



GARO TWIN+

Assembly instructions / End User Instruction (EN)

Manual 380237 1.1



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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. 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 and DC-fault monitoring for each side.
- Double mains terminals for easy forwarding of mains cable to next TWIN+.
- Suitable for installation on wall or pole.
- LED status indication.
- Upgradeable firmware
- Energy meters for each side
- OCPP via Wifi or LAN
- RFID readers

TWIN+ supports following features

External DLM energy meter

Cluster installation of multiple TWIN+ via Ethernet

Cluster installation of multiple TWIN+, LS4 and GLB+ via Ethernet

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.
- ⚠ TWIN+ is designed exclusively for charging electric vehicles.
- ⚠ 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, cleaning or maintenance.
- ⚠ Use TWIN+ only within the specified parameters.
- ⚠ Never spray water or any other liquid directly at 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 TWIN+

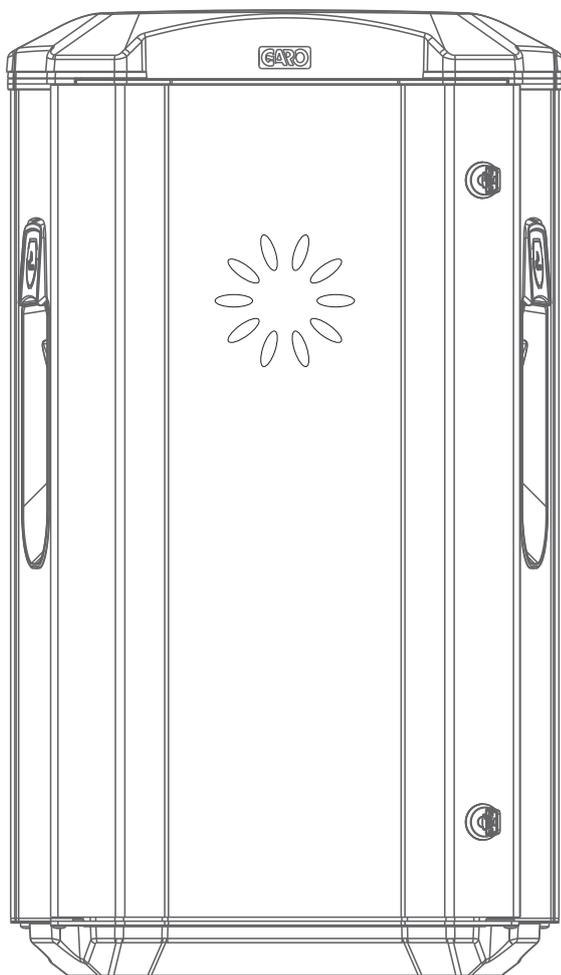
Cautions

-  Incorrect installation and testing of the TWIN+ could potentially damage either the vehicle's battery and/or the TWIN+ itself.
-  Do not use private power generators as a power source for charging.
-  Do not operate the TWIN+ in temperatures outside its operating range – see technical specifications.

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 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 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.
-  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.
-  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.

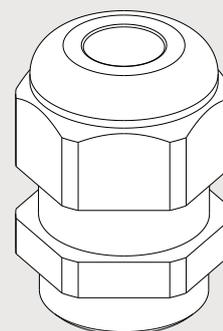
Content



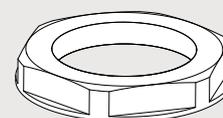
TWIN+



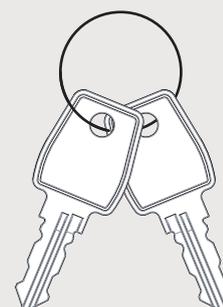
Manual



3X M16



3X M16



Keys

Installation support
and manuals.
Scan QR code.



INSTALLATION

- 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.

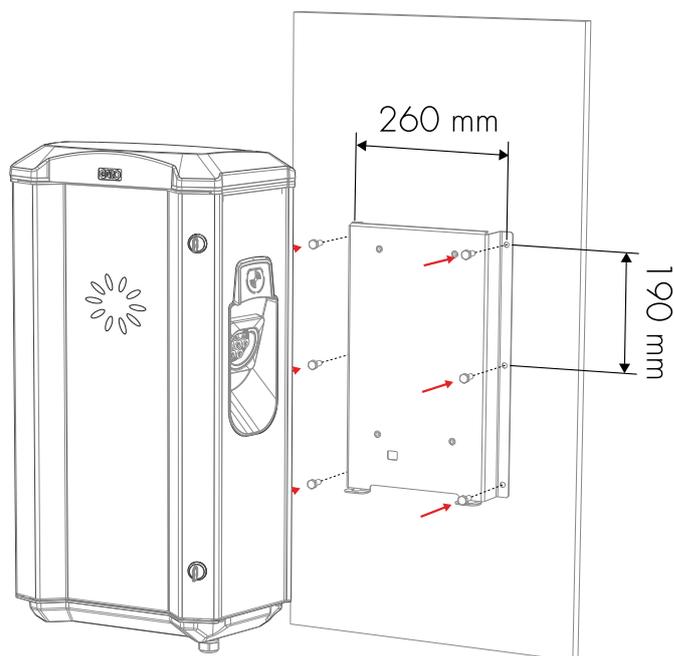
1. Select suitable group fuse and cable dimension for the electrical installation. Make sure to consider the cable length during calculation to avoid risk of voltage drop.

