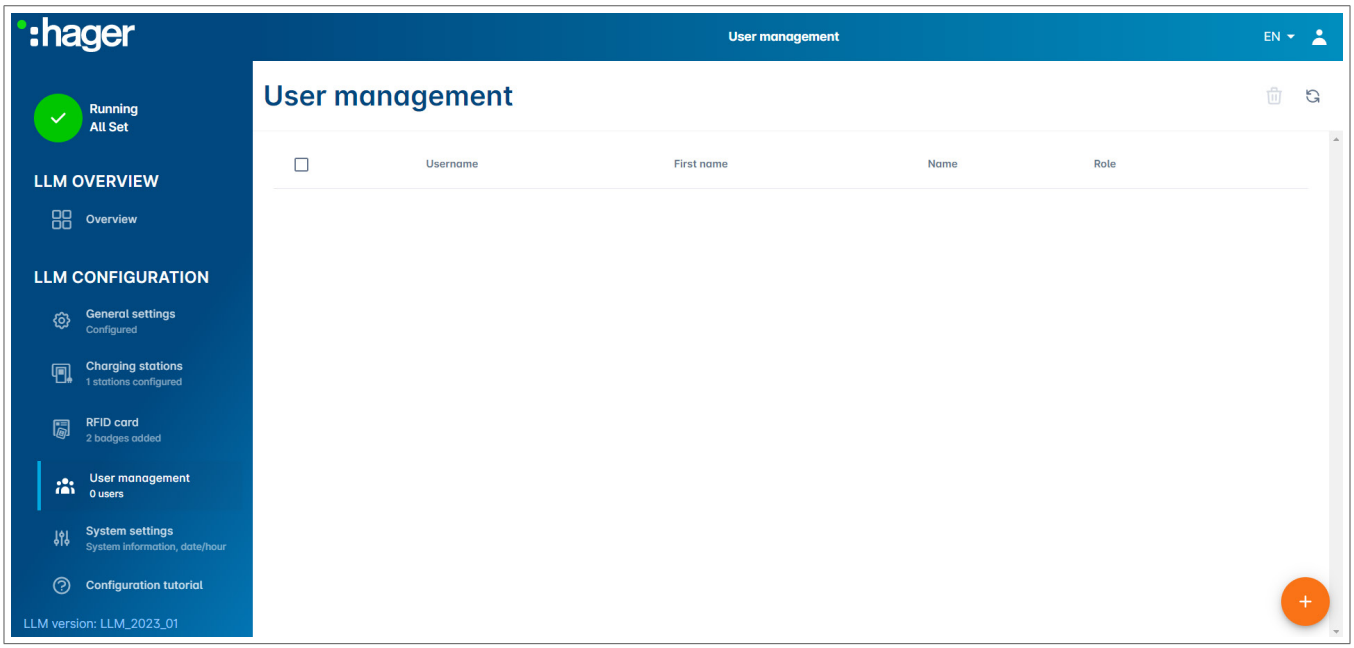


❷ Specify the charging stations for which the RFID card is authorised (either all or only select charging stations).

Example: RFID card 1 can only be used for charging at charging station 1.

