GARO TWIN

Assembly instructions / End User Instruction (EN)

CE

IP44

IK10

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TABLE OF CONTENT

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.

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

INFORMATION

GARO TWIN assortment is a range of EVSE stations for Mode-3 AC charging.

Below are some example of standard features:

- Double outlets or cables for Mode-3 EV charging.
- Up to 2x22kW simultaneous charging from one EVSE depending on model.
- RCCB with DC-fault monitoring for each side.
- Internal static DLM (Dynamic Load Management).
- Remote control function for activated charging.
- Double mains terminals for easy forwarding of mains cable to next TWIN.
- Suitable for installation on wall or pole.
- LED status indication.
- Upgradeable firmware

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

General functions:
- Remote activation via relay (timer etc)
- Prepared for external DLM meter (advanced DLM fuctions)
- Prepared for cluster installations
- Possibility to connect TWIN together with GLB in cluster Install and administrate RFID readers
- Connect mobile/tablet/PC to webinterface*
- Activate scheduled charging via webinterface*
- Schedule for electric current limitation via webinterface*
- Install external energy-meter for advanced DLM*
- Connect up to 25pcs TWIN in a cluster for advanced DLM*
- Update firmware via webinterface*

* Require installed wifi module

www.garoemobility.com/support

Warnings

⚠️ Dielectric Voltage Withstand Test is not allowed on TWIN

⚠️ 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 TWIN range of charging stations is designed exclusively for charging electric vehicles.

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

⚠️ Do not install or use the TWIN 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 TWIN.

⚠️ Use the TWIN only within the specified parameters.

⚠️ Never spray water or any other liquid directly at the TWIN. Never spray any liquid onto the charge handle or submerge the charge handle in liquid. Store the charge handle in the dock to prevent unnecessary exposure to contamination or moisture.

⚠️ 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 TWIN.

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Cautions

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

⚠️ Poor quality electricity may harm the TWIN and or the vehicle. An example of such source of poor quality electricity may be private power generators.

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

⚠️ Some energy meters have touch protection covers over the terminals that must be installed during use of TWIN to have valid guarantee

Notes

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

ⓘ Ensure that the TWIN's 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 TWIN's components. The outside of the TWIN, 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 TWIN in direct sunlight to avoid any heat-problems.

ⓘ To even out the load, it is important to rotate the phases when connecting several of TWINs to the same supply. Note that 1-phase charging is common in electric vehicles and L1 and L2 in the TWIN 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 TWIN firmware are continuously updated.
To make sure that the TWIN is working properlty, it is necessary to update the firmware and it requires a communication card.
Communication cards are available as an accessory.
TWINs installed in a cluster only need the master to have the communication card installed.

INSTALLATION OF STANDALONE TWIN

- Use conductors that are dimensioned in accordance with local electrical regulations. The selected cable must be able to sustain periods of constant load of up to 63A.
- The installation must be carried out by an authorized installer.
- Left hand side PCB (CC1) controls the left side outlet and right hand side PCB (CC2) controls the right hand side outlet.
- TWIN 1-phase models use L1 for left hand side outlet and L2 for right hand side outlet.

1. Select suitable group fuse and cable dimension for the electrical installation. Make sure to consider the cable length during calculation to avoid risk of voltage drop.
(figure 3) shows the needed ampere (A) for each TWIN model.

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. Fill in the fuse and cable information in the Warranty form located in the installation manual that is included in the box.
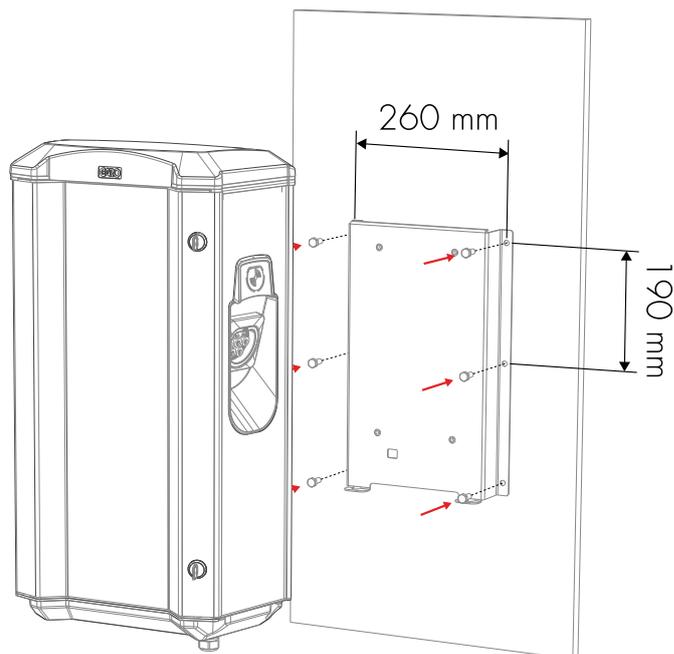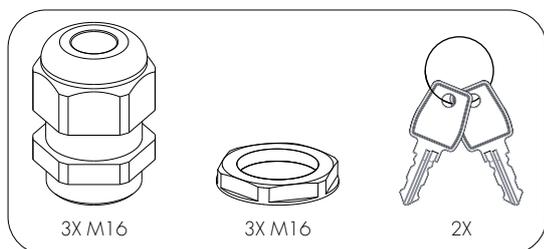
3. Mount the TWIN on a wall or pole according to picture 1-7.

Note: Wall installation of TWIN requires a minimum 20mm distance between the wall and the TWIN to ensure correct cooling, see (figure 4).
When TWIN is installed on a pole, the holes at the back side of the TWIN should be covered/closed by attached screws, see (figure 7).
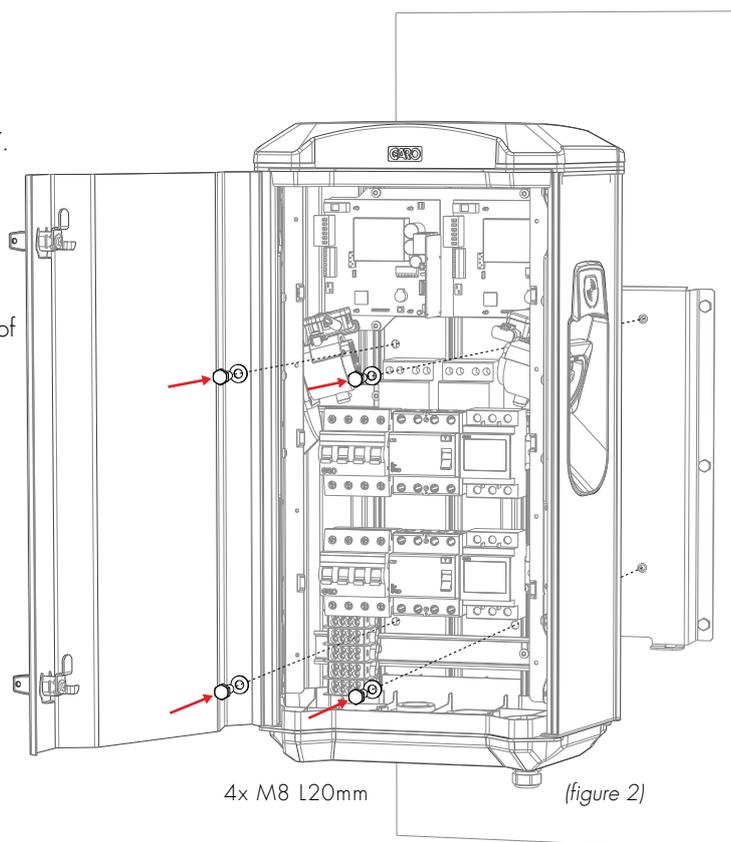
Manual

3X M16   3X M16   2X

260 mm
190 mm

6 Ø 8,5mm (screws not included)
(figure 1)

4x M8 L20mm   *(figure 2)*

MAX Ampere per modell

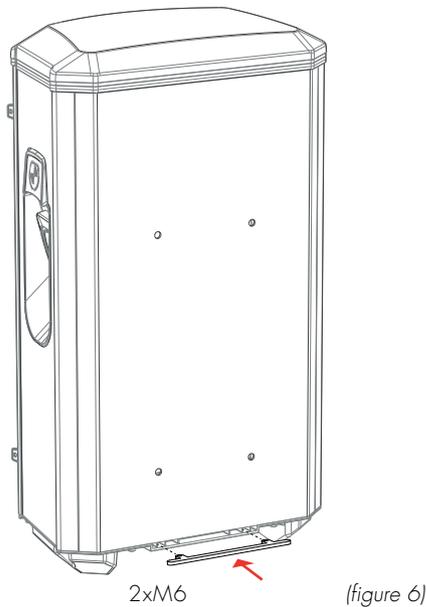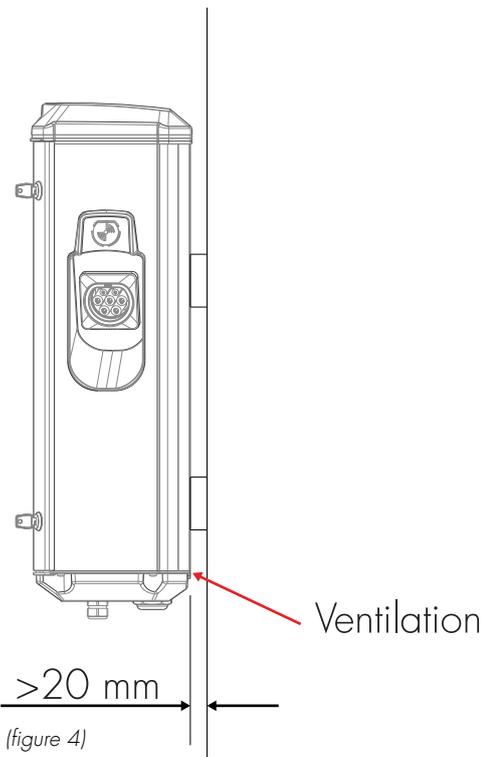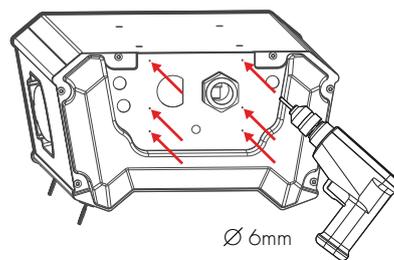|	
TWIN 3,7 kW	= MAX 16 A
TWIN 7,4 kW	= MAX 32 A
TWIN 11 kW	= MAX 16 A
TWIN 22 kW	= MAX 32 A

(figure 3)

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4. Check/set the dip 1-3 on SW1 CC2 to the max Ampere
(A) that the outlets can load/charge, for example TWIN11kW:
16+16A=32A
Dip switch SW1 is located in the center of left hand side of CC2,
see (figure 9).

Ø 6mm

Ventilation

>20 mm

(figure 4)

2xM6   *(figure 6)*

2x M8xL20mm + Nut + Washer

2xM8 L20 + 2xM8 Nut + Washer

6x M6 Nut + Washer

3xM6 L12mm

(figure 5)

6xM6 L40mm

(figure 7)

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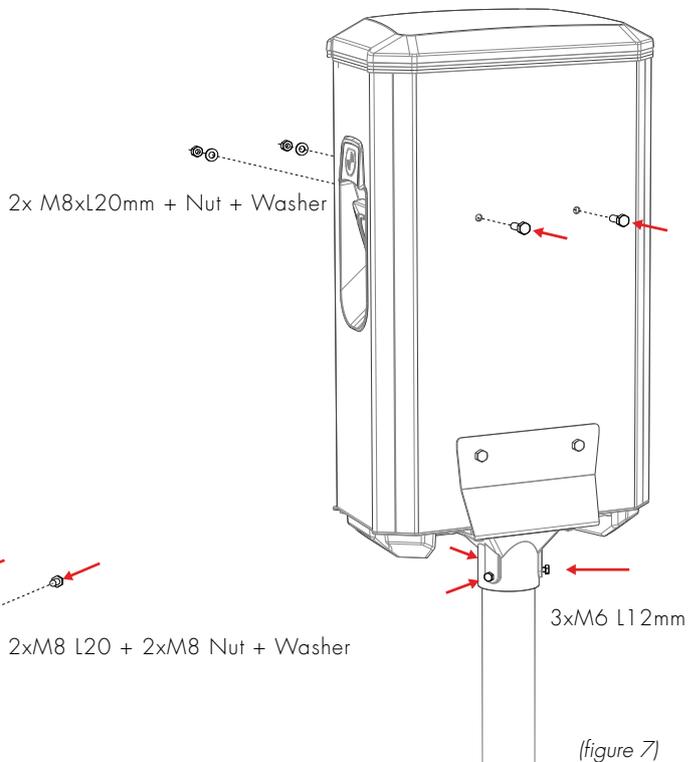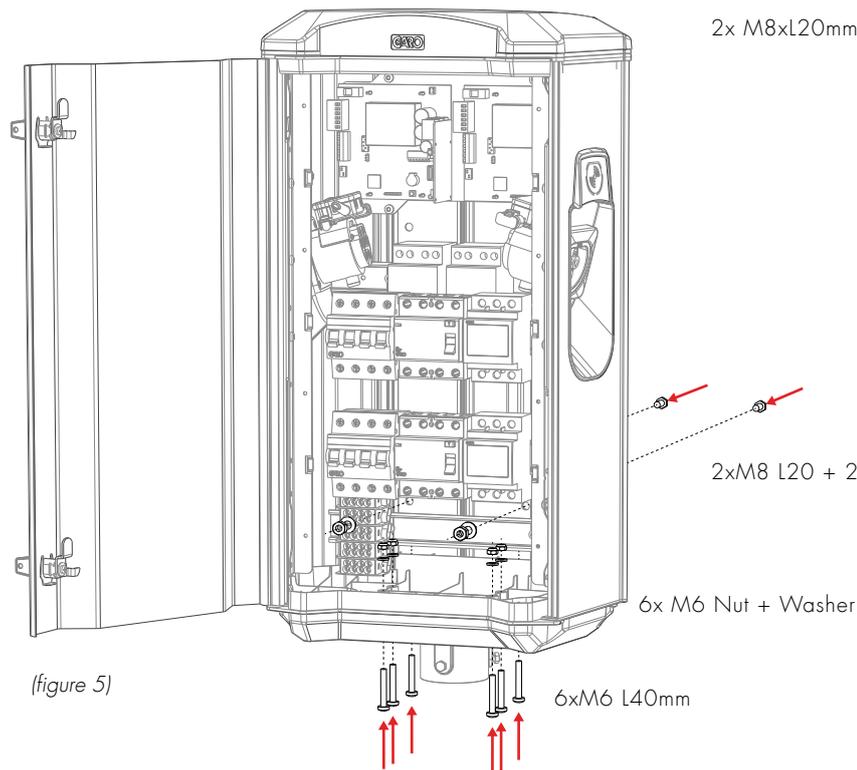
5. With dip 1-3 on SW2 on both CC1 and CC2, you can (when needed) reduce the charge current (A) separate for left/right hand side of the TWIN. Available range is 6A – MAX32A, see (figure 8). This is normally not necessary to do at a standard installation.

Note: it is ok to set different value for left and right hand side. SW2 on CC1 controls left hand side and SW2 on CC2 controls right hand side.

Dip switch SW2 is located at bottom left hand side on both CC1 and CC2, see (figure 9).

