

Installation/Service/User manual



GARO AB

Box 203, SE-335 25 Gnosjö Phone: +46 (0) 370 33 28 00

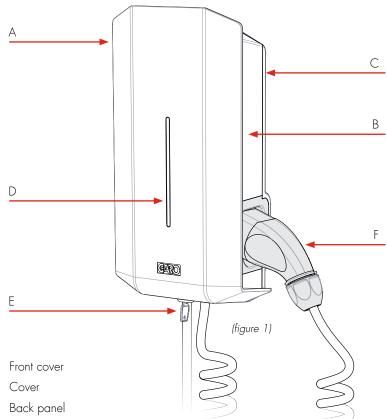
info@garo.se

garo.se



GARO Wallbox GLB+

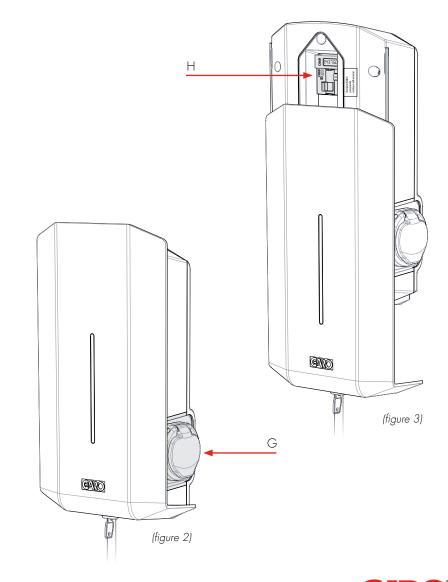
with cable and connector, type 1 or 2



- Indication light
- Key
- Connector type 1 or 2
- Type 2 socket outlet
- RCCB (Residual Current Circuit Breaker) or RCBO (Residual Current Breaker with Overcurrent Protection). Energy meter.

GARO Wallbox GLB+

with type 2 socket outlet







EN

TABLE OF CONTENTS

About this manual	Ē
	6
Safety Information	
Dimensional drawing	13
Assembly instructions for installer	14
Box Contents	16
Tools and Materials Required	17
Step-by-Step Installation	18
End User instruction	26
Charging electric vehicles	29
Resetting/Conditioning of RCCB or RCBO	31
Care	32
Form for annual service and maintenence	33
Troubleshooting	3.5
Warranty form /Garantiformulär	42
Warranty Conditions	43

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.





Safety Information

Hazard categories and special symbols

Read these instructions carefully before trying to install, operate, or maintain the wallbox. 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 a qualified 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 over, 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 to ensure that charging current limits are not exceeded

- The front cover must always be locked in its upper position in order to ensure compliance with IP Code IP44.
- Avoid mounting the wall box in direct sunlight. The charging current will be reduced to 16A if the temperature limit inside the wallbox is exceeded. Charging can also be completely turned off should the wallbox be too hot, this is a safety feature to ensure a long life-time of the product.
- To balance 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.
- This product is already internally Dielectric Voltage Withstand Tested from the factory. It is important not to connect the product when doing an external Dielectric Voltage Withstand Test, since the product has electronics connected to the PE.
- To confirm that the GLB+ Wallbox is functioning correctly after installation, test with an FVSF test box





TECHNICAL SPECIFICATIONS

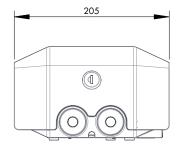
Product type	All GLB+ models
Standards / Directives	IEC 61851-1 and IEC 61439-7
	(EROHS
EMC Classification:	2014/30/EU
Installation method:	Wall
Installation environment:	Indoor / Outdoor
Location type:	Non-restricted Access
Rated Voltage:	1-phase 230VAC / 3-phase 400VAC depending
	on model
Installation systems:	TT, TN and IT systems
Charging type:	Mode 3
Charging method	AC Charging
Protection class:	IP44
Mechanical impact resistance:	IKO8
Temperature range:	-25C - +40C
Installation height:	0.5–1.5 metres above ground/land to lower edge of wallbox
Weight:	3-5,4kg depending on model
Standard cable length (fixed cable	Standard 4,5m
version):	
Rated current withstand	10kA
Rated short-time withstand current	10kA
Rated conditional short-circuit	10kA
current of an assembly	

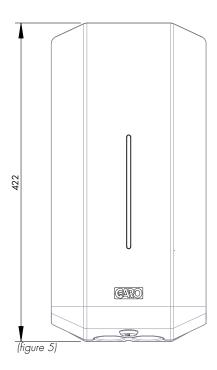
Short-circuit protective device type	Type C (when included)
Rated impulse withstand voltage	4kV
Rated insulation voltage	230/400V
Rated current of each circuit	32A
Rated diversity factor	RDF=1
Pollution degree:	3
EMC environmental condition	A and B
RFID Frequency Band	13.56MHz
RFID output power	250mW

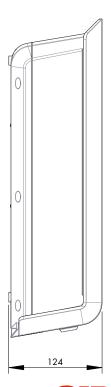




Dimensional drawing







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 designed to be fixed to a wall or mounted on a GARO Wallbox stand and all installation must be carried out by a qualified installer and comply with local installation regulations.

