EV Charger
Operation Manual

Contents

1 Product introduction

GAC EV Charger is mainly used as a supporting AC charging device for GAC electric vehicles, it's also compatible with other electric vehicles . The AC Charger is composed of pile body, gun rack, mounting backplane, mounting column (optional), etc. Users can start charging by tapping RFID card. It is applicable to the installation and used in GAC's direct-operated charging stations, GAC's dealer charging stations, private parking spaces, real estate residential quarters, commercial building parking lots and other places.

Appearance drawing

2 Reference standards

The EV charger meets but is not limited to the following standards:

1. IEC 60721-2-2 : 1988 Classification of environmental conditions of electric and electronic products—Environmental conditions of nature—Precipitation and wind
2. IEC 60721-2-5:1991 Classification of environmental conditions—Part 2:Environmental conditions appearing in nature—Section 5:Dust,sand,salt mist,MOD
3. IEC 61000-4-2:2001 Electromagnetic compatibility(EMC).Part 4-2:Testing and measurement techniques—Electrostatic discharge immunity test,IDT
4. IEC 61000-4-3:2002 Electromagnetic compatibility(EMC)—Part 4-3:Testing and measurement techniques—Radiated,radio-frequency,electromagnetic field immunity test,IDT
5. IEC 61000-4-4:2004 Electromagnetic compatibility—Testing and measurement techniques—Electrical fast transient/burst immunity test,IDT
6. IEC 61000-4-5:2005 Electromagnetic compatibility—Testing and measurement techniques—Surge immunity test,IDT
7. IEC 61000-4-11:2004 Electromagnetic compatibility—Testing and measurement techniques—Voltage dips,short interruptions and voltage variations immunity tests,IDT
8. IEC 61851-1-2017 Electric vehicle conductive charging system-Part 1： General requirements
9. IEC 62196-1-2014 Plugs,socket-outlets,vehicle connectors and vehicle inlets-Conductive charging of electric vehicles -Part 1:General requirements
10. IEC 62196-2-2011 Plugs,socket-outlets,vehicle connectors and vehicle inlets-Conductive charging of electric vehicles-Part 2: Dimensional compatibility and interchange ability requirements for a.c. pin and contact-tube accessories
11. IEC 61851-1-2017 Electric vehicle conductive charging system-Part 1:General requirements
12. IEC 61851-2-2018 Electric vehicle conductive charging system-Part 21-2:Electric vehicle requirements for conductive connection to an AC/DC supply - EMC requirements for off-board electric vehicle charging systems

3 Technical parameters

Product type		Stand-alone version
Function	**Start charging mode**	Tap the RFID card
	Display mode	Light bar + Indicator
	Communication mode	None
	Metering mode	Class 1 (onboard)
	Leakage protection mode	Type A + DC 6mA (onboard)
Appearance and structure	**Number of charging guns**	1 pcs
	Rated charging current	32A
	Charging cable length	5 m
	Installation method	Wall mounted/floor stand (optional)
	Protection configuration	Overvoltage/undervoltage protection, over-current protection, leakage protection, grounding protection, lightning protection, emergency stop protection, overtemperature protection, output relay adhesion detection protection
	Outline dimension (height * width * thickness)	382.9mm*193.5mm*131.7mm
Electrical indicators	**Rated input voltage**	AC 110 V or 220 ~ 240 V
	Rated output voltage	AC 110 V or 220 ~ 240 V
	Input frequency	50/60Hz
	Applicable scenarios	Indoor/outdoor

Product type		Stand-alone version
Operating environment	Operating temperature	-40°C~+55°C
	Operating altitude	⩽ 2,000 m
	Protection level	IP55
	Charging connection mode	Connection mode C
Reference standards		IEC 62196-1-2014, IEC 62196-2-2011 IEC 61851-1: 2017, IEC 61851-21-2: 2018

4 Basic functions

4.1 Connection mode

The charging pile adopts connection mode C described in IEC 62196, with a fixed charging gun at the end of the pile.