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.

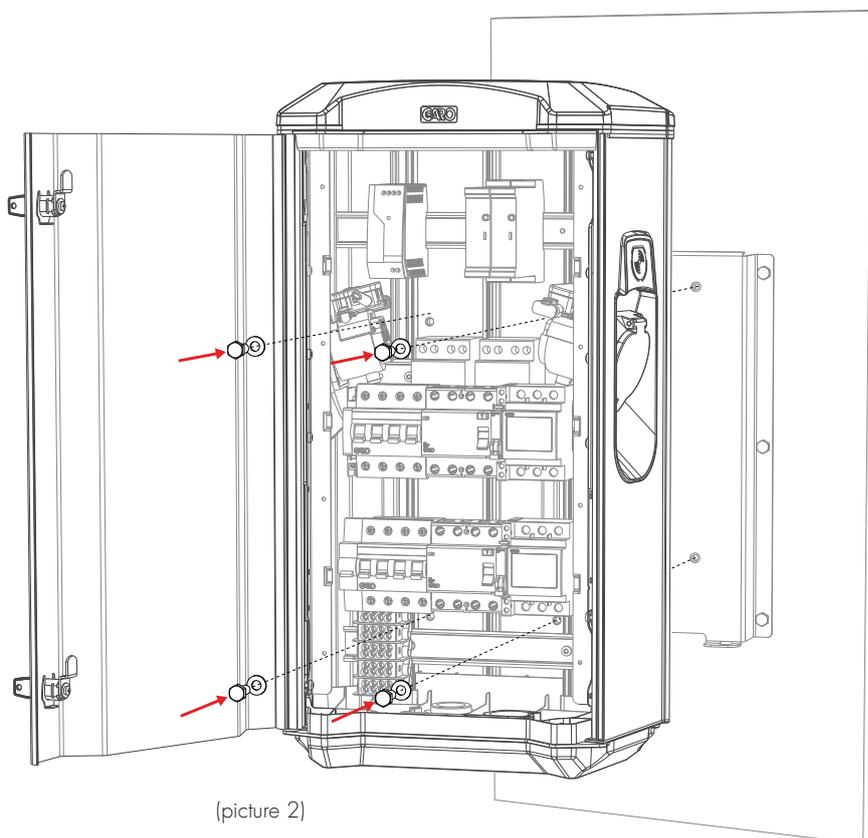
3. Mount the TWIN+ on a wall or pole according to picture 1-6.

NOTE! In cases with TWIN+ installed in a grid, Installation order of the TWIN+ need to follow the order in the attached Master/slave file. See picture 8



(picture 1)

6 Ø 8,5mm (screws not included)

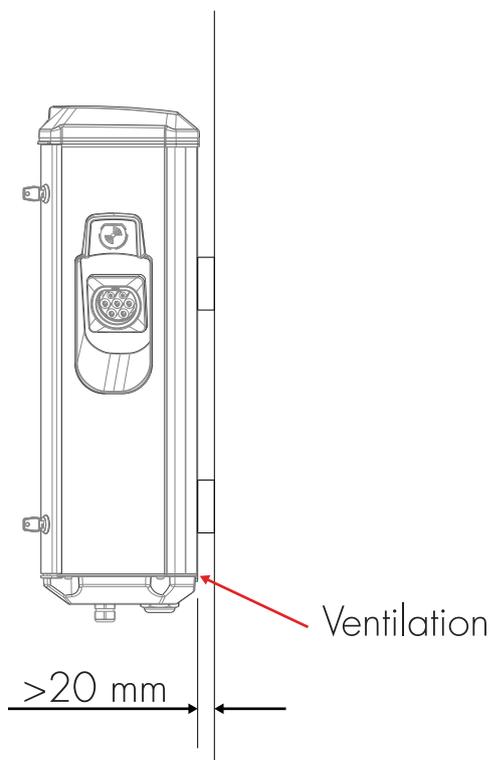


(picture 2)

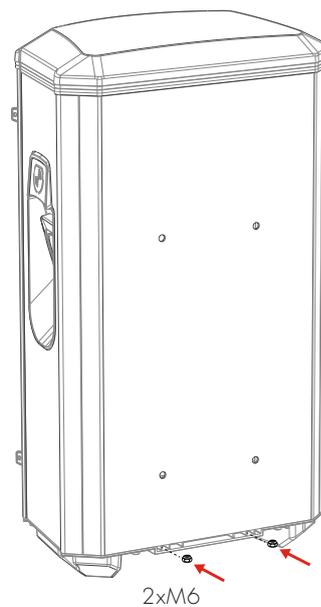
4x M8 L20mm

Note: Wall installation requires a minimum 20mm distance between the wall and the TWIN+ to ensure correct cooling, see picture 3.