Note: Dip 1-3 SW2 settings on both CC1 and CC2 MAX Ampere (A), see (figure 8).
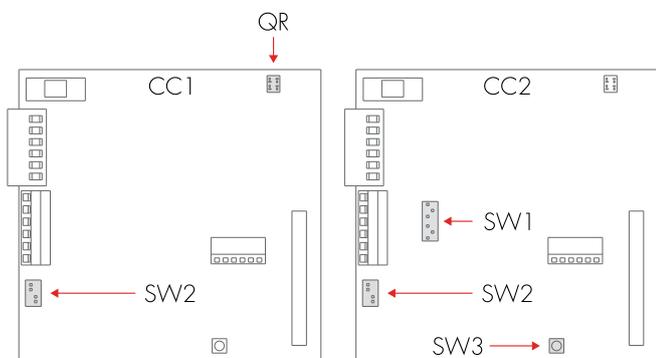
6. Install the electrical supply cable to terminals L1-L3, N , PE. Note: TWIN is equipped with double terminals that makes it easy to forward the supply cable to another TWIN, see (figure 9).

7. Fill in the serial number in the Guarantee form. See QR code label at upper right corner of CC1, see (figure 9).

SW2 MAX Ampere

TWIN 3,7 kW = MAX 16 A	
TWIN 7,4 kW = MAX 32 A	
TWIN 11 kW = MAX 16 A	
TWIN 22 kW = MAX 32 A	

(figure 8)

(figure 9)

SW1

	ON	OFF		A
3		✓	3=OFF	
2		✓	2=OFF	16A
1	✓		1=ON	

3		✓	3=OFF	
2	✓		2=ON	20A
1		✓	1=OFF	

3		✓	3=OFF	
2	✓		2=ON	25A
1	✓		1=ON	

3	✓		3=ON	
2		✓	2=OFF	32A
1		✓	1=OFF	

3	✓		3=ON	
2		✓	2=OFF	40A
1	✓		1=ON	

3	✓		3=ON	
2	✓		2=ON	50A
1		✓	1=OFF	

3	✓		3=ON	
2	✓		2=ON	63A
1	✓		1=ON	

SW2

	ON	OFF		A
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	

(figure 10)

Max current (A) for each side and model

TWIN 3,7 kW = MAX 16 A	
TWIN 7,4 kW = MAX 32 A	
TWIN 11 kW = MAX 16 A	
TWIN 22 kW = MAX 32 A	

8. Assembly the front cover and close the front door, see (figure 12).

9. Turn on electrical power.

10. For GTBDCW… models: Connect a mobile device (PC/Tablet/Mobile) to the TWIN Wifi network. You find SSID and password on a label inside the front door. Type in 172.24.1.1 in your web browser and check that the TWIN web interface is visible. This action confirms that the TWIN wifi module is working properly. TWIN need to be powered on for around 15min before this action.

Cu = 2,5Nm, Al = 4Nm
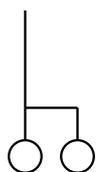
L1   L2   L3   N   PE

(figure 11)
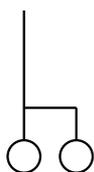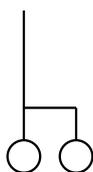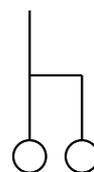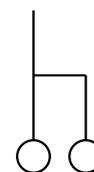
11. Test the TWIN with a test instrument or test to charge an electric vehicle to ensure that the TWIN is working properly.

12. Doublecheck that the Warranty Form is filled in completely, sign with name, date and company that the warranty is valid.

(figure 12)

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Dip Switch Information

SW1 CC2

	ON	OFF		
6	☐	☐	6	Datalink Endtermination ON, OFF
5	☐	☐	5	ON = Master Mode, OFF = Slave mode
4	☐	☐	4	Remote enable input function. ON (default) = Open circuit, OFF = Closed circuit
3	☐	☐	3	
2	☐	☐	2	Fuse value in mains cabinet, see below table for settings
1	☐	☐	1	

	16 A		20 A		25 A		32 A		40 A		50 A		63 A	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
3	☐	☑	☐	☑	☐	☑	☑	☐	☑	☐	☑	☐	☑	☐
2	☐	☑	☑	☐	☑	☐	☐	☑	☐	☑	☑	☐	☑	☐
1	☑	☐	☐	☑	☑	☐	☐	☑	☑	☐	☐	☑	☑	☐

SW2 CC1, CC2

	ON	OFF		
4	☐	☐	4	ON = Fixed cable, OFF = Outlet
3	☐	☐	3	
2	☐	☐	2	MAX Ampere for outlet / cable, see below table for settings
1	☐	☐	1	

	6 A		10 A		13 A		16 A		20 A		25 A		29 A		32 A	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
3	☐	☑	☐	☑	☐	☑	☑	☐	☑	☐	☑	☐	☐	☑	☑	☐
2	☐	☑	☑	☐	☑	☐	☐	☑	☐	☑	☑	☐	☐	☑	☑	☐
1	☑	☐	☐	☑	☑	☐	☐	☑	☑	☐	☐	☑	☐	☑	☑	☐

(figure 13)

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Remote enable signal

Via a potential-free contact (relay, timer etc) the TWIN can be
remotely enabled/disabled. The cable is connected to terminals
on CC2, see picture 11 (remote control).

Enable of the TWIN can be done in two ways:

1. Enable by open circuit (default from factory).
2. Enable by closed circuit.

The setting is done via SW1 DIP4 on CC2, see (figure 14)).
ON = Open circuit enables TWIN (default)
OFF= Closed circuit enables TWIN

Remote control

SW1

CC2

SW2

SW3

External charge control:
open contact=enabled,
closed contact=disabled
*Remote control signal can
be set in inverse function.

Dip 4: Remote control
- see table below

(figure 14)

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EM270, 271-RS485

DLM Meter   TWIN

8 T
5 A-   Shielded   A- 200
6 B+   B+ 201
7 GND   Twisted Pair   PE

Termination 6-8

GNM1D-RS485

DLM Meter   TWIN

5 T
8 A-   Shielded   A- 200
6 B+   B+ 201
7 GND   Twisted Pair   PE

Termination 5-8

GNM3D-RS485 (LP)

DLM Meter   TWIN

7 T
9 A-   Shielded   A- 200
8 B+   B+ 201
10 GND   Twisted Pair   PE

Termination 7-9

GNM3T-RS485 (LP)

DLM Meter   TWIN

10 T
12 A-   Shielded   A- 200
11 B+   B+ 201
13 GND   Twisted Pair   PE

Termination 10-12

(figure 15)

Dynamic Load Management (DLM) for Stand Alone TWIN

NOTE! Do not change any setting on the internal energy meters.

DLM reduces charging current when demand of current elsewhere increases. Simple to say, the TWIN balance the charging current that you will get as much power as possible to the EV that is available in the system without any risk to overload the mains fuses.

To activate DLM, a Modbus energy meter must be installed in the supply distribution box. The following energy meters are approved:

• Garo GNM1D-RS485
• Garo GNM3D-RS485
• Garo GNM3T-RS485 (current transformer 3-phase. Max current is based on current transformer)
• CG EM 112
• CG EM 210
• CG EM 270
• CG EM 271

For use in systems that have local electricity production (solar cell, wind etc)

• Garo GNM3D-LP-RS485
• Garo GMI3D-LP
• Garo GNM3T-LP-RS485 (current transformer 3-phase. Max current is based on current transformer)

Note the energy meter's Modbus address must be set to 2, 100 or 101.

Adress 2: Recommended for a stand alone TWIN. Setting for SW1 CC2 is valid and charging process are paused if available current drops below 6A. Can handle MAX 63A.

Adress 100 or 101: Only recommended when multiple TWINs are connected in a grid. Minimum charging current is 6A and charging process is not terminated by the DLM function. This mode require an installed wifi module. Note, all settings are done in the webinterface. SW1 DIP1-3 set max current for the complete TWIN and the DLM meter supervise the mains fuses.

The energy meter continually measures the total energy consumption for each phase. The data is transmitted to the TWIN, that then is reducing the charging current when necessary in order to prevent the mains fuses from tripping.

In one-phase systems, the energy meter needs to be installed to same phase as the TWIN.
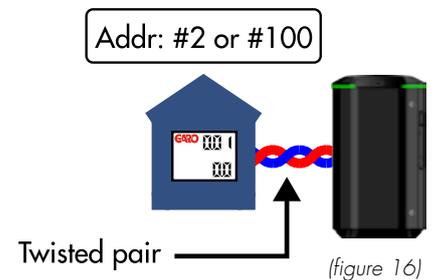
Connection of the energy meters Modbus cable:

    Terminal   200:   A -
    Terminal   201:   B +

Recommended cable is twisted pair shielded signal cable approved for Modbus communication.

Settings in the external DLM energy meter:

• Modbus address 2 (recommended), 100 or 101 (9600 baud, no parity, one stop bit).
• Set SW2 (Dip 1-3) CC2 to max available Ampere (A) (see settings for max available Ampere from mains) see (figure 17).

Addr: #2 or #100

Twisted pair

(figure 16)

	16 A		20 A		25 A		32 A		40 A		50 A		63 A	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
3		✓		✓		✓	✓		✓		✓		✓	
2		✓	✓		✓			✓		✓	✓		✓	
1	✓			✓	✓			✓	✓			✓	✓	

(figure 17)

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Dynamic Load Management (DLM) for TWIN in a grid

NOTE! Do not change any setting on the internal energy meters.

To activate DLM for TWINs installed in a grid, a Modbus energy meter must be installed in the supply distribution box. It is also possible to install a 2nd Modbus energy meter when you need to measure the consumed energy at more than one place. TWIN master require an installed wifi-module.

The following energy meters are approved:
• Garo GNM1D-RS485
• Garo GNM3D-RS485
• Garo GNM3T-RS485 (current transformer 3-phase. Max current is based on current transformer)
• CG EM 112
• CG EM 210
• CG EM 270
• CG EM 271
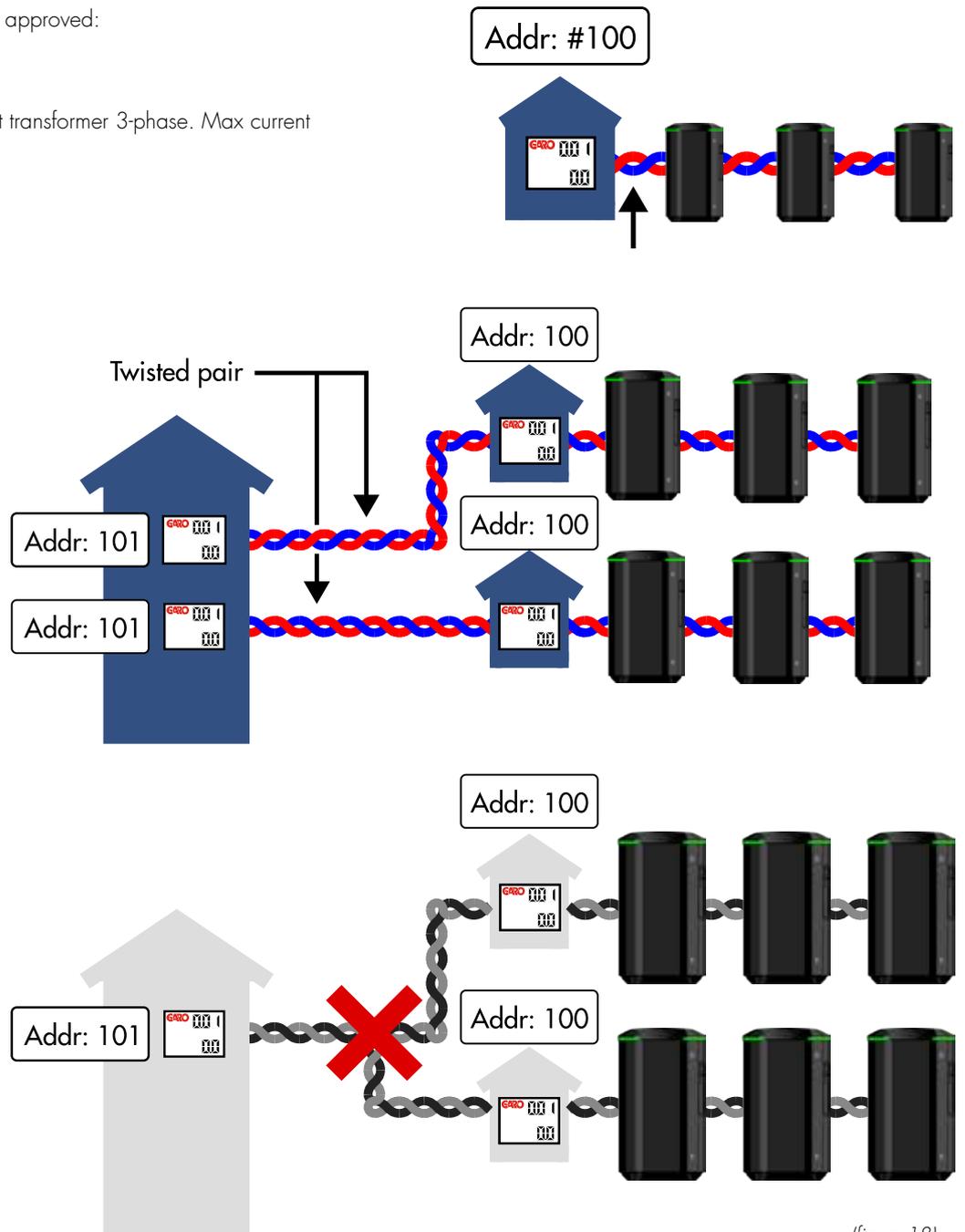
(figure 18)

For use in systems that have local electricity production (solar cell, wind etc)
• Garo GNM3D-LP-RS485
• Garo GMI3D-LP
• Garo GNM3T-LP-RS485 (current transformer 3-phase. Max current is based on current transformer)

Note the external DLM energy meter's Modbus address must be set to #100 (and #101 for a 2nd e-meter).

The external DLM energy meter/meters continually measures the total energy consumption for each phase. Data is transmitted to the first wallbox (TWIN Master), which controls the charging current per phase for the entire system in order to prevent the main fuses from tripping.

The Master TWIN in the grid needs to have a wifi module installed.

A maximum of 25 TWIN may be connected together in a grid by a shielded twisted pair cable. See picture 13, 14.

It is allowed to mix TWIN with GLB Wallbox in this type of grid, and the limit is max 50pcs "outlets",
(TWIN = 2pcs outlets and GLB = 1pcs outlet). (figure 19)(figure 20)

One of the TWIN should be a Master in the installation and this is set by SW1 DIP5 on CC2 (right side PCB)
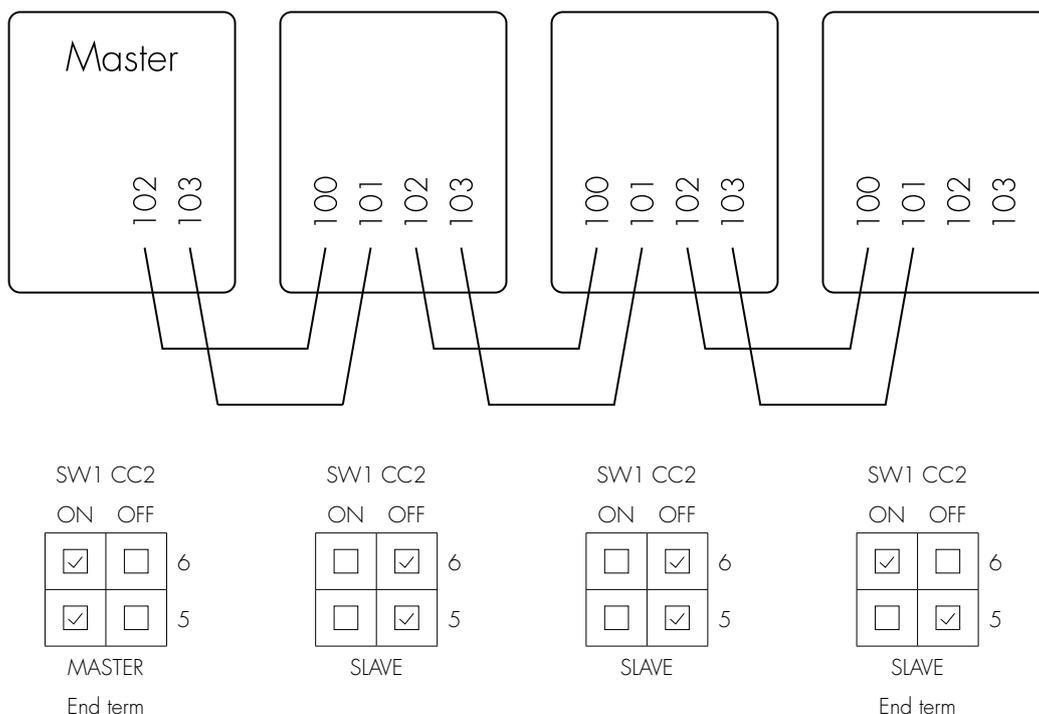All other TWIN in the installation should be Slaves and this is set by SW1 DIP5 on CC2 (right side PCB)
See (figure 21)

The first and last TWIN in the installation should be end-terminated via SW1 DIP 6 on CC2 (right side PCB), see (figure 21).

