GARO Nova GTC

Assembly instructions / End User Instruction (EN)

CE

IP44

IK10

GARO®

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About this manual

This document contains general descriptions which are verified to be accurate at the time of printing. However, because continuous improvement is a goal at GARO, we reserve the right to make product and software modifications at any time. This range is subject to continual product development. Errors, typo and omissions excepted.

INFORMATION

GARO GTC assortment is a range of portable EVSE stations for Mode-3 AC charging.
Below are some example of standard features:

- Double outlets for Mode-3 EV charging.
- Up to 2x7,4kW simultaneous charging from one EVSE depending on model.
- MCB and RCCB with DC-fault monitoring for each outlet.
- Internal static DLM (Dynamic Load Management).
- Suitable for installation on ground or wall.
- LED status indication.

Some models also have:
- Energy meters for each side
- Communication module for Wifi/LAN functions
- RFID readers

General functions:
- Install and administrate RFID readers
- Connect mobile/tablet/PC to webinterface
- Remote charging activation from a relay/timer etc.
- Update firmware via webinterface

Some functions require specific installed hardware ie communication module.

For full user manual: www.garoemobility.com/support

Latest manual can always be found at
http://garoemobility.com/support

Warnings

⚠ Dielectric Voltage Withstand Test is not allowed on GTC Nova

⚠ This equipment should not be used by anyone (including children) with reduced physical, sensory or mental capacity, or anyone lacking in experience or knowledge, unless they are provided with supervision or prior instruction in how to use the equipment by the person responsible for their safety.

⚠ The GTC Nova range of charging stations is designed exclusively for charging electric vehicles.

⚠ The GTC Nova must be grounded according to local country installation requirements.

⚠ Do not install or use the GTC Nova near flammable, explosive, harsh, or combustible materials, chemicals, or vapors.

⚠ Turn off the electrical power at the circuit breaker before installing, configuring or cleaning of the GTC Nova.

⚠ Use the GTC Nova only within the specified parameters.

⚠ Never spray water or any other liquid directly at the GTC Nova. Never spray any liquid onto the charge handle or submerge the charge handle in liquid.

⚠ Do not use this equipment if it appears to be damaged or if the charging cable appears to be damaged.

⚠ Do not modify the equipment installation or any part of the product.

⚠ Do not touch the terminals with fingers or any other objects.

⚠ Do not insert foreign objects into any part of the GTB Nova.

Cautions

⚠️ Do not use private power generators as a power source for charging. Variations in the electrical voltage can damage the vehicles battery and/or the GTC Nova itself.

⚠️ Incorrect installation and testing of the GTC Nova could potentially damage either the vehicle's battery and/or the GTC Nova itself.

⚠️ Do not operate the GTC Nova in temperatures outside its operating range – see technical specifications.

Notes

ⓘ All installation must be carried out by an authorized installer and comply with local installation regulations. If any questions, please contact your local electrical authority.

ⓘ Ensure that the charging cable is positioned so it will not be stepped on, driven over, tripped on, or subjected to damage or stress.

ⓘ Unroll the charging cable to prevent it from overheating.

ⓘ Do not use cleaning solvents to clean any of the GTC Nova's components. The outside of the GTC Nova, the charging cable, and the end of the charging cable should be periodically wiped with a clean, dry cloth to remove accumulation of dirt and dust.

ⓘ Be careful not to damage the circuit boards or components during installation.

ⓘ Refer to local standards and regulations not to exceed charging current limitations.

ⓘ The front cover must always be locked in order to ensure compliance with IP Code IP44.

ⓘ Avoid installing the GTC Nova in direct sunlight to avoid any heat-problems.

ⓘ To even out the load, it is important to rotate the phases when connecting several of GTC Nova to the same supply. Note that 1-phase charging is common in electric vehicles and L1 and L2 in the GLB is used for this purpose.

ⓘ Ventilation signal from EV is not supported.

ⓘ Adapters for charging connectors are not allowed to be used.

ⓘ Cord extension sets for charging cable is not allowed to be used.

ⓘ Electrical vehicles (EV) software and the GTC Nova firmware are continuously updated.
To make sure that the GTC Nova is working properly, it is necessary to update the firmware and it requires a communication card.
Communication cards are available as an accessory.

ⓘ GTC Nova charging station is designed for safe electric vehicle charging for temporary installations.
When installing NOVA charging station, the supply cable should be preceded by an RCCB type A.

ⓘ When used in public environments, such as events of various kinds, incoming and outgoing CEE shall be locked with appropriate protection. Appropriate protection is available in GARO's range.

INSTALLATION OF STANDALONE GTC NOVA

The installation must be performed by a professional electrician.
The installed mains cable need to handle up to 32A during long
term period.
Calculate the required cable length and select the appropriate
cable-area to minimize the risk of voltage-drop.
Follow local country regulations.
Left hand side PCB (CC1) controls the left side outlet/cable and
the right hand side PCB (CC2) controls the right hand side outlet/
cable.

1. Select the appropriate group fuse and cable size for the
electrical installation. GTC Nova have a CEE inlet where the
mains cable.

NOTE! Due to high currents for a long time in the cable, there is a
high risk of voltage drop if the cable is under-dimensioned which
can damage the electronics in an EV.

2. Mount the GTC Nova according to picture 1.
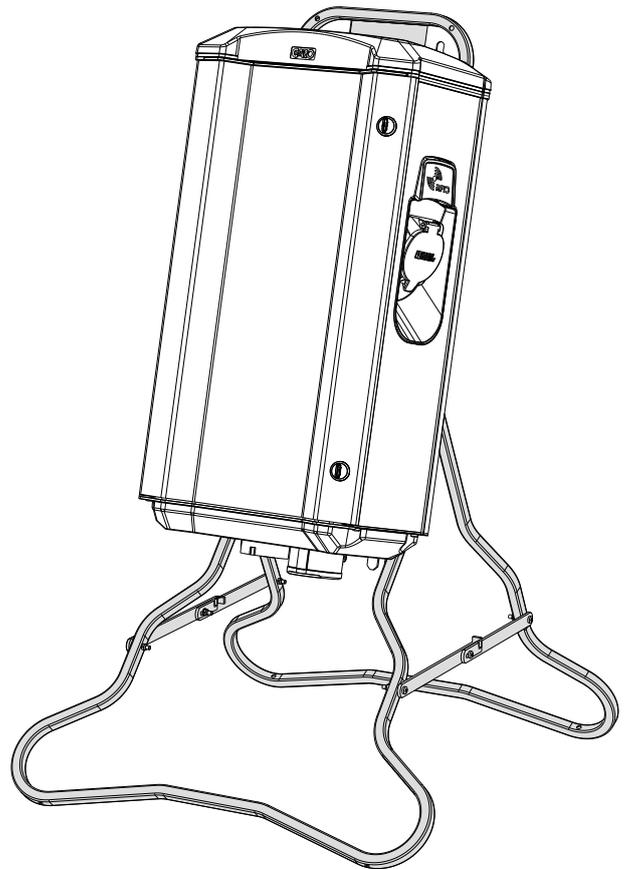
(picture 1)

3. You can by setting Dip switch SW2 on both CC1 and CC2 (picture 2 and 3) reduce the charging current for left or right hand side if needed. Normally, this is normally not necessary. Available range is 6-32A (table 1 and picture 4).
It is allowed to set different values on left and right hand side.

