Athena

Main Features

- Over 94% peak efficiency & 200A high output current.
- Installation space-saving: support wall-mounted installation, only 350mm thickness of the wall box.
- Connect to any backend based on OCPP 1.6J protocol.
- Equipped cable management system. (Optional)

Specifications

General Information	
Input Rating	480Vac±10%, 3 phases, 50/60Hz, L1+L2+L3+PE
Input Current Rating	AC 90A
Power Factor	≥0.98 @ Full Load
Efficiency	≥94% @ Full Load (Peak)
Output Interface	CCS1+CCS1
Output Power	60kW max.
Output Voltage	200-1000Vdc
Output Current	200A max./connector
User Interface	
Display	7-inch touch screen
Support Language	English (Other languages available upon request)
Button and Switch	Mechanical Buttons & Emergency Button
RFID Reader	ISO/IEC 14443 A/B, ISO/IEC 18092, IEC/ISO 15693
Communication	
Network Interface	4G, Wi-Fi, Ethernet
Protocol (EVSE&Backend)	OCPP 1.6J
Protocol (EVSE&EV)	DIN 70121, ISO 15118
Environmental	
Operating Temperature	-22°F to 131°F(Derating from 122°F)
Storage Temperature	-40°F to 158°F
Humidity	5% to 95% no condensation
Altitude	≤6561.28' above sea level
Mechanical	
NEMA enclosure	Type 3R
IK Rating	IK10 (Screen is IK08)
Cooling	Forced Air
Charging Cable Length	14.8'
Dimensions (WxHxD)	2.46*2.46*1.25'
Weight	Approx. 275.58 lb (excluding power modules)
Installation	Wall mounting, Pole mounting (Pole is optional)
Certification and standards	
Standards and compliance	FCC part 15 Class A, UL 2202, UL 2231-1, UL 2231-2, Energy Star
Certification	TUV, FCC, Energy Star

*Cable Management System and Pole are optional.
*Cable Management System will be packaged separately from EVSE.

Note: Pictures are for reference only, please prevail in kind.

Star Charge®

Charging infrastructure

Athena 60 **Installation Manual**

Version Number/Document Number：1.0/DCY0626TYAZEN

Star Charge Americas Corp

Legal Statement

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Content

1. General

1.1 Document purpose

This document aims to guide the construction personnel to complete the on-site installation of Athena 60 DC charger.

1.2 Scope of application

1.2.1 This manual applies to the following equipment type

Athena 60 DC EVSE.

1.2.2 This manual applies to the following personnel

Professional electrical equipment installation personnel.

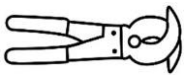
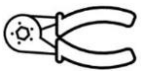
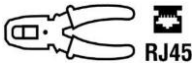
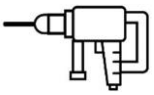
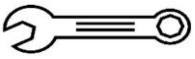
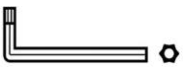
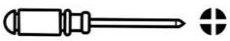
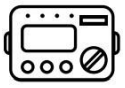
1.3 Definition of related warning symbols

No.	Symbol	Content
1		**"Electrical hazard" symbol indicates danger** Failure to pay attention to the procedures, practices or improper implementation may cause injuries or death. Only after the conditions referred to are fully understood and fulfilled, can the operation accompanied the "Electrical hazard" symbol be performed.
2		**"Caution" symbol indicates danger** Failure to pay attention to the procedures, practices or improper implementation may cause product damaged. Only after the conditions referred to are fully understood and fulfilled, can the operation accompanied the "Caution" symbol be performed.
3		**"Tips" symbol indicates operation tips or useful information** Operation tips and useful information shall be marked with "Tips". It does not contain information about warnings for dangerous functions or harmful functions.
4		**"Waste Disposal" symbol indicates electronic and electrical waste** The logo is located on the product, in the instruction manual or on the packaging, indicating that electrical and electronic equipment and its accessories should be disposed of separately from ordinary household waste. The material can be reused according to its mark. You can make a great contribution to environmental protection by reusing old equipment and materials or other forms of reuse.

Table1 Definition of warning symbols

2 Preparation before installation

2.1 Installation tools

No.	Category	Name	Uses	Picture
1	Cable preparation tools	Electrician knife	Stripping insulation layer	
2	Cable preparation tools	Cable cutter	Cable cutting	
3	Cable preparation tools	Crimping pliers	Terminal crimping	
4	Cable preparation tools	RJ45 Network crimping pliers	RJ45 connector crimping	
5	Installation tools	Percussion drill	Drilling hole	
6	Installation tools	Open end wrenches (full set)	Installing and removing nut	
7	Installation tools	Allen wrench (full set)	Installing and removing screw	
8	Installation tools	Torx screwdriver (full set)	Installing and removing screw	
8	Installation tools	Phillips screwdriver (PH2)	Installing and removing screw	
9	Installation tools	Hammer	Striking	
13	Measuring instrument	Spirit level	Horizontal measurement	
14	Measuring instrument	Tape measure	Distance measurement	
15	Measuring instrument	Multimeter	Measuring voltage, current, etc.	
16	Measuring instrument	Megger	Measuring resistance	

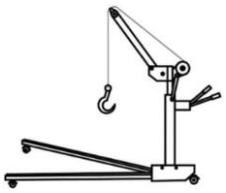
17	Hoisting instrument	Hand crane	Equipment hoisting	

Table 2 Installation tools

Note: The above tools should be selected according to the actual situation on-site.

2.2 Construction materials

2.2.1 Cable terminals

(1) 2AWG copper cable corresponding terminal: TLK35-8 (Recommended);

(2) 5AWG copper cable corresponding terminal: TLK16-8 (Recommended);

(3) Network cable (cat6a): RJ45 connector (if Ethernet communication is required).

2.2.2 Other materials

Heat-shrinkable tube, insulating tape and other auxiliary materials used in the production of cable copper terminals.

2.3 Requirements for installation personnel

(1) The installation personnel entering the construction site shall comply with the construction site safety management regulations.

(2) The installation personnel entering the construction site must wear a safety helmet (fasten your chin strap, and ensure the safety helmet is intact), and shall not wear unsafe clothes such as loose clothing, slippers, etc. It is strictly forbidden to work after drinking or smoke at the construction site.

(3) The installation personnel at heights must wear safety helmets, fasten safety belts, wear non-slip shoes and tie up working tools.

(4) If there is heavy dust on the construction site or painting work is conducted, the installation personnel must wear protective masks.

(5) Do not enter dangerous areas such as hoisting areas or the places under the position of vertical operation, and do not strike the objects.

(6) Try to stay away from all kinds of mechanical equipment and electrical circuits to prevent mechanical and electrical damage.

(7) The installation personnel who use portable power tools must master their use skills and precautions, wear insulating shoes and insulating gloves, and the metal shell must be grounded.

(8) For temporary electricity utilization on the construction site, the electrical box must be kept intact, and damaged electrical components must be replaced in time.

(9) Rubber cables shall be used for temporary wires on site, plastic flexible cord shall not be used, and wires shall not be plugged directly into sockets.

(10) Try to avoid live-wire work.

(11) Worker shall be concentrated when entering borders such as foundation pits and roofs and various openings, to prevent falling from a height.

(12) Pay attention to the conditions of the ground with iron nails and steel bars, to prevent other injuries such as piercing, touching, hanging and falling.

(13) The construction protection facilities, safety signs, warning signs and other items at the site shall not be removed without authorization.

(14) It is required to strengthen the on-site maintenance of construction equipment, maintain the intact rate, and prevent from running them with faults or under overload.

2.4 Handover of construction drawings

After arriving at the site, the installation personnel shall first ask for the civil construction drawings of installation site, and check whether the cables and concrete foundations of each equipment meet the requirements.

2.5 Inspection of electric power cables

The recommended type of the incoming cable is 2AWG (copper core) for phase line and 5AWG (copper core) for PE line. The cable type mentioned in this manual is only a suggestion. The installation personnel remain responsible for determining the correct cable and compliance with applicable standards and regulations.

2.6 Requirements for concrete foundation (only for pole-mounted installation)

If there is no suitable place for installation on site, it is recommended to build a concrete foundation. The concrete foundation needs to be poured before the charger is installed. The size of the concrete foundation is 450mm*500mm*500mm, and the buried depth of the foundation is 500mm. The dimension of concrete foundation can be adjusted according to customer’s requirements and actual conditions on site. The top view is shown in Figure 1 and the three-view drawing of construction is shown in Figure 2. The concrete foundation inspection requirements are as follows:

(1) Pay attention to the level correction when pouring the foundation.

(2) The foundation installation is higher than the ground level, and necessary maintenance spaces are reserved on site depending on the specific situation.

(3) The foundation is filled with C25 concrete.

(4) Reserve an outlet hole on the foundation for cable, as shown in the Figure1.

(5) After the foundation is completed, use a spirit level to test the levelness.

(6) According to the drawing positioning, 8 screws of M10*150 are pre-embedded in the concrete foundation in advance and expose 30 ~ 40mm on the upper surface of the concrete foundation.