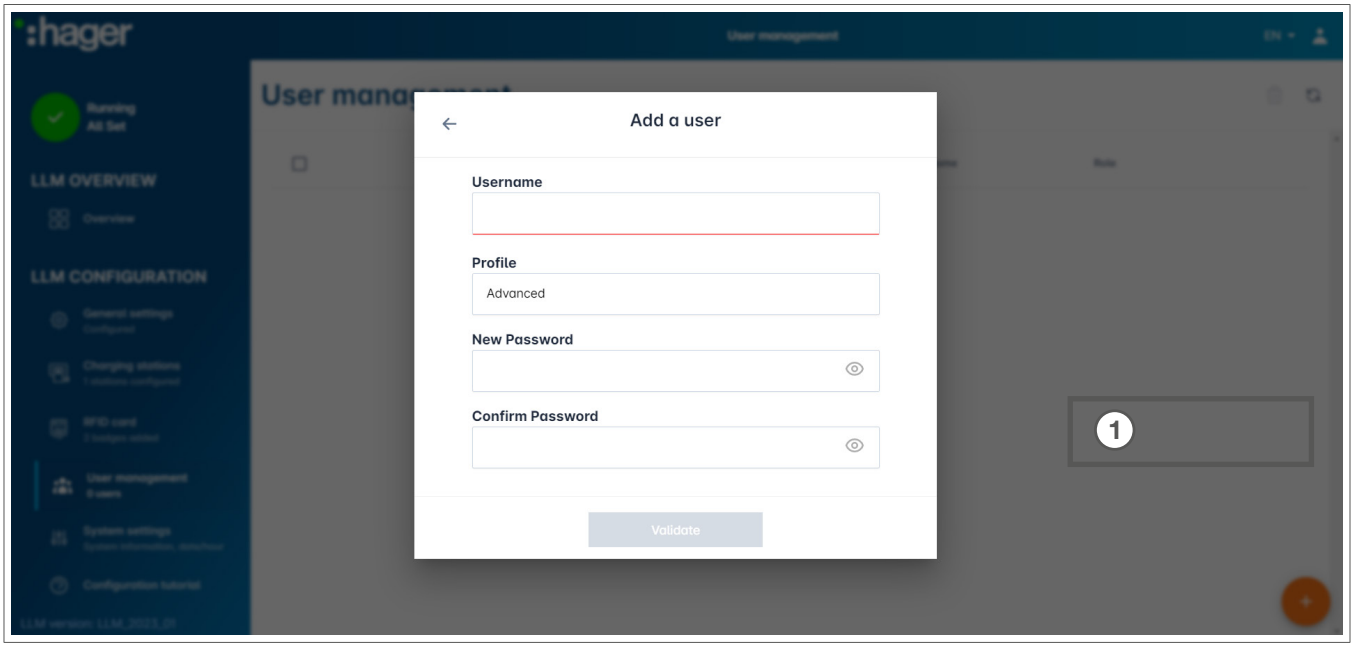
05.07 User management

- Create user.



Click + and fill out the following fields:

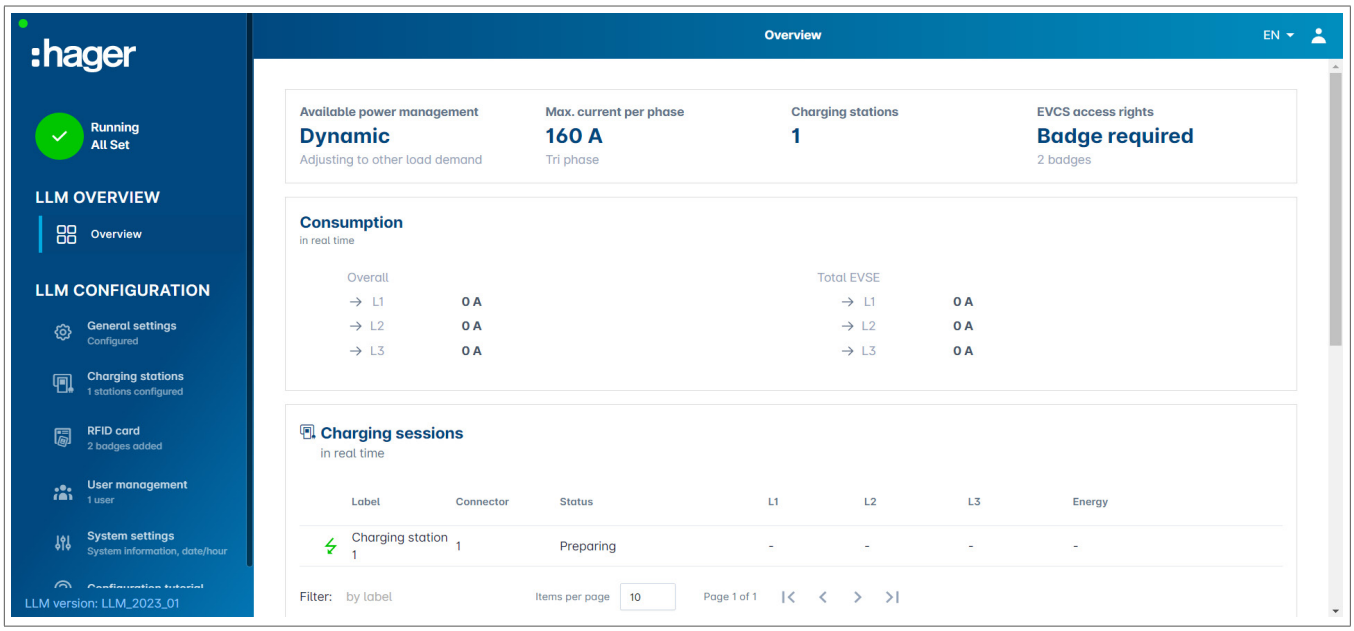
– Name of the user
– **Profile:**
  Administrator with rights for all settings
  Advanced user who can manage RFID cards and create Standard users
  Standard user with access to the dashboard
– **New password**
– **Confirm password**