4. Install the electrical power supply cable in the CEE inlet, see picture 3.

SW2 MAX Ampere

GTC 7,4 kW = 32 A

(table1)
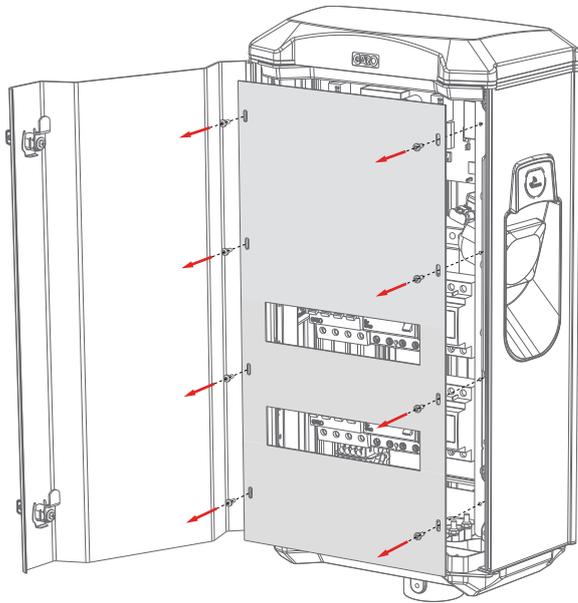
(picture 2)
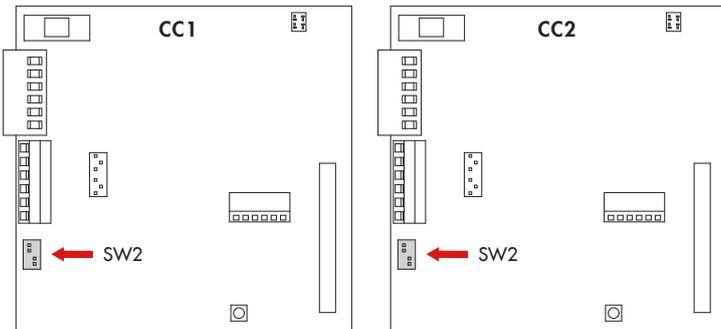
(picture 3)

SW2

	ON	OFF		
3	☐	☑	3=OFF	
2	☐	☑	2=OFF	6A
1	☑	☐	1=ON	

3	☐	☑	3=OFF	
2	☑	☐	2=ON	10A
1	☐	☑	1=OFF	

3	☐	☑	3=OFF	
2	☑	☐	2=ON	13A
1	☑	☐	1=ON	

3	☑	☐	3=ON	
2	☐	☑	2=OFF	16A
1	☐	☑	1=OFF	

3	☑	☐	3=ON	
2	☐	☑	2=OFF	20A
1	☑	☐	1=ON	

3	☑	☐	3=ON	
2	☑	☐	2=ON	25A
1	☐	☑	1=OFF	

3	☐	☑	3=OFF	
2	☐	☑	2=OFF	29A
1	☐	☑	1=OFF	

3	☑	☐	3=ON	
2	☑	☐	2=ON	32A
1	☑	☐	1=ON	

(picture 4)

GARO

5. Turn on the electrical power to the GTC Nova.

6. For GTCDCW… models: Connect a mobile device (PC/Tablet/Mobile) to the GTC Nova Wifi network. You find SSID and password on the label inside the front door. Type in 172.24.1.1 in your web browser and check that the GTC web interface is visible. This action confirms that the GTB Twinbox communication module is working properly.

7. Test the GTC Nova both sides with a test instrument or test to charge an electric vehicle to ensure that the GTC Nova is working properly.

(picture 5)
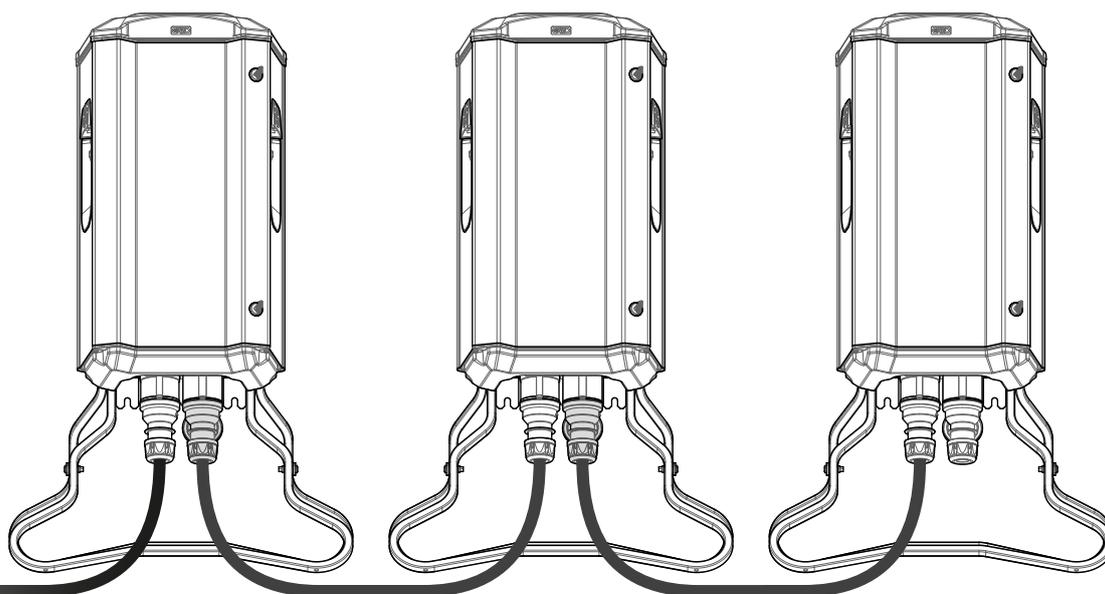
(picture 6)

RFID reader installation

1. Turn off the electrical power to the GTC Nova
2. Assembly the RFID readers according picture 7-9.

Note: Both DIP switches should set to ON on both RFID readers, see picture 10.

A wifi module needs to be installed to the Master GTC Nova.