Important information for installer:

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



Type Label example

(table 1)	Pro	tect	on t	ype
GLB+	1-phase	3-phase ²⁾	No RCBO	RCBO
GLB-B37A	•			•
GLB-B74A	•			•
GLB-B22		•	•	

- 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.
- 3-phase chargers must be protected with both a Type A 30mA Residual Current Device (RCD) and a fuse of maximum 32A in the supply distribution box.
- GLB+ Wallbox have a internal DC-monitor protection implemented which is compliant with follow IEC 60364-7-722.
- 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 6mm² conductors (16A) / 10mm² conductors (32A) to avoid voltage drop.
- Calculate the distance to ensure minimal voltage drop.





Box Contents





Drill template (see the back of the box)



GLB Wallbox







Manual

Tools and Materials Required

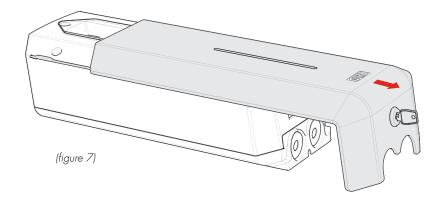
Before installing the Garo Wallbox, gather the following tools and materials:

- 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 back panel 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)
- Leve
- Power drill
- Cable gland for communication cable (Optional only when knock-outs on back panel of GLB+ Wallbox is used)





Step-by-Step Installation



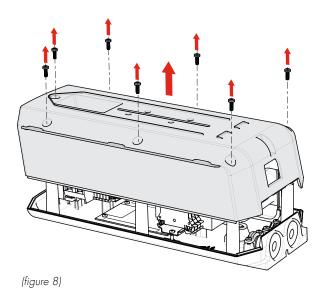
- Read Safety Instructions
 - (i) All installation must be carried out by a qualified installer and comply with local installation regulations.
- 2. Ensure the supply cable is isolated
 - ↑ Turn off

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 to Box Contents)
- 4. Attach the drill template to the wall where the charger will be installed. Suitable height refer to Technical Data.
 - Λ

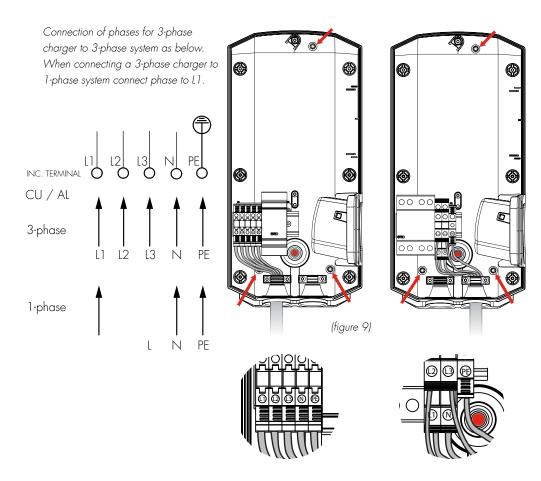
Do not install or use the GLB+ Wallbox near flammable, explosive, harsh, or combustible materials, chemicals, or vapors.

Avoid mounting the wall box in direct sunlight. The charging current will be reduced to 16A if the temperature limit inside the wallbox is exceeded. Charging can also be completely turned off should the wallbox be too hot, this is a safety feature to ensure a long life-time of the product.



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

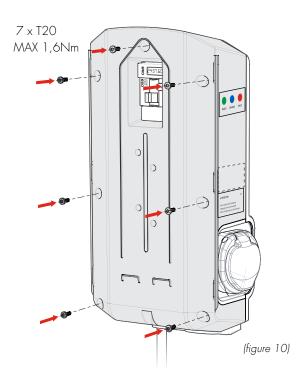




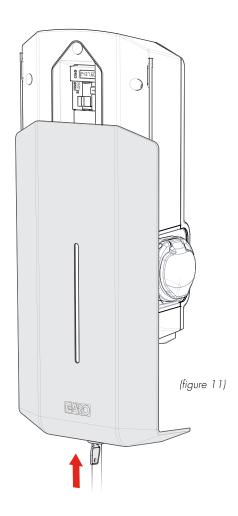
(Optional, only when connecting communication cable to GLB+) Press out the knock-out on the GLB+ Wallbox back panel, mount a cable gland. See red circle in figure 9. Feed the communication cable through the cable inlet.