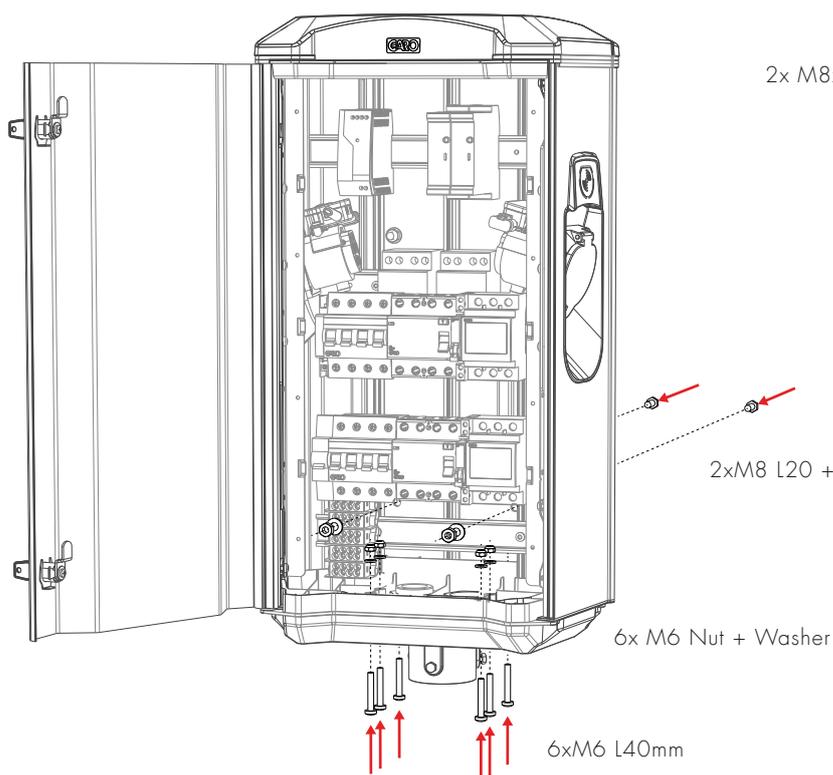
When TWIN+ is installed on a pole, the holes at the back side should be covered/closed by attached screws, see picture 6.



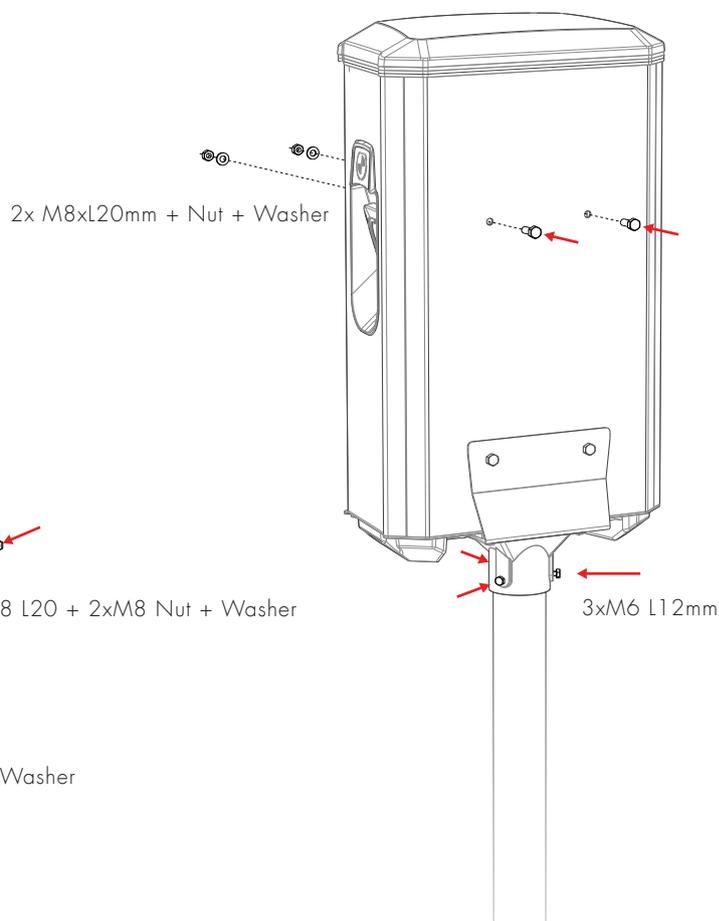
(picture 3)



(picture 4)



(picture 5)



(picture 6)

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 picture 7.

Phase-rotation is recommended in order to achieve even load on all phases when several TWIN+ are installed to same mains.

For example:

1st TWIN+: L1, L2, L3

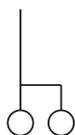
2nd TWIN+: L3, L1, L2

3rd TWIN+: L2, L3, L1

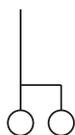
And so on....