DIP switch	ON	OFF	
	☑	☐	2
	☑	☐	1
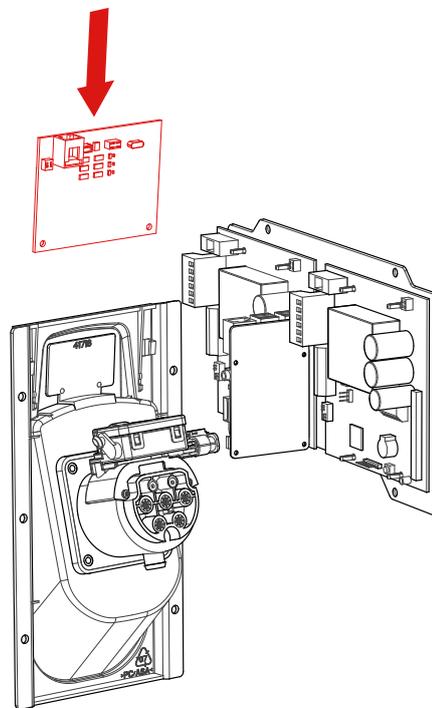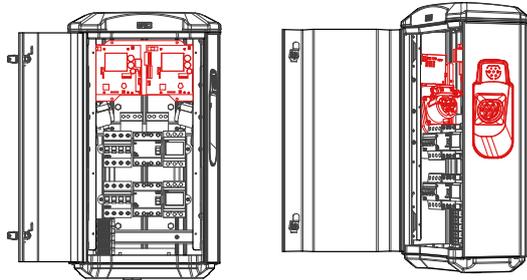
(picture 10)
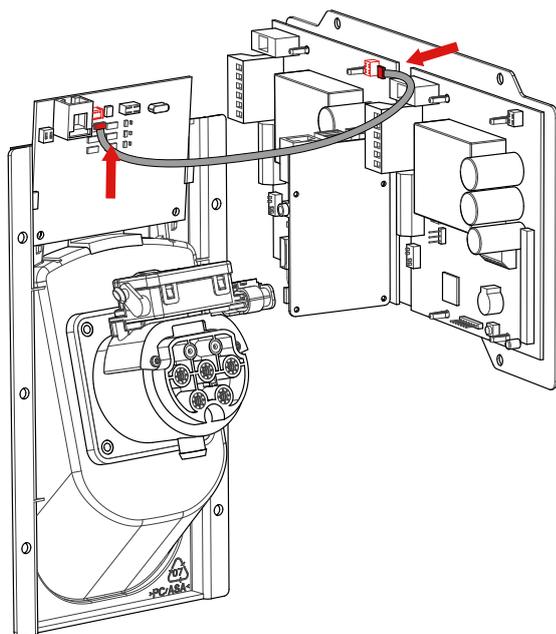
(picture 7)

(picture 8)
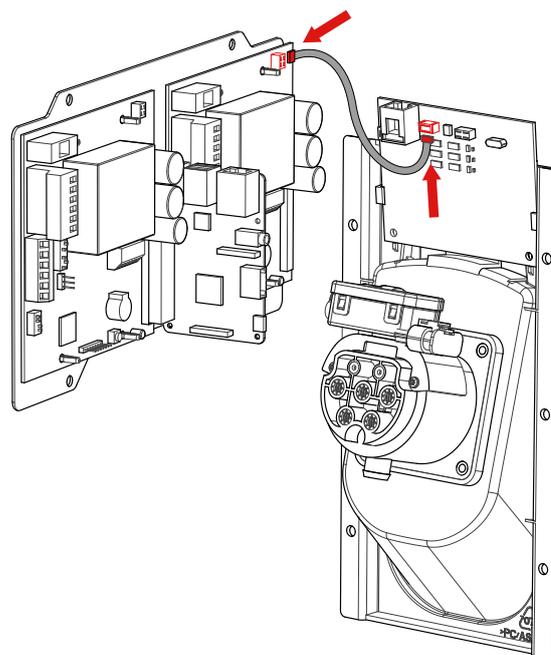
(picture 9)

RFID settings for stand alone GTC Nova

Set SW1 (Dip5) CC2 to ON that makes the unit as "Master",
see picture 11.
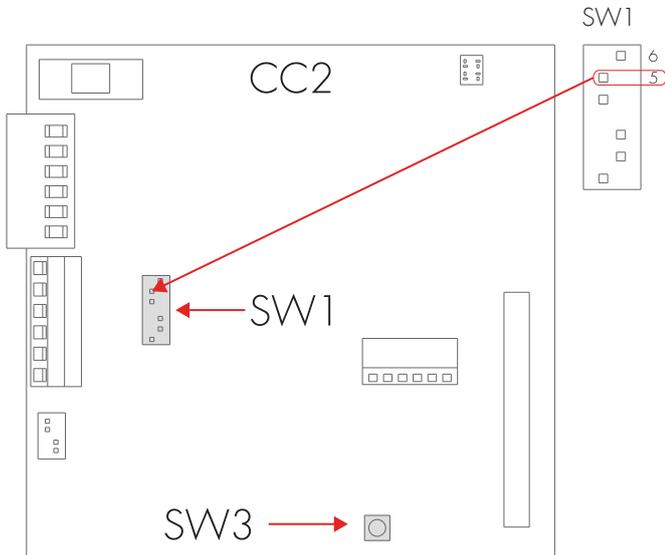
(picture 11)

For RFID setting, see section web interface.