Schematic image with TWIN Master placed to the left of the cluster

TWIN

(figure 19)

TWIN CLUSTER INSTALLATION

Schematic image with TWIN placed in the center of the cluster

TWIN

Master

102 103 · 100 101 102 103 · 100 101 102 103 · 100 101 102 103

SW1 CC2	SW1 CC2	SW1 CC2	SW1 CC2
ON OFF	ON OFF	ON OFF	ON OFF
☑ ☐ 6	☐ ☑ 6	☐ ☑ 6	☑ ☐ 6
☐ ☑ 5	☐ ☑ 5	☑ ☐ 5	☐ ☑ 5
SLAVE	SLAVE	MASTER	SLAVE
End term			End term
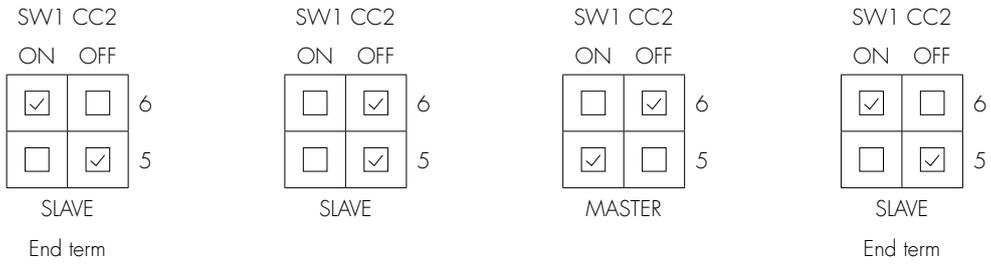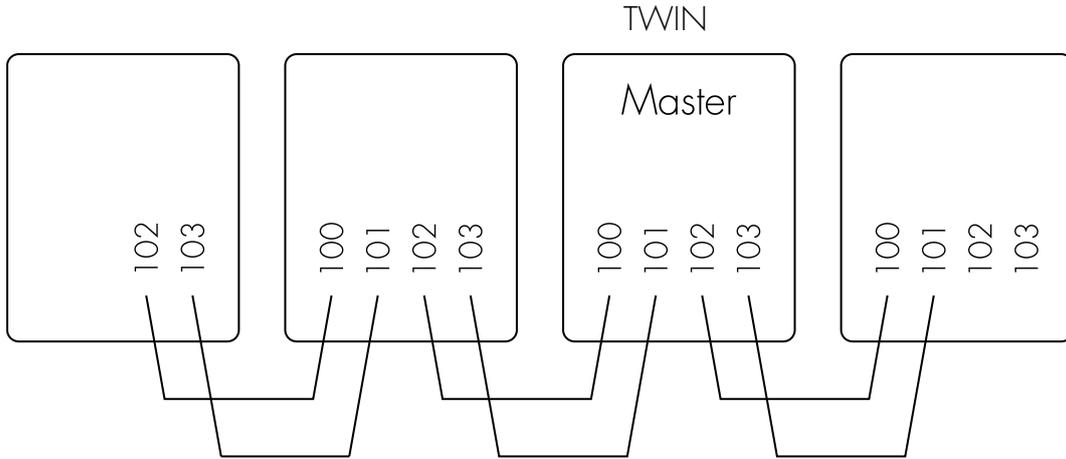
(figure 20)

Settings explanation of Dip 5, 6 on SW1 CC2

		SW1 CC2			SW1 CC2			SW1 CC2			SW1 CC2
		ON OFF			ON OFF			ON OFF			ON OFF
MASTER	5	☑ ☐	SLAVE	5	☐ ☑	End term OFF	6	☐ ☑	End term ON	6	☑ ☐
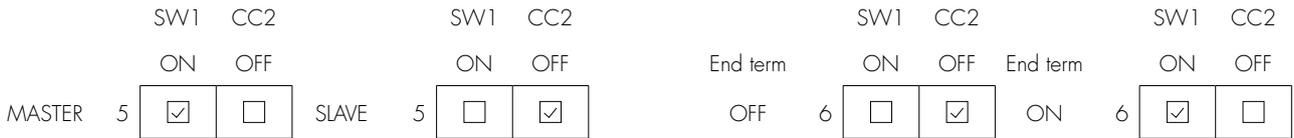
(figure 21)

RFID reader installation

1. Turn off the electrical power to the TWIN
2. Assembly the RFID readers according (figure 23) - (figure 26).

Note: Both DIP switches should set to ON on both RFID readers, see picture 18.

A wifi module needs to be installed to the Master TWIN.

Note: RFID can read Mifare Classic tags.
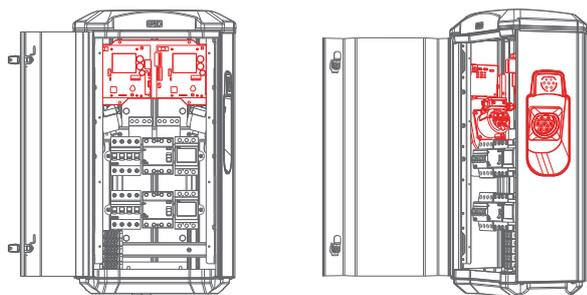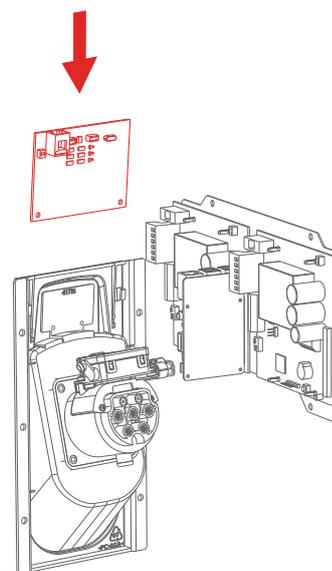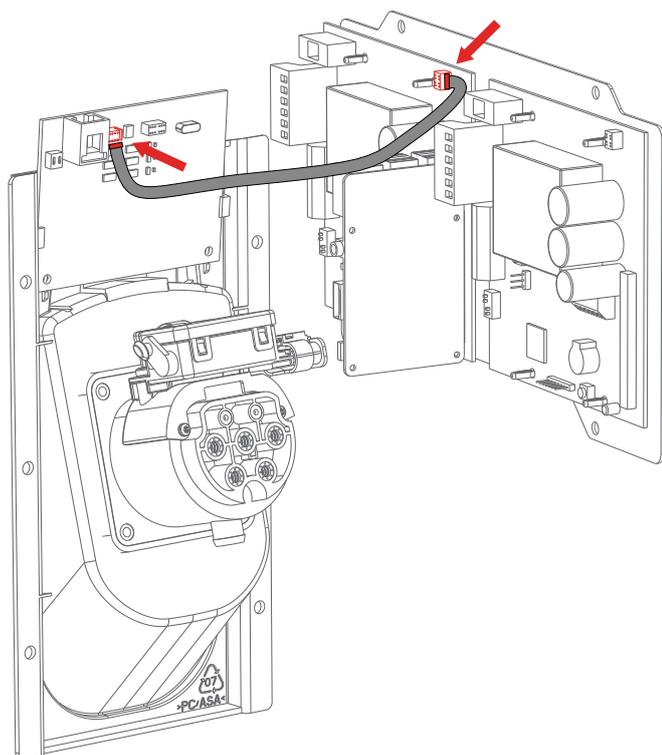
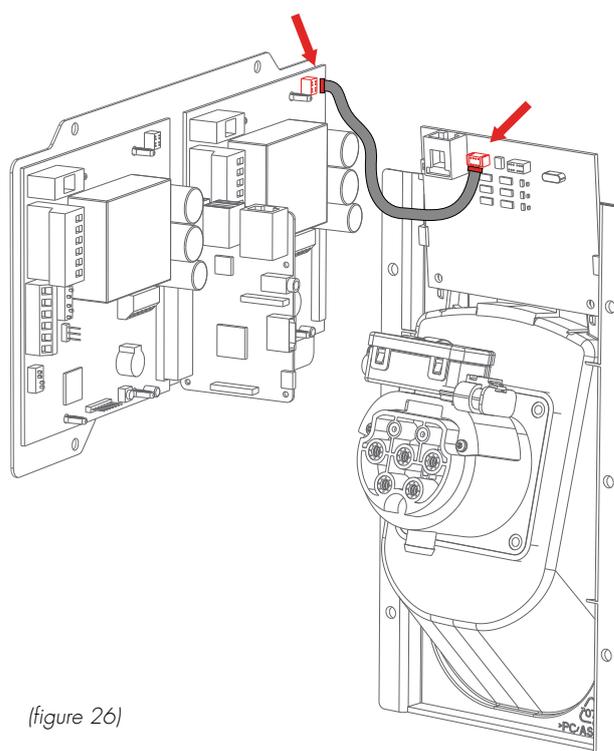| DIP switch	ON	OFF	
	☑	☐	2
	☑	☐	1

(figure 22)
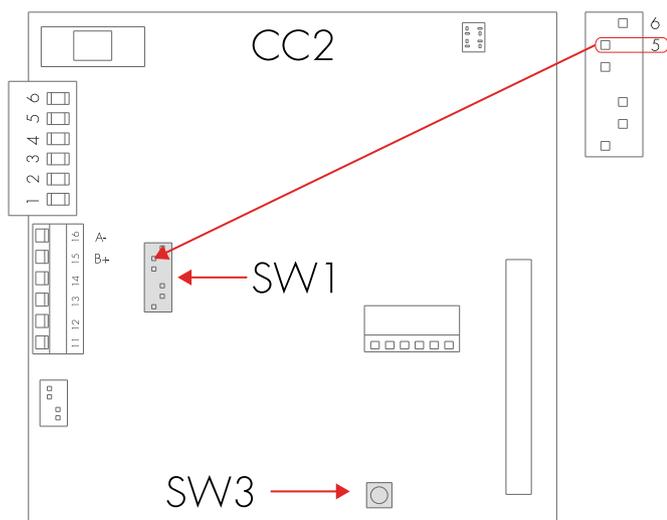

(figure 25)

(figure 23)

(figure 24)

(figure 26)

RFID settings for stand alone TWIN

Set SW1 (Dip5) CC2 to ON that makes the unit as "Master", see (figure 27).

For RFID settings, see RFID section in the webinterface section in this manual.

(figure 27)

RFID settings for TWINs connected in a grid

In Twin cluster installations via data-link terminals, the slave TWINs must be powered on before RFID function can be activated. Settings that are made via TWIN master for TWIN slaves that are not powered on will result in Slaves that has not received the settings from the Master and the RFID function will be deactivated. Those TWIN slaves will start charging session without RFID authorization.

A maximum of 25pcs TWIN can be installed in cluster via Data-link (twisted pair cable).

It is also possible to mix TWIN and GLB in data-link cluster. In that case, the maximum is 50pcs charging points (TWIN = 2pcs, GLB = 1pcs) See (figure 29)(figure 30).

One of the TWIN should be a Master in the installation and this is set by SW1 DIP5 on CC2 (right side PCB)
All other TWIN in the installation should be Slaves and this is set by SW1 DIP5 on CC2 (right side PCB)
See (figure 28)).

The first and last TWIN in the installation should be end-terminated via SW1 DIP 6 on CC2 (right side PCB).

Settings explanation of Dip 5, 6 on SW1 CC2
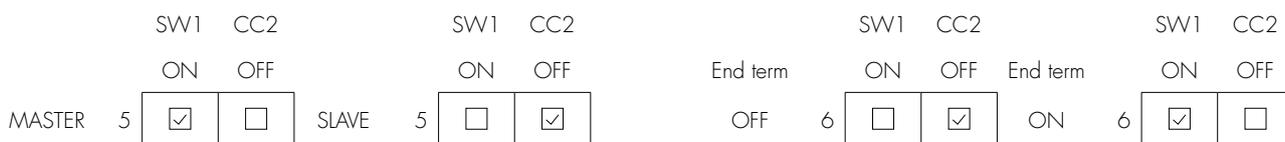
(figure 28)

INSTALLATION OF STANDALONE TWIN

Schematic image with TWIN Master placed to the left of the cluster

TWIN

SW1 CC2	SW1 CC2	SW1 CC2	SW1 CC2

(figure 29)

Schematic image with TWIN Master placed in the center of the cluster
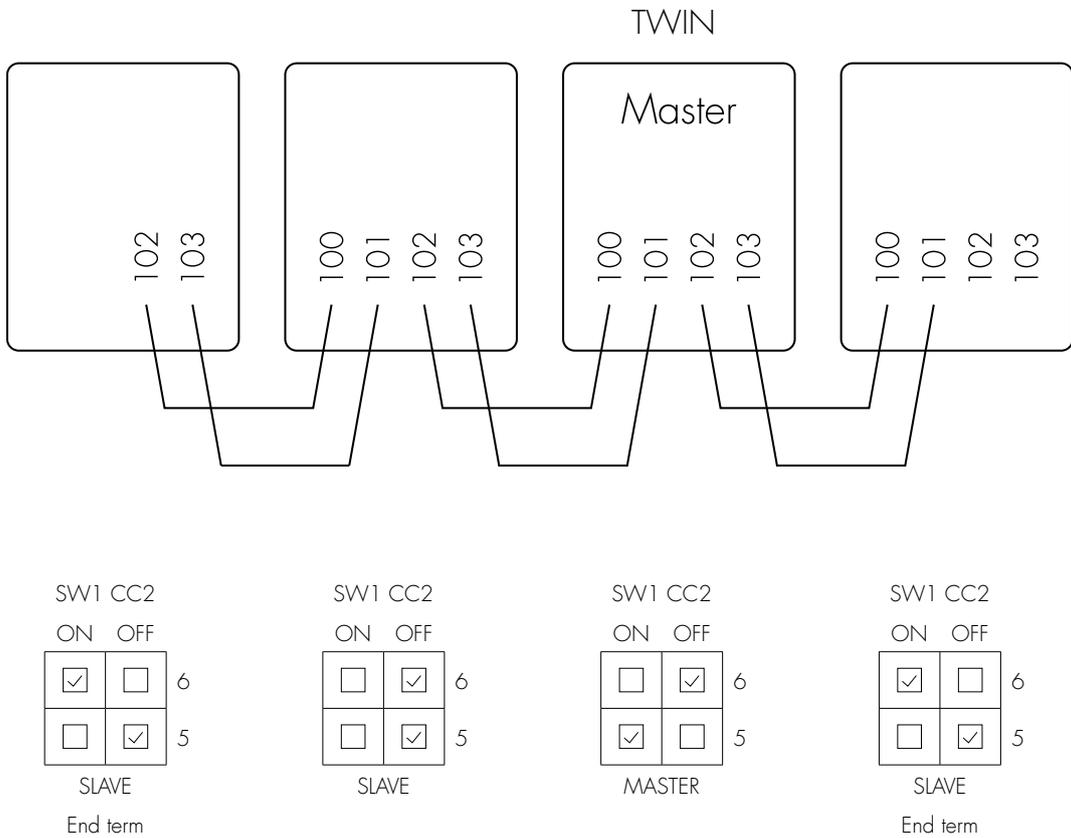
TWIN

