



GARRO Charger GLB

Load Balancing and
Low Tariff

End User Instruction (EN)

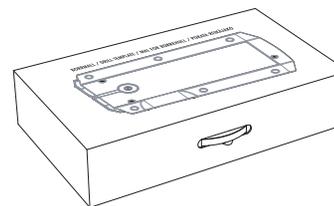
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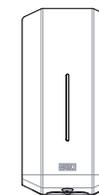
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Box Contents



Drill template
(see the back of the box)



GBL Wallbox



Keys



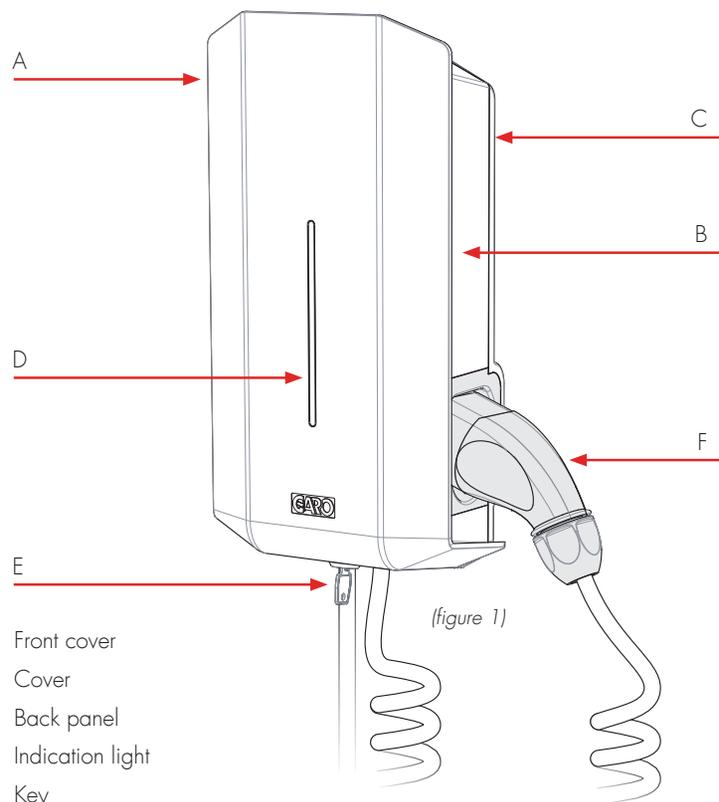
Manual



Language labels

GLB Variants

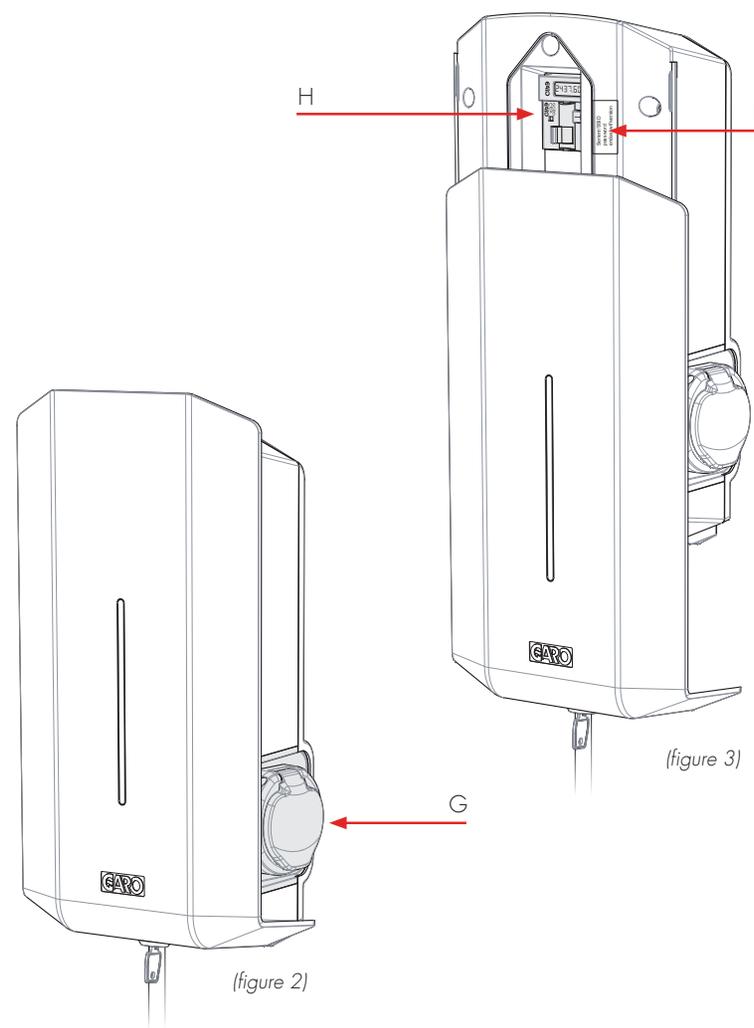
GARO Wallbox Charger GLB with cable and connector, type 1 or 2