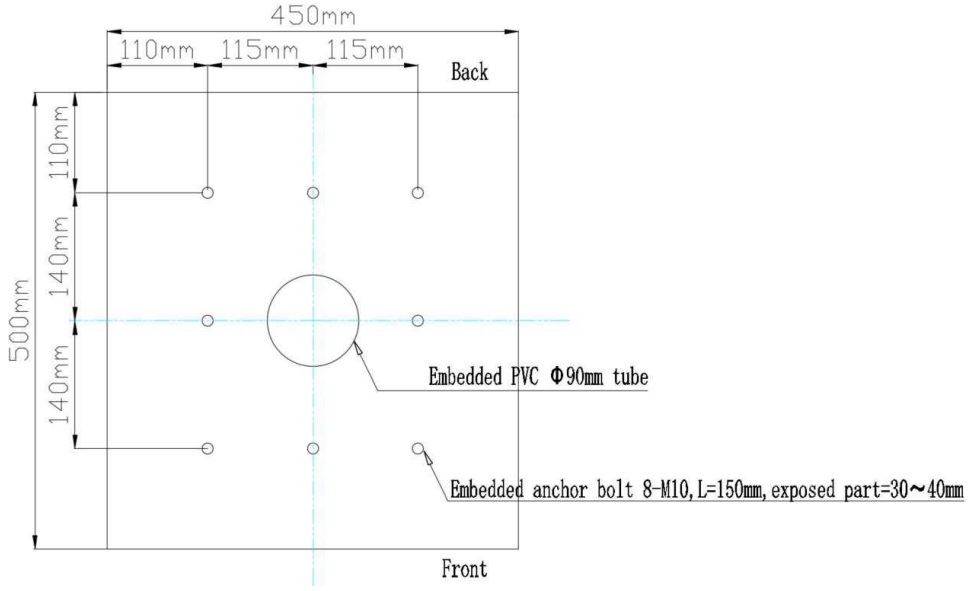


Figure 1 Top-view drawing of concrete foundation

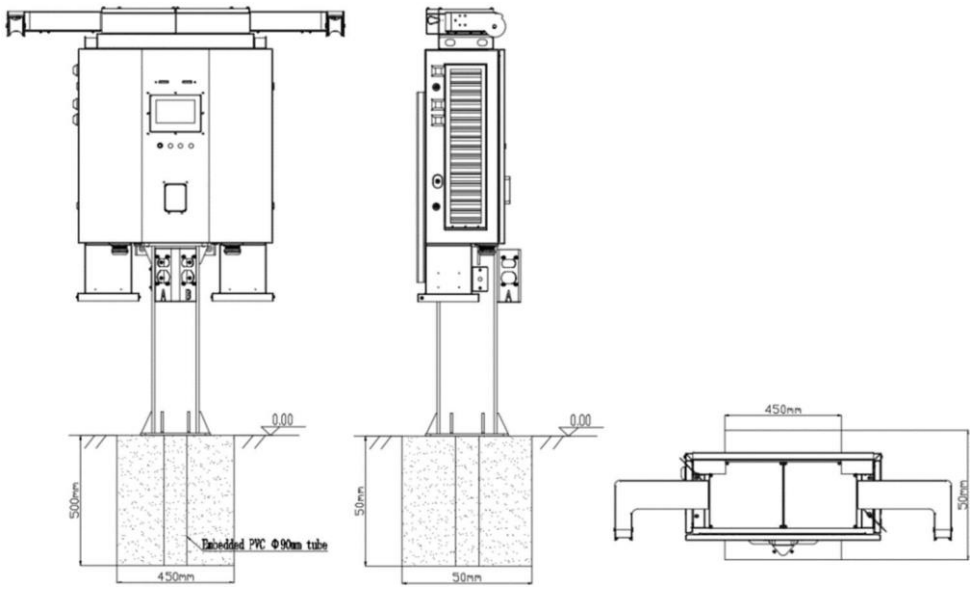


Figure 2 The three-view drawing of construction

2.7 Equipment spacing requirements

(1) Maintenance distance requirements.

When the back or side of the charger to be installed is near a wall or other obstacles, a certain maintenance distance needs to be left, please refer to Figure 3 and Figure 4 as follows:

Unit: mm

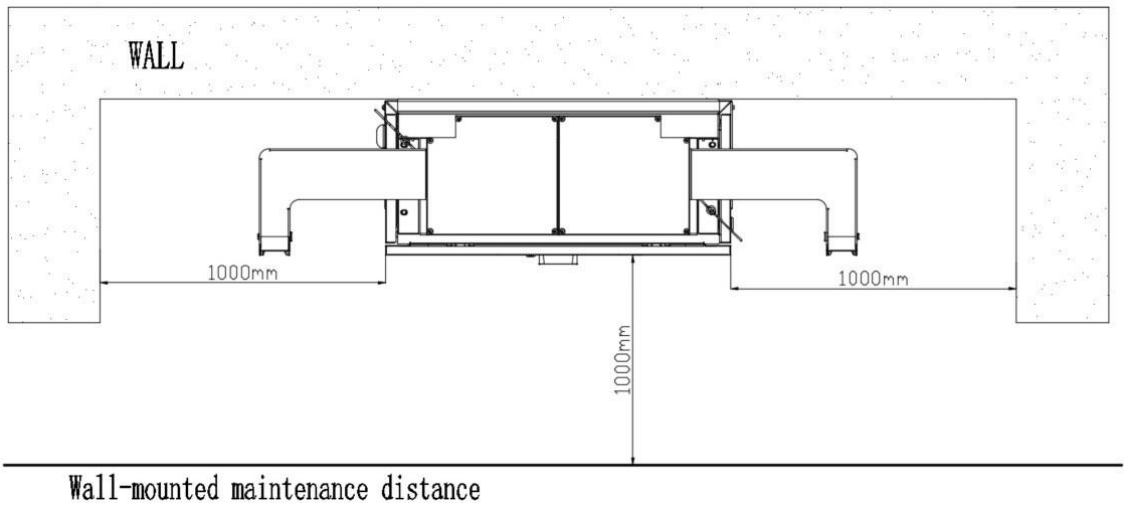


Figure 3 Wall-mounted maintenance distance diagram

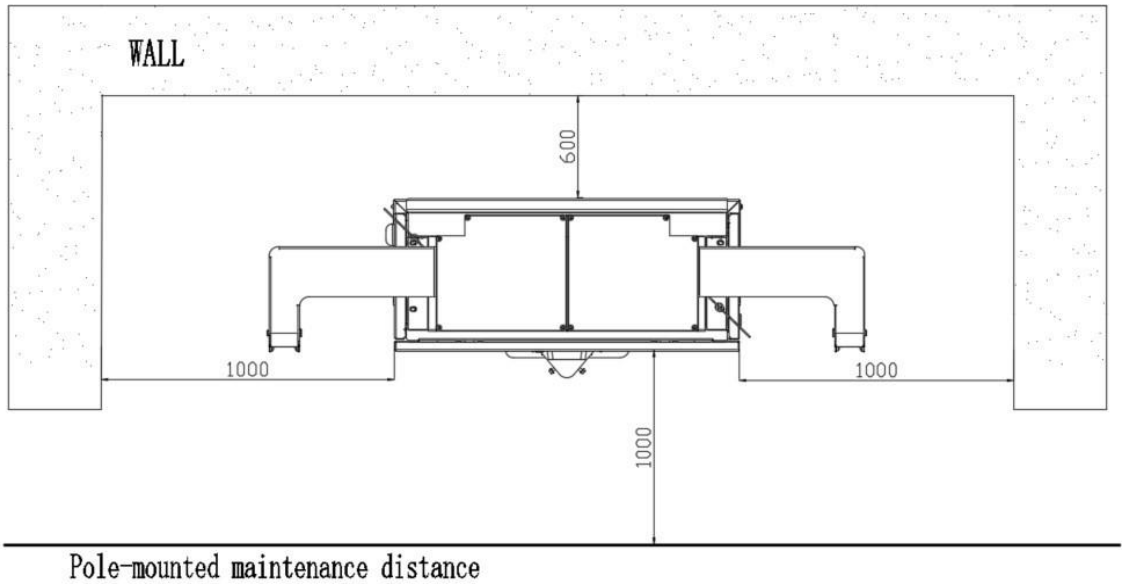


Figure 4 Pole-mounted maintenance distance diagram

(2) Distance requirement for parking spaces

When the charger is installed in the middle of a parking space or a parking space with back to back, it is suggested to set aside 1200mm space between the wheel stop and the charger to facilitate the use of the charger, as shown in Figure 5.