(figure 30)

LAN connection via RJ45

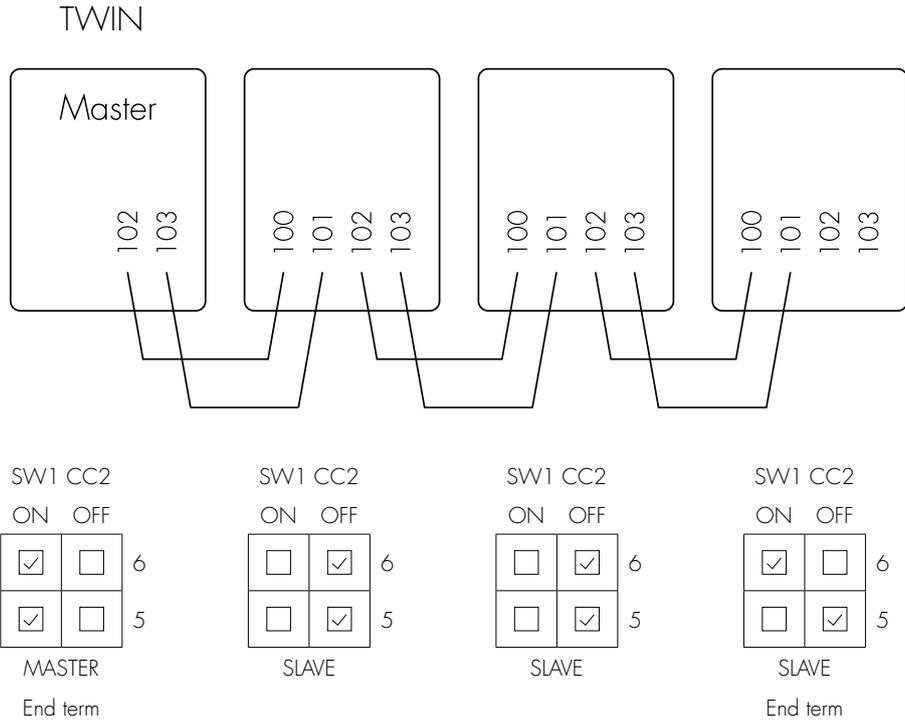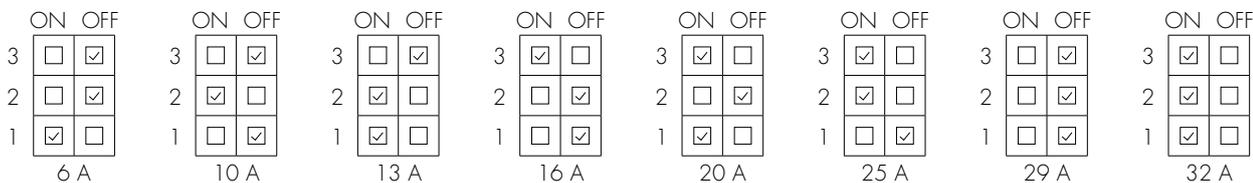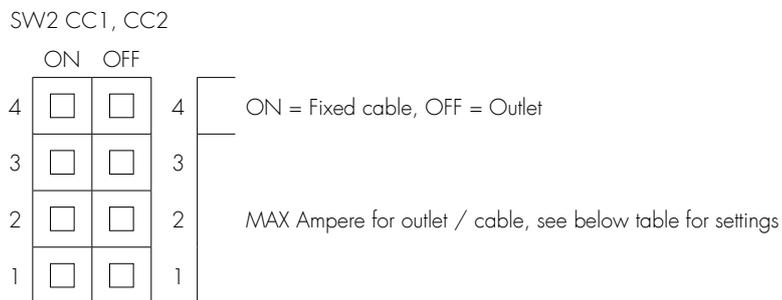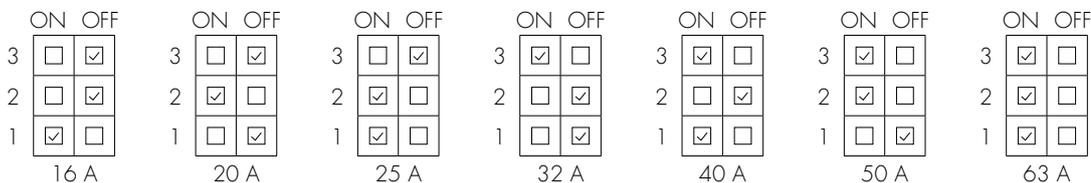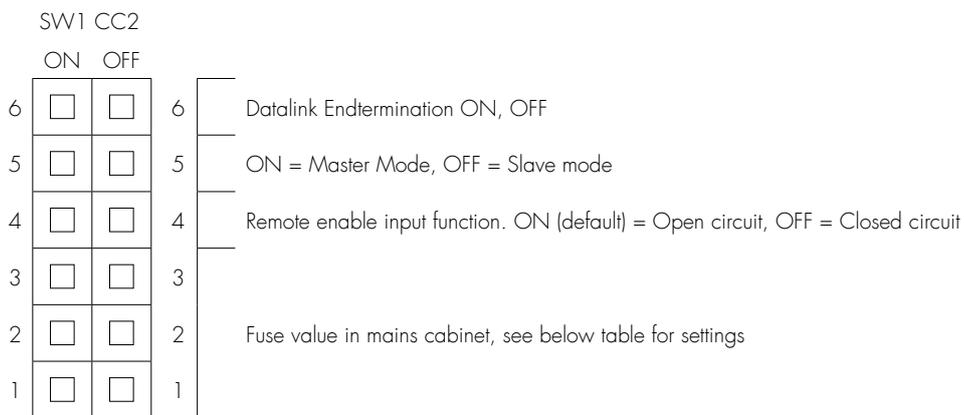Note: Only for TWIN with installed wifi module.

It is possible to connect the TWIN to a LAN via the RJ45 port on the wifi module. Default settings is DHCP. More options are available in the web interface.

NOTE! Make sure that the network you connect your Wallbox to has a firewall towards Internet to prevent unauthorized access to the Wallbox.

Dip Switch Information

SW1 CC2

	ON	OFF		
6	☐	☐	6	Datalink Endtermination ON, OFF
5	☐	☐	5	ON = Master Mode, OFF = Slave mode
4	☐	☐	4	Remote enable input function. ON (default) = Open circuit, OFF = Closed circuit
3	☐	☐	3	
2	☐	☐	2	Fuse value in mains cabinet, see below table for settings
1	☐	☐	1	

	16 A	20 A	25 A	32 A	40 A	50 A	63 A
	ON OFF	ON OFF	ON OFF	ON OFF	ON OFF	ON OFF	ON OFF
3	☐ ☑	☐ ☑	☐ ☑	☑ ☐	☑ ☐	☑ ☐	☑ ☐
2	☐ ☑	☑ ☐	☑ ☐	☐ ☑	☐ ☑	☑ ☐	☑ ☐
1	☑ ☐	☐ ☑	☑ ☐	☐ ☑	☑ ☐	☐ ☑	☑ ☐

SW2 CC1, CC2

	ON	OFF		
4	☐	☐	4	ON = Fixed cable, OFF = Outlet
3	☐	☐	3	
2	☐	☐	2	MAX Ampere for outlet / cable, see below table for settings
1	☐	☐	1	

	6 A	10 A	13 A	16 A	20 A	25 A	29 A	32 A
	ON OFF	ON OFF	ON OFF	ON OFF	ON OFF	ON OFF	ON OFF	ON OFF
3	☐ ☑	☐ ☑	☐ ☑	☑ ☐	☑ ☐	☑ ☐	☐ ☑	☑ ☐
2	☐ ☑	☑ ☐	☑ ☐	☐ ☑	☐ ☑	☑ ☐	☐ ☑	☑ ☐
1	☑ ☐	☐ ☑	☑ ☐	☐ ☑	☑ ☐	☐ ☑	☐ ☑	☑ ☐

(figure 31)

Dimensional sketch

660

206

377
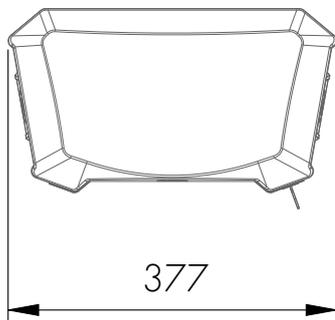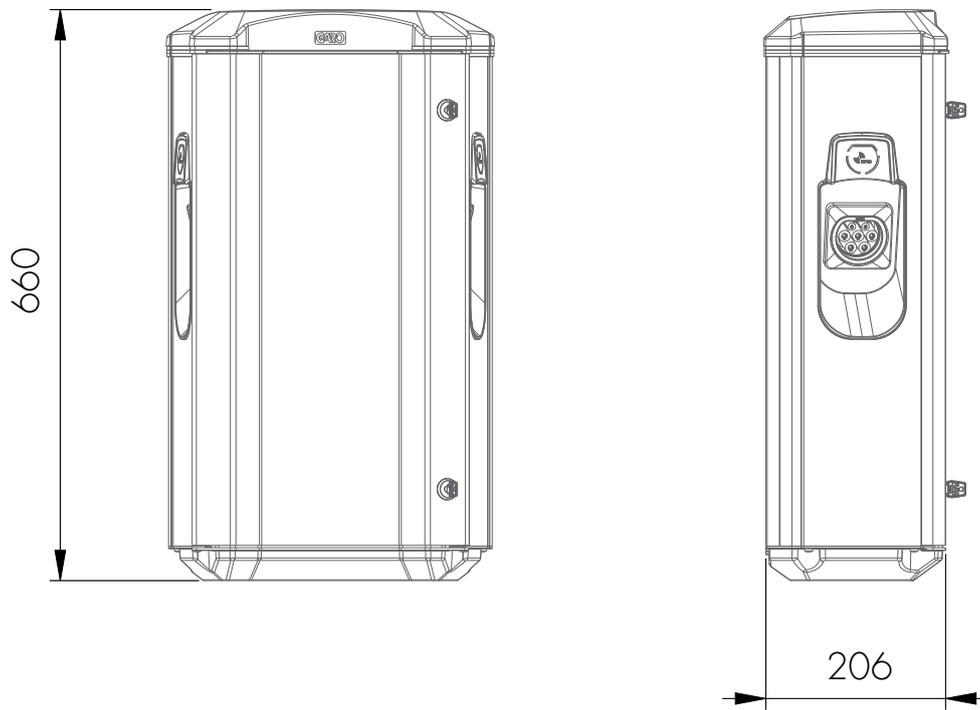
M-Bus information

Connection of M-Bus (only for TWIN with M-Bus energymeters)
Terminal 300 = M+
Terminal 301 = M-

Ø8,5(4x)

570±1

385±0,4

89,5±0,4

130

90°

(figure 32)