(figure 1)

- A. Front cover
- B. Cover
- C. Back panel
- D. Indication light
- E. Key
- F. Connector type 1 or 2
- G. Type 2 socket outlet
- H. RCCB (Residual Current Circuit Breaker) or RCBO (Residual Current Breaker with Overcurrent Protection). Energy meter.
- I. Serial no./SSID, password (Wi-Fi version only)

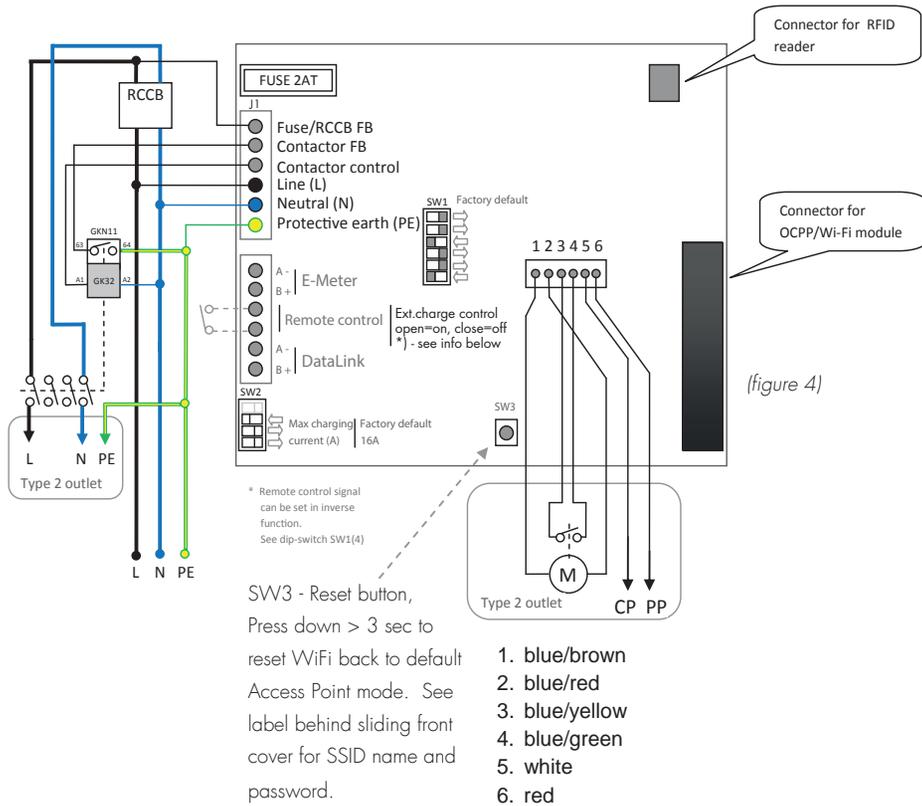
GARO Wallbox Charger GLB with type 2 socket outlet



(figure 2)

(figure 3)