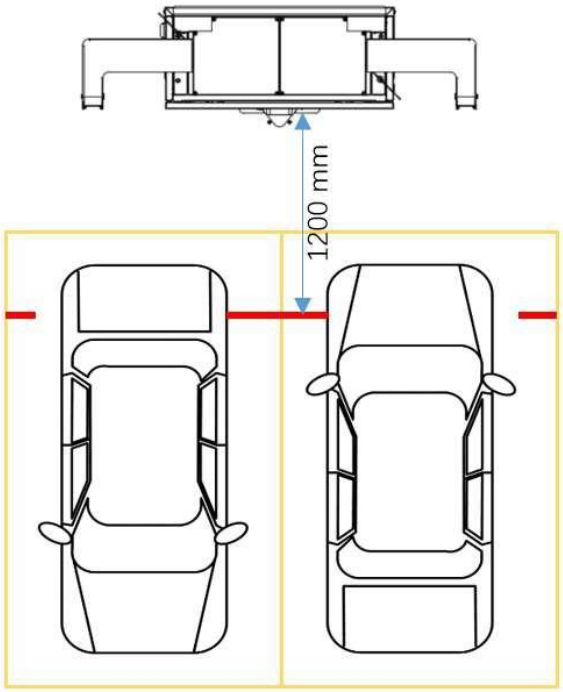


Figure 5 Distance requirements for parking spaces

2.8 Current and distribution capacity requirements

The power grid is 3-phase system (L1 + L2 + L3 + PE), the phase-to-phase voltage is 480V(±10%), and the frequency is 50 ~ 60Hz. If the charger is running at full power, the power grid capacity should be≥70kVA. It is recommended that the MCCB should be Ue:480Vac, In: 100A, thermo-magnetic type, Icu ≥Ics ≥25kA, 3P.

2.9 Grounding/insulation resistance requirements

(1) Check the civil grounding resistance test report to ensure that the resistance of the grounding grid produced on site must be ≤ 10Ω.

(2) Check the civil insulation resistance test report to ensure that the insulation resistance of the cable is ≥10MΩ.

Note: the above requirements are the minimum requirements of the equipment. The specific standards shall be subject to local laws and regulations.

3. Installation steps

3.1 Unpacking and unpacking inspection

3.1.1Equipment unpacking list

Name	Package	Configuration	Package Size(mm)	Weight(kg)	Attachment paper	Parts List
DC charger	Wooden box	Standard	1250*1110*770（W*D*H）	177	1*Certificate of conformity 1*Factory inspection report 1*User manual	1*Mounting bracket 2*Door brace 2*Key 2*Connector holder 8* Screw M5 5* Expansion bolt M8 8* Expansion bolt M6
Power module		Standard				
CMS（Charging cable management）assembly	Wooden box	Optional	800*600*510	80		1* Adapter plate 2*Main part 4*Screw M8 8*Screw M6
Pole	Wooden box	Optional	550*472*915（W*D*H）	24		7* Screw M8

Table 3 Equipment unpacking list

3.1.2 Inspection of unpacking

(1) Check the packing list and equipment quantity.

(2) Check the equipment nameplate information.

(3) Check whether the accompanying documents are complete.

(4) Check whether the spare parts and accessories are complete.

(5) Check the delivery inspection report and certificate of conformity.

(6) Check whether the appearance of equipment is good, and whether there are any deformations, bumps, stains and other defects.

3.1.3 Precautions for unpacking

(1) The installation shall unpack the package in the presence of the owner, and fills in the unpacking record in detail. See Appendix 1 for the unpacking record sheet.

(2) After passing the unpacking inspection, the owner's representative shall sign on the equipment unpacking record sheet for confirmation.

(3) If any problems are found in the process of equipment unpacking and acceptance, make records and wait for the negotiation between the owner and the supplier.

3.2 Charger installation

3.2.1. Wall-mounted installation

The dimensions of wall-mounted installation are shown in Figure 6.

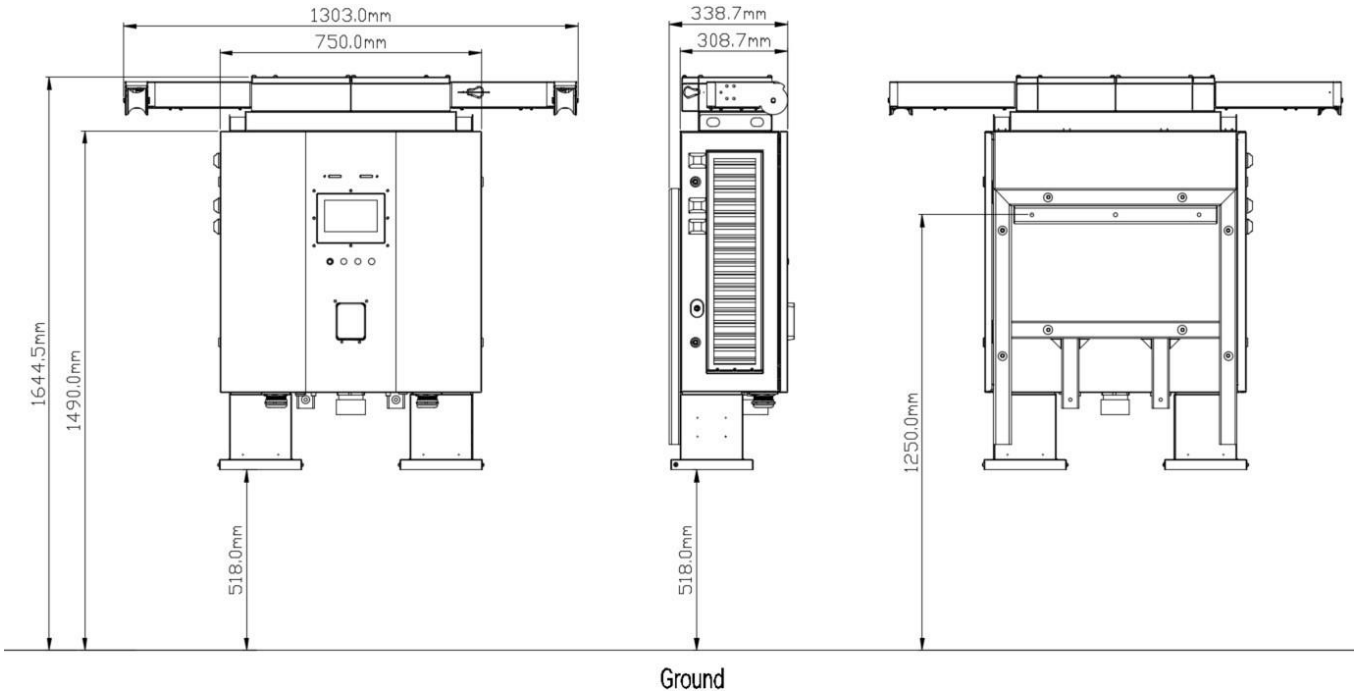


Figure 6 Wall-mounted installation dimensions

Wall-mounted components are shown in Figure 7.

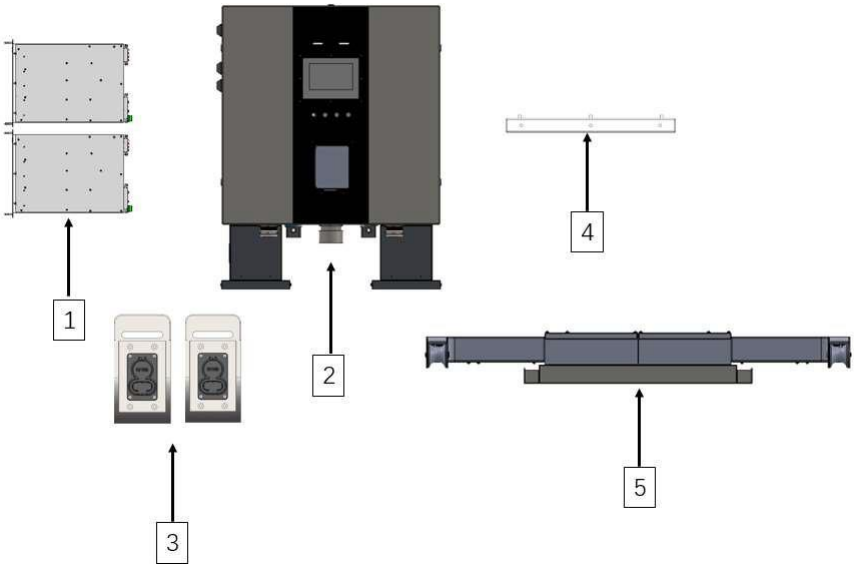


Figure 7 Wall-mounted components

①：30kW Charging module, 2 set

②：Charger main body, 1 set

③：Connector holder, 2 set

④：Mounting bracket, 1 set

⑤：CMS (Charging cable management system), 1 set

Installation steps:

(1) Select the load-bearing wall where the charger is to be installed, locate the hole position of the wall-mounted charger, and mark the position of the hole with a pencil, as shown in Figure 8.

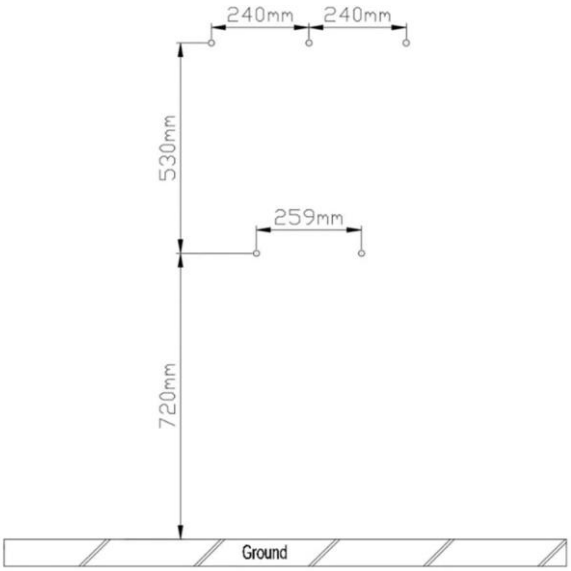


Figure 8 Marking the installation hole position

(2) Select drill bit of Ø 12mm and use the percussion drill to make holes at the marked hole position (Note: the drilling depth is about 70mm). Take out the black caps on the mounting bracket and use M8 × 50mm expansion screws installs the mounting bracket on the wall through the three holes on the upper part and tighten it.