- 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.
 - 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.
- Check if the charging current needs to be reduced. If so, refer to the 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.
 - Refer to local standards and regulations not to exceed charging current limitations
 - To balance 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.
 - This product is already internally Dielectric Voltage Withstand Tested from the factory. It is important not to connect the product when doing an external Dielectric Voltage Withstand Test, since the product has electronics connected to the PE.

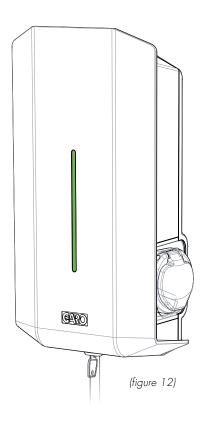


- 14. Carefully place the cover in position from the front. Ensure the inserts on the right hand side fit into the groove and the cover is perfectly positioned all around.
- 15. Adhere language label/labels on the side of the charger, choosing language suitable for the site. See figure 10.
- 16. Securely 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.





- 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.
 - i To confirm that the GLB+ Wallbox is functioning correctly after installation, test with an EVSE test box.



END USER INSTRUCTION

End user instruction

Congratulations on selecting a GARO Wallbox and contributing to a better environment. 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 a qualified installer and comply with local installation regulations.



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.



Do not install or use the GLB+ Wallbox near flammable, explosive, harsh, or combustible materials, chemicals, or vapors.



Use the GLB+ Wallbox only within the specified operating parameters.



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



Do not touch the GLB+ Wallbox's end terminals with fingers or any other objects.



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.



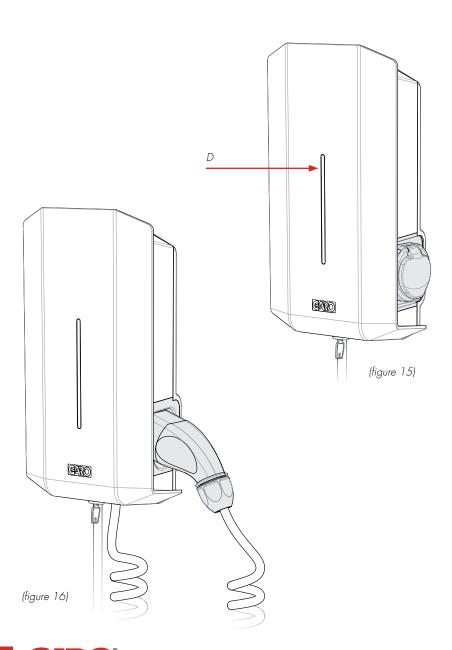
Do not operate the GLB+ Wallbox in temperatures outside its operating range see technical data

- 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.
- Avoid mounting the wall box in direct sunlight. The charging current will be reduced to 16A if the temperature limit inside the wallbox is exceeded. Charging can also be completely turned off should the wallbox be too hot, this is a safety feature to ensure a long life-time of the product.





End user instrucion



Charging electric vehicles

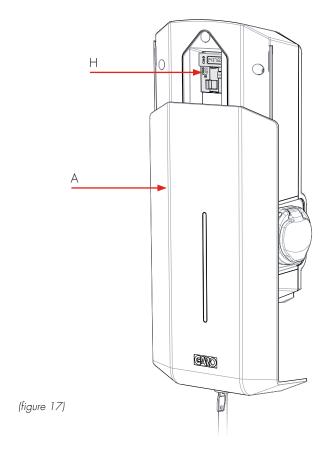
- 1. Connect the wallbox to the vehicle using the cable.
- 2. When charging starts, a pulsing blue light intensity indicates charging in progress.
- 3. Stop charging. As a rule, the wallbox socket and vehicle inlet locks the cable. As a result, charging must be stopped from the vehicle before the cable is removed. Terminate charging according to the vehicles instruction manual, removing connector from car before removing connector at charger end.
- 4. After charging, ensure the cable is either removed or coiled and suspended to avoid damage and eliminate the risk of a trip hazard.

For wallboxes with a socket, it is important to ensure that the current rating of the charging cable is sufficient for the wallbox output current. For example, to charge at 32A, a 32A cable is required.