Mainboard Simplified Connection Diagram



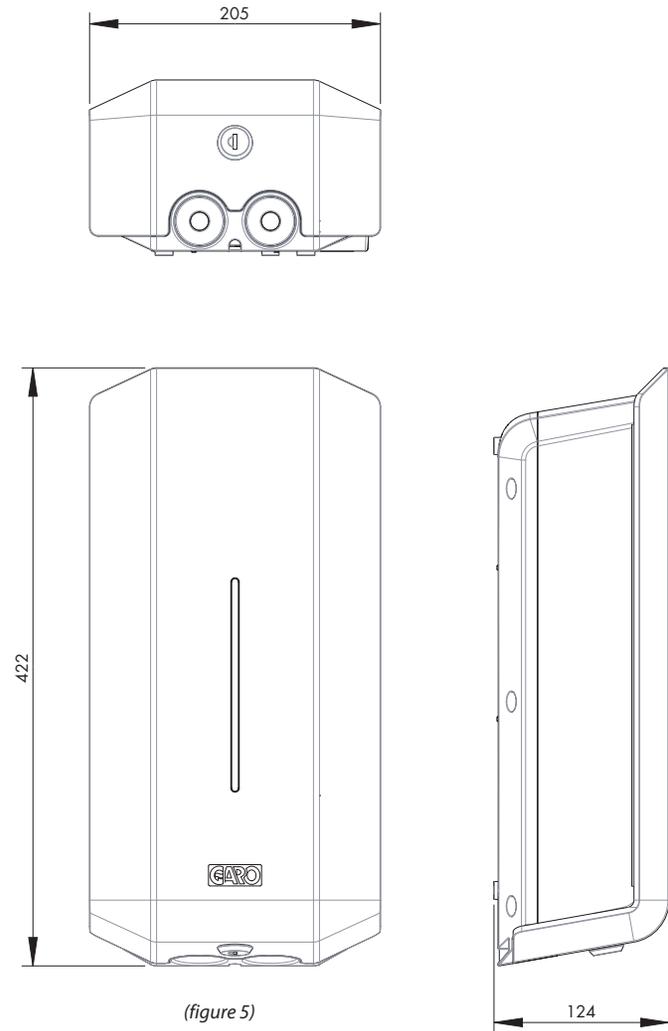
Connect central energy meter to "E-Meter" modbus terminals (A- to A- and B+ to B+)

Compatible energy meters:

GARO 1-phase energy meter GNM1D-100-RS485

GARO 3-phase energy meter GNM3D-RS485

Dimensional Drawing



(figure 5)

ASSEMBLY INSTRUCTIONS FOR INSTALLER

The GARO Wallbox is an AC charger enabling Mode 3 charging which complies fully with the requirements of IEC 61851-1 and IEC TS 61439-7.

The product complies with IP Code IP44, with a closed front.

It is to be fitted to a wall or GARO Wallbox stand, and all installation must be carried out by an authorised installer and comply with local installation regulations.

Important information for installer:

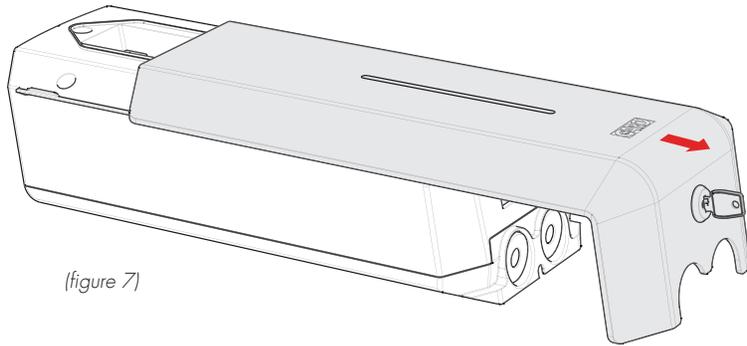
- ① All installation must be carried out by an authorised installer and comply with local installation regulations.



(table 1)

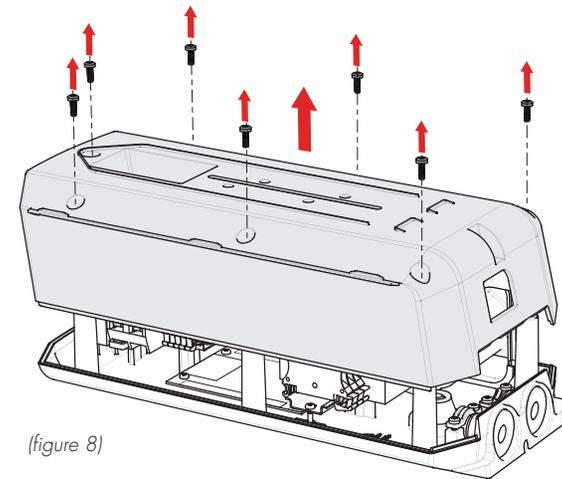
GLB Type	Protection type					
	1-phase	3-phase	No RCBO or RCCB ^{1) 2)}	RCBO type A ^{2) 4)}	RCCB type A ^{2) 3)}	RCCB type B ³⁾
GLB...37..	•			•		
GLB...74..	•			•		
GLB...22..		•	•			
GLB...22..-A		•			•	
GLB...22..-B		•				•

- 1) Chargers without RCCB or RCBO included in the enclosure must have Residual Current protection and must be protected with a max 32A fuse in the supply distribution box.
 - 2) Chargers without RCCB Type B fitted in the enclosure must in accordance to IEC 60364-7-722 be protected with a Residual Current Device (RCD) Type B.
 - 3) 3-phase chargers equipped with a Residual Current Circuit Breaker (RCCB) must be protected with a max 32A fuse in the supply distribution box.
 - 4) 1-phase chargers fitted with a Residual Current Breaker with Overcurrent Protection (RCBO) can be connected in parallel. This group of chargers must be protected by a backup fuse in the distribution box. The backup fuse shall not exceed 125A.
- Calculate to determine the maximum operating current. Use conductors that are sized in accordance with local wiring regulations. The selected cable must be able to sustain periods of constant load of up to 32A. Manufacturers recommendation is to use minimum 10mm² conductors to avoid voltage drop.
 - Calculate the distance to ensure minimal voltage drop.