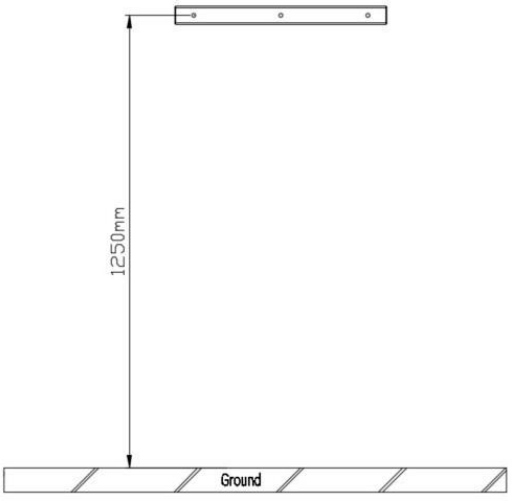


Figure 9 Installation of mounting bracket

(3) Fix the charger main body on the mounting bracket. First, lift the charger main body to its back slightly higher than the mounting bracket with a hand crane, and move it close to the wall until the mounting bracket contacts the back of the charger main body. Move the charger main body to clamp with the three holes on the upper part of the mounting bracket. As shown in Figure 10.

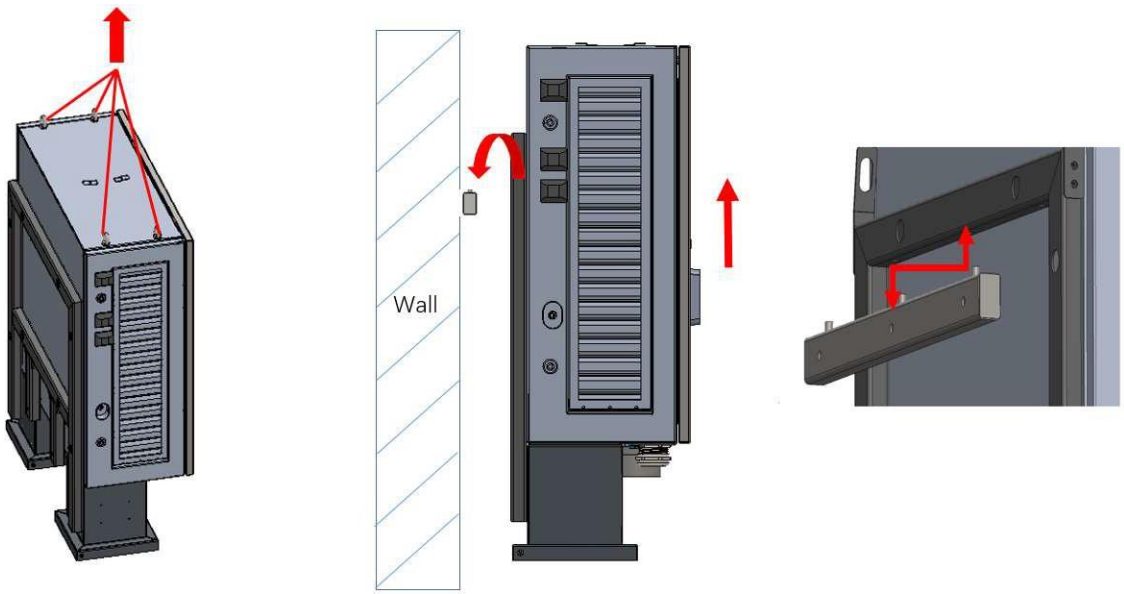


Figure 10 Wall-mounted fixing diagram 1

(4) Fix the lower part of the charger main body with M8 × 50 screws on the two mounting holes already opened on the wall, as shown in Figure 11.

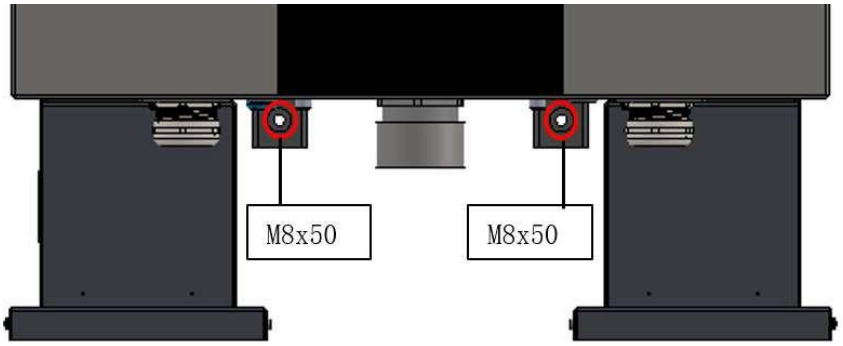


Figure 11 Wall-mounted fixing diagram 2

(5) Open the left door, put the charging modules into the charger main body, and tighten the four screws (M4 × 12). Then close the left door, as shown in Figure 12.

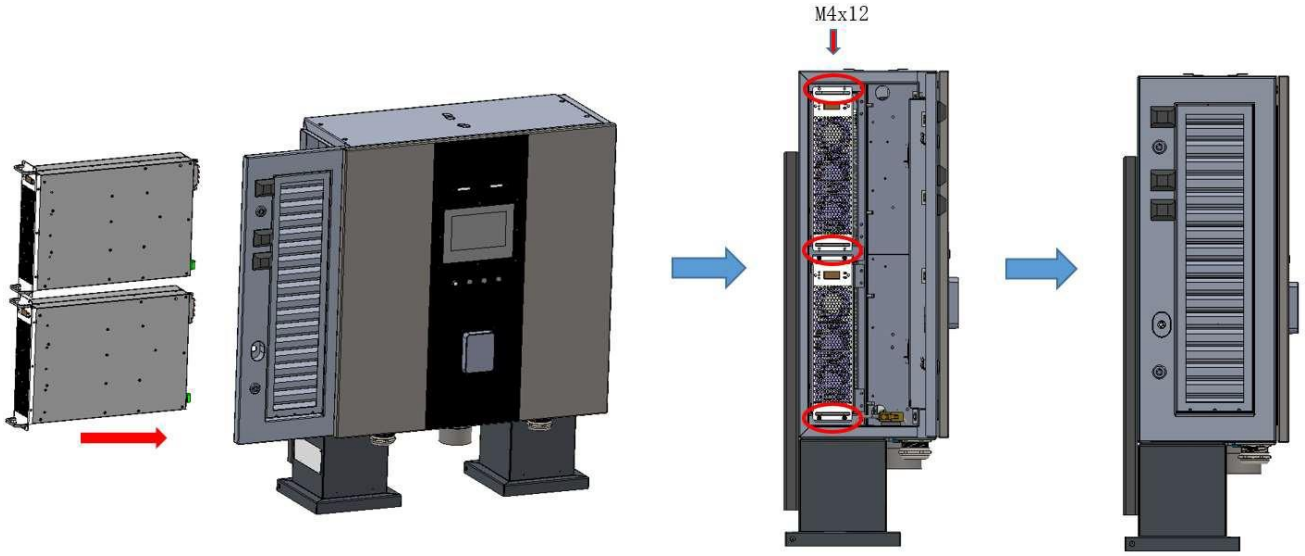


Figure 12 Charging module installation

(6) Open the front door from the bottom of the charger main body, remove the brace and prop up the front door, as shown in Figure 13.

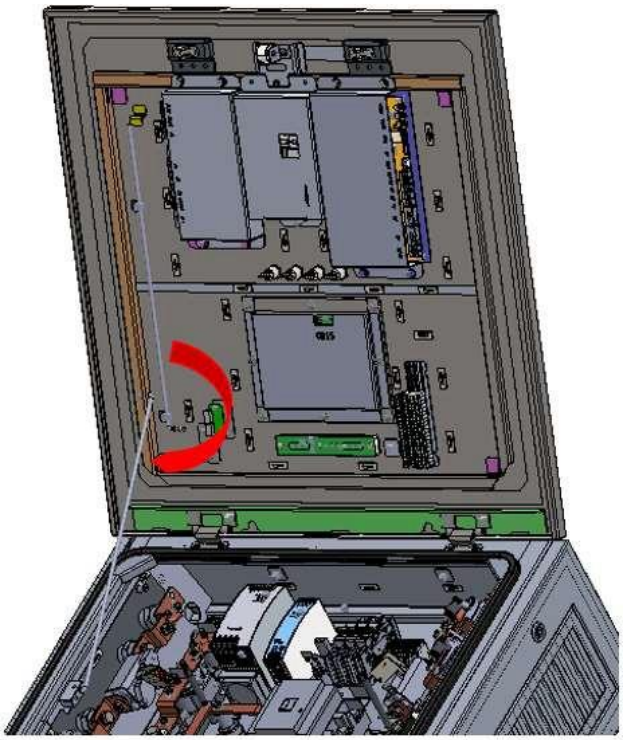


Figure 13 Opening the front door

(7) From the front of the charger, unscrew the screws of the transparent protective cover and remove the transparent protective cover, as shown in Figure 14.