Information

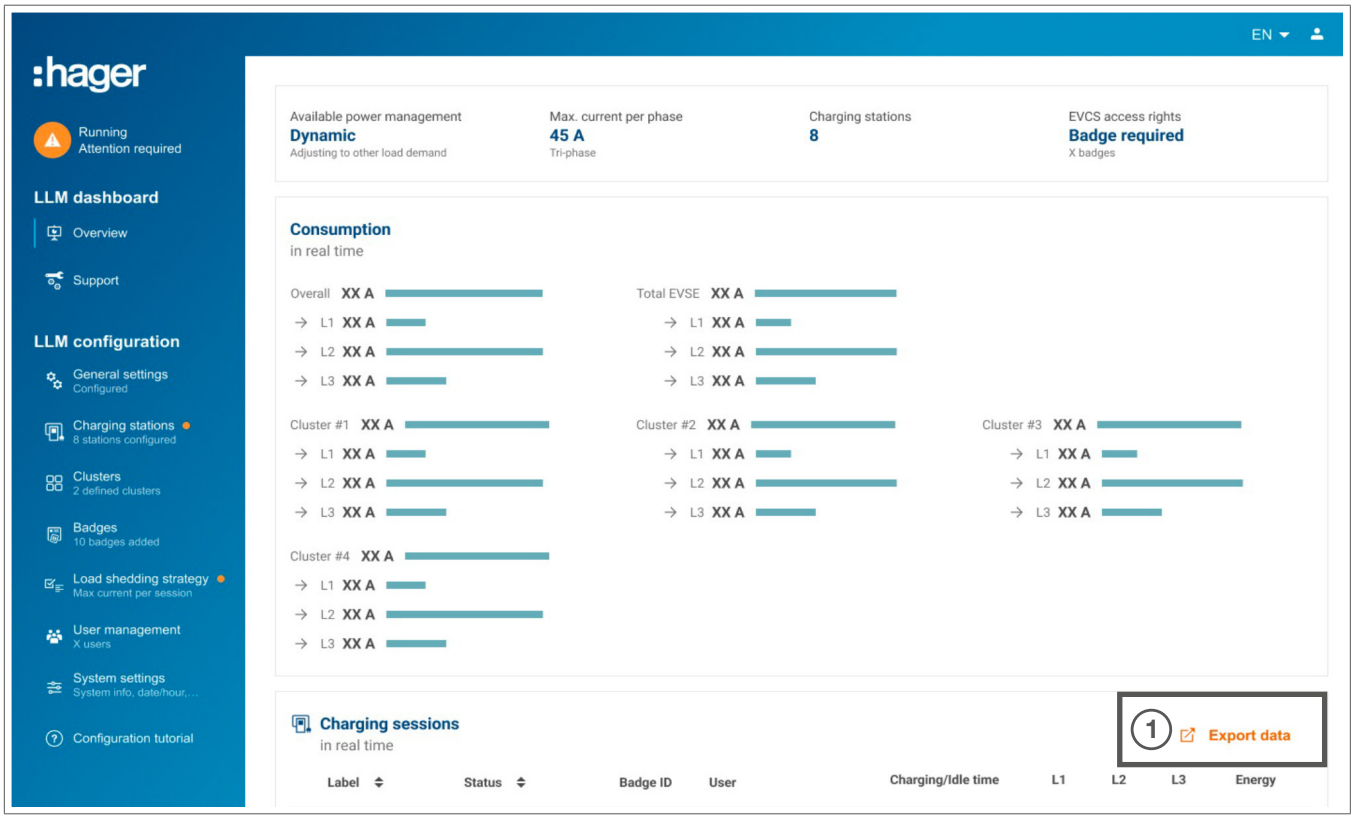
The password is temporary and must be changed after the first login.