The status of the wallbox can be obtained from the colour of the Indication light (D):

- Solid green light: charger ready, vehicle not connected
- Shifting blue light intensity: device connected to vehicle, charging in progress.
- Flashing yellow light: check authorisation of RFID-tag.
- Red light: fault, refer to section on Troubleshooting.





Resetting/Conditioning of RCCB or RCBO



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.



Incorrect installation and testing of the GLB+ Wallbox could potentially damage either the vehicle's Battery and/or the GLB+ Wallbox itself.

If the wallbox is equipped with a RCCB or RCBO (H). In the event of overload/earth fault, these can be tripped. These components must also be conditioned every 6 months.

Procedure for resetting/conditioning:

- 1. Disconnect the car.
- 2. Unlock the front cover with the key provided.
- 3. Open the front cover (A) by sliding it downwards.
- 4. Reset the circuit breaker. When conditioning press the test button, then reset the circuit breaker.
- 5. Close the front cover by sliding it upwards.
- 6. Lock the front cover with the key.
- i The front cover must always be locked in its upper position in order to ensure compliance with IP Code IP44.



Care



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.



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 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.
- Avoid mounting the wall box in direct sunlight. The charging current will be reduced to 16A if the temperature limit inside the wallbox is exceeded. Charging can also be completely turned off should the wallbox be too hot, this is a safety feature to ensure a long life-time of the product.

Cleaning the Charging Station

We recommend cleaning the GLB+ Wallbox with a soft dry cloth. Never use abrasive pads or detergents.

Form for annual service and maintenence

Model /ID	Name:	Date:

Outside GLB+

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 fastening/fixing to ground/wall		
Clean GLB outside surface		
Check locking mechanism		
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 from LED:s		
Check Type 2 socket locking function		
(Type 2 socket versions)		





Turn off the electrical power

Inside GLB+

Check point for annual maintenence	Status/ Value	Comment/remark
Check gaskets/strain reliefs		
Check torque for mains terminals		
Check torque for GLB fixing screws		
towards ground/wall		
Check torque for connectors on		
contactors, relays, energymeters		
Check connectors onmain board		
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		

Troubleshooting

Indication	Type of fault	Measure
Constant red light	The residual-current or	Reset. Refer to section on
	personal protective current	Resetting the residual-current
	breaker	or personal protective current
	has been tripped.	breaker.
	Broken cable	Check cable
	Motor lock socket not in	Contact a qualified
	latched position.	electrician.
	Other	Contact a qualified
		electrician.
No indication		Check supply fuse.

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

LED light indication	When	Cause of error
	No car connected	Charging station available and ready for charging
	Car connected	State B: Car connected but not yet ready for charging
Firm	Car connected	State C: Car connected and ready for charging, but charging station requires authentication to start charging (Free Charging = "OFF").
Blinking (3 blinks)	When car connects	The charging station detects that the cable is connected, but is yet to detect the car.
Blinking (30 second blink)	Whenever during operation	Charging station have received command from backend to start charging and is waiting for car to connect.
	Car connected	Charging is ongoing (state C)
Firm	Car connected	Charging is paused (state B)
Blinking	Whenever during operation	Charging station/point is reserved for a specific user
	Whenever during operation	DC fault monitor may be defect.
	Whenever during charging	Residual Circuit Current Breaker (RCCB) triggered.
	Whenever during charging	DC fault detected.
	Whenever during charging	Circuit breaker (MCB) triggered - Overload / short circuit
Firm	Whenever during charging	Type 2 connector motor locking was released/unlocked (the cable can be removed)
	When connecting car	The socket outlet can not engage locking mechanism to lock the connector.
*	When connecting car	Charging cable is damaged.

LED light indication	When	Cause of error
Firm (3 seconds)	When RFID is presented	RFID card is not valid or not approved by backend.
Blinking	Whenever during operation	Charging station/point is deactivated.
Blinking	When RFID is presented	Charging station is verifying the RFID in backend cloud service.
	Charging station and internal meters are powerless.	The upstream circuit breaker have been triggered.
NO LIGHT	Charging station is powerless (no LED light), but the internal meters have power.	The 12V power supply unit has power, but the charging controller/controllers still do not indicate green on LED-light [Ready]. When operating normally, the LED-light should show blinking green.

LED light indication	Measure 1	Measure 2	
	No error Check car settings that can influence charging, i.e gear in parking mode, doors closed, car locked etc. Present a valid RFID to the RFID		
Firm	card reader (look for RFID symbol), start charging via mobile app or contact charging station operator to start charging remote via backend.		
	If the charger is supposed to work without RFID/app authentication, contact the backend operator and ska them to verify that "Free charging" is set to ON.	Have you tried everything without success? Contact installer.	
Blinking (3 blinks)	Connect the charging cable to the vehicle, or verify that cable is connected correctly. If no success, try a different charging cable if available.		
Blinking (30 second blink)	Connect the charging cable, or verify that cable is connected correctly.		
	No error		
Firm	No error	Have you tried everything	
Blinking	No error (contact backend operator if this is not the desired mode)	without success? Contact installer.	