4.2 Display function

(1) Normal charging

S/N	Function status	Display color	Display mode
1	Stand by	Ice blue	Always ON
2	Inserting the gun	Green	Flashing
3	Identification success	Ice blue	Flashes 3 times
4	Identification failed	Yellow	Flashes 3 times
5	Charging startup	Green	Always ON
6	Charging in progress	Green	Marquee gradient
7	Charging alarm	Red	Flashing or always ON, the table below for details

(2) Abnormal charging

S/N	Fault type	Fault name	Indicator color, display mode
1	Shutdown fault	Electric leakage	RED always on
2		Ungrounded	
3		Emergency stop	
4		Over current	
5		Relay adhesion	
6		Metering fault	
7		Over voltage	RED flashing
8		Under voltage	
9	Non-shutdown alarm	Level 1 Over temperature	RED flashing

4.3 Charging mode

The user starts and stops charging by tapping RFID card.

4.4 Charging control

The charging pile sends a PWM square wave signal with a certain duty cycle to the electric vehicle. By correctly judging the various state of the vehicle-pile connection, the charging switch is closed to perform the charging process according to the connection state and control timing sequence. When an abnormal status occurs, the charging circuit is actively cut off.

4.5 Safety protection

(1) Emergency stop charging function

In case of emergency, press the emergency stop button to disconnect the charging output.

(2) Overvoltage and undervoltage protection

When the input voltage is overvoltage or undervoltage, the charging pile will disconnect the charging output.

(3) Overload, short circuit, leakage protection

In case of overload, short circuit and electric leakage, the charging output of the

charging pile will be cut off immediately; Apply Type A residual current protector to ensure personal safety.

(4) Lightning surge protection

The charging pile is built-in with lightning surge protection circuit, which has the function of lightning protection to ensure the safety of people, device and vehicles.

(5) Overtemperature protection

The charging pile is built-in with temperature monitoring module. When the internal temperature of pile body exceeds the threshold value, the power will be reduced by steps until it stops charging and reports the fault information.

(6) Power failure protection function

The charging pile has the function of automatic storage of charging data in case of abnormal power failure.

5 Instructions for charging operation

Step 1. Stop and turn off the vehicle. Remove the charging gun and connect it to the charging port of the vehicle to ensure that the connection is in place.
Step 2. Tap RFID card to start charging.
Step 3. Tap RFID card when you want to stop charging.

6 Common problems and solutions

(1) No response after tapping RFID card for a long time

1) Is the gun insertion action performed correctly? Before tapping the card, make sure the connection of the gun is correct. At this time, the car piles enter respectively. In the pre-charging state, if the gun is not charged for a long time, it is necessary to unplug and re-plug the gun, then start charging.
2) Is tapping the card in the right area? Cards must be tapped in designated area.
3) Is tapping the distance between the card and the card reader area too far? When the card is tapped, it should be close to the area.

4) Is tapping the card time too short? The card should stay in the card reader area for 1~2s to ensure the device reads the card successfully.

(2) The status of the indicator status is incorrect after the gun is inserted

1) Re-plug the charging gun to ensure that the plug-in gun is connected correctly.
2) Pay attention to the indicator light and feedback the situation with the after-sales personnel. For details, please refer to "4.2.1 Definition of Indicator Light Status".

(3) After tapping the card to start charging, there is no charging current for a long time

1) Confirm whether the preparations for charging the vehicle are ready? Such as whether the vehicle is turned off.
2) Tap the card to stop charging, connect the gun again and tap the card again to start charging.

(4) After charging, the electronic lock cannot be unlocked

Press the remote control unlock button of the electric vehicle to unlock the vehicle. If it cannot be unlocked automatically, you can use the mechanical unlocking function of the car socket.

7 Charging precautions

(1) Before using the charging pile, please make sure that the device is well grounded to avoid any casualties caused by electric shock.
(2) Never modify, install or alter any parts of a charging pile under any circumstances.
(3) Please make sure the input voltage, frequency and other conditions meet the product requirements before the charging pile is powered on.
(4) Before starting charging, turn off the power supply switch of the vehicle.
(5) It is forbidden to pull out the charging gun during the charging process.
(6) Duringe charging, the vehicle shall not move, the personnel shall stay away from the charging site as far as possible.
(7) In case of emergency during the charging process, please press the red emergency stop button at the lateral side of the charging pile and observe whether there are any other abnormalities in the charger.

8 Installation and use guide

8.1 Unpacking inspection

Visually inspect the appearance and check whether the AC charging pile is damaged by collision during delivery. If there is some damage, please immediately notify the carrier and keep the photos. Check whether the attached accessories are complete according to the packing list. If there is any missing or errors, please make records and contact the company in time.