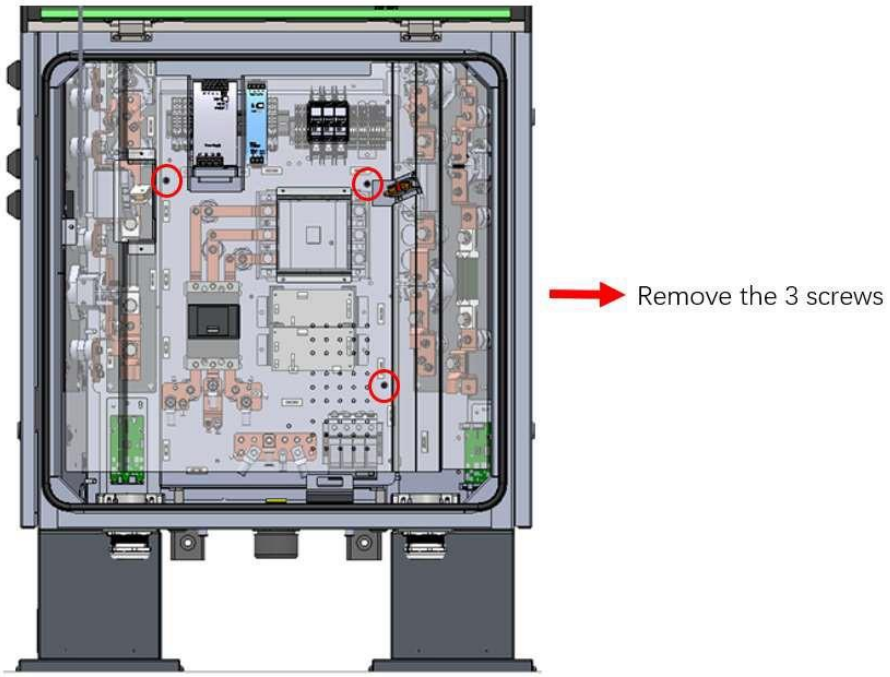


Figure 14 Removing the protective cover

(8) Wiring: Insert the power cable into the charger main body from the cable gland on the bottom. The cable needs to be protected with corrugated tube (1.5 inch). Connect the L1 \ L2 \ L3 three-phase to the corresponding incoming terminals, and the PE wire to the PE copper bar. Refer to Figure 15, the phase sequence shall not be incorrect.

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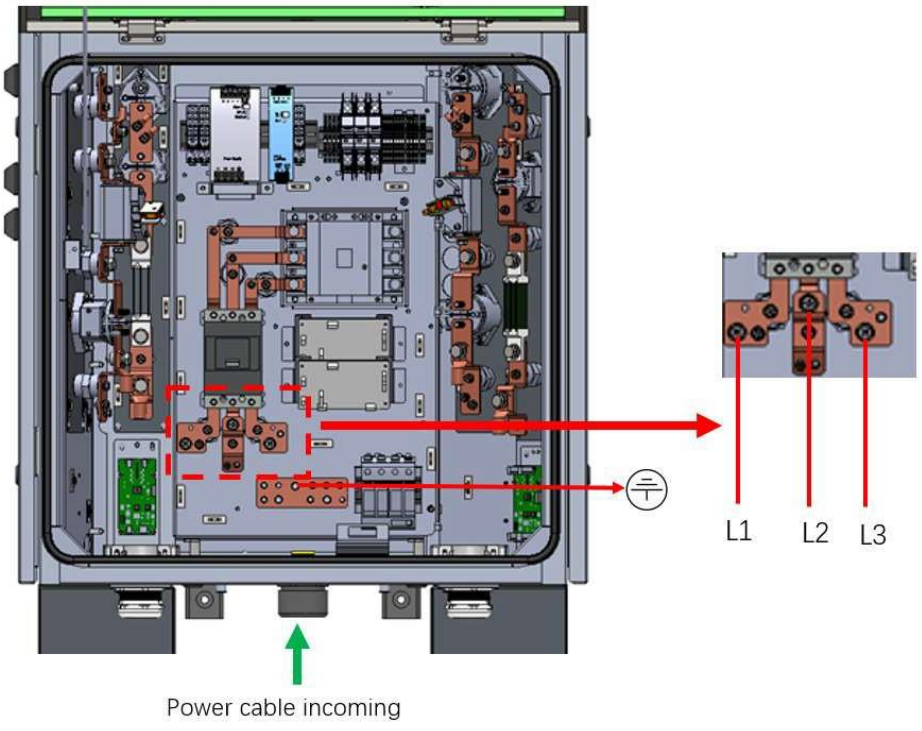


Figure 15 Wiring diagram

If Ethernet communication is required, insert the network cable into the charger from the cable gland, the network cable needs to be protected with corrugated tube (1/2 inch).

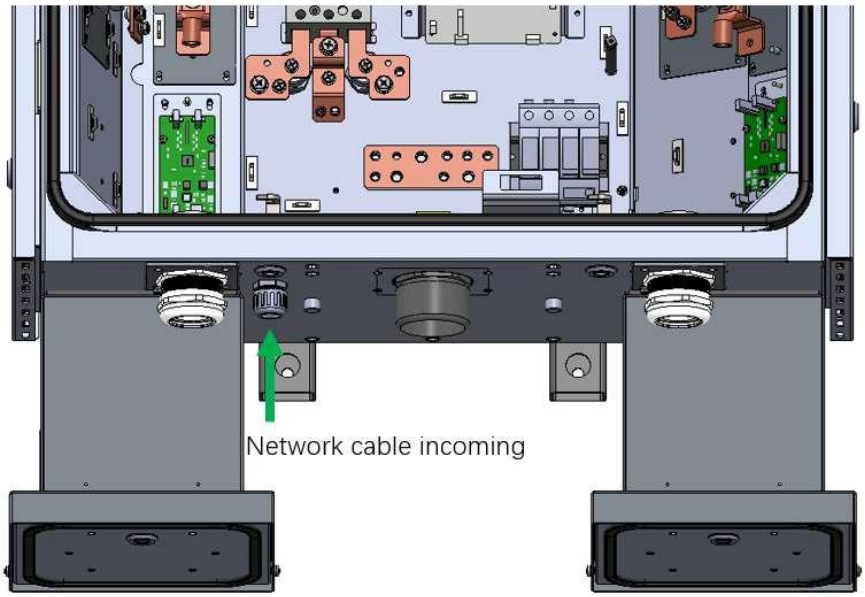


Figure 16 Cable gland for network cable

After crimping a RJ45 connector, connect the network cable to the Ethernet port.

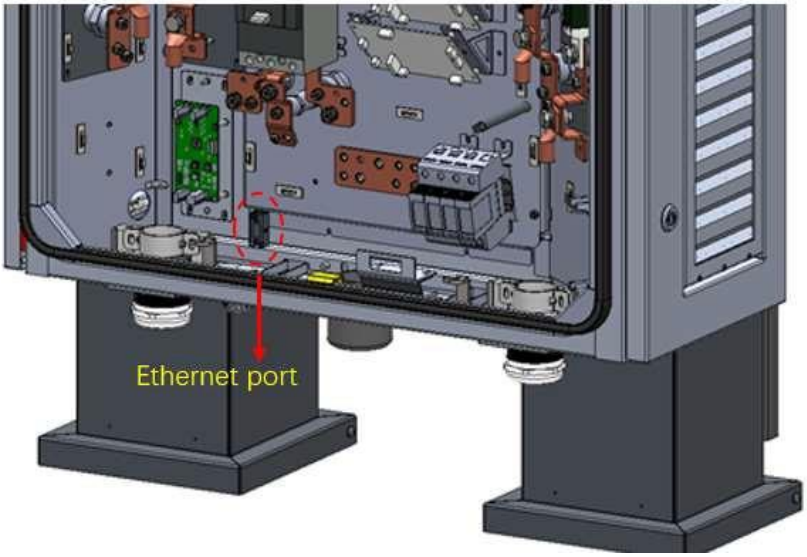


Figure 17 Ethernet port in the charger

(9) After wiring, tighten the incoming waterproof gland, fix the transparent protective cover with the removed screws, retract the door brace and close the door.

(10) After the installation of the charger main body, start to install the connector holders. After taking out the connector holders, take away the four black plugs on the he connector holder, refer to Figure 18, select

a suitable position on the wall (it is recommended that the lower edge is 950mm away from the ground), and mark the drilling position according to the four holes on the connector holder, refer to Figure 19.