Dimensional sketch
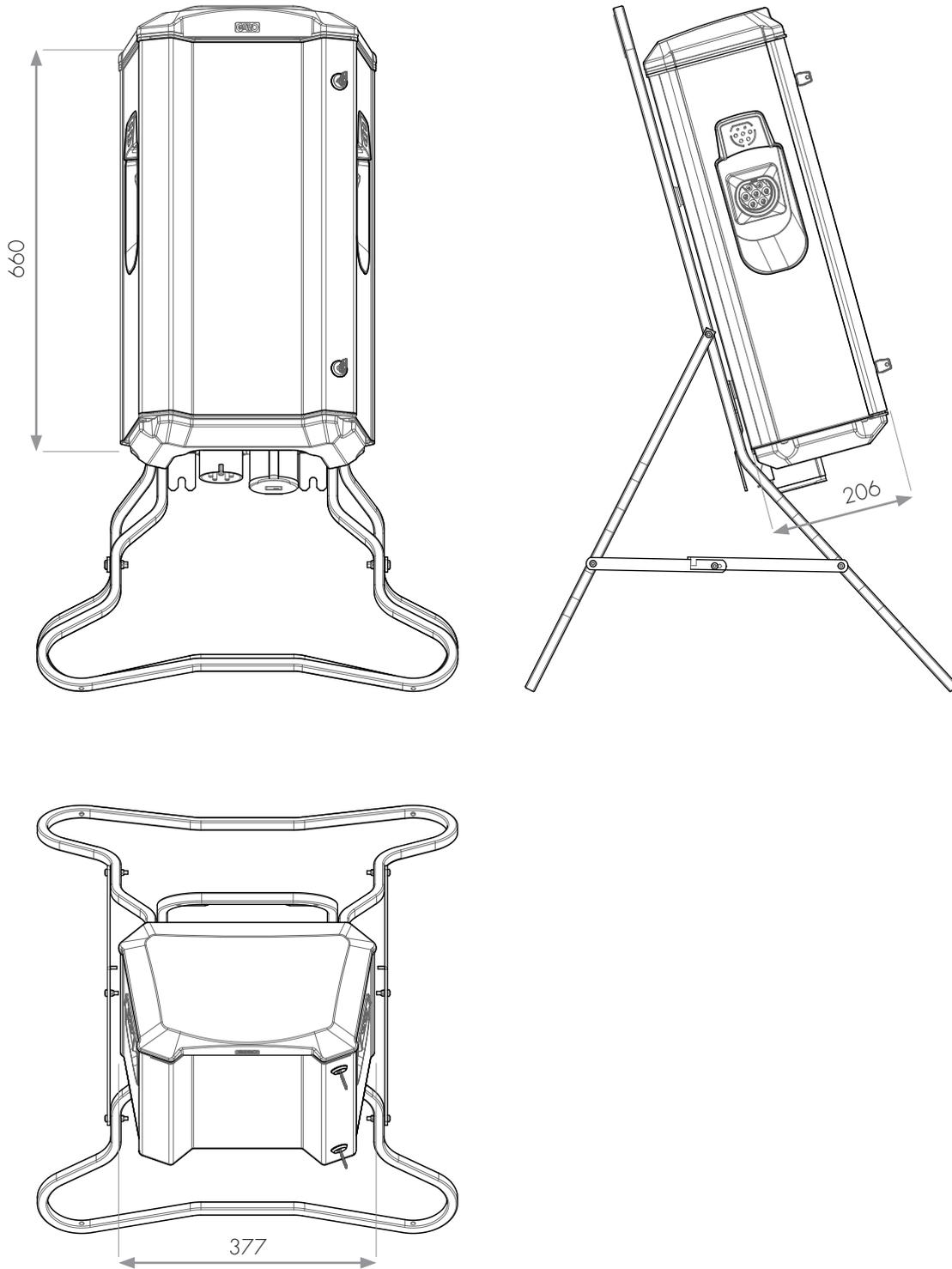
USER MANUAL

Normal use / Charging

Connect the charging cable to the EV. Charging will start
immediately if the EV is ready for charging. See your EV charging
manual.
When finishing charging, follow the car's instructions.
After charging: Release first the charging cable from your EV and
place the charging cable at designated place.

Note!
It is the EV that determines how much electrical current (A) the
GTC should provide. GTC Nova can provide the maximum rated
power according to the rating label. When both sides are in use,
the GTC Nova will balance the load equally between both sides.
In cases where the required power exceeds the available power
to the Nova, the left hand side is prioritized.

The GTC Nova is equipped with outlets, and it is important to use
correct charging cable.
For example, if you want to use 32A from the Nova, you must use
a 32A charging cable.

Note that there are both 1-phase and 3-phase charging cables
in the market. Use the correct cable to your EV. To find the correct
type of cable needed to your EV, please see the EV manual.

Resetting/Conditioning of RCCB

In the event of overload/earth fault, the built in RCCB/RCBO can trip, see picture 12. These components also need to be conditioned by pressing the test button every 6 month.

Procedure to reset/condition:

1. Disconnect the EV from the Nova
2. Open the front door.
3. Reset the RCCB (B). Conditioning means that first press the test button (A) and then reset the RCCB (B).
4. Close the front door.

Front door should be closed and locked to achieve IP44 class.
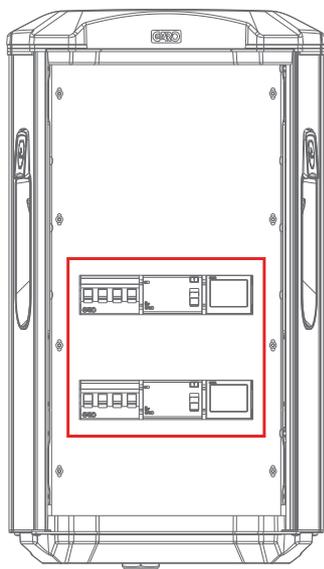
(picture 12)
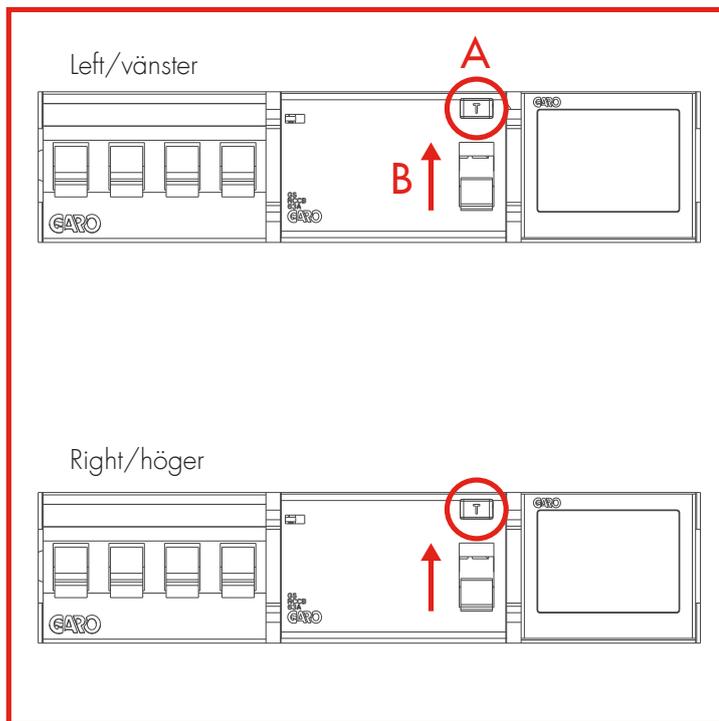
Electrical diagram
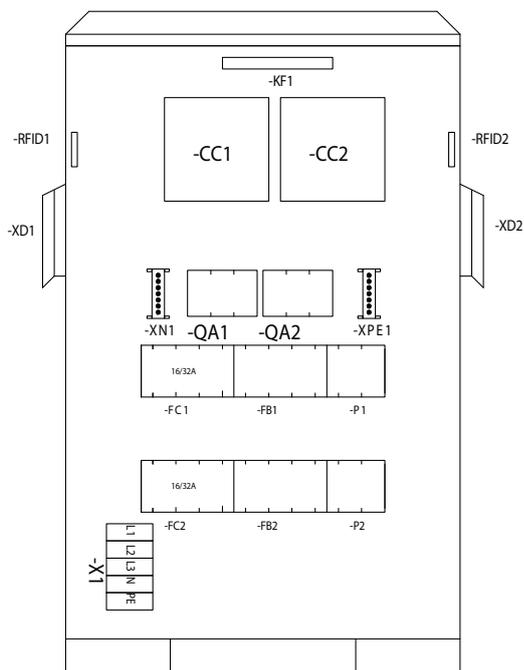
P1	=	Energymeter Left Outlet
P2	=	Energymeter Right Outlet
FB1	=	RCCB Left Outlet
FB2	=	RCCB Right Outlet
FC1	=	Fuse Left Outlet
FC2	=	Fuse Right Outlet
QA1	=	Contactor Left Outlet
QA2	=	Contactor Right Outlet
XN1	=	N Neutral terminal
XPE1	=	PE Terminal Protection Earth
CC1	=	Charge Controller Left
CC2	=	Charge Controller Right
RFID1	=	Left Receiver
RFID2	=	Right Recevier
KF1	=	Led light Topcard
X1	=	Incoming terminal
XD1	=	Left charging connector
XD2	=	Right charging connector