8.2 Packing list

8.2.1 Packing list of wall-mounted model

S/N	Product	Quantity	Remarks
1	Smart EV Charger	1 set	
2	Operation manual	1 copy	
3	Wall-mounted hanging board	1 set	At the bottom of pile body
4	Gun rack	1 set	
5	Φ8 Plastic expansion tube (wall plug)	4 pcs	
6	M6 stainless steel round head self-tapping screw	4 pcs	
7	Φ6 Plastic expansion tube (wal plug)	3 pcs	
8	M4 stainless steel round head self-tapping screw	3pcs	
9	RFID card	3pcs	
Note: The instruction manual, certificate of quality, packing list and other accessories are separately placed in the ziplock bags，and ancillary 3 RFID cards .			

8.3 Installation

1) Install the device on solid brick wall, concrete wall or metal support.
2) The installation method and position must be suitable for the weight and size of the charging pile.
3) Install the device in a well-ventilated place.
4) Install a separate electric leakage circuit breaker (⩾40A) outside the pile.

Self-provided installation tools such as:
Impact drill, insulated adjustable wrench, Phillips screwdriver, diagonal pliers, wire crimping pliers, multimeter, etc.;

According to the requirements of the on-site environment, arrange the power line, install the wall-mounted backplane or column, fix the charging pile, install the gun rack, complete the wiring of power supply and grounding wire, and power on for commissioning.

See 8.4 and 8.5 for the dimensions and installation drawings of wall mounted and floor mounted respectively.

8.4 Wall-mounted model’ s dimensions and installation drawings

The internal structure diagram of the device is only for schematic purposes. Please refer to the received material.（Size unit: mm）

8.4.1 Wall-mounted installation (as shown in Fig. 1)

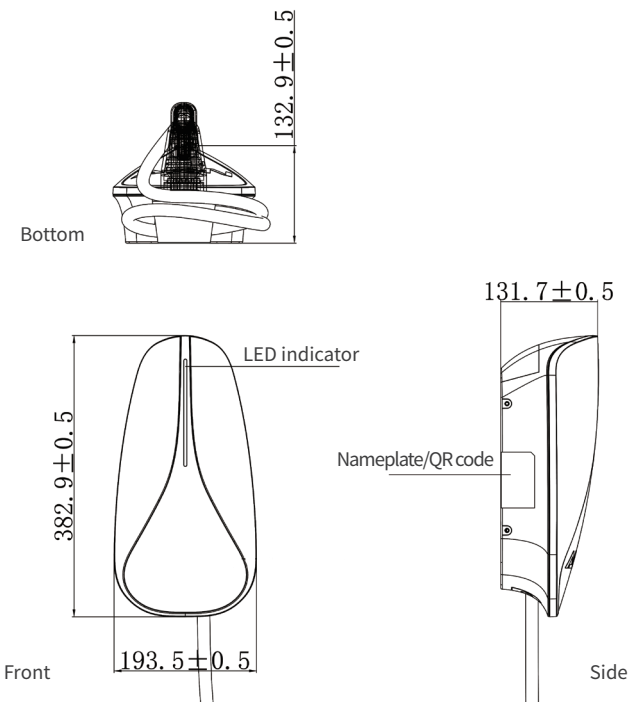

Fig. 1: Outline dimension drawing of wall-mounted installation

8.4.2 Install the wall-mounted hanging board (as shown in Fig. 2)

1) Installation height: the bottom surface of the wall-mounted hanging board is about 1,300 mm away from the ground;

Prepare 4* ϕ8*40 mm wall plugs and 4* M6*40 mm stainless steel round head self-tapping screws; the wall plug is shown in the following figure;

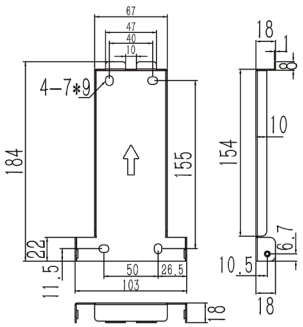

Fig. 2: Outline dimension drawing and installation opening dimension drawing of wall-mounted hanging board

Fig. 3: Schematic diagram of wall plug

2) According to the position of the fixing hole for the wall-mounted hanging board (as shown in Fig. 2), use an electric drill to drill 4 * round holes with a diameter of 8 mm and a depth of 40 mm on the wall;

Install the wall plug: put the wall plug into the drilled hole, and then use a hammer to drive the wall plug into the wall until it is flush with the wall surface;