Note: When DIM is pre-configured from factory, follow the marked phase order label at incoming terminals. All pre-configured TWIN+ contains the information about this inside the cabinet.

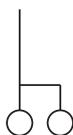
$Cu = 2,5Nm, Al = 4Nm, MAX16mm^2$



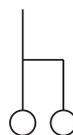
L1



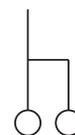
L2



L3



N



PE

(picture 7)

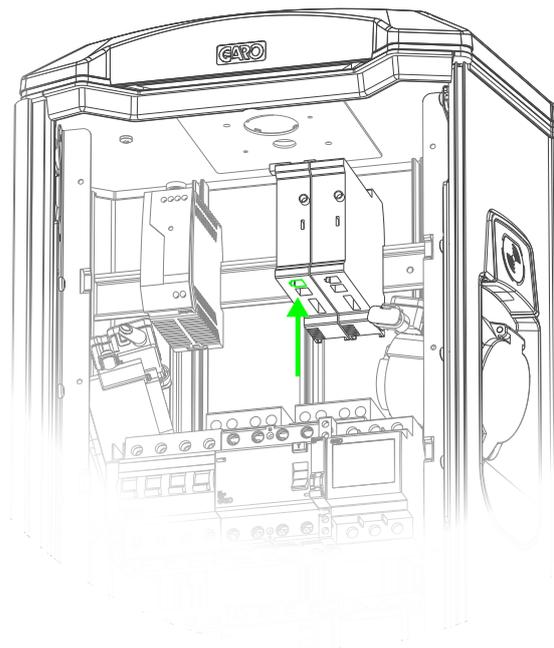
Master/Slave form

Role	Serialnumber / M-number
Master	M00001
Slave 1	M00002
Slave 2	M00003
Slave 3	M00004
Slave 4	M00005
Slave 5	
Slave 6	
Slave 7	
Slave 8	
Slave 9	
Slave 10	

(picture 8)

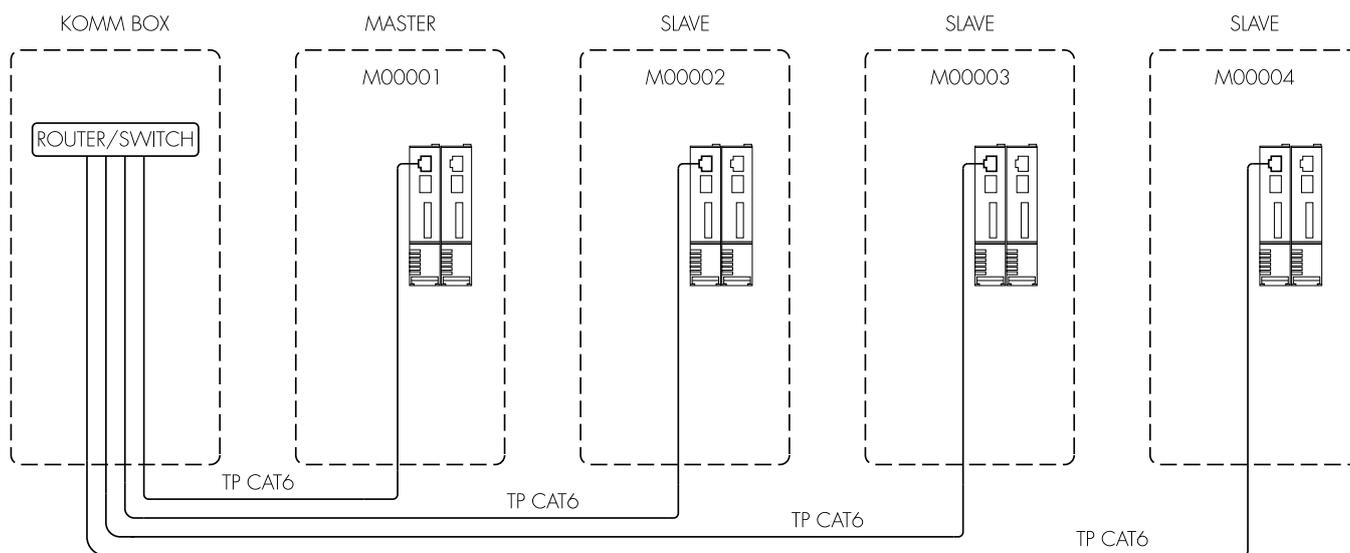
7. In cases with TWIN+ connected in a grid, install TP cable CAT6 with RJ45 connectors between each TWIN+ and the provided ethernet router/switch (located ie. in GARO KOMM BOX). See example of ethernet wiring diagram picture 10

Note! Connect the ethernet cable to CC1. The ethernetport on CC2 is not in use. See picture 9-10



(picture 9)

4pcs TWIN+ in an Ethernet network with Router/Switch



(picture 10)