-KF1

-RFID1   -CC1   -CC2   -RFID2

-XD1   -XD2

-XN1   -QA1   -QA2   -XPE1

16/32A

-FC1   -FB1   -P1

16/32A

-FC2   -FB2   -P2

-X1   L1 L2 L3 N PE

-KF1

Fuse

Connector for
the RFID reader

Fuse/RccB FB
Contactor FB
Contactor control
Line (L)
Neutral (N)
Protective earth (PE)

A-
B+ E-Meter

A-
B+ Datalink

ON

SW2

ON

communication cable

1. blue/brown
2. blue/red
3. blue/yellow
4. blue/green
5. white
6. red

1 2 3 4 5 6

Connector for
WLAN-Card

Fuse

Connector for
Led light Topcard

Connector for
the RFID reader

Fuse/RccB FB
Contactor FB
Contactor control
Line (L)
Neutral (N)
Protective earth (PE)

A-
B+ E-Meter

Remote control

A-
B+ Datalink

ON

SW1

1. blue/brown
2. blue/red
3. blue/yellow
4. blue/green
5. white
6. red

1 2 3 4 5 6

ON

SW2

communication cable

FC1
QA1
LINE (L)
XN1
XPE1
A-
B+
A-
B+

-P1 + lastbalansering

DATALINK

CT1

CP 1
PP1

FC2
QA2

A-
B+

-P2

CT2

CP 2
PP 2

GR/BL
YE/BL
RE/BL
BR/BL

M

GR/BL
YE/BL
RE/BL
BR/BL

M

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Connecting to GTC Nova Wifi access point (AP)

(Only for GTC with wifi module installed)
1. Make sure that the GTC Nova is turned on.
2. Check the Serial no./SSID and password on the label which can be found inside the front door. Make a note of the serial number/SSID and password in the box below for future reference.
3. Identify the wallbox's SSID name in the wireless network display on your phone, tablet or computer see (picture 23) Connect to the Nova wireless network and enter the password.
4. Launch the browser on your device. The device will display the Nova website automatically or type in 172.24.1.1

To connect the GTC Nova to a local wireless network, see the section entitled "Connect GTC Nova
to a local network via Wi-Fi".
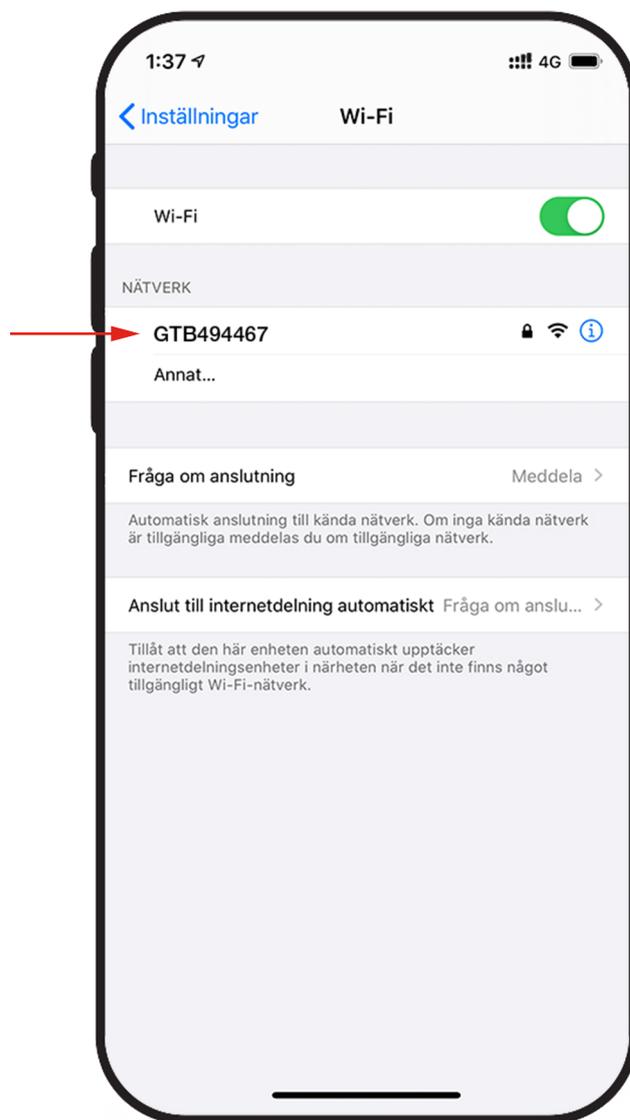
(picture 13)

Web interface

You can see information and do settings in the web interface. Below are some examples. (Due to continuous development, there might be more features in the web-interface than listed below and the pictures can vary).

Warning! GARO recommend that settings should be done by a person that have enough knowledge and good experience of a GTC Nova. If wrong setting is done for example DLM functions, it can result in overload for the installation and it can cause operational failure.

Note:
When the GTC Nova is connected to your local network, you should use the url: chargebox.garo.se in your web browser. Your mobile device needs to be connected to same network as the GTC Nova.