Electrical diagram

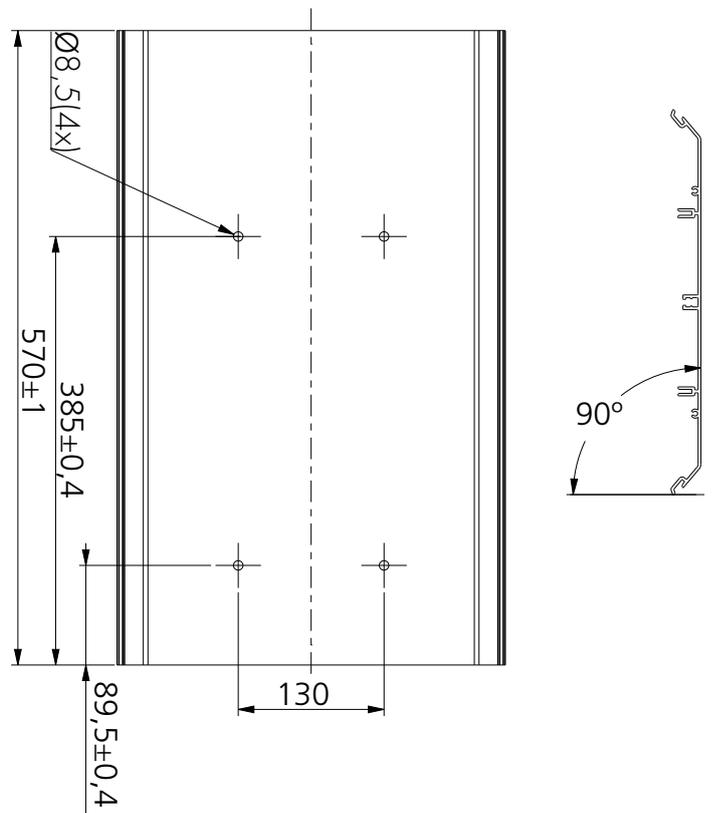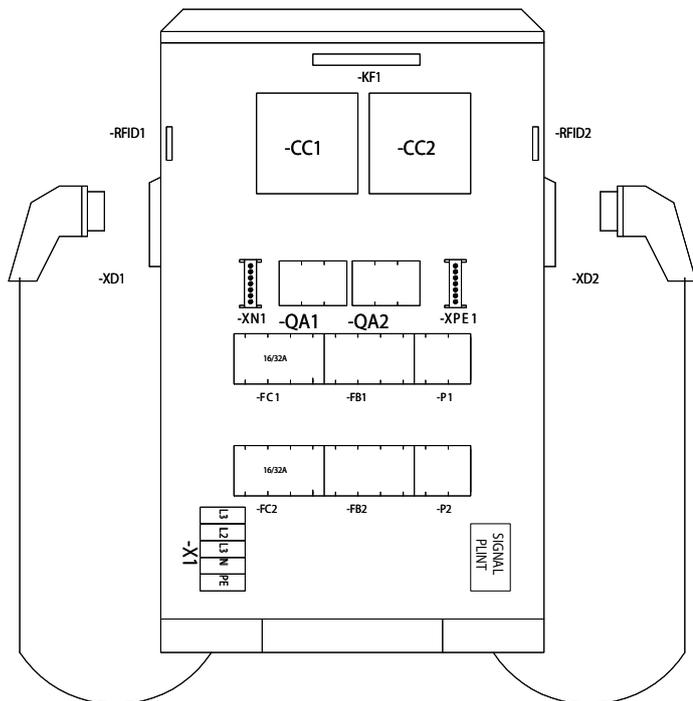|		
Q1	=	Main Breaker 100A
P1	=	Energymeter Left Outlet
P2	=	Energymeter Right Outlet
FB1	=	RCCB Left Outlet
FB2	=	RCCB Right Outlet
FC1	=	Fuse Left Outlet
FC2	=	Fuse Right Outlet
QA1	=	Contactor Left Outlet
QA2	=	Contactor Right Outlet
XN1	=	N Neutral terminal
XPE1	=	PE Terminal Protection Earth
CC1	=	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
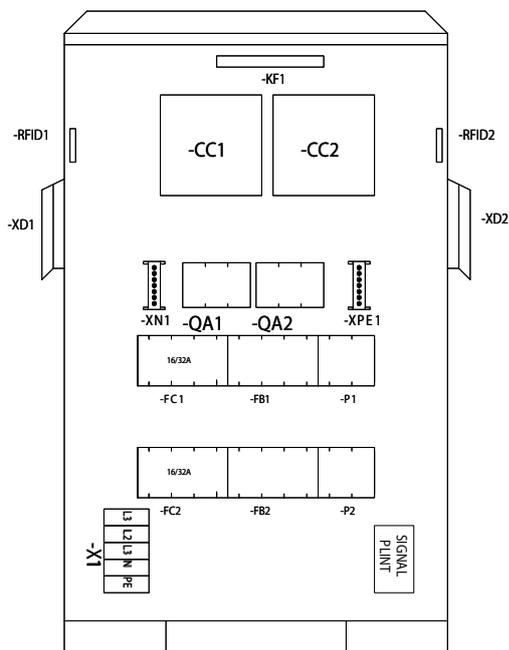
(figure 33)
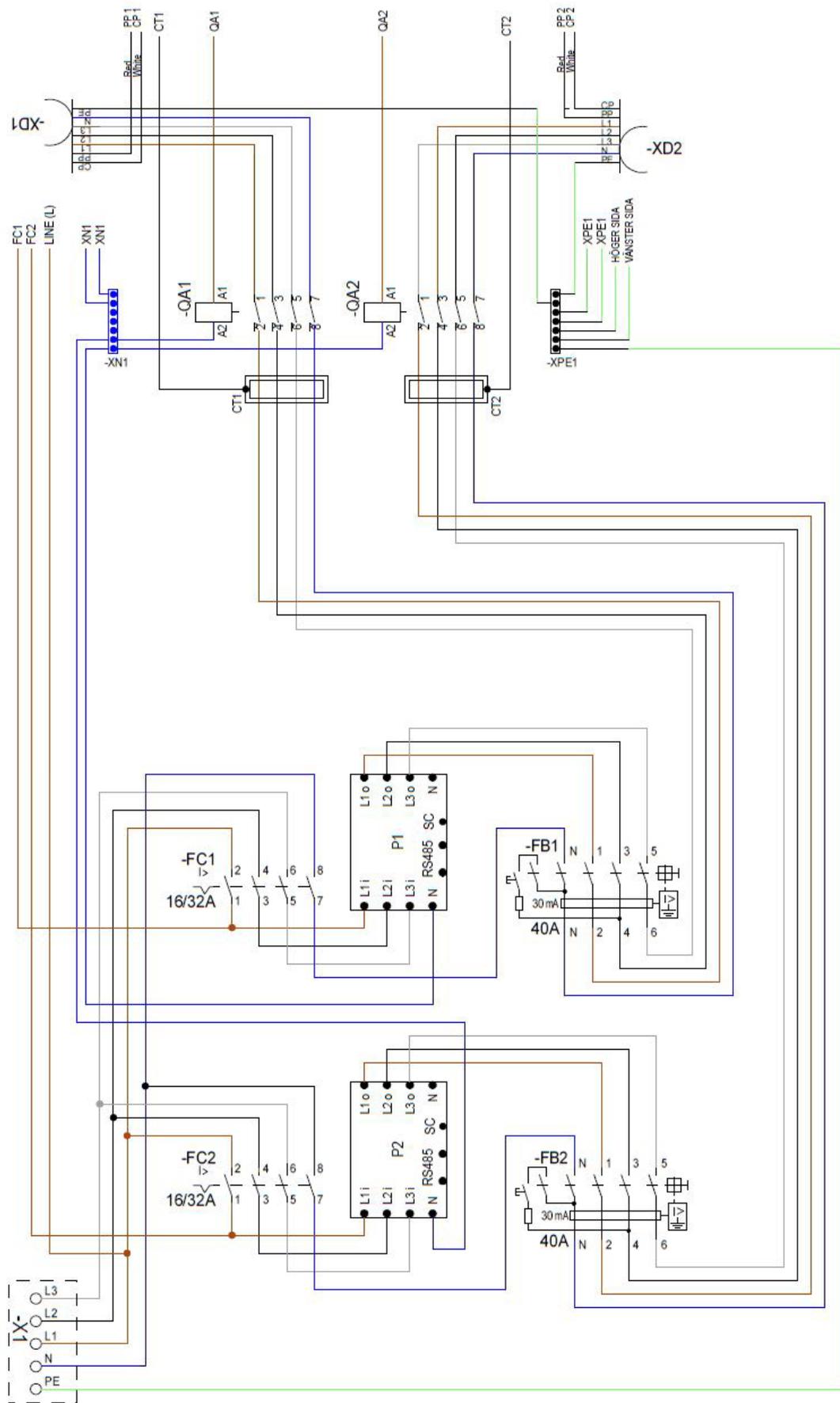
(figure 34)
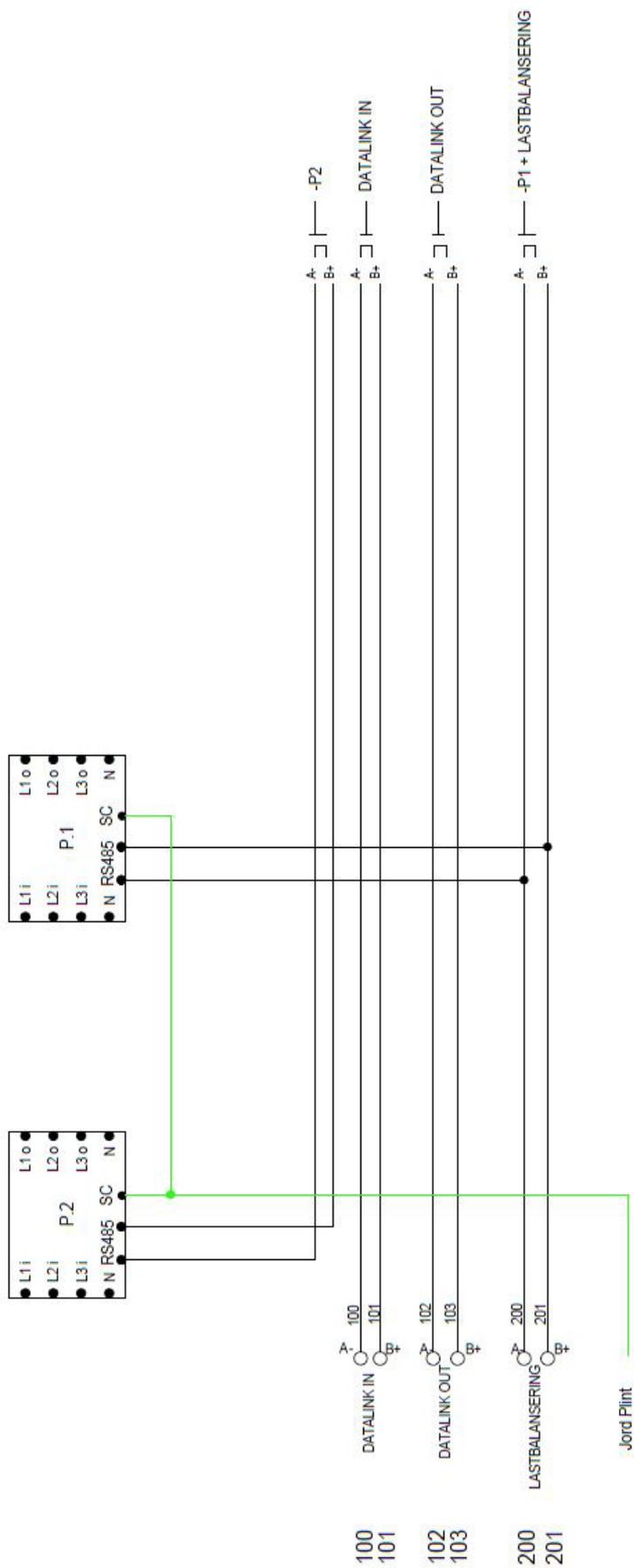
(figure 35)
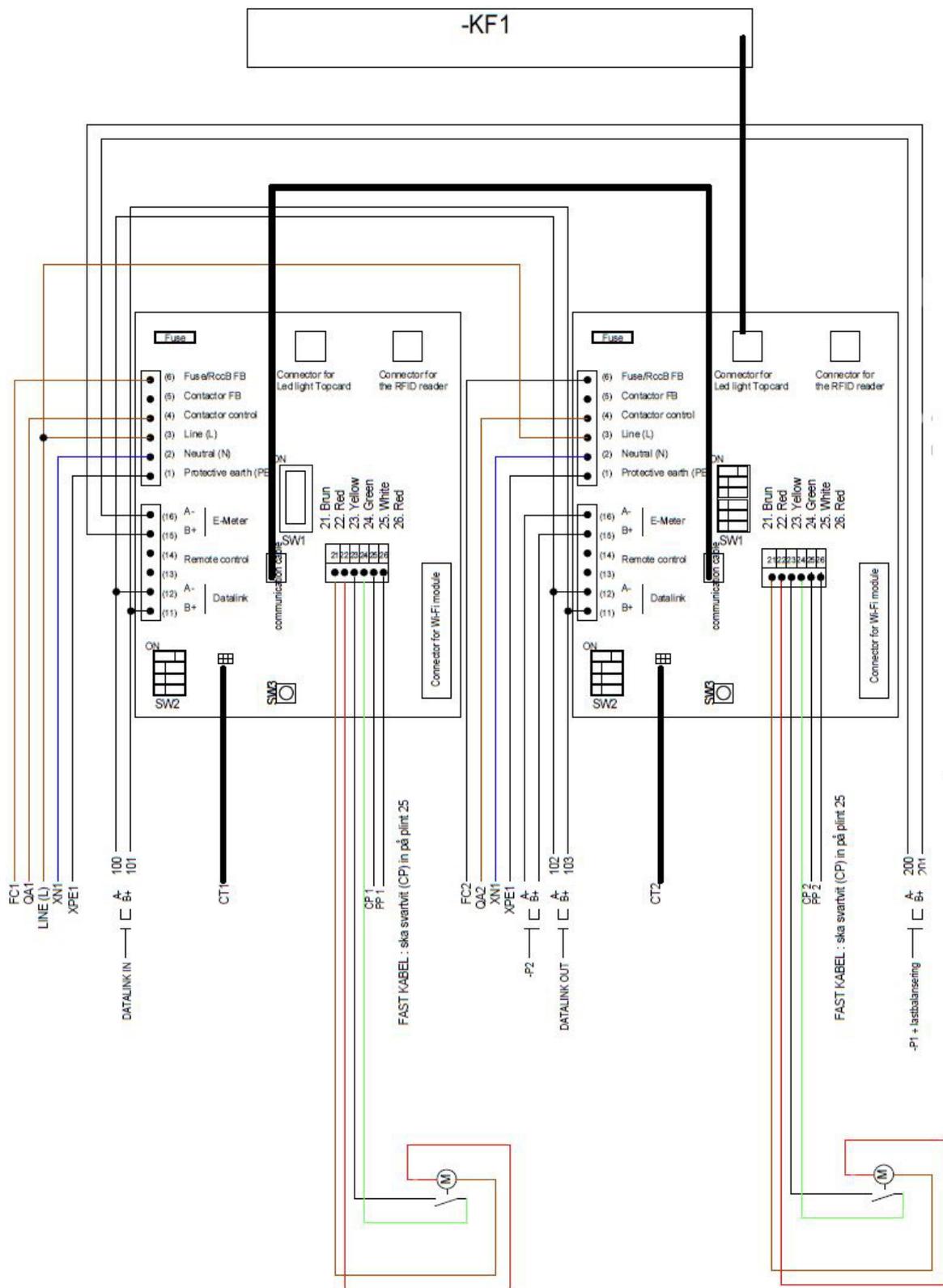
(figure 36)

-KF1	Top card RGB-Led
-CC1	Charge Controller 1
-CC2	Charge Controller 2
-QA1	Contactor Left Outlet / Connector 1
-QA2	Contactor Right Outlet / Connector 2
-X1	Incoming terminal

1	
-FC1	Fuse Left Outlet / Connector 1
-FB1	RCCB Left Outlet / Connector 1
-P1	Energy Meter Left Outlet / Connector 1

2	
-FC2	Fuse Right Outlet / Connector 2
-FB2	RCCB Right Outlet / Connector 2
-P2	Energy Meter Right Outlet / Connector 2
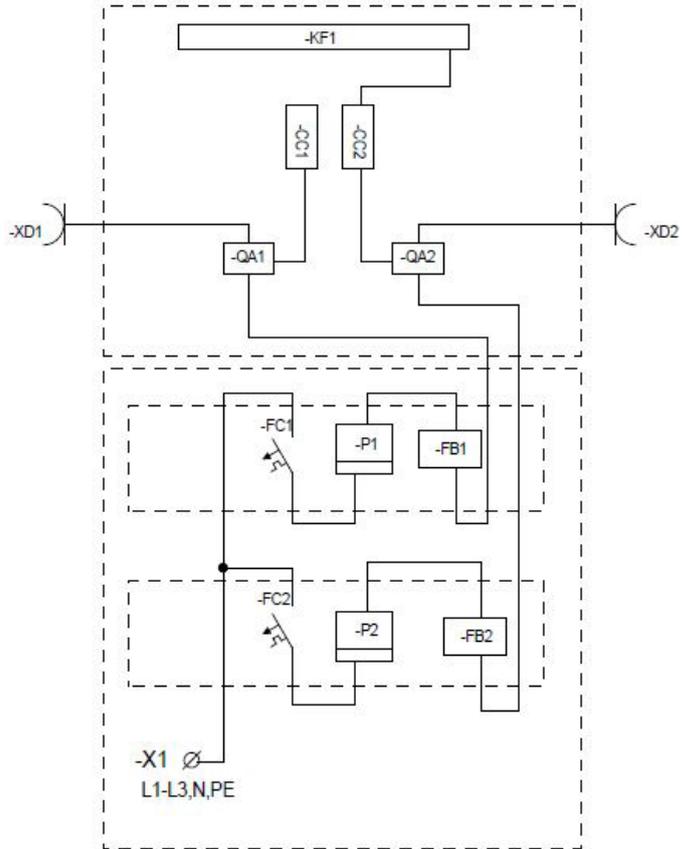
(figure 37)

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 TWIN should provide. TWIN can provide the maximum rated power according to the rating label. When both sides are in use, the TWIN will balance the load equally between both sides.

In cases where the required power exceeds the available power to the TWIN, the left hand side is prioritized. The electrical current can also be reduced by the Dynamic Load Management (DLM) functions.

If the TWIN is equipped with outlets, it is important to use correct charging cable.