Figure 18 Connector plug and mounting hole

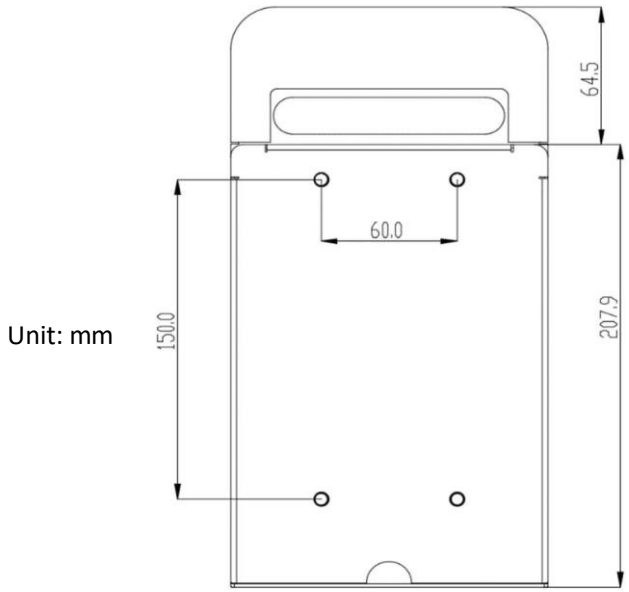


Figure 19 Mounting hole location

(11) Select a drill bit of Ø 10mm and drill holes with a depth of about 70mm at the marked position in the previous step with a percussion drill. Drive M6 × 50 expansion screws into the hole and fully tighten the 4 expansion screws. After installing connector holders, restore the removed black plugs.

(12) Remove the hoisting rings on the top of the charger main body as shown in Figure 20.

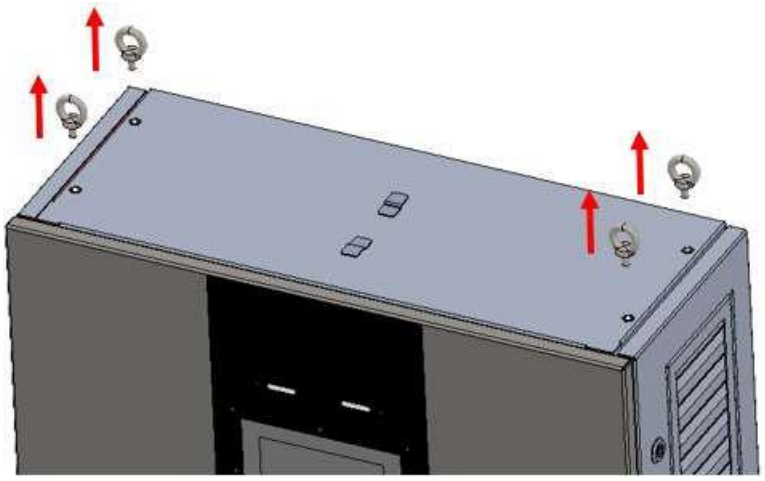


Figure 20 Removing the hoisting rings

(13) Install the CMS (Charging cable management) on the adapter plate, and fasten the CMS with the screws on the back of the adapter plate, and make the front of the adapter plate face forward as shown in Figure 21.

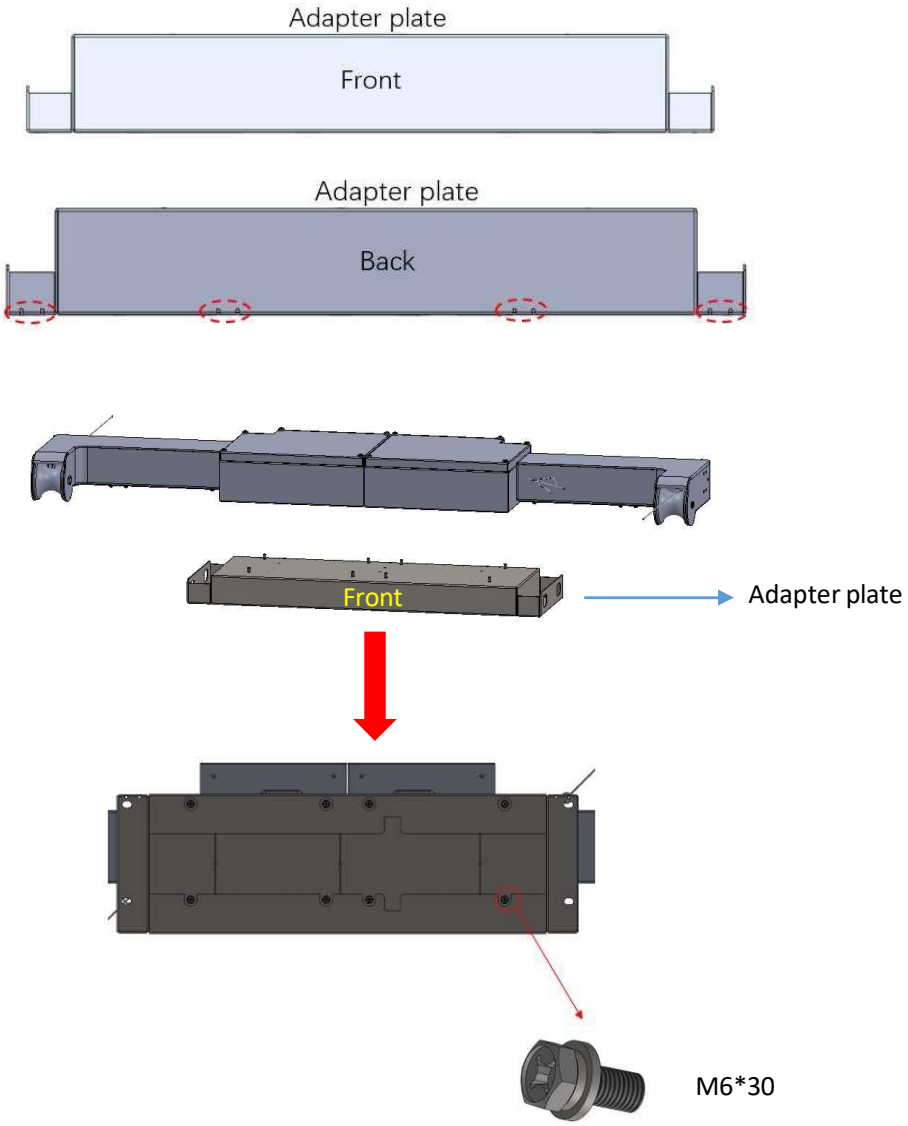


Figure 21 Installing the CMS on the adapter plate

(14) Hoist the CMS, move it onto the top of the charger main body and align the gap of the adapter plate with the clamp plate on top of the charger main body as shown in Figure 22.

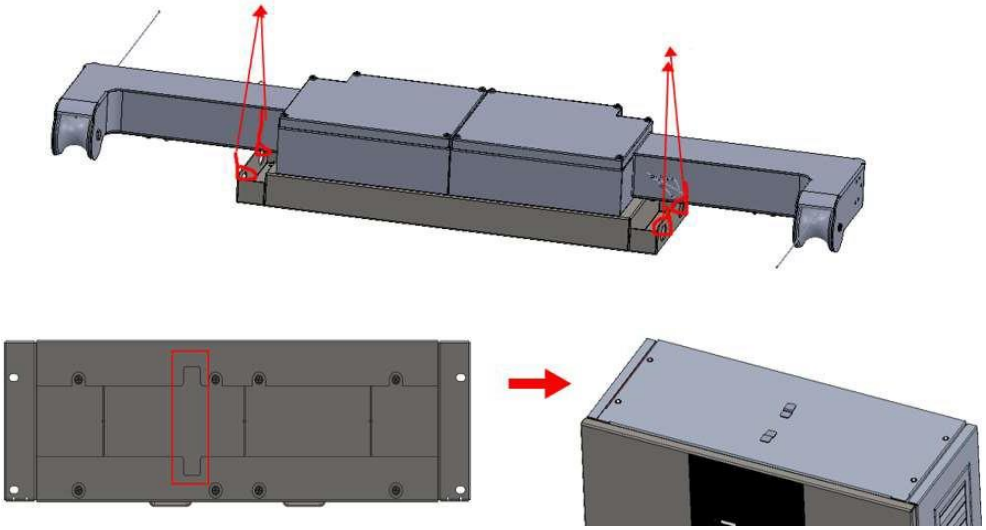


Figure 22 Moving the CMS onto the charger main body

(15) Push the CMS and adapter plate to the right, align both sides of the adapter plate with both sides of the charger main body, and align the mounting holes.

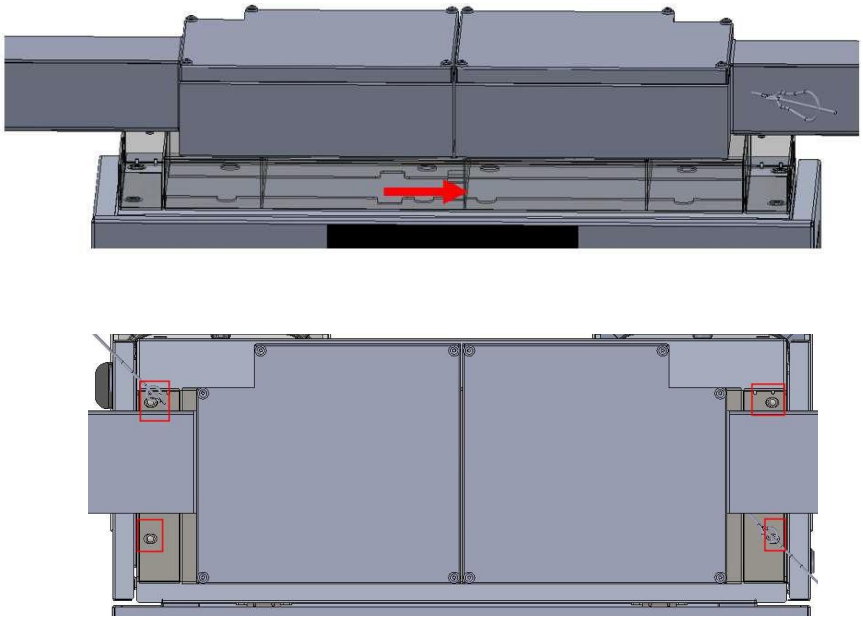


Figure 23 Mounting the CMS on top of the charger main body

(16) Fix the adapter plate and the charger main body with screws.