3) Install the hanging board: as shown in Fig. 4, align the hole position of the wall-mounted hanging board with the drilled hole, and then lock it with M6*40 mm stainless steel round head self-tapping screw;

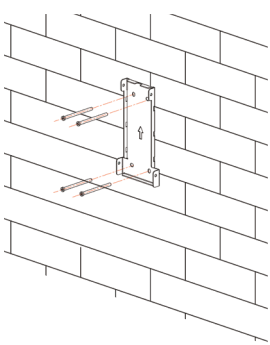

Fig. 4: Wall-mounted hanging board installation diagram

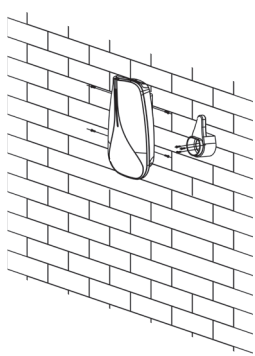

Fig. 5: Wall-mounted pile body installation diagram

4) Hang the charging pile onto the wall-mounted hanging board, and then fix the charging pile onto the wall-mounted hanging board with screws (M4*15 mm stainless steel combination screws) from both sides, as shown in Fig. 5.

8.4.3 Install the gun rack

1) Installation height: the bottom of the gun rack is about 1,300 mm away from the ground; the installation position relative to the pile body is shown in the Fig. 7 below.

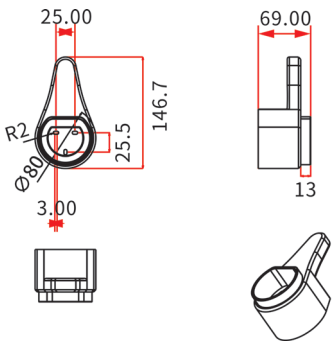

Fig. 6: Installation outline dimension drawing of gun rack

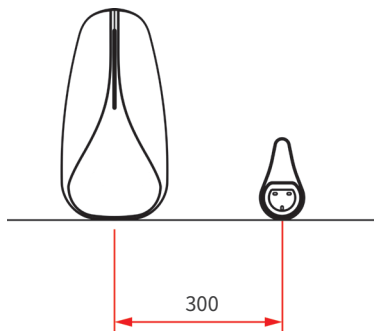

Fig. 7: Installation position of gun rack relative to pile body

2) Prepare 3* ϕ6*40 mm wall plugs and 3* M4*40 mm stainless steel round head self-tapping screws; the wall plug is shown in the figure below.

Fig. 8: Schematic diagram of wall plug

3) According to the installation outline dimension drawing of the gun rack (as shown in Fig. 6), use an electric drill to drill 3* round holes with a diameter of 6 mm and a depth of 40 mm on the wall;
Install the wall plug: put the wall plug into the drilled hole, and then use a hammer to drive the wall plug into the wall until it is flush with the wall surface;
4) As shown in Fig. 5, align the hole position of the gun rack with the drilled hole, and lock it with M4*40 mm stainless steel round head self-tapping screw.

8.5 Mounting column installation

The internal structure diagram of the device is only for schematic purposes. Please refer to the received material. (Size unit: mm)