For example, if you want to use 32A from the TWIN, 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.
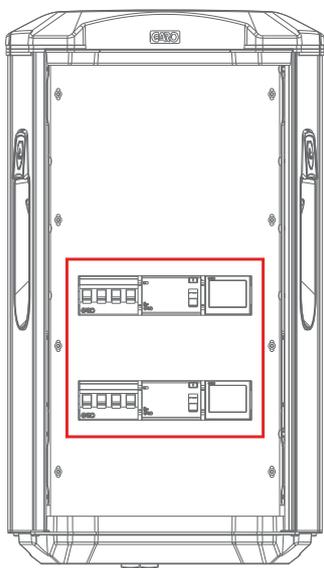
Resetting/Conditioning of RCCB

In the event of overload/earth fault, the built in RCCB/RCBO can trip, see (figure 38). 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 TWIN
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.
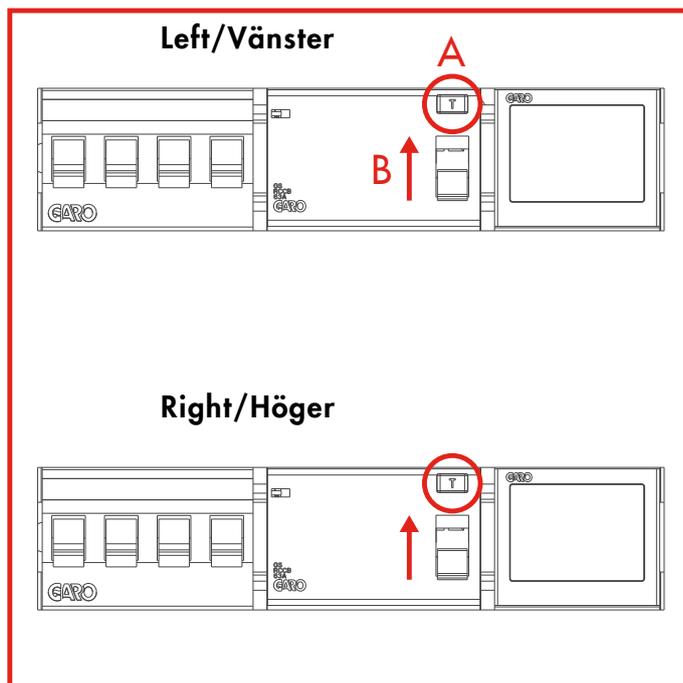
(figure 38)

WEB INTERFACE

In the TWIN's web interface, you can access several features. 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 only are made by a person with enough knowledge of this product. Wrong settings can cause disturbances or overload of your electrical installation.

Note: When the TWIN is connected to your local network, you should use the address chargebox.garo.se in the web browser. Your mobile/tablet/PC must be connected to same network as your TWIN.

• DLM settings (Dynamic Load Management and require external energy meter installed)
• Scheduled Limited Charge Current settings (not active when external energy meter installed)
• Naming functions for TWIN and RFID tags
• Activating and deactivate RFID function
• Activating and deleting RFID tags
• Connecting to local Wifi or LAN settings
• G-Cloud information and settings (only for G-Cloud systems)
• Energy consumption
• Updating of the TWIN firmware. Update TWIN slaves individually or mass update TWIN slaves in cluster installations.
• Schedule functions
• Activate/deactivate TWIN
• Individual report for each chargingpoint.

Reset of wifi settings

If problem to connect to TWIN accesspoint or other similar problem, press SW3 on main board (figure 27) for 3sek to reset all wifi settings to factory default (performed by a person with necessary knowledge).

Connect mobil/tablet/computer to GARO TWIN web interface

General information

Garo TWIN Conditions
• Installed wifi module
• Electrified wallbox
Note: Please wait up to 3min before the wifi module is ready after power on.
The wifi module is set to "Accesspoint" as default and in this mode you should search after the wallbox SSID in your device.
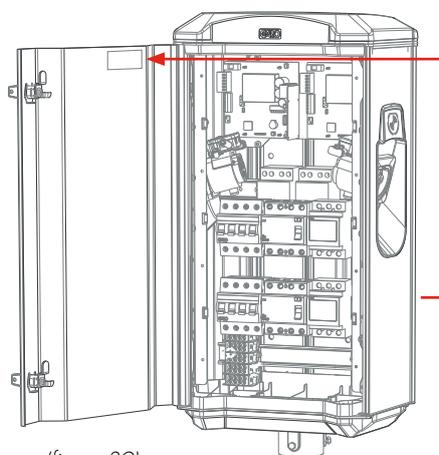SSID and password is written on a label inside the front door.

You can connect the wifi module to a local network via wifi or LAN (ethernet port).
In this mode, your device need to be connected to same network to have access to the web interface.

Connect device to Garo TWIN accesspoint

1. Search for the TWIN SSID and press connect. Type in the password located on the wallbox label. The label is placed inside the front door.
2. Open a web browser. If the web interface does not appear, type in "172.24.1.1" in the address field.
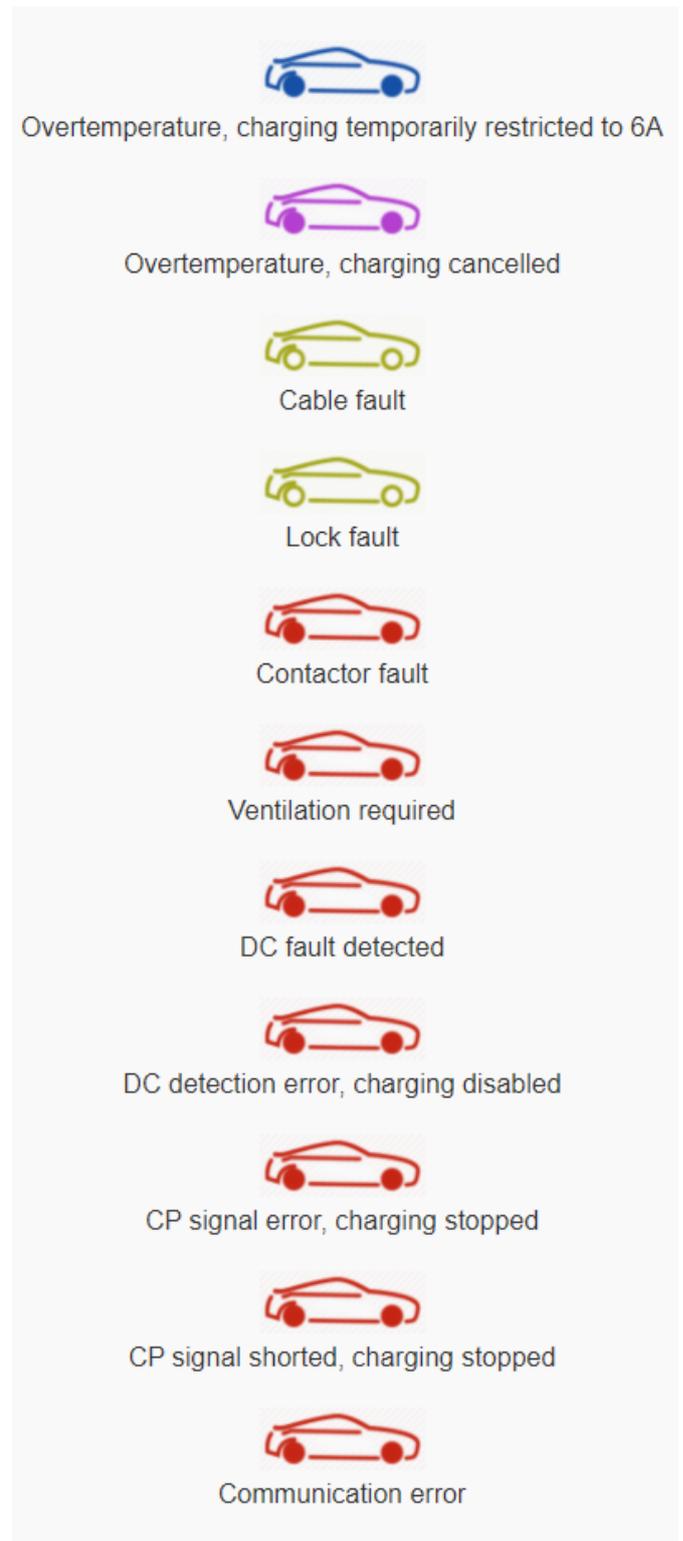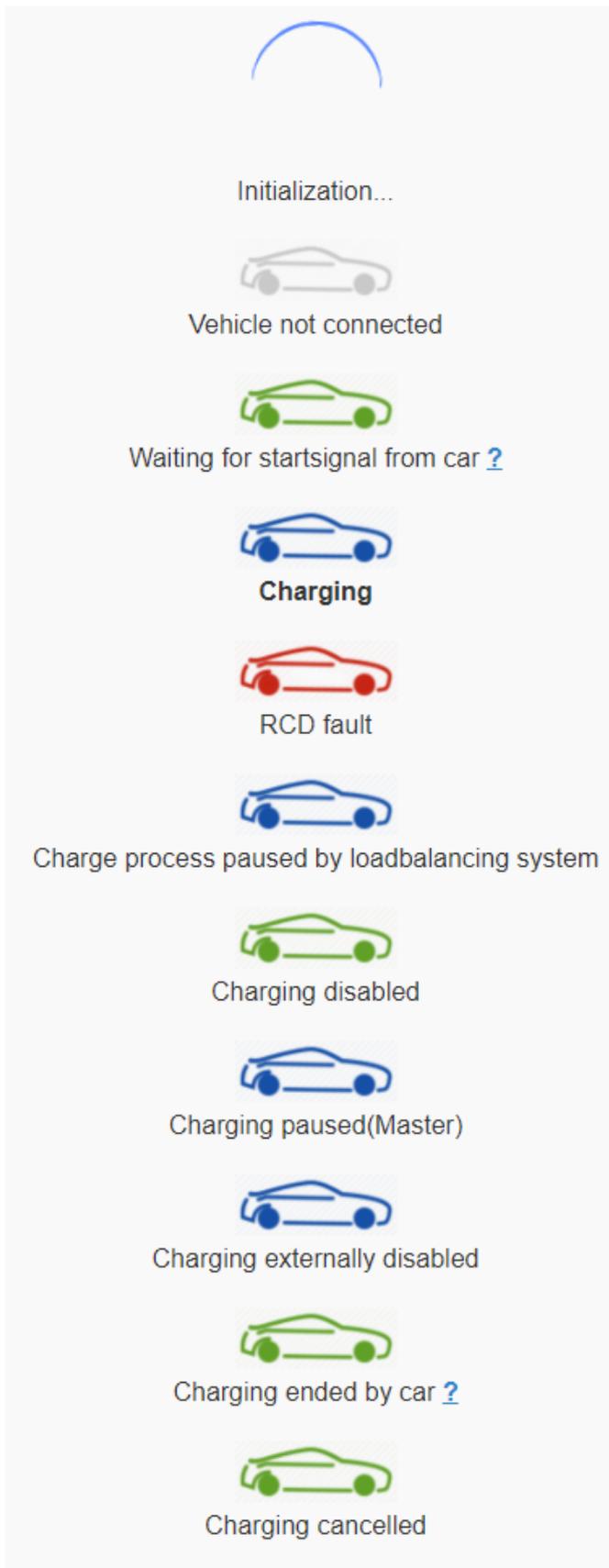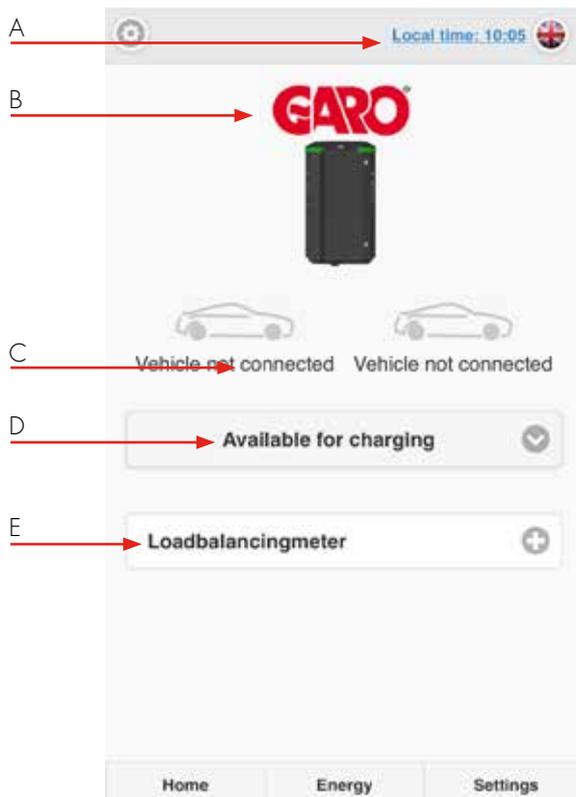3. Note, the webinterface is not accessable from Internet.

(figure 39)

(figure 40)

List of all different statues

Initialization...

Vehicle not connected

Waiting for startsignal from car ?

Charging

RCD fault

Charge process paused by loadbalancing system

Charging disabled

Charging paused(Master)

Charging externally disabled

Charging ended by car ?

Charging cancelled

Overtemperature, charging temporarily restricted to 6A

Overtemperature, charging cancelled

Cable fault

Lock fault

Contactor fault

Ventilation required

DC fault detected

DC detection error, charging disabled

CP signal error, charging stopped

CP signal shorted, charging stopped

Communication error

Home meny


A. Click to set time
B. Double click GARO logo for extended information.
C. Wallbox status
D. Dropdown list *:
   Available for charging
   Not available for charging
   Schedule
E. An installed DLM meter is visible here. Note, it can take up to 5min before the DLM meter is visible after power on.
   * N/A for older wallboxes

F. Car and text shows present status.
G. In systems with multiple connected wallboxes, the status is shown under the serial number for each box.
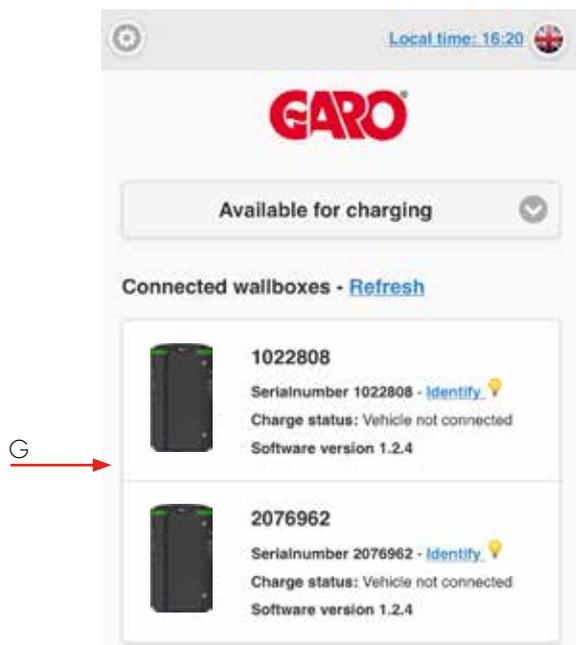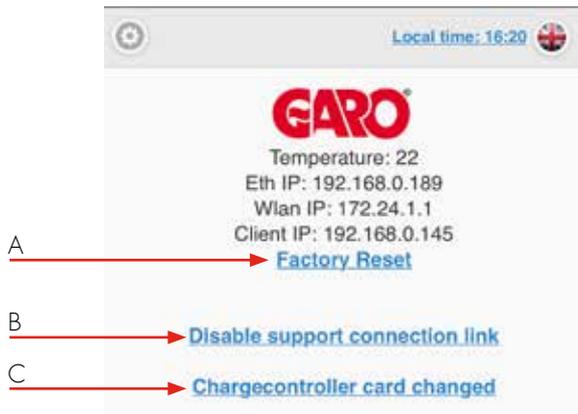
Visible only after doubleclick on GARO logo

A.   Factory reset means that all settings will be set as factory default.

B.   Enable or Disable support connection… means that support can have access to the wallbox over internet. TWIN need to be connected to internet.