8. In cases with external energy meter (for DLM function), connect the energy meter communication terminals A- and B+ to TWIN+ Master station terminals 200 A-) and 201 (B+). The energy meters modbus address must be set to #2. The modbus RS-485 communication settings is: Baud 9600, 8bit, 1 stop bit, no parity

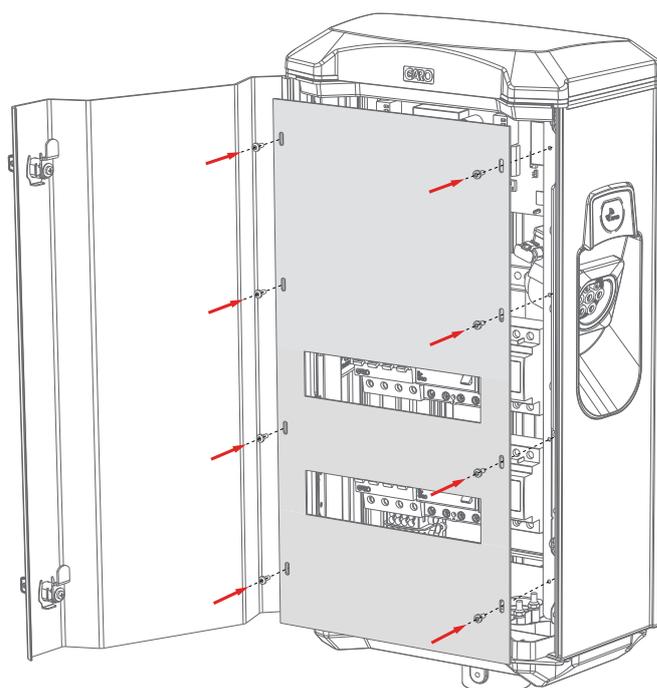
9. Fill in the warranty form in the manual.

10. Assembly the protection cover and close the front door. Picture 11

11. Turn on electrical power.

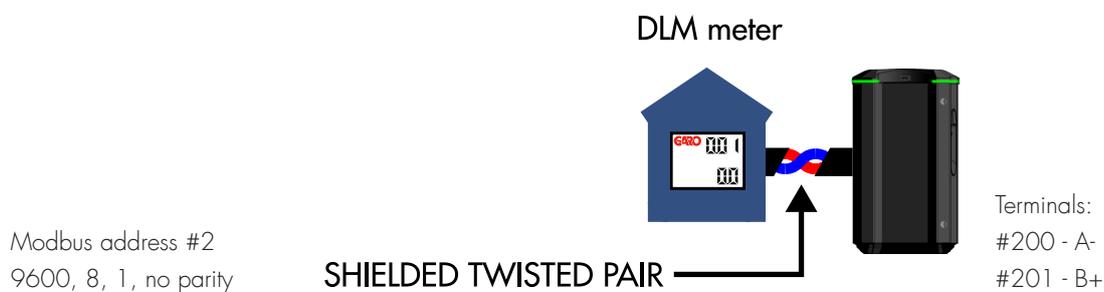
12. Wait a few minutes until the TWIN+ have finished the startup process and test both sides with a EVSE-tester or an EV. In cases where authorization (by RFID tag or similar) is needed to start charging please contact the backend administrator.

13. Doublecheck that the warranty form is completely filled. Sign with name, date and company in order for the warranty to be valid.



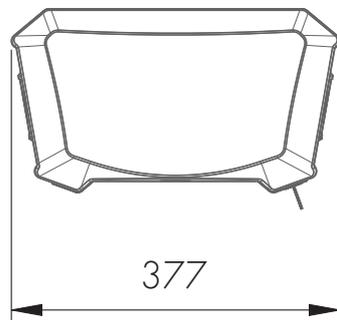
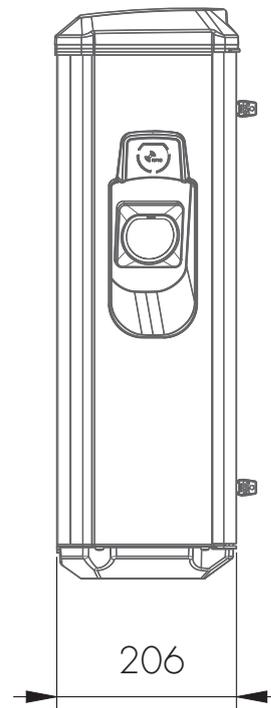
(picture 11)

DLM meter installation



(picture 12)

Dimensional sketch



USER MANUAL

Normal use

Connect the charging cable to the EV.

If authorization is activated, please hold a valid RFID-tag against the RFID reader on the side of the LS4 you want to use or use the app to authorize charging.

Charging will start instant if the EV is ready for charging. See your EV charging manual.

When finishing charging, follow the EV's instructions.

After charging: Release the charging cable from your EV and place the charging cable at designated place.