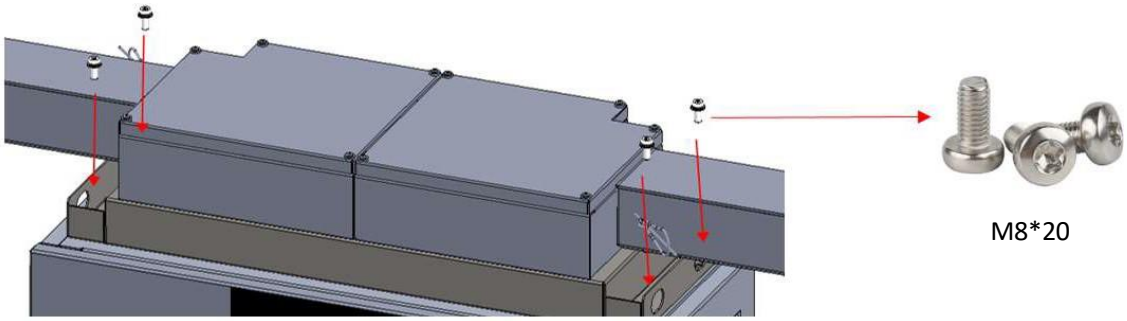


Figure 24 Fixing the adapter plate and the charger main body

(17) The completed effect diagram is shown in Figure 25.

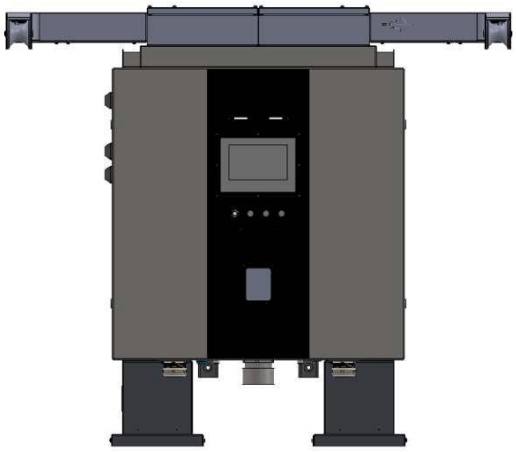


Figure 25 Effect drawing of CMS installation

(18) Fix the charging cable on the CMS through the cable clamp. First open the clamp, then hang the charging cable on the CMS and put it in the clamp, finally close the clamp, shown in Figure 26. The fixed point of charging cable is 2.5m from the outlet gland.

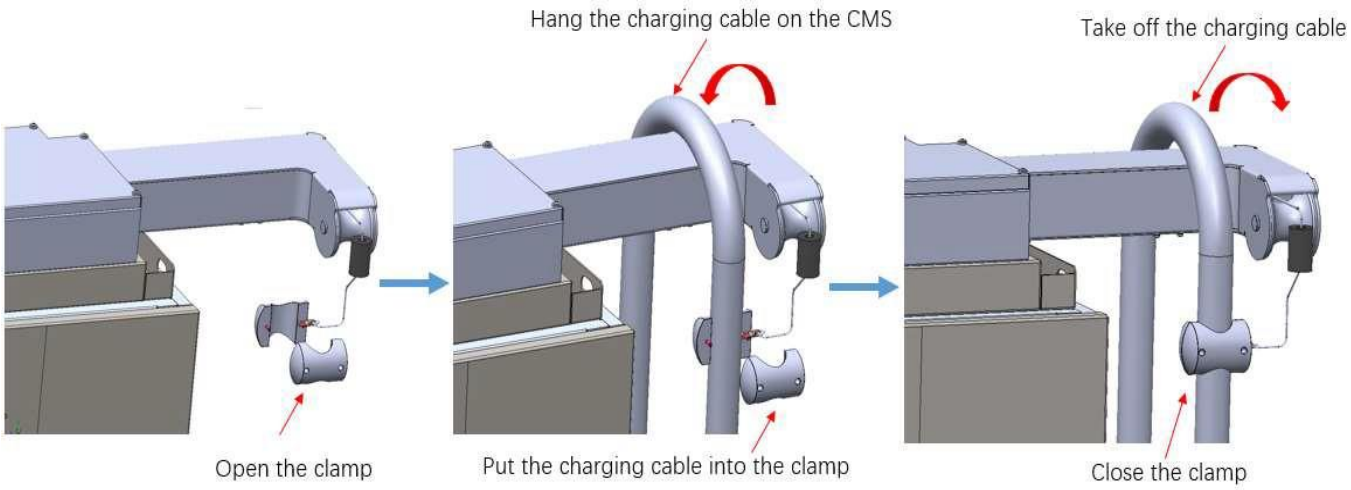


Figure 26 Fix the charging cable

(19) After wall-mounted installation, the diagram sketch is shown in Figure 27.

Figure 27 Effect drawing of wall-mounted installation

3.2.2 Pole-mounted installation

The dimensions of wall-mounted installation are shown in Figure 28 and components are shown in Figure 29.