- Settings for scheduled reduced charge current (not active when external energy meter installed)
- Activating and deactivate RFID function
- Activating and deleting RFID tags
- Connecting to local Wifi network and LAN settings
- G-Cloud information and settings (only for G-Cloud systems)
- Energy consumption (only master GTC, require installed energy meter)
- Updating of the GTC Nova firmware
- Schedule functions
- Enable/disable GTC Nova

Main menu

Doubleclick the GARO symbol to show enhanced information
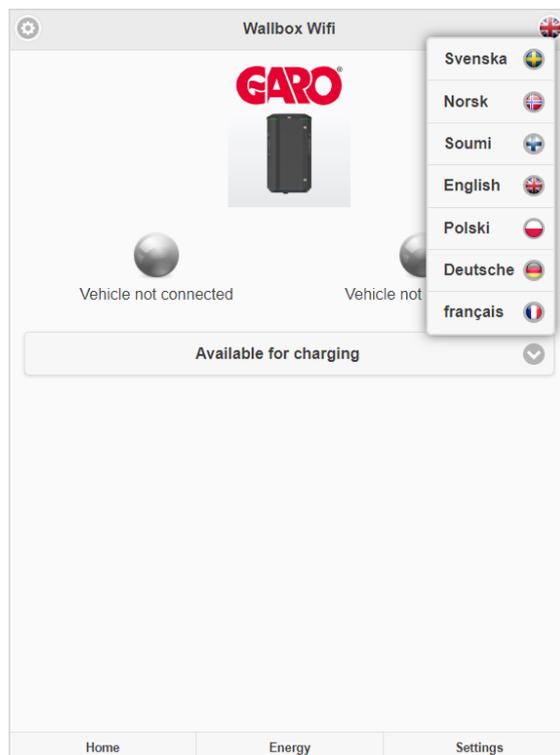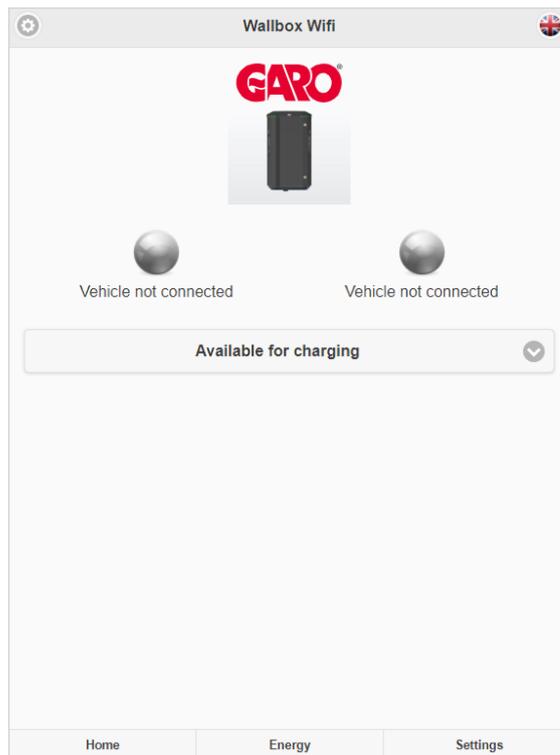
Example of information for left and right hand side
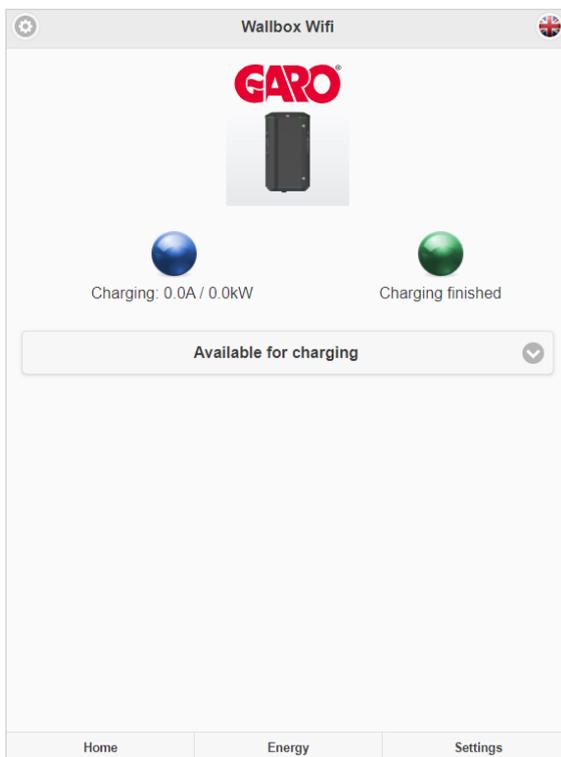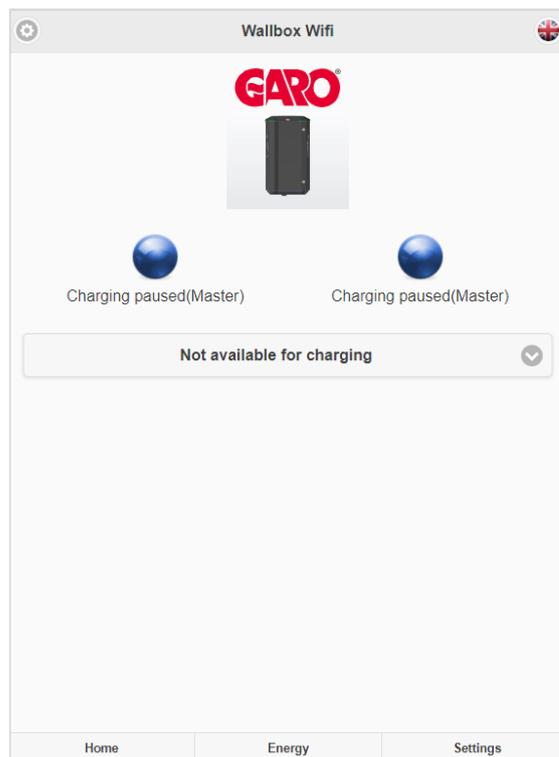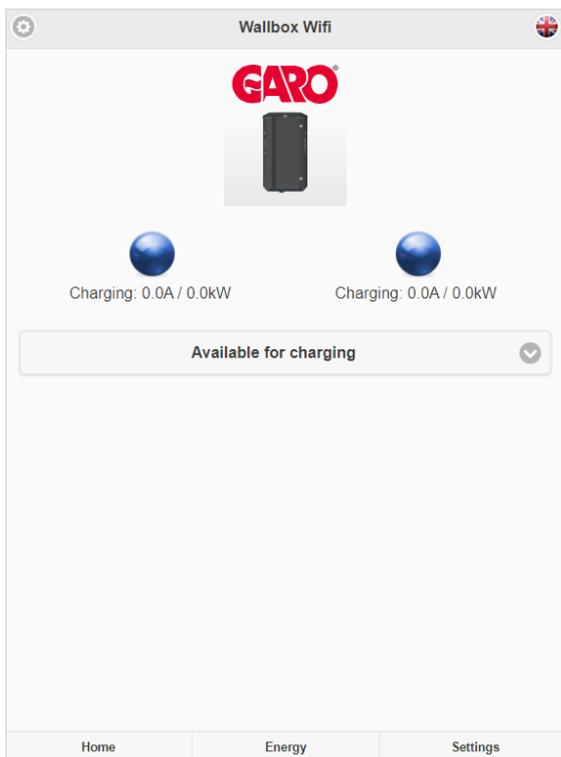
Energy information