(figure 7)

1. Read Safety Instructions
 - ⓘ All installation must be carried out by an authorised installer and comply with local installation regulations.
2. Ensure the supply cable is powerless.
 - ⚠ Turn off input power at the circuit breaker before installing, configuring or cleaning of the GLB Wallbox.
3. Remove the drill template from the packaging (refer Box Contents)
4. Attach the drill template to the wall where the charger will be installed.
Suitable height - refer Technical Data.
 - ⚠ Do not install or use the GLB Wallbox near flammable, explosive, harsh, or combustible materials, chemicals, or vapors.
5. Drill/mark in accordance with the instructions on the drill template.
6. Unlock the front cover with the key provided and slide the cover downwards.
7. The front cover has a built-in stop-position. To move past this position, grip the underside of the cover and lift outwards gradually while pulling downwards.

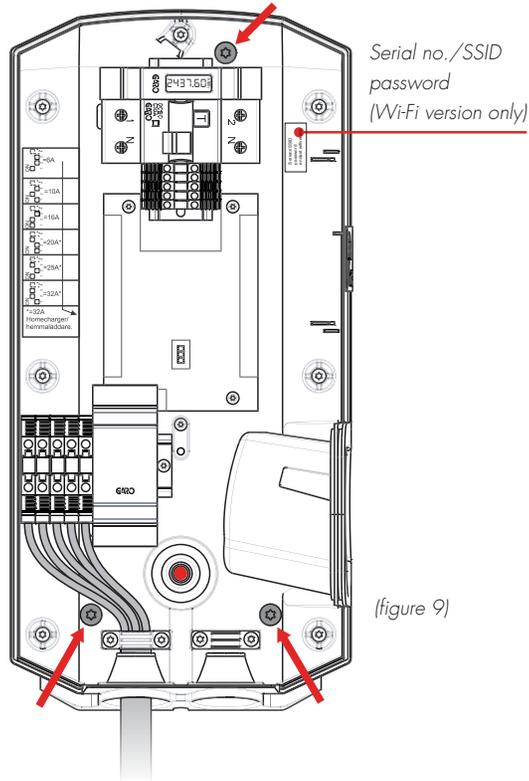
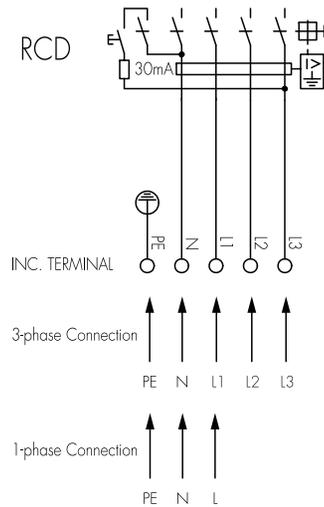


(figure 8)

8. Loosen the seven screws and carefully remove the cover from the back panel.

Step-by-Step installation

Connection of phases for 3-phase charger to 3-phase system as below. When connecting a 3-phase charger to 1-phase system connect phase to L1.