C.   Chargecontroller card changed. Click here if you want to copy all old chargning history to the chargecontroller card.
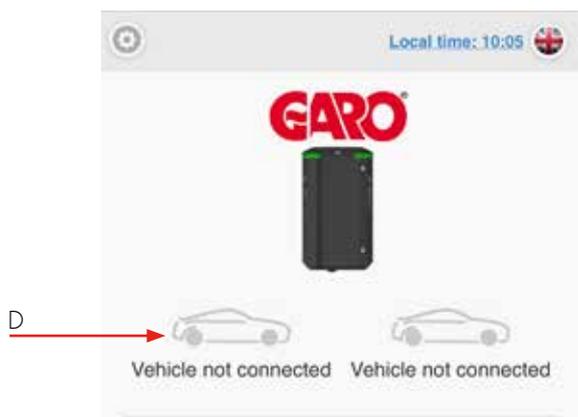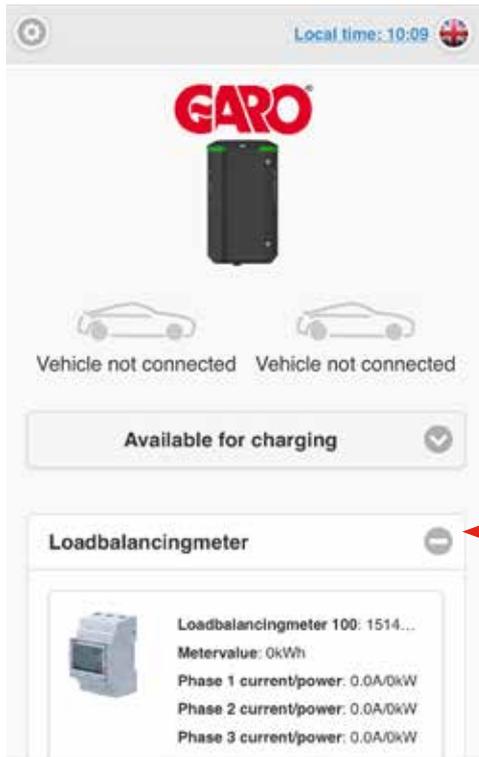

D.   Available for charging means that the TWIN is activated.

E.   Not available for chargning mean that the TWIN is deactivated. *

F.   Schedule means that you can set periods when the TWINes should be activated. Choose wanted period and press Book. *, **

G.   Click on a period to delete it*
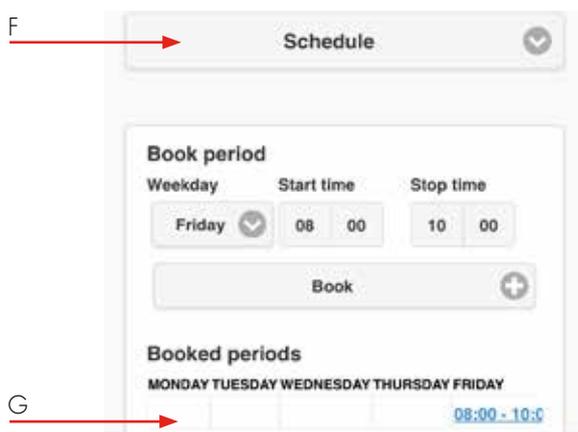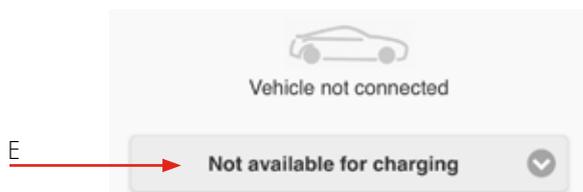
* N/A for older wallboxes
** Same schedule is valid for all connected boxes

A   A.   Click the + to show extended information. The information is updated every minute (only displayed with installed DLM meter)

B.   Click Refresh to search for connected wallboxes

C.   Multiple connected wallboxes are shown in a list

D.   Click Identify to start white blink and ticking sound from chosen wallbox. It is a simple way to identify a specific wallbox in the list.
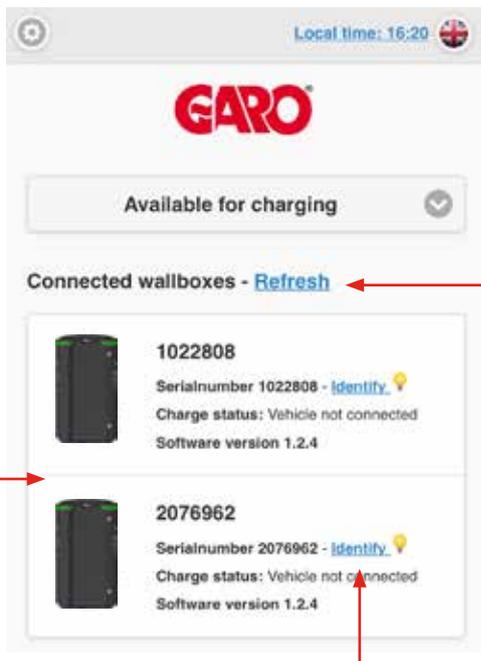
Energy meny

A. In wallboxes without internal energymeter, Energy meter not installed is shown.

B. Choose energy meter

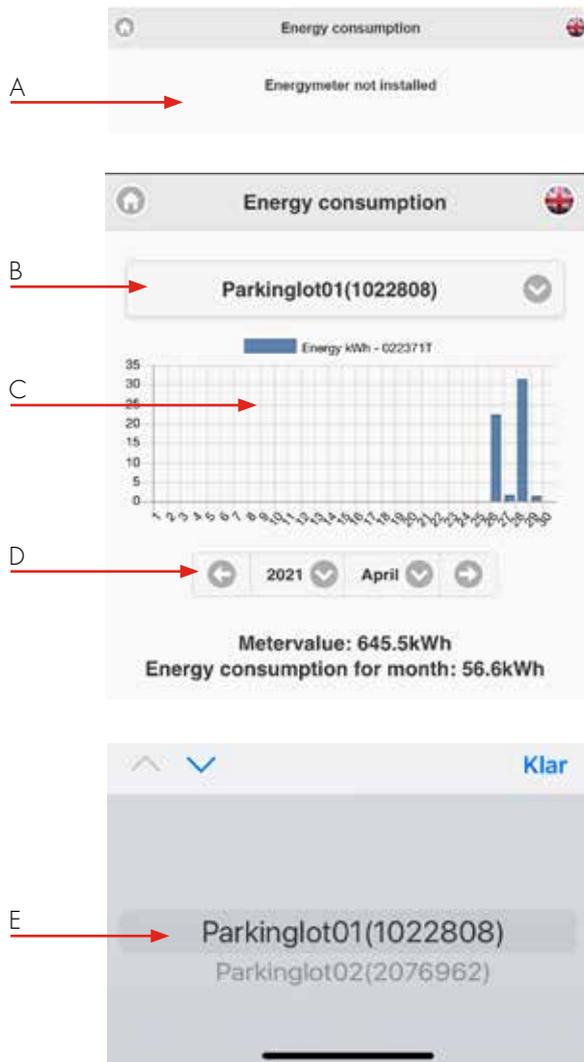C. TWIN with internal energymeter show energy consumption here.

D. Choose consumption period

E. Choose wanted energymeter (cluster installation)

Settings

A. Click + to see extended information.

Wifi settings

A

B

C

D

E

A. Dropdownlist:
   - Local accesspoint (default)
   - Connected to router
   - Wifi diabled (only visible for LAN connected wallbox)
B. Accesspoint password – more information shows wifi modules MAC-adress.
C. Field for own password.
D. Enable internet hotspot (only visible for LAN connected wallbox).
E. Click Save after changed settings.

Connect TWIN to local wifi network

General information

Make sure that your local network uses a secure firewall to avoid unwanted access to the wallbox from internet.w

Only 2,4GHz wifi network are supported.

5GHz wifi network is not supported.

Firewall/router must handle outgoing request to:

* 8.8.8.8 via ICMP(ping)

* 85.11.39.104 (www.webel-online.se) via ICMP(ping), TCP port 80 and TCP port 443

Make sure your router/firewall does not block this traffic.

WPA/WPA2 encryption is supported. WPA2 Enterprise is not supported.

Local wifi network must have a password. The wallbox can not connect to an open wifi network that does not request a password. Tip: Bookmark the site in your device for simple access later. Access to site is from Internet is not supported.

A

B

C

A. Connect wallbox to local wifi network. Choose Connected to router in the dropdown list.
B. Click Scan for wifi-networks. Click wanted network, type in password and click Save.
C. Save

Make sure your unit is connected to same network as your wallbox. Type in chargebox.garo.se in a webbrowser and follow the instructions.
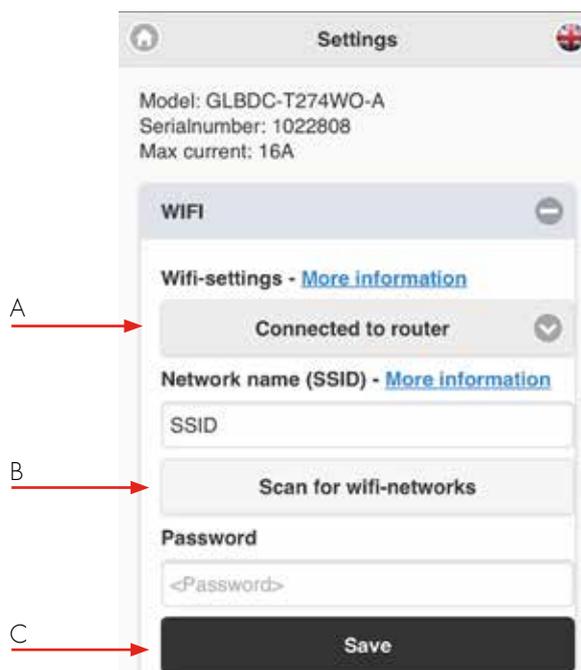
Ethernet settings

You can connect the wallbox to a LAN via wifi modules ethernet port.
Make sure that your local network uses a secure firewall to avoid unwanted access to the wallbox from internet.
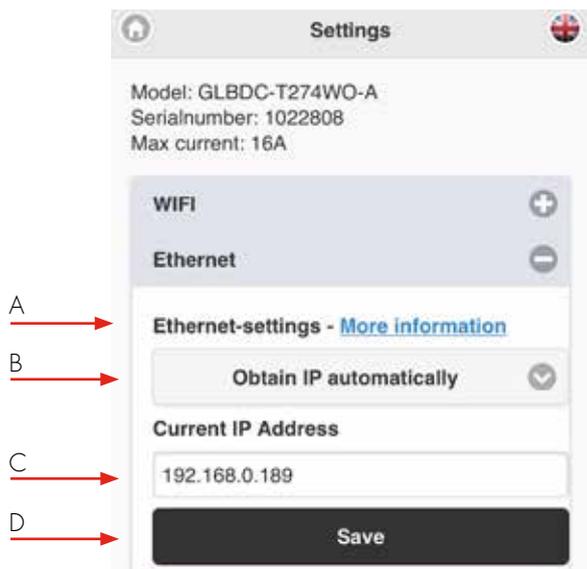
A.   Ethernet-settings – More information shows the Ethernetports MAC adress.

B.   Dropdown list
   • Obtain IP automatically
   • Static IP

C.   Current IP adress.

D.   Click Save after changed settings.

Static IP require manual type in IP adress, Netmask and Gateway.

Click Save after changed settings.
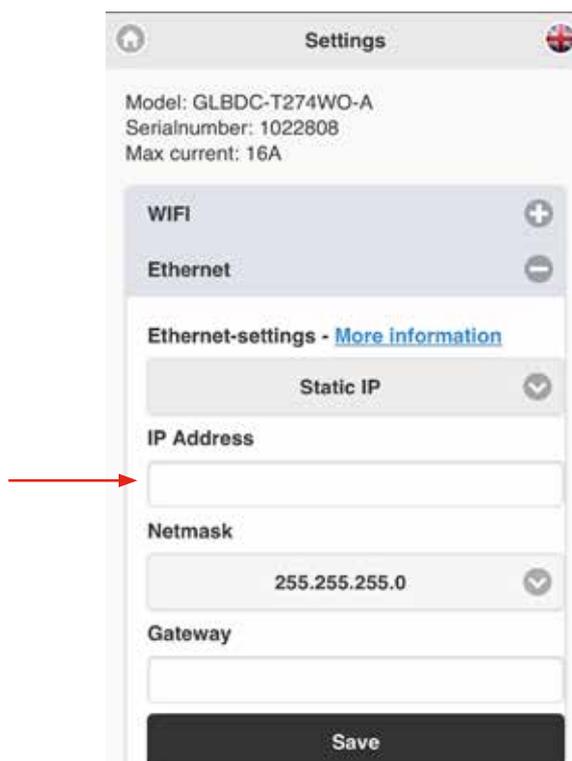
RFID (option)

Note, require installed RFID reader.

Note: The RFID reader can read Mifare Classic tags.

A. Tick Activate RFID Check box to activate the RFID authentification function.

B. Click Add new tag.

C. Type in or read the RFID tag number from the wallbox. By click Read tag from wallbox, the RFID reader can read the tag number you hold in front of the reader.

D. Add a referens to each tag..

E. Choose selected a specific wallbox or all wallboxes. For Twin, you can choose left or right hand side.

F. Click Save for each registered tag.
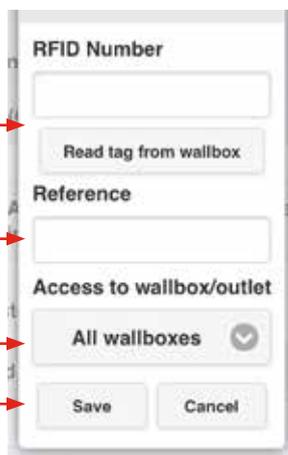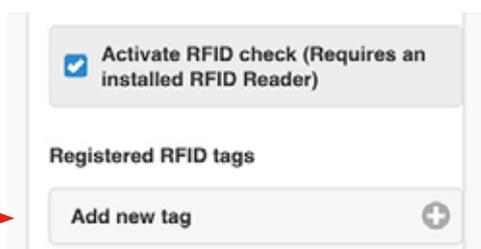
Outlet options *

Note, only for standalone Master wallbox with outlet.

A

B
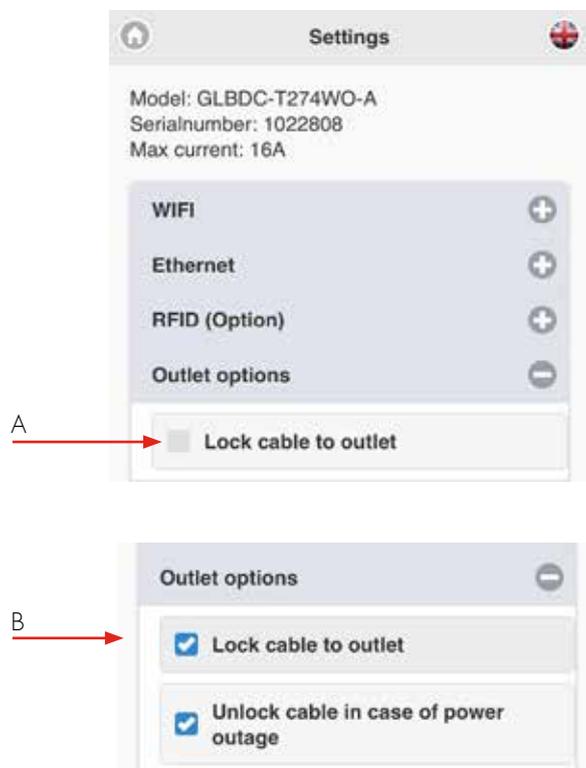
A.   Tick Lock cable to outlet in cases when you want to cable to be locket to the outlet.
The wallbox will lock the cable at next charging session.