Information for consumed energy for each side of the GTC
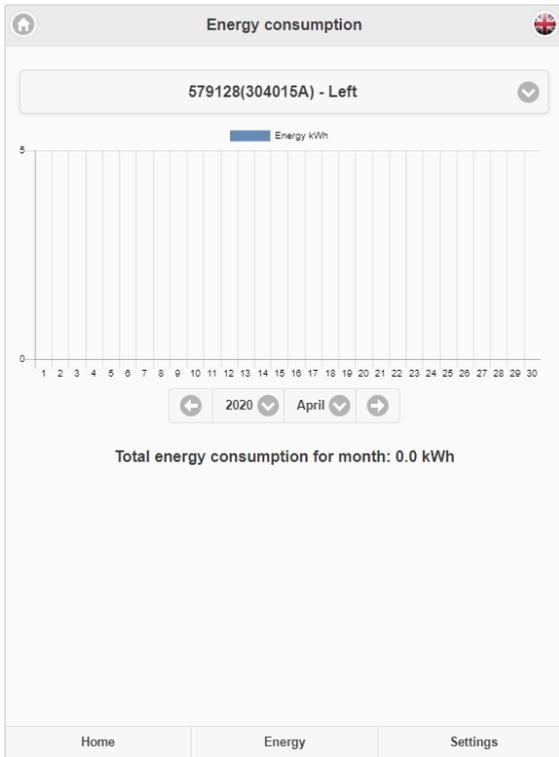
RFID settings in the web interface

After activate the RFID check, you can add and remove RFID tags manually or read in RFID tags via the RFID reader (Read tag from wallbox).

Note: when multiple GTC Novaes are connected in a grid, you can activate RFID tags individually for each Nova.

You can also add a name or comment for each tag.
Read tag from wallbox: Hold the tag against the RFID reader and the tags ID is shown in the interface. Press save.

When RFID check is activated, you need to hold an active RFID tag against the RFID reader to activate the charging process. A ticking sound will indicate that the GTC is waiting for the RFID tag. The ticking continues in 30sek. After that, you need to reconnect the charging cable to the vehicle again and restart the process. If the RFID tag is accepted, the charging process will begin. Red light from GTC indicates that the tag is not accepted.

To erase a RFID tag, click the "-" at the side of the registered tag.

Schedule

Settings menu for scheduled activation of GTC Nova.
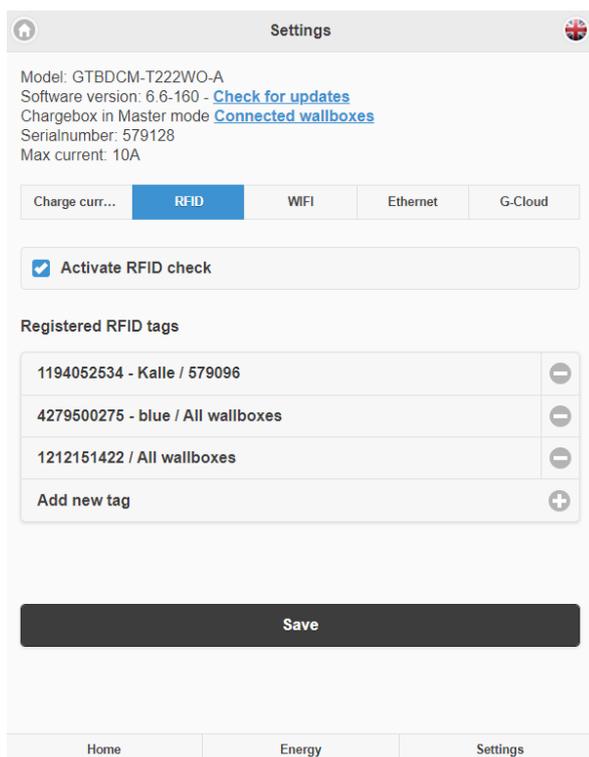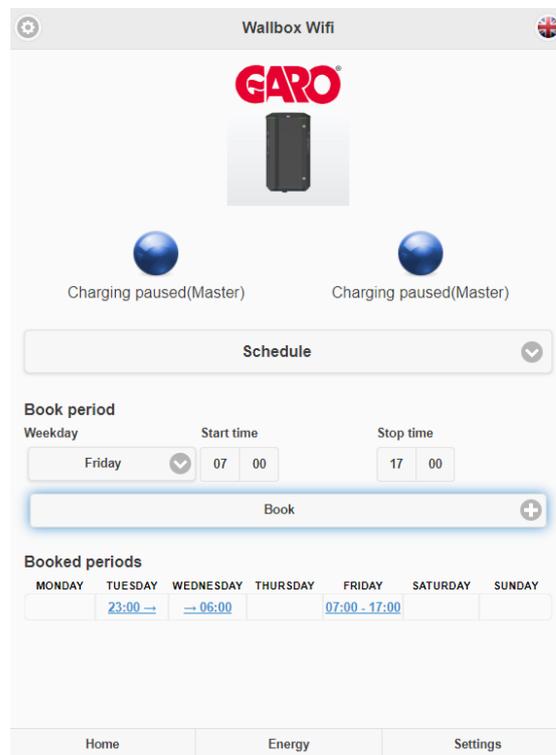
Connect GTC Nova to a local network via Wi-Fi

The GTC Nova will attempt to connect to the specified Wi-Fi network. If the data entered is incorrect or the connection is unsuccessful for any other reason, the device will return to access point mode after around 10 minutes.

1. Choose "connect to Router"
2. Enter your network name (SSID)
3. Enter the wifi password
4. Press "Save"

Launch the browser on your device and go to url: chargebox. garo.se and follow the instructions.

Note: your device needs to be connected to same network as the GTC Nova

Note: If the data entered is incorrect or the connection is unsuccessful for any other reason, the device will return to access point mode after around 10 minutes.

Connect GTC Nova to a local network via ethernet with DHCP

The GTC Nova will attempt to get an IP address from the local DHCP server.

1. Choose "Ethernet" and "Obtain IP automatically"
2. Current IP address is visible
3. Press Save

Launch the browser on your device and go to url: chargebox. garo.se and follow the instructions.

Note: your device needs to be connected to same network as the GTC Nova

Connect GTC Nova to a local network via ethernet using static IP-adress

The GTC Nova will attempt to connect to the local network using a static IP-address.

1. Choose "Ethernet" and "Static IP"
2. Enter the IP address, Netmask and Gateway information
3. Press Save

Launch the browser on your device and go to url: chargebox. garo.se and follow the instructions.