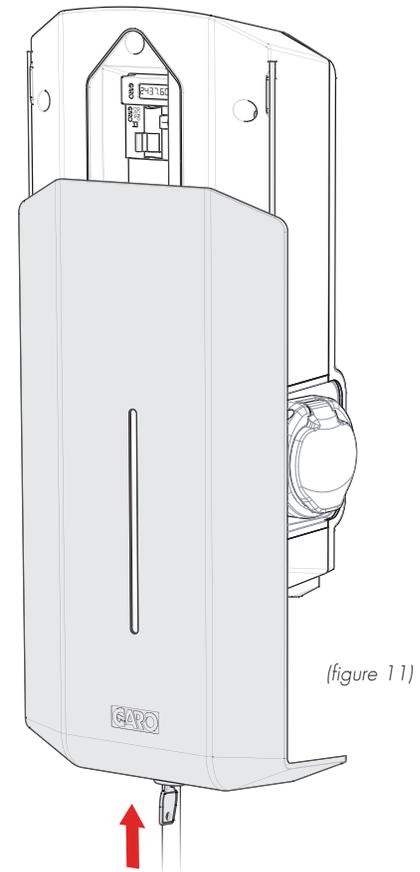
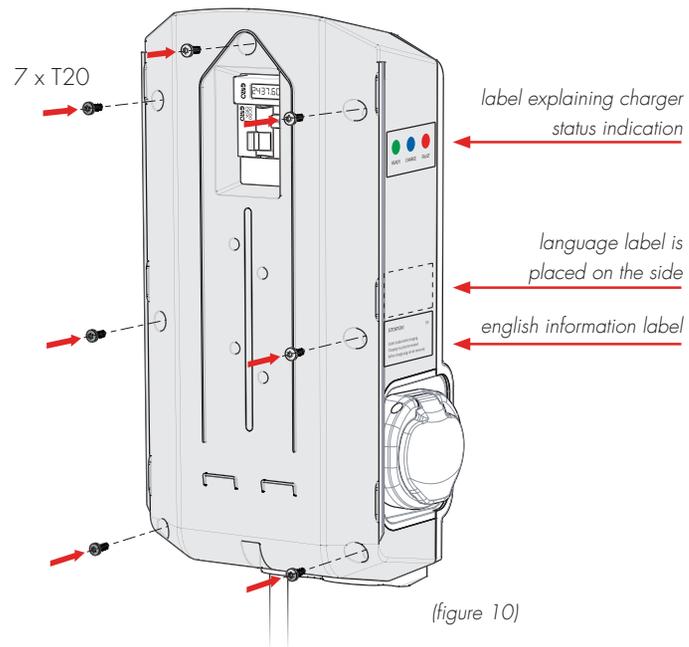


(figure 9)

9. **(Optional, Only when connecting communication cable to GLB)**
Press out the knock-out on the GLB Wallbox backside, mount a cable gland. See red circle in figure 9. Feed the communication cable through the cable inlet. Connecting the communication cable refer to section Dynamic Load Management (DLM) for individual chargers or Dynamic Load Management (DLM) for multiple chargers in group.

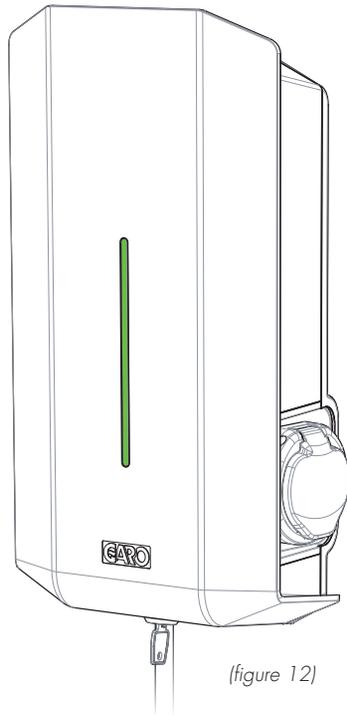
10. Screw the back panel onto the wall using three screws suitable for the wall surface. See red arrows in figure 9.
11. Feed the cable through the cable inlet.
 - i Be careful not to damage the circuit boards or components during installation.
12. Connect the cable onto the terminal blocks. The terminal blocks are compatible with cables measuring 1.5 mm²–6 mm² up to 10 mm² in 32A Wallbox.
 - ! The GLB Wallbox must be grounded through a permanent wiring system.
 - ! Use the GLB Wallbox only within the specified operating parameters.
13. Does the charging current need to be reduced? Refer to section: Reducing the charging current.
 - ! Incorrect installation and testing of the GLB Wallbox could potentially damage either the vehicle's Battery and/or the GLB Wallbox itself.
 - i Refer to local standards and regulations not to exceed charging current limitations.
 - i To even out the load, it is important to rotate the phases when connecting several of GLB Wallbox to the same system. Note that 1-phase charging is common in electric vehicles and L1 in the GLB is used for this purpose.
 - i When Dielectric Voltage Withstand Test is done on an installation it is important to disconnect the terminal J1 on the GLB main board.

Step-by-Step installation



14. Carefully place the cover in position from the front. Ensure the inserts on the right hand side fit into the groove and the cover is perfectly positioned all around. If the charger has Wi-Fi connectivity, verify that the SSID numbers on the cover and base plate match.
15. Adhere language label/labels on the side of the charger, choosing language suitable for site. See figure 10.
16. Securely attach the cover using the seven screws.
17. Verify that the RCCB/RCBO is switched on.