LED indications



3pcs green flash: Waiting for authorization by tag or App



Constant green flash: Waiting for connection between EV and TWIN+



EV connected to TWIN+ and charging



TWIN+ waiting for authorization from Backend



Error, reset MCB/RCCB and/or contact your TWIN+ installation partner



RFID-tag not valid



Electrical problem inside TWIN+, check fuses and/or contact your TWIN+ installation partner

Felsökning / Support / FAQ mm

www.garoemobility.com/support

Technical specifications

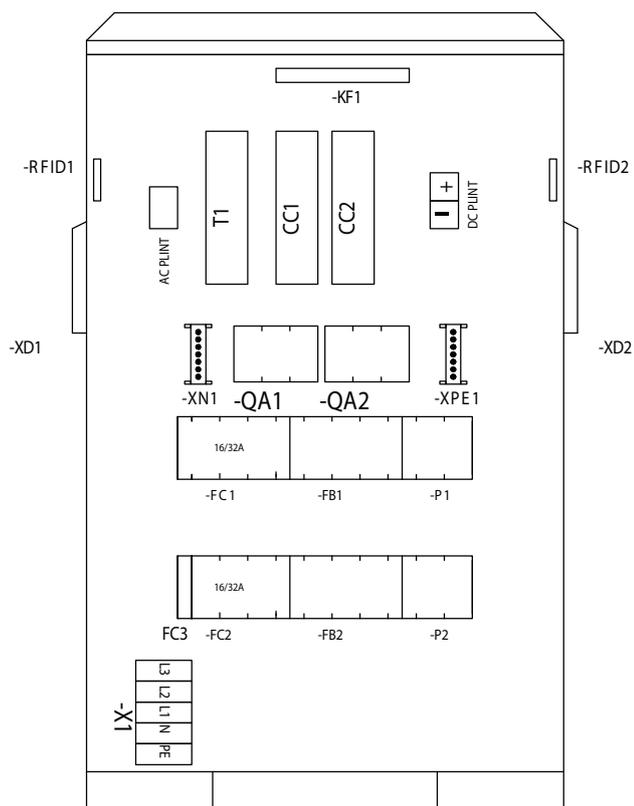
Product type	All TWIN+ models
Standards / Directives	IEC 61851-1 and IEC 61439-7



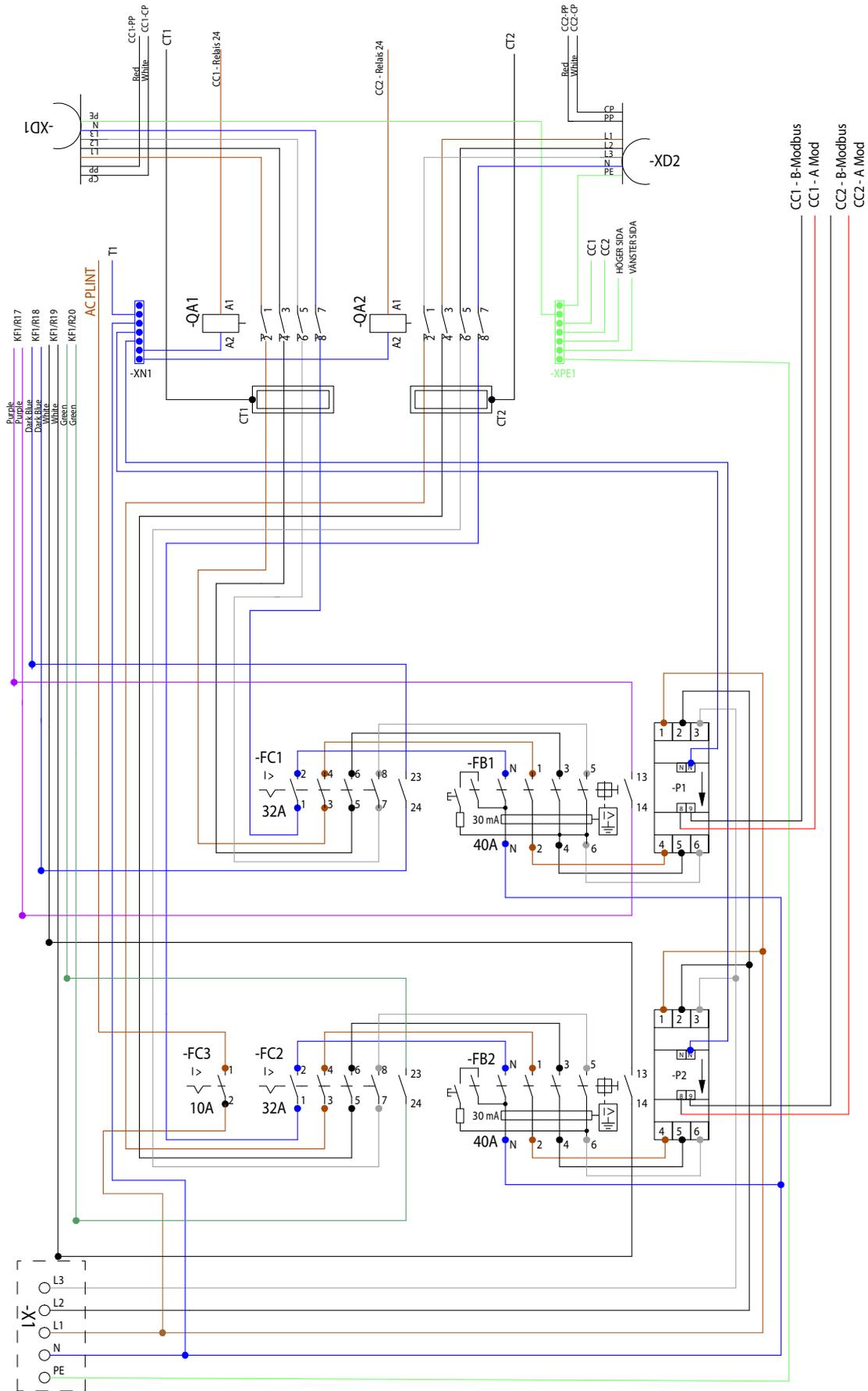
EMC Classification:	2014/30/EU
Installation method:	Ground / Wall
Installation environment:	Indoor / Outdoor
Location type:	Non-restricted Access
Rated Voltage:	230V / 400V 50Hz
Installation systems:	TT, TN and IT* systems
Charging type:	Mode 3
Charging method:	AC Charging
Protection class:	IP44
Mechanical 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