Note: your device needs to be connected to same network as the GTC Nova

Factory reset of Network settings

By pressing the SW3 on CC2 for >3s, you will reset the network settings to default AP (access point) mode. See picture 24. See SSID and password information inside the front door.
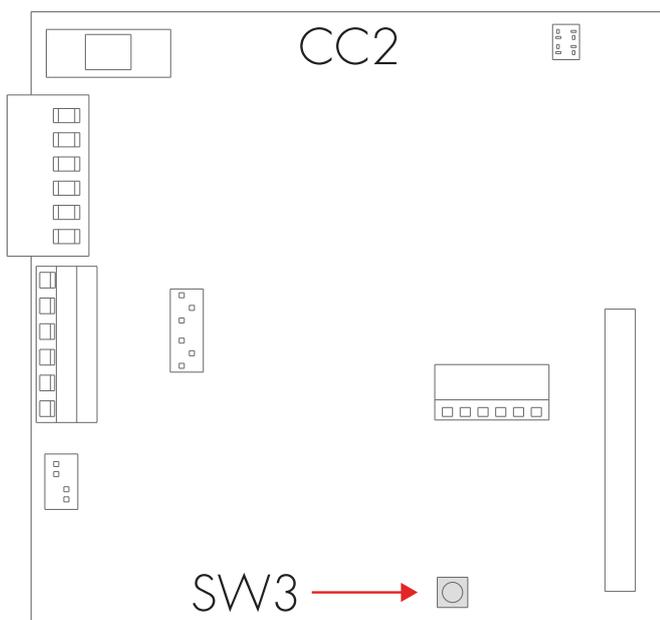
Updating the firmware

When GTC Nova is connected to internet via a local network (wifi or ethernet), klick on "Check for updates" and follow the instructions.

When multiple GTC Nova is connected in a grid, update for all units can perform at same time from the GTC Master.

(picture 14)
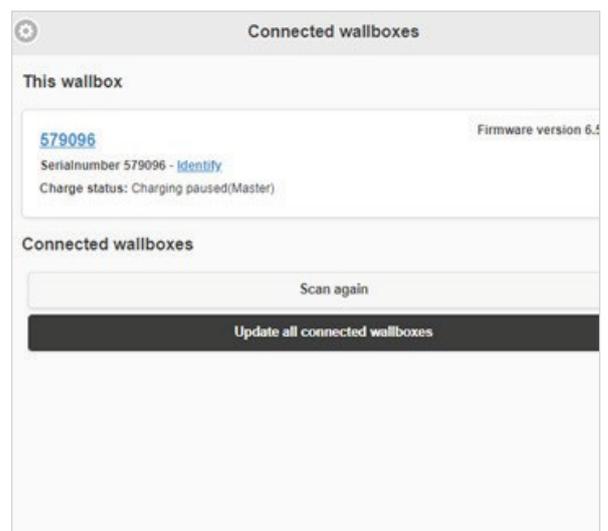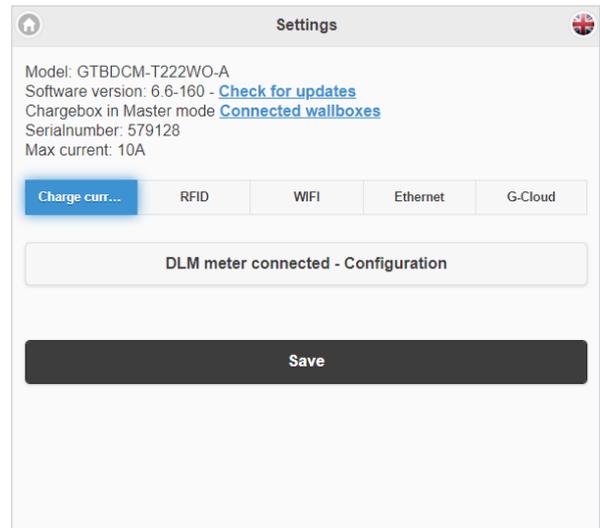
Uppdatering för GTC laddbox som ej är ansluten till internet via wifi eller LAN (kräver installerad wifimodul)

Updating the firmware on a GTC Nova not connected to internet (installed wifi module is required).

- Via computer, android mobile/tablet:
  Open https://www.webel-online/wifi and download the file.
- Then connect your computer/mobile/table to the GTC Nova AP wifi (access point). SSID and password is located inside the front door.
  Open http://172.24.1.1:8080/update in the web browser.
- Click "choose file" and mark the downloaded file.
- Click "update" and wait for the process to end.

Care

Cleaning the Charging Station

We recommend cleaning the GTC Nova with a soft dry cloth. Never use abrasive pads or detergents.

The RCCB needs to be conditioned every 6 month. Please see section Resetting/Conditioning of RCCB

Troubleshooting

Basic indications

🟢	Solid green	Twinbox ready, waiting for EV to connect
(🟢)	Flashing green	EV connected, waiting to start charging or charging complete
((🟢))	Fast flashing green	RFID reader ready, waiting to read tag
🔵 🔵 🔵	Shifting blue intensity	Charging in progress
🔵	Solid blue	RFID tag accepted, charging starts within 2 min
🔵　🔵	Slow flashing blue	Remote enable signal is disabled, Charging deactivated in web-interface or Scheduled charging not active
((⚪))	Fast flashing white	Indentification signal

Error indications		Error type	Action
🟡	Solid yellow	Charging cable error	Check the charging cable
(🟡)	Flashing yellow	EV outlet locking function error	Check the EV outlet, contact local electrician
🔴	Solid red	RCCB tripped or error signal from EV	Reset RCCB
🔴	Solid red for 3s	RFID tag not accepted	Check your RFID tag
((🔴))	Fast red flash	DC fault detected	Automatically reset after 15min or at restart of charging process
🔴 🟢 🟡	Shifting red/green/yellow	DC fault-detection hardware error	Contact local electrician
🟣	Fast flashing purple	Twinbox overheated, charging process terminated	Auto-reset when temperature drops below max limit

Error indications

Error indications	Error type	Action
○ ○ ○ One white flash every two minutes	DLM error	Auto-reset when Twinbox communication with energy meter is up and running
● ● ● Flashing red/blue	Firmware update in progress	Wait for the update process to complete

GLB/Twin - ljud signaler

Up beat tone	RFID tag is accepted, authorization ok
Down beat tone	RFID tag is not accepted, authorization has failed
Fast ticking tone	RFID reader active, waiting for authorization eg. RFID tag
One tick sound repeating every two minutes	Indicate an error in DLM function

Technical specifications

Product type:	All GTC models
Standards/directives:	IEC 61851-1 and IEC TS 61439-7

CE **RoHS**

Installation:	Wall/ground mounted
Voltage rating:	230V/400V 50Hz
Installation systems:	TT-, TN- and IT*-systems
Charging Type:	Mode 3
Charging method:	AC charging
Protection class:	IP44
Mechanical impact resistance:	IK10
Temperature range:	-25C – +40C (without direct sunlight)
Recommended installation height:	0.5–1.5 metres above ground
Weight:	21 kg
Standard cable length (fixed cable versions):	4m

* 1-phase GTC Nova

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