18. Re-install the front cover by feeding it in from below.
19. Lock the front cover with the key.



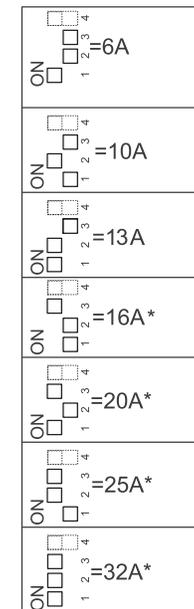
(figure 12)

20. Connect the power and ensure the indication light is solid green.
21. If, not refer to the section on: Troubleshooting
22. When solid green light is shown, the charger is ready for use.
 - ⓘ To be sure of proper function of installed GLB Wallbox test with ESVE-tester or electric vehicle.

Setting The Charging Current

- ⚠ Turn off input power at the circuit breaker before installing, configuring or cleaning of the GLB Wallbox.
- ⓘ All installation must be carried out by an authorised installer and comply with local installation regulations.
- ⓘ Refer to local standards and regulations not to exceed charging current limitations

SW2



(figure 13)

Depending on the size of the fuse, overload may occur, primarily at the property's meter fuse. The wallbox's charging current can be reduced using the switches on the mainboard (refer to Mainboard simplified connection diagram).

The power supply must be turned off before the charging current is reduced.

Remote Control of Charger Via Enable Input

! Turn off input power at the circuit breaker before installing, configuring or cleaning of the GLB Wallbox.

i All installation must be carried out by an authorised installer and comply with local installation regulations.

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

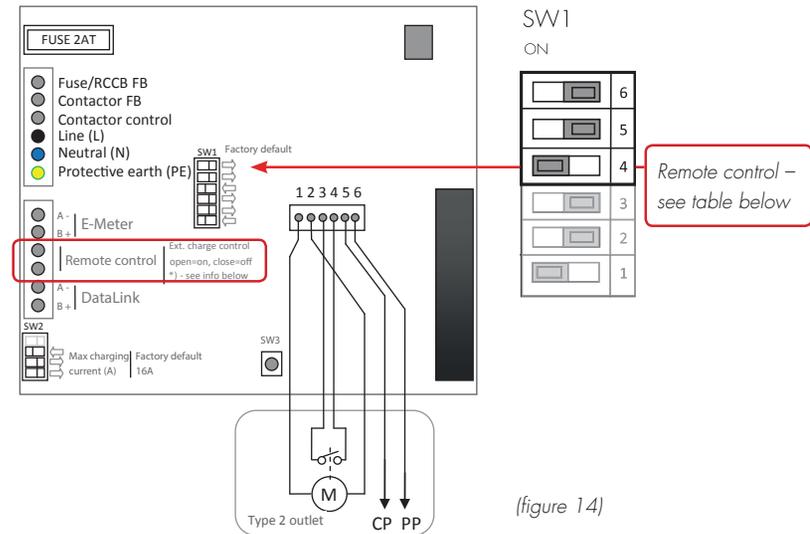
The wallbox is equipped with a potential free contact input, where charging can be activated and deactivated. The charger's remote control capability allows charging to be controlled externally through, for example, a relay outlet such as a timer or other superordinate control unit.

Charging can be verified in two ways:

Activate charging by opening the circuit between the Remote Control connection blocks. This option is the factory setting.

Activate charging by closing the circuit between the Remote Control connection blocks.

If there is no external Input to control charger, leave switch in On position



DIP Switch settings

Charging is activated at	DIP Switch SW1.4
Open circuit	ON (Factory setting)
Closed circuit	OFF - Requires T/S to operate charger

Setting the Amperage for Main Fuses (Dynamic Load Balance)