LED light indication	Measure 1	Measure 2
	If the orange "alarm" LED indicator on the charge controller is firm lit, then the charge controller needs to be replaced.	
	Reset the RCCB inside the charging station.	
	Verify that the 8-pole quick connection on the charge controller is properly connected.	
	Verify correct grounding and phases in building electrical system	
	When car is connected: Disconnect charging cable from the charging station, then the LED indication shall return to GREEN. Reconect charging cable to start charging. The charging will restart automatically after 15 minutes if cable is not disconnected.	Have you tried
	Reset circuit breaker.	everything
	Check internal wiring and components for possible reasons for short circuit.	without success? Contact installer.
Firm	Verify allowed maximum current in backend charger configuration (OperatorCurrentLimit).	Firm Red light will always generate
	Check motor locking wiring and connection for damages. Verify that locking mechanism rod and arm are not stuck.	an alarm to the backend operator.
	Verify that the connector is properly inserted into the socket. Light force may be applied.	
	Verify that there are no foregin objects inside the socket outlet, hence blocking the connector.	
	Verify that the motor locking is properly installed and without visual damages.	
	Check charging cable and connectors for damages. Test with another cable if available.	
	Verify that CP and PP connection pins and wires are not loose or having bad connection.	
	Verify grounding of charging station.	



LED light indication	Measure 1	Measure 2
Firm (3 seconds)	Verify that the RFID token is approved by backend (contact backend operator).	
	Verify that the RFID token is stored in charger internal memory / whitelist (requires certified technician)	Have you tried everything without success? Contact installer.
Blinking	Contact backend operator and ask for remote activation.	
Blinking	No error	

LED light indication	Indication / fault code in Web UI	OCPP fault code
	IDLE (available) - (A) Vehicle not connected	
Firm	IDLE (available) - (B) Vehicle connected not ready	
	IDLE (available) - (C) Vehicle connected ready	
	IDLE (available) - (A) Vehicle not	
Blinking (3 blinks)	connected	
	AUTHORIZED (available) - (A) Vehicle	
Blinking (30 second blink)	not connected	
	CHARGING (occupied) - (C) Vehicle connected ready	
Firm	CHARGING (suspendedEV) - (B) Vehicle connected not ready	
		Reserved
Blinking		Reserved
	Actuator unlocked while charging	connectorLockFailure
Firm	Plug locking failed	connectorLockFailure
	Possible CP and PR wiring issue.	otherError
	UNAVAILABLE (unavailable)	Unavailable
Blinking		



Warranty form /Garantiformulär

GLB+ Model:		
M no:		
	Electrical installation data	
Group fuse/Gruppsäkring (A):		
Supply cable dimension/Kabelarea:		
	Function Test	
Sign Installer/Signatur installatör:		
Company Name/Företagsnamn:		
Owner/Customer Name/Ägare/		
kundens namn:		
Installation address:		

Warranty Conditions

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).
- 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).
- 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.

Sverige/Sweden

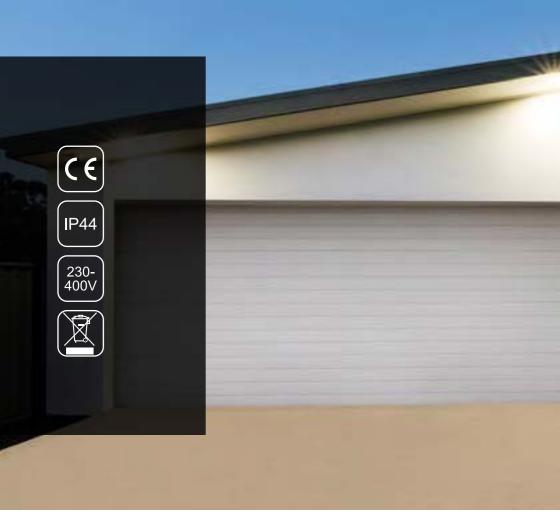
Garantivillkor enl ALEM 09.

OBS! Fullständigt ifylld garantiblankett krävs.

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









GARO AB

Box 203, SE-335 25 Gnosjö Phone: +46 (0) 370 33 28 00 Fax: +46 (0) 370 33 28 50

info@garo.se

garo.se