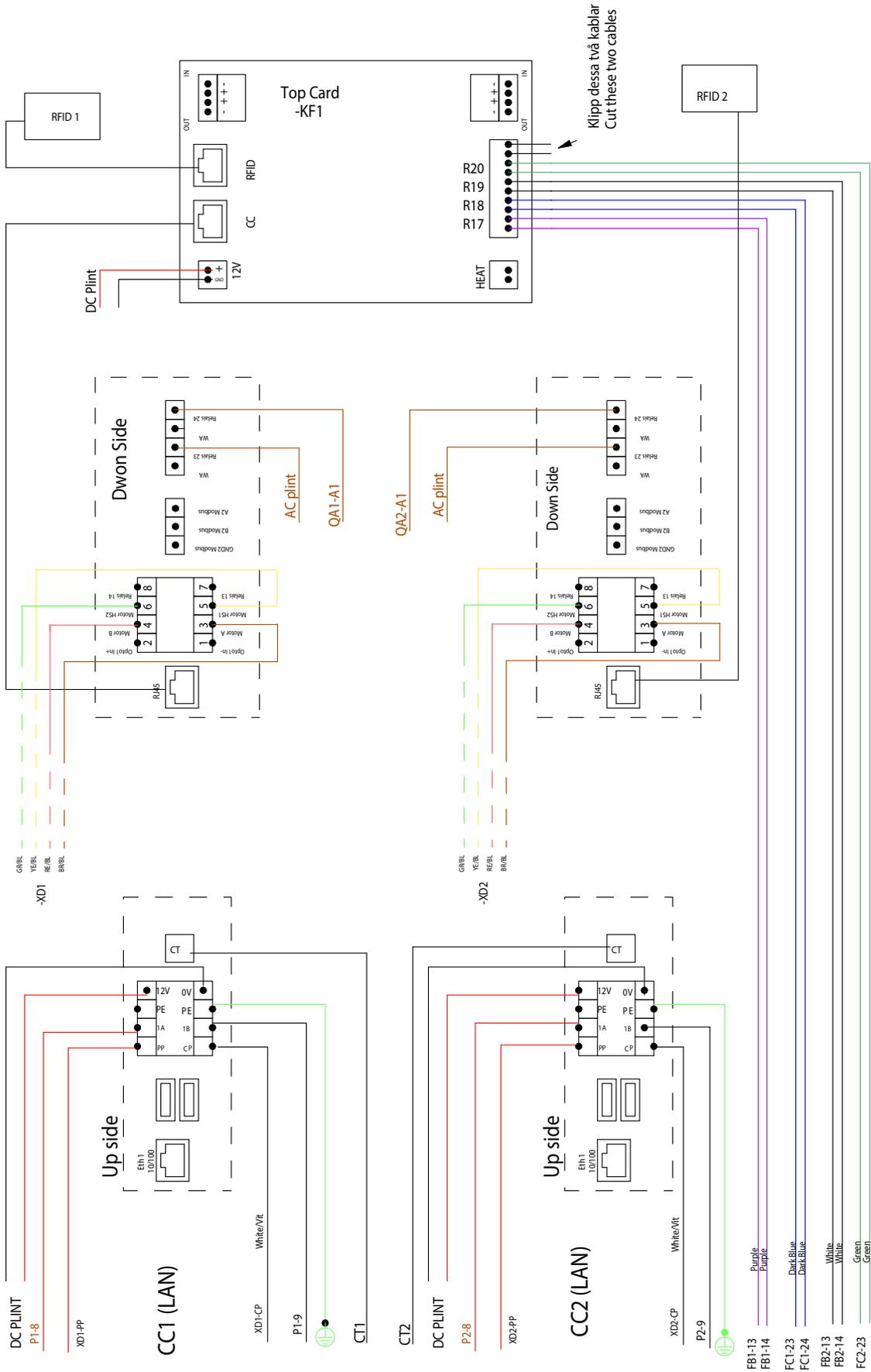
* 1-phase Twin

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
- FC3 = Fuse Charge Controller and Powersupply
- QA1 = Contactor Left Outlet
- QA2 = Contactor Right Outlet
- XN1 = N Neutral terminal
- XPE1 = PE Terminal Protection Earth
- CC1 = Charge Controller (Parent)
- CC2 = Charge Controller (Child)
- RFID1 = Left Receiver
- RFID2 = Right Receiver
- KF1 = Led light Topcard
- X1 = Incoming terminal
- XD1 = Left charging connector
- XD2 = Right charging connector





Service / Maintenance

The service must be performed by a professional electrician.
A service form can be found at www.garoemobility.com

In order for the warranty to apply, it is required that a completed service form/forms, (depending on the age of the product), can be presented when contacting GARO support or other Garo support partners.

The most recent service form may not be older than 12 months.
Service is performed by visual inspecting both outside and inside of theTWIN+, conditioning of components as well as functional tests. Specific service points can be found in the service form.

If your TWIN+ is connected to Backend Operator or other external supervised system, GARO recommends that you contact the operator, to plan the service in advance, in order to avoid unnecessary errors and warning messages that could lead to expensive emergency call outs from other service partners. You can normally find information inside the TWIN+ if it is connected to a supervised system.

Any questions regarding service, please contact GARO at support@garo.se

YOU WILL NEED FOLLOWING DURING SERVICE:

- Service form + pen
- Key to the front door
- Torx tools and PZ2 screwdriver
- Cleaning cloth
- Test instrument/equipment for EVSE:s, for example GARO article 352344

Service and maintenance form

Plant ID:

Name:

Date:

Check point for annual maintenance:	Status/ Value	Comment/remark
Visual check outside cabinet		
LED indication lit		
Check cables, connectors, connector pins		
Check sockets		
Check color, foil and instructions		
Check external antenna (when installed)		
Check fastening/fixing to ground/wall		
Clean TWIN+ outside surface		
Check locking mechanism		
Check both RCCB by pressing "T" button. Check that LED indication switches to red color for both sides		
Function test by GARO test-equipment or similar		
Check that electrical power is delivered by indications on test equipment		
Check RFID reader (when available). Indication by 2 or 3 flashes from LED:s		
Check Type 2 socket locking function (Type 2 socket versions)		
Turn off the electrical power		