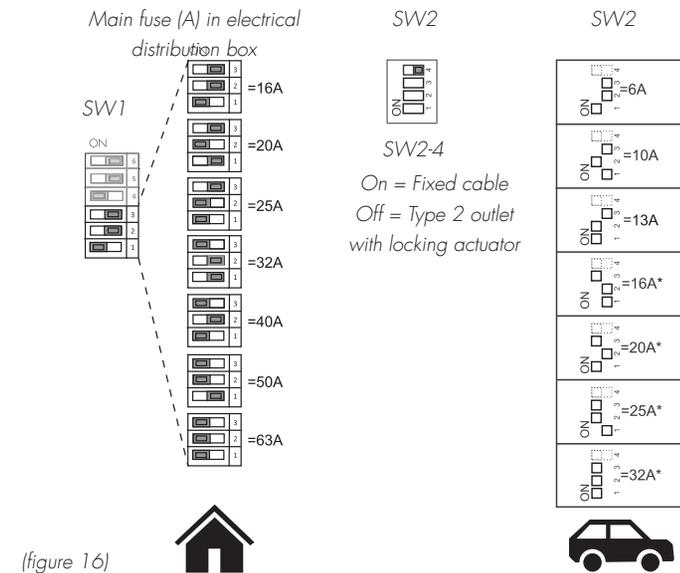
-  Turn off input power at the circuit breaker before installing, configuring or cleaning of the GLB Wallbox.
-  All installation must be carried out by an authorised installer and comply with local installation regulations.
-  Refer to local standards and regulations not to exceed charging current limitations

During installation, the amperage of the DIP switch SW1(1-2-3) must be adjusted to correspond with the size and strength of the main fuses.

The DIP switch SW2(1-2-3-) which controls the charger's maximum permitted charging current should be set to the recommended current values outlined below, when DLM for individual chargers is activated.

Main fuse	16A	20A	25A	32A	40A	50A	63A
SW1(1-2-3)	16A	20A	25A	32A	40A	50A	63A
SW2(1-2-3)	13A	16A	20A	25A	32A	32A	32A

The energy meter is connected to the terminal "E-meter" on the main board. If the wallbox has an internal energy meter installed, the Modbus connection of the external meter is to be connected in parallel with the internal one.



Dynamic Load Management (DLM) for individual chargers

-  Turn off input power at the circuit breaker before installing, configuring or cleaning of the GLB Wallbox.
-  All installation must be carried out by an authorised installer and comply with local installation regulations.
-  Refer to local standards and regulations not to exceed charging current limitations

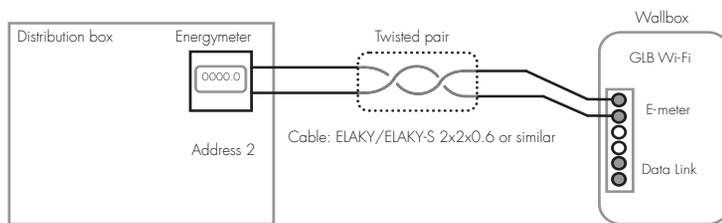
DLM reduces charging current when demand of current elsewhere increases.

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

- GNM1D-RS485 (single-phase Modbus)
- GNM3D-RS485 (three-phase Modbus)

Note the energy meter's Modbus address must be set to 2.

The energy meter continually measures the total energy consumption for each phase. The data is transmitted to the wallbox, reducing the charging current in order to prevent the main fuses from tripping. When using a single-phase wallbox, a single-phase energy meter must be installed to the phase to which the wallbox is connected.



Example of installation

(figure 15)

Commissioning:

- Connect central energy meter to GLB modbus terminal "E-Meter" (refer to Mainboard simplified connection diagram) Note, Modbus connection between energy meter and GLB must be connected as following: A- (energy meter) to A- (GLB "E-meter" terminal) and B+ (energy meter) to B+ (GLB "E-meter" terminal)
- Config energy meter in distubution box to modbus address no.2 (9600 baud, no parity, one stop bit)
- Config SW1 (DIP 1-3) for max current (refer Setting the amperage for main fuses)

Dynamic Load Management (DLM) for multiple chargers in group

-  Turn off input power at the circuit breaker before installing, configuring or cleaning of the GLB Wallbox.
-  All installation must be carried out by an authorised installer and comply with local installation regulations.
-  Refer to local standards and regulations not to exceed charging current limitations

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

- GNM1D-RS485 (single-phase Modbus)
- GNM3D-RS485 (three-phase Modbus)

Note the energy meter's Modbus address must be set to 100.

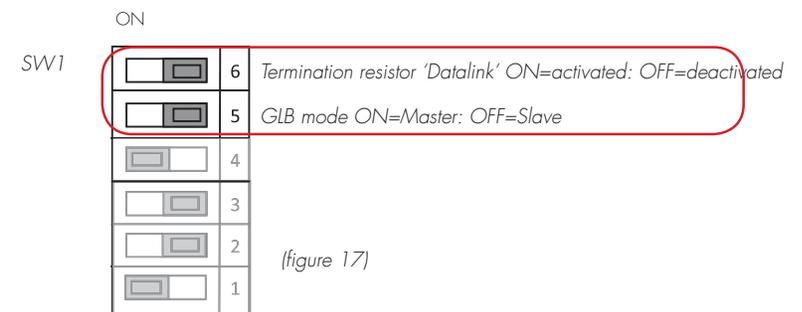
The energy meter continually measures the total energy consumption for each phase. Data is transmitted to the first wallbox (GLB Master), which controls the charging current per phase for the entire system in order to prevent the main fuses from tripping. When using a single-phase energy meter, the meter must be set to the same phase as all of the wallboxes.