05.08 Dashboard



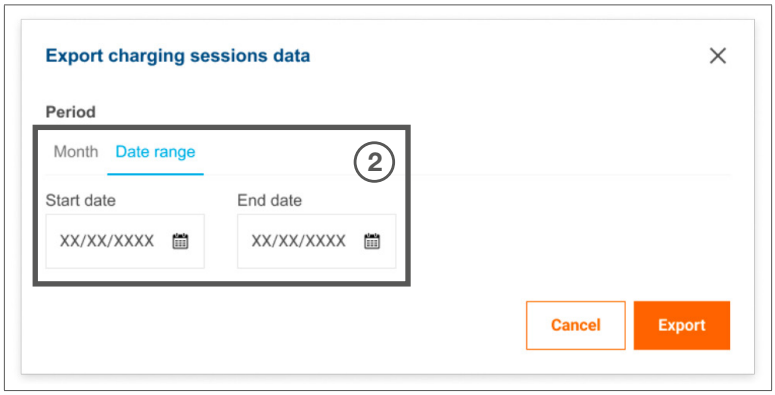
This view displays the installation data and provides a visualisation of consumption and charging operations.

05.09 Export function



❶ Click the **Export data** button to export a **.csv** file containing all historical data on charging operations.

A new pop-up window will open.



❷ Specify the period for which all charging operations are to be exported.

This period may not exceed one year.