Check gaskets		
Check torque for mains terminals		
Check torque for TWIN+ fixing screws towards ground/wall		
Check torque for connectors on contactors, relays, energymeters and DC-PSU		
Check connectors on CCU module		
Measure the earthing resistans (Ohm) on EV sockets/cables with a multimeter		
Clean inside when necessary		
Turn on the electrical power		
Check charging function on both sides		

Warranty Conditions / Garantivillkor

SVERIGE/SWEDEN

Garantivillkor enl ALEM 09.

OBS! Fullständigt ifylld garantiblankett krävs.

Garantin gäller ej om produkten varit utsatt för ett isolationstest, sk
meggning.

EU Countries (except Sweden)

1. The product benefits from manufacturer's warranty. The applicable warranty period must be stated in purchase documents from your supplier.
2. The product must be installed by a certified installer / contractor.
3. Proper installation, storage and operation conditions must be obtained.
4. Warranties apply only to products installed in their original installation location.
5. Installation, use, care, and maintenance must be normal and in accordance with instructions.
6. Warranty requires a dated, fully filled in Warranty form by an certified installer/contractor. If the original installation date cannot be verified, then the warranty period begins ninety (90) days from the date of product manufacture (as indicated by the model and serial number).
7. Warranty does not cover damage occurred by incorrect use of equipment, use of any non-original spare parts, lack of maintenance or faults caused by disassembly of the product or unauthorized persons intervention,
8. Warranty does not cover software or update thereof.
9. Warranty does not cover aesthetic deficiencies caused by negligent manipulation or accidents (breaks or damage to the carcass).
10. Warranty does not cover damage caused by external overvoltage from either grid or car/ charging object.
11. Warranty does not cover damage caused by force major like for example but not limited to: floods, winds, fires, lightning, accidents, sabotage, military conflicts, terrorism, volcanos, earthquakes or corrosive environments.

Warranty Form / Garantiformulär

TWIN+ Model: _____
M nr: _____

ELECTRICAL INSTALLATION DATA

Group fuse/ Gruppsäkring (A): _____
Supply cable dimension/Kabelarea: _____

FUNCTION TEST

Testbox / EV (model) _____

Date/Datum: _____

Sign Installer/Sign installatör: _____

Company Name/Företagsnamn: _____

Owner/Customer Name / Ägare/kundens
namn: _____

Installation adress: _____



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