B.   Untick Unlock cable in case of power outage if you want the outlet to lock the cable in case of power outage.

G-Cloud

G-Cloud is a service for legal persons and require a subscription and internally energymeter in the wallbox.
The service means that the wallbox will be connected to a cloud server. The energy consumsion is stored in G-Cloud. Via G-Cloud website, you can create energy reports for each energymeter.
G-Cloud subscription is ordered at www.garo.se

A

A.   Tick the box to activate the function.
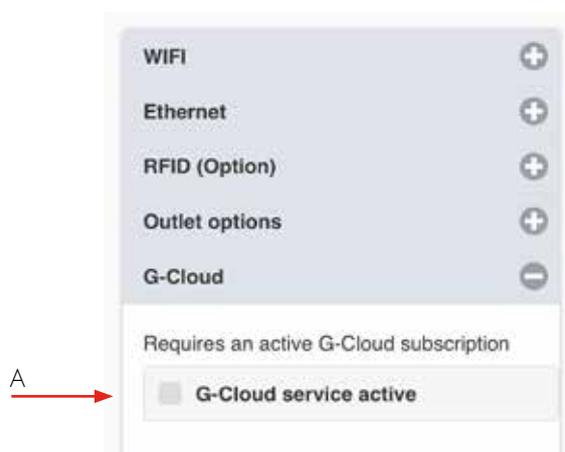
Charge current settings / DLM

Minimum charging current*
Note, only for standalone Master wallbox

A.   Minimum charging current – more information show
     information window:

B.   This setting allows you to set the minimum starting current
     (in amperes) for the wallbox, some car models require
     a higher starting current to properly charge. Leave this
     setting at 6A unless you experience problems starting
     your charging process.

C.   Slide the slider to wanted minimum charging current and
     click Save.

     * The function is not available for older TWIN.
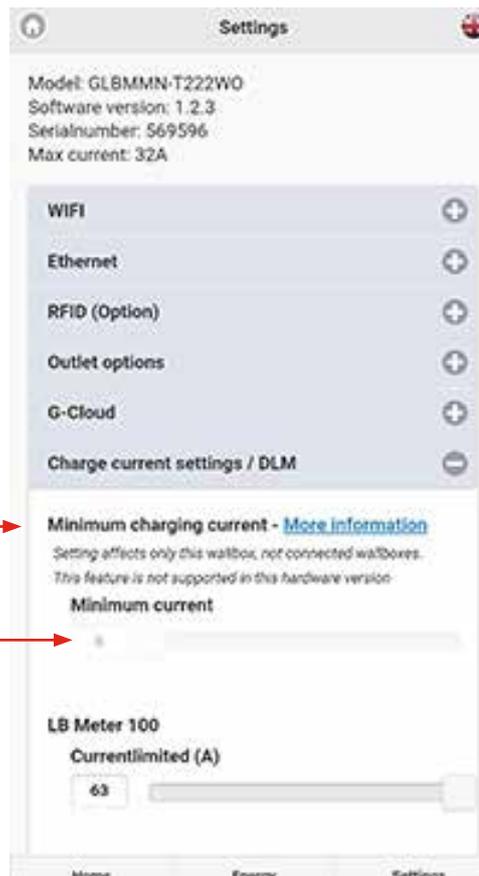
D.   Limit charge current is possible by ticking the box.

E.   Click Add new period and set wanted values.

F.   Click "-" to delete a period
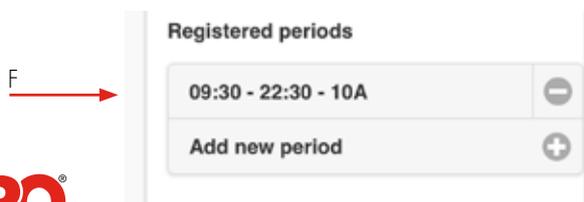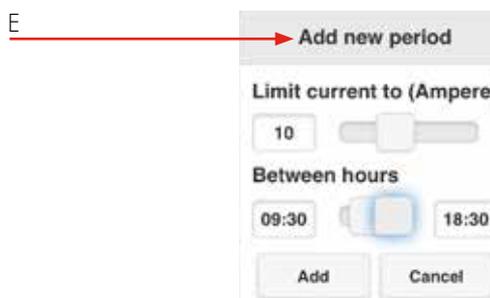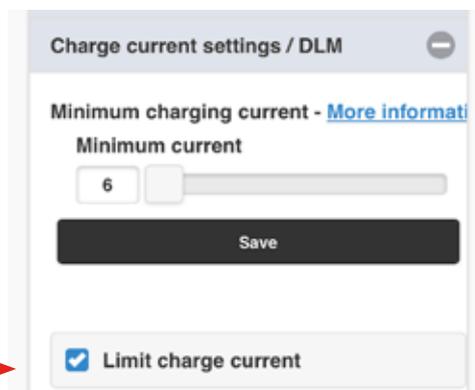
LB Meter settings are shown in cases with DLM meter adress 100 or 101 installations

A. Currentlimited (A): Set Distribution board fuse size.

B. In systems where Power-limit is neccessary, tick the box and set the Powerlimit value wanted in the distribution board.

    Note, it is possible to monitor 2pcs distribution boards. In this case, settings needs to be done for each DLM meter. The wallbox needs around 5min to detect an installed DLM meter after power on.

C. Choose correct system for your installation.
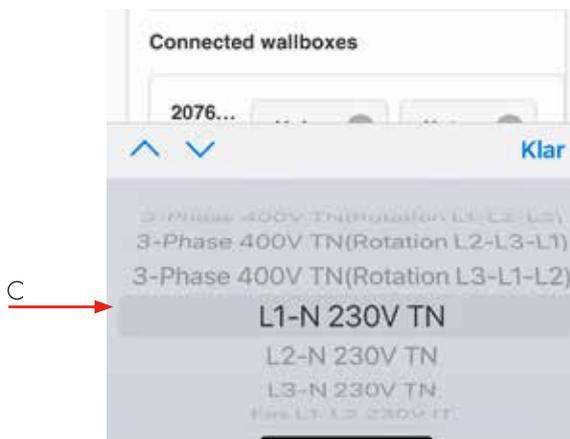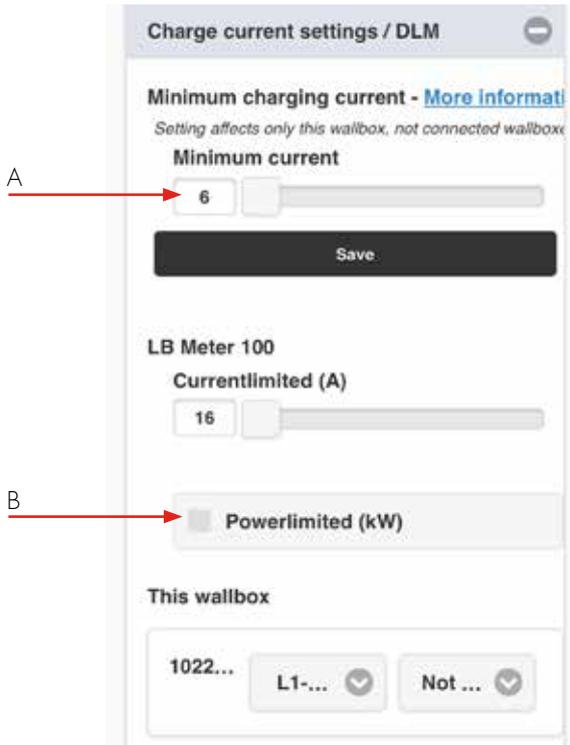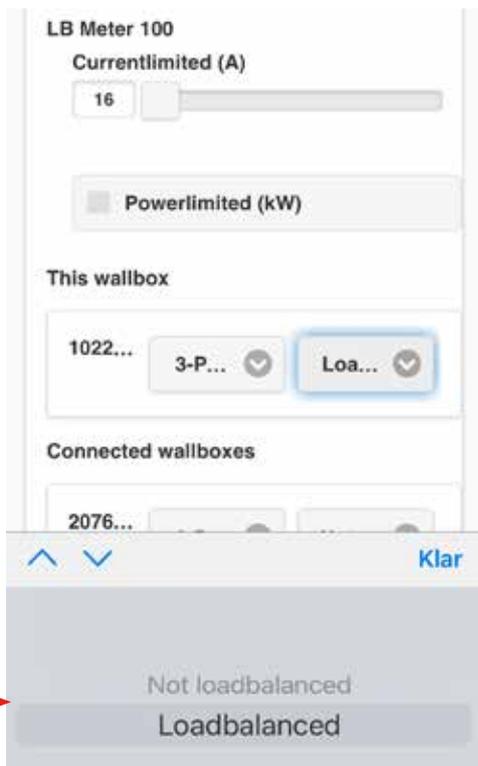
A. Set wanted value for each wallbox in the system.

B. Click Save after changed settings.

C. Note, in systems with multiple connected wallboxes, make the setting for each box in the system. All wallboxes are shown in a list.

A

C
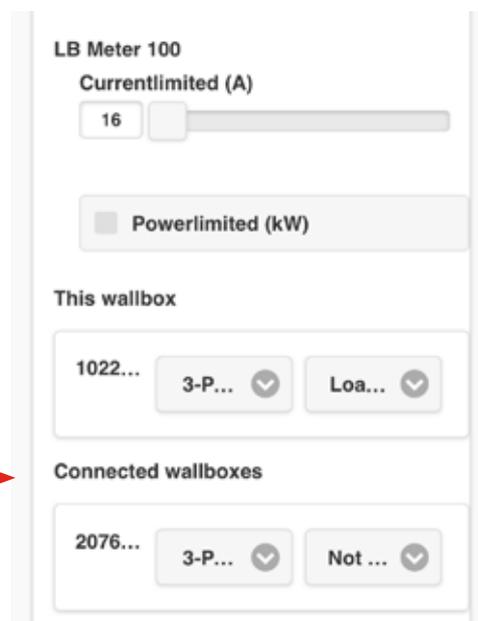
Software Updates / Identification
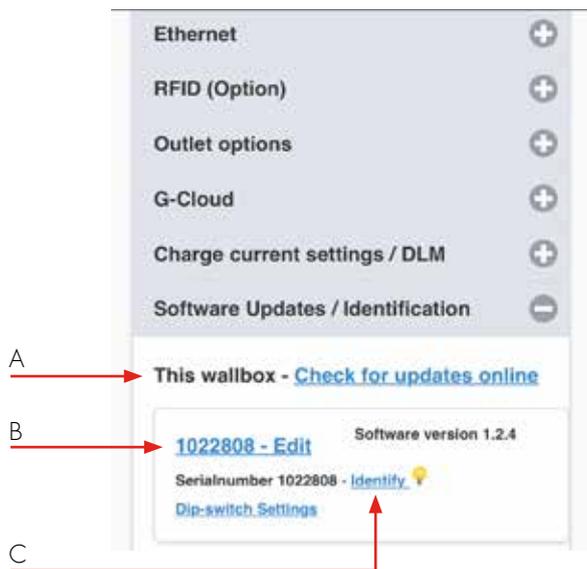
A. This wallbox– Check for updates online(wallbox needs to be connected to internet)

B. Click serialnumber – Edit to add reference name.

C. Click Identify and the wallbox start with blinking white light and a ticking sound.
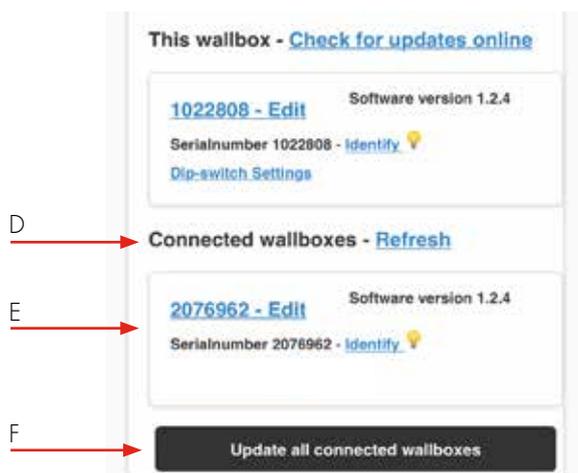
D. Connected wallboxes– Refresh (in systems with multiple connected wallboxes).

E. Click to update list of connected boxes.

F. Update all connected wallboxes*

G. Click to update connected wallboxes.
Note, a TWIN update will take up to 5 min.
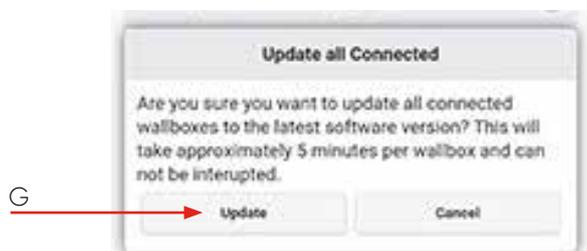
Firmware update for TWIN not connected to internet via Wifi or LAN

By Computer / Android mobile or tablet:

1. Open https://www.webel-online.se/wifi and download the file. (device must be connected to internet)
2. Connect your device to the TWIN Wifi network. (Search for TWIN<the box serial no>)
3. Open http://172.24.1.1:8080/update in your web-browser
4. Press button "choose file" and mark the downloaded file.
5. Klick "Update" and wait for the update process to end.

Standalone installed wallbox with wifi-module should have SW1.5 in ON manual update process.

Workingflow RFID with multiple wallboxes

1. NAME WALLBOXES

- Settings -> Software Updates / Identification
- Connected wallboxes –
- Refresh
- All connected wallboxes are shown in a list

2. IDENTIFY

- Click Identify to find each wallbox. Clicked wallbox starts to blink with white light.

3.

- Click the serialnumber – Edit and name the wallbox according to your preferences. Note, space is not allowed.
- Repeat step 2 and 3 until all wallboxes have a name

4. RFID SETTING

- Settings > RFID (Option)
- Click "Activate RFID check box
- Add new tag
- Click read tag from wallbox and hold the tag infront of the ticking RFID reader (Masterbox, left side on Twin).
- RFID number shows in the screeen.
- Add reference to the tag.
- Add ´specific wallbox or all wallboxes in the list. At this step, it helps if each wallbox has a name instead of just a serialnumber.
- Click Save.
- Repeat step 4 until all tags are registred.

Care

We recommend that you clean the TWIN Wallbox with a soft, dry cloth. Never use detergent.

Exercize the RCCBs every 6th month. See section "Resetting/Conditioning of RCCB"

Indication	Error type	Action
Solid red light	RCCB has tripped or EV earth check error is detected.	Reset. Refer to section on resetting the residual-current or personal protective current breaker.
Solid red light for 3 sec	RFID tag not accepted.	
Red fast flash	DC current >6mA - charging has stopped.	
Constant yellow light	Broken cable.	Check cable
Flashing yellow light	Motor lock socket not in latched position.	Contact a qualified electrician.
Shifting red/green/yellow	DC detection hardware error.	
Solid purple light	Chargebox overheating, charging has stopped.	
White fast flash	Search light indication.	
One quick white flash repeating every minute	Indicate an error in DLM function.	
Solid blue light	RFID accepted - waiting to start charging.	
Shifting blue intensity	EV charging in progress.	
Shifting red/blue	Software upgrade in progress.	
Shifting blue/black	Chargesession not enabled due to scheduled mood.	
Solid green	Charger in idle, waiting for EV to connect.	
Green slow flash	EV connected, wait to start charging or EV has finish charging.	
Green fast flash	RFID reader is active, waiting to read tag for authorization.	

If the advise does not help, contact your qualified installer.

GARO

Technical data

Product type	All TWIN models
Standards / Directives	IEC 61851-1 and IEC 61439-7

$$\text{C}\epsilon \text{ RoHS}$$

EMC Classification:	2014/30/EU
Installation method:	Ground / Wall
Installation environment:	Indoor / Outdoor
Location type:	Non-restricted Access
Rated Voltage:	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
Weight:	14-18kg depending on model
Standard cable length (fixed cable version):	Standard 4m
Rated current withstand	10kA
Rated short-time withstand current	10kA
Rated conditional short-circuit current of an assembly	10kA
Short-circuit protective device type	Type C
Rated impulse withstand voltage	4kV
Rated insulation voltage	230/400V
Rated current of each circuit	32A
Rated diversity factor	RDF=1
Pollution degree:	3
EMC environmental condition	A and B

* 1-phase Twin