	A	B	C	D	E	F	G	H
1	transactionId	evcsId	evcsName	startDateTransactio	stopDateTransactio	badgeId	badgeName	energyChargedKwh
2	1	a0:02:4a:e0:a3:c5	N/A	07.11.2022 11:21	07.11.2022 11:30	645c0542	N/A	679
3	2	a0:02:4a:e0:a4:10	N/A	07.11.2022 11:23	07.11.2022 12:24	044ee958	N/A	13550
4	3	a0:02:4a:e0:a3:c5	N/A	07.11.2022 12:27	08.11.2022 05:56	34f5db32	N/A	937
5	4	a0:02:4a:e0:a4:10	N/A	07.11.2022 12:43	07.11.2022 13:39	74ac0a42	N/A	8334
6	5	a0:02:4a:e0:a2:e7	N/A	07.11.2022 13:19	07.11.2022 13:20	a443f141	N/A	0
7	6	a0:02:4a:e0:a2:e7	N/A	07.11.2022 13:20	07.11.2022 13:21	a443f141	N/A	0
8	7	a0:02:4a:e0:a5:00	N/A	07.11.2022 13:22	08.11.2022 06:03	a443f141	N/A	6735
9	8	a0:02:4a:e0:a3:b0	N/A	07.11.2022 13:35	07.11.2022 13:38	24cfdd58	N/A	231
10	9	a0:02:4a:e0:a3:b0	N/A	07.11.2022 13:38	07.11.2022 13:38	24cfdd58	N/A	0
11	10	a0:02:4a:e0:a3:b0	N/A	07.11.2022 13:39	08.11.2022 05:57	24cfdd58	N/A	6234
12	11	a0:02:4a:e0:a4:10	N/A	07.11.2022 13:39	08.11.2022 05:43	74ac0a42	N/A	349
13	12	a0:02:4a:e0:a3:c5	N/A	08.11.2022 12:08	01.01.1970 01:00	34f5db32	N/A	5680
14	13	a0:02:4a:e0:a4:10	N/A	08.11.2022 12:26	01.01.1970 01:00	74ac0a42	N/A	10063
15	14	a0:02:4a:e0:a5:00	N/A	08.11.2022 12:32	08.11.2022 12:32	a443f141	N/A	0
16	15	a0:02:4a:e0:a5:00	N/A	08.11.2022 12:33	08.11.2022 12:34	a443f141	N/A	0
17	16	a0:02:4a:e0:a3:b0	N/A	08.11.2022 12:34	01.01.1970 01:00	24cfdd58	N/A	6831
18	17	a0:02:4a:e0:a5:00	N/A	08.11.2022 12:35	01.01.1970 01:00	a443f141	N/A	6561
19	18	a0:02:4a:e0:a3:c5	N/A	09.11.2022 12:12	10.11.2022 06:00	34f5db32	N/A	8565
20	19	a0:02:4a:e0:a4:10	N/A	09.11.2022 12:21	09.11.2022 13:09	74ac0a42	N/A	2536
21	20	a0:02:4a:e0:a3:b0	N/A	09.11.2022 12:22	10.11.2022 06:07	24cfdd58	N/A	6656
22	21	a0:02:4a:e0:a5:00	N/A	09.11.2022 12:47	10.11.2022 06:02	a443f141	N/A	7400
23	22	a0:02:4a:e0:a4:10	N/A	09.11.2022 13:09	09.11.2022 17:01	74ac0a42	N/A	6504
24	23	a0:02:4a:e0:a4:10	N/A	09.11.2022 17:04	09.11.2022 17:04	74ac0a42	N/A	0
25	24	a0:02:4a:e0:a4:10	N/A	10.11.2022 11:18	10.11.2022 16:42	74ac0a42	N/A	15361
26	25	a0:02:4a:e0:a5:00	N/A	10.11.2022 11:26	10.11.2022 20:37	a443f141	N/A	5857
27	26	a0:02:4a:e0:a3:c5	N/A	10.11.2022 11:56	10.11.2022 20:37	34f5db32	N/A	10379
28	27	a0:02:4a:e0:a3:b0	N/A	10.11.2022 12:07	10.11.2022 20:37	24cfdd58	N/A	6368
29	28	a0:02:4a:e0:a4:10	N/A	10.11.2022 20:21	10.11.2022 20:37	74ac0a42	N/A	3699
30	29	a0:02:4a:e0:a5:00	N/A	11.11.2022 12:21	12.11.2022 06:04	a443f141	N/A	7214
31	30	a0:02:4a:e0:a3:c5	N/A	11.11.2022 12:25	11.11.2022 12:27	24cfdd58	N/A	92
32	31	a0:02:4a:e0:a3:c5	N/A	11.11.2022 12:27	11.11.2022 12:29	24cfdd58	N/A	3
33	32	a0:02:4a:e0:a3:cb	N/A	11.11.2022 12:29	11.11.2022 12:29	24cfdd58	N/A	0
34	33	a0:02:4a:e0:a3:b0	N/A	11.11.2022 12:30	12.11.2022 06:03	24cfdd58	N/A	7263

Example of a .csv file with historical charging data

The following information is included in the downloaded .csv file:

– MAC address of the charging station
– Name of the charging station
– Start and end date of the charging operation
– RFID card number
– Name of the RFID card (comment)
– Amount of energy chargedExport function

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2024-10

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