A maximum of 32 wallboxes may be connected by a shielded twisted pair cable, which is connected to the wallbox connection terminal labelled 'Data Link'.

It is not permitted to form a cascade from a box which leads out to the charger using one or more parallel connected drop cables. See the installation example to the right.

The Data Link cable must be electrically terminated in the first and final wallboxes, via DIP switch SW1 (DIP6) on the printed circuit board. In the below example, the SW1 (DIP 6) DIP switch is to be set to 'ON' in wallboxes no. 1 and 5, and 'OFF' in the remaining boxes.

To verify that the master wallbox is defined as master, ensure the SW1 switch (DIP 5) is set to 'ON' mode.



About this Manual

The purpose of this Manual is to provide you with the necessary information to charge your electric vehicle using Garo Wallbox, models GLB.

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 modifications at any time.

Tools and Materials Required

Before installing the Garo Wallbox, gather the following tools and materials:

- Pencil or marker
- Hole punch (optional, to push through cardboard template)
- Wire cutter
- Voltmeter or digital multimeter (to measure AC voltage at the installation site)
- Small flathead screwdriver
- Medium flathead screwdriver
- Large flathead screwdriver (optional, to remove plastic knock-outs on backside of GLB Wallbox)
- T20 Torx driver
- 3 screws (and plugs) suitable for wall type
- Ferrules (the diameter of the ferrule depends on the diameter of the power wiring and the construction)
- Level
- Power drill
- Twisted pair cable (Optional only when DIM is used)
- Cable: ELAKY/ELAKY-S 2x2x0.6 or similar
- Cable gland for communication cable (Optional only when knock-outs on backside of GLB Wallbox is used)

Hazard categories and special symbols

Read these instructions carefully before trying to install, operate, or maintain it.
Save the manual for future use.

	Indicates a potentially hazardous situation which could result in death or serious injury
	Indicates a potentially hazardous situation which could result in minor or moderate injury
	Indicates practices that do not involve the risk of bodily injury

Warnings

-  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 GLB Wallbox range of charging stations is designed exclusively for charging electric vehicles.

-  The GLB Wallbox must be grounded through a permanent wiring system.
-  Do not install or use the GLB Wallbox near flammable, explosive, harsh, or combustible materials, chemicals, or vapors.
-  Turn off input power at the circuit breaker before installing, configuring or cleaning of the GLB Wallbox.
-  Use the GLB Wallbox only within the specified operating parameters.
-  Never spray water or any other liquid directly at the GLB Wallbox. 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 GLB Wallbox's end terminals with fingers or any other objects.
-  Do not insert foreign objects into any part of the GLB Wallbox.

Cautions

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

Notes

-  All installation must be carried out by an authorised installer and comply with local installation regulations.
 -  Ensure that the GLB Wallbox'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 GLB Wallbox's components. The outside of the GLB Wallbox, 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 its upper position in order to ensure compliance with IP Code IP44.
 -  To even out the load, it is important to rotate the phases when connecting several of GLB Wallbox to the same system. Note that 1-phase charging is common in electric vehicles and L1 in the GLB is used for this purpose.
 -  When Dielectric Voltage Withstand Test is done on an installation it is important to disconnect the terminal J1 on the GLB main board.
 -  To be sure of proper function of installed GLB Wallbox test with ESVE-tester or electric vehicle.

Technical Data

Specifications

Product type:	all GLB models
Standards/directives:	IEC 61851-1 and IEC TS 61439-7
	CE RoHS 
Installation:	on wall
Voltage rating:	230V/400 50Hz
Installation systems:	TT, TN and IT systems
Charging type:	Mode 3
IP classification:	IP44
Mechanical impact resistance:	IK08
Application temperature:	-25°C – +40°C
Storage temperature:	-35°C – +55°C
Installation height:	0.5–1.5 metres above ground/land to lower edge of charger
Weight:	around 3 kg including socket outlet 3.8–4.1 kg including cable and connector, 1-phase 5.4 kg including cable and connector, 3-phase
Cable length:	5 m (Only GLB models with fixed cables)