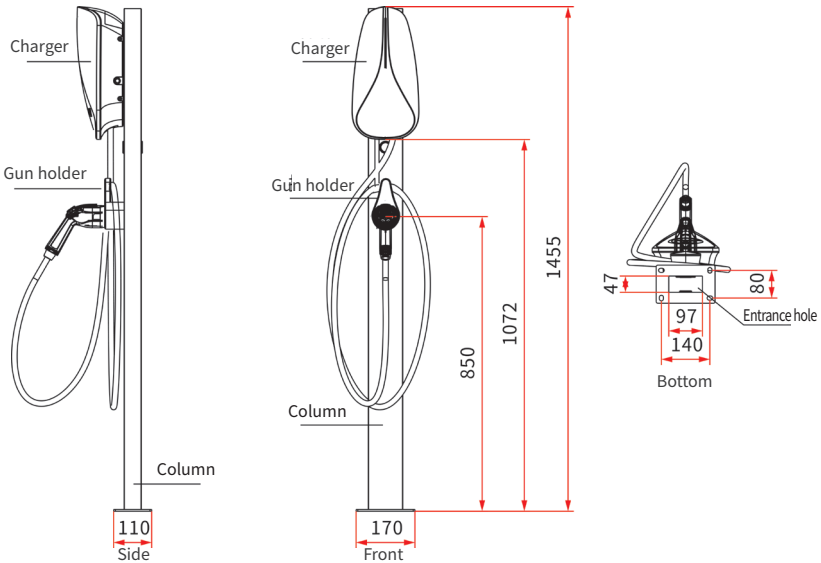

Fig. 9: Mounting column installation diagram

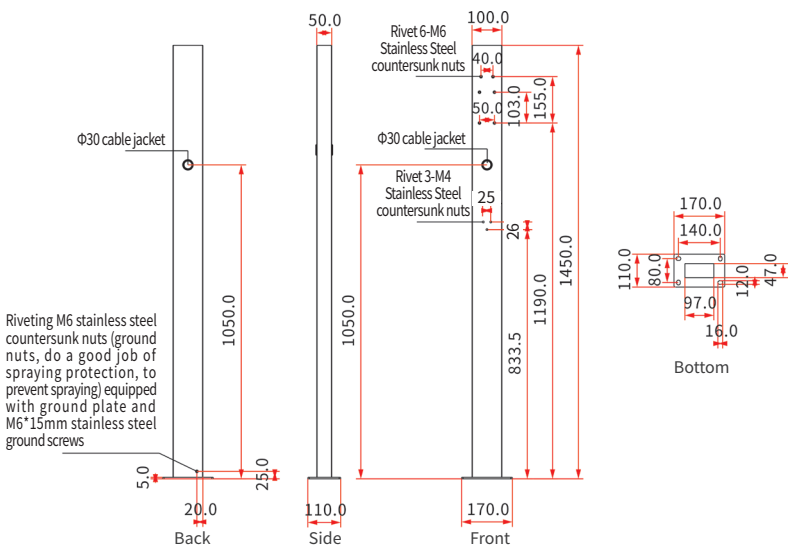

Fig. 10: Column size diagram

1) Insert four M10 stainless steel bolts (to be prepared by yourself), the bolts must be perpendicular to the foundation surface, the depth of the bolts should be not less than 150mm, and the exposed length of the embedded bolts should ensure that 3-4 silk teeth are exposed after the nuts are tightened. Flat gaskets and spring gaskets are needed when the floor column is fixed.
2) After wearing the cable, fix the column firmly.
3) Fix the hanging plate on the column with M6*15mm stainless steel combination screws.
4) Fix the gun holder on the column with M4*12mm stainless steel combination screws.
5) Installation of charging equipment; Take the charging device out of the packing case, fix the device to the mounting plate using M4*16mm stainless steel combination screws through the corresponding screw holes on the side of the device. As shown in Figure 11.

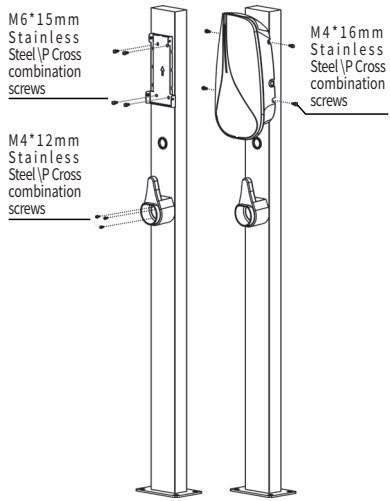

Fig. 11: Installation diagram

9 Electrical connection

9.1 Wiring

For GAC's exclusive intelligent charging pile, the factory standard configuration is a 0.85 m power incoming line (as shown on the left of Fig. 12). During the on-site installation, a leakage circuit breaker (⩾40A) shall be equipped. During wiring, the power incoming line (L and N) shall be connected to the outgoing terminals of the corresponding switch.

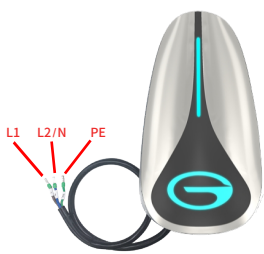

Fig. 12: Schematic diagram of power incoming line

10 Device debugging

Step 1: Check the incoming line, wire and waterproof cable lock are connected reliably and locked well.

Step 2: Use a multimeter to measure the existence of a short circuit; Measure the power supply voltage and check if is within the permitted input voltage range.

Step 3: Power up the device.

Step 4: Observe LED indicator, confirm the device shall be in normal working status.


GAC