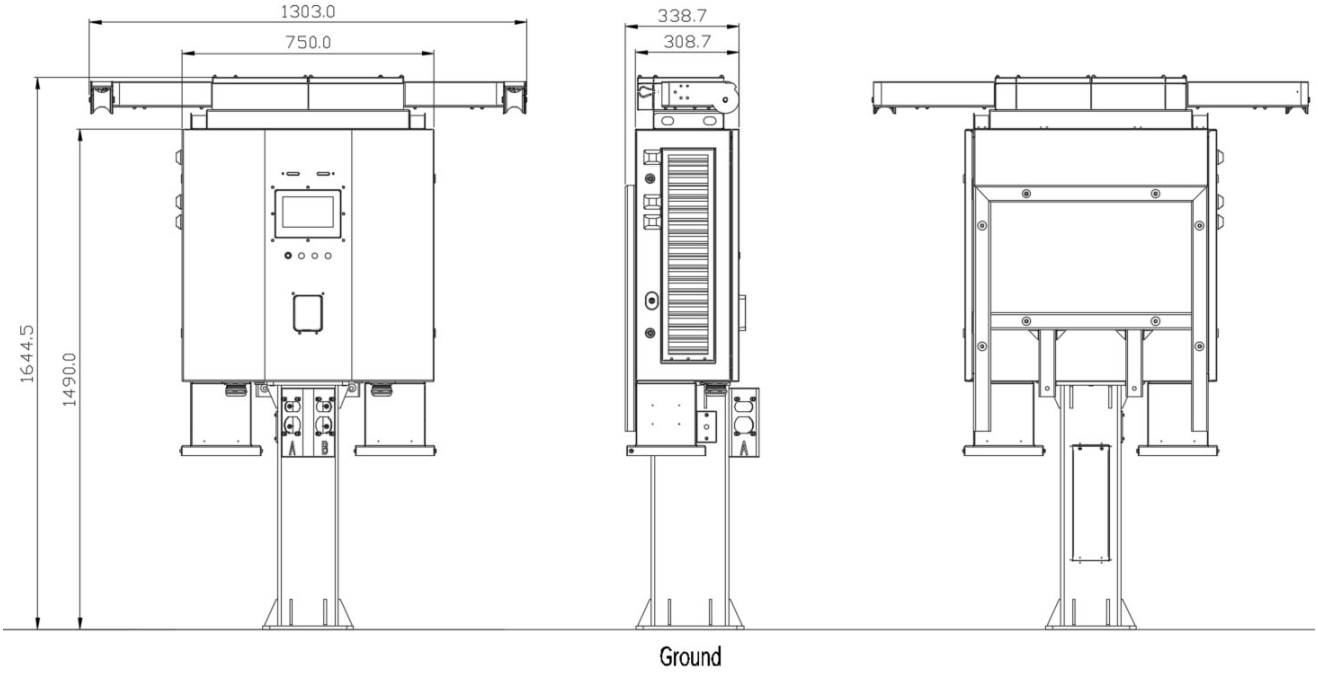


Figure 28 Pole-mounted installation dimensions

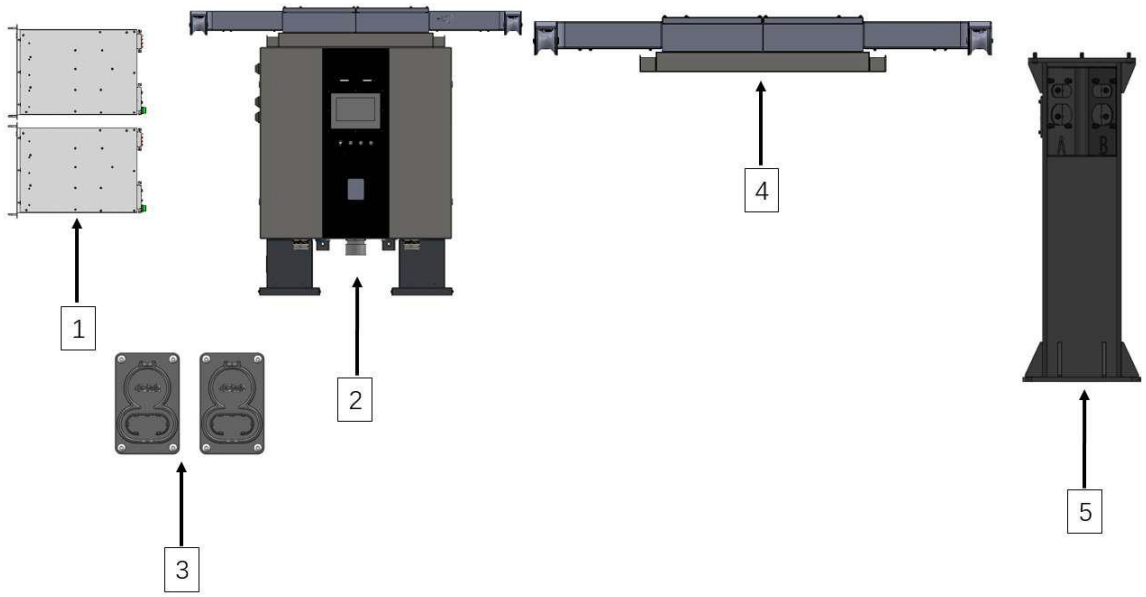


Figure 29 Pole-mounted components

① 30kW Charging module, 2 set

② Charger main body, 1 set

③ Connector holder, 2 set

④ CMS (Charging cable management system), 1 set

⑤ Pole, 1 set

Installation steps:

(1) Move the pole onto the foundation and fix it by 8 embedded anchor bolts of M10 on the foundation, as shown in Figure 30.

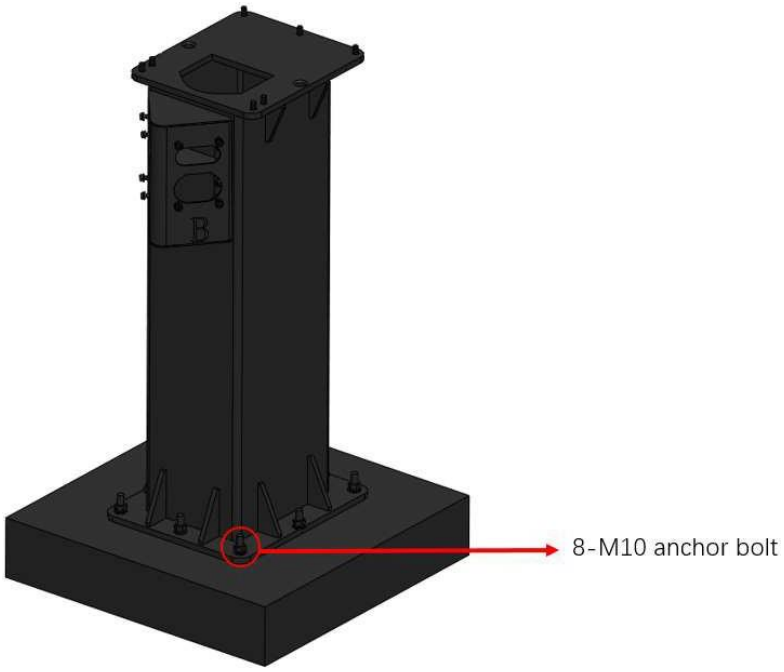


Figure 30 Installation drawing of pole

(2) Remove the mounting plate behind the pole, and insert the power cable from the foundation into the pole through the hole at the pole bottom, then insert the cable through the hole at the upper part of the pole, as shown in Figure 31.

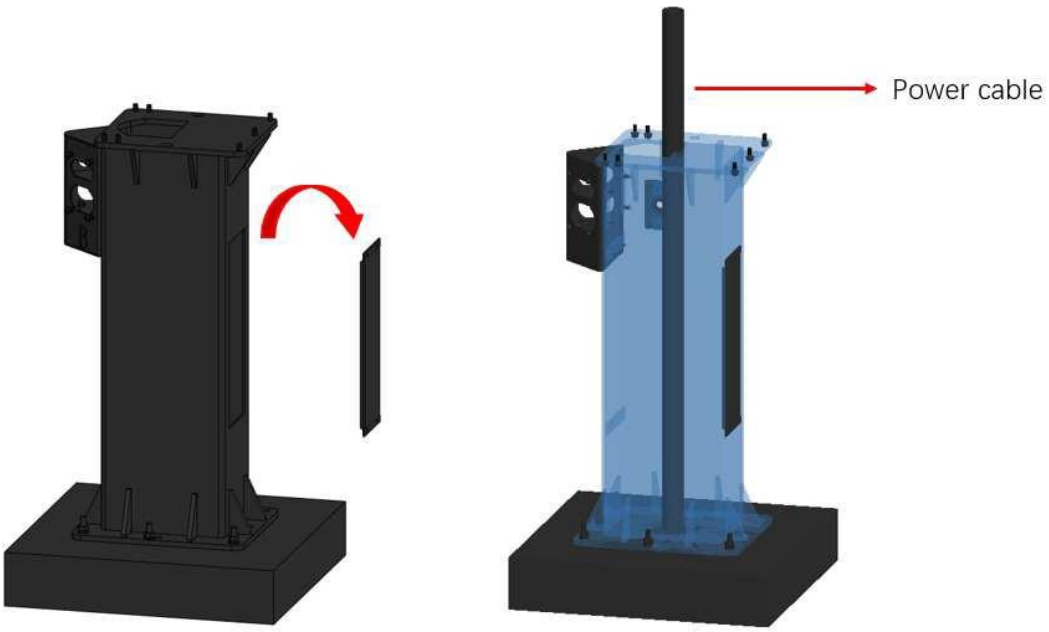


Figure 31 Cable incoming diagram

(3) Move the charger main body to the pole position by hand crane, align the screw holes, and fix the charger main body on the pole with 7 screws of M8 × 30, as shown in Figure 32.

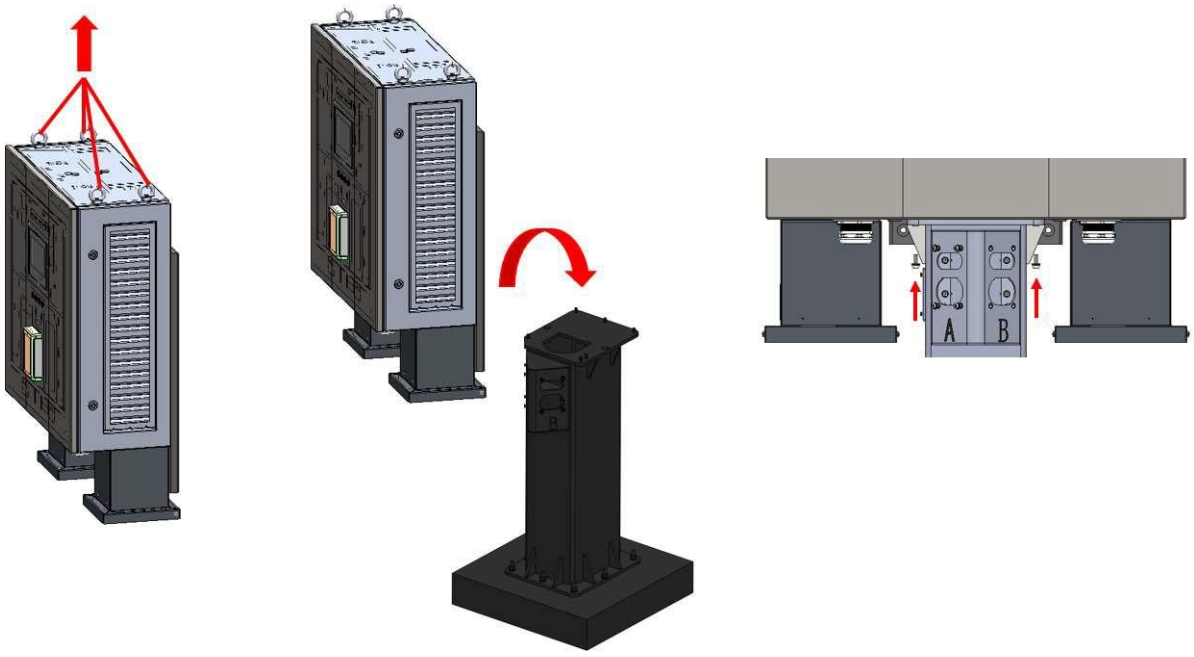


Figure 32 Charger main body installation diagram

(4) For installation of charging module, please refer to wall-mounted type in Figure 12.

(5) Electrical wiring. Open the front door, as shown in Figure 33, and then remove the transparent protective cover. Refer to the wiring of wall-mounted charger main body for details. After wiring, restore the transparent protective cover, retract the door brace and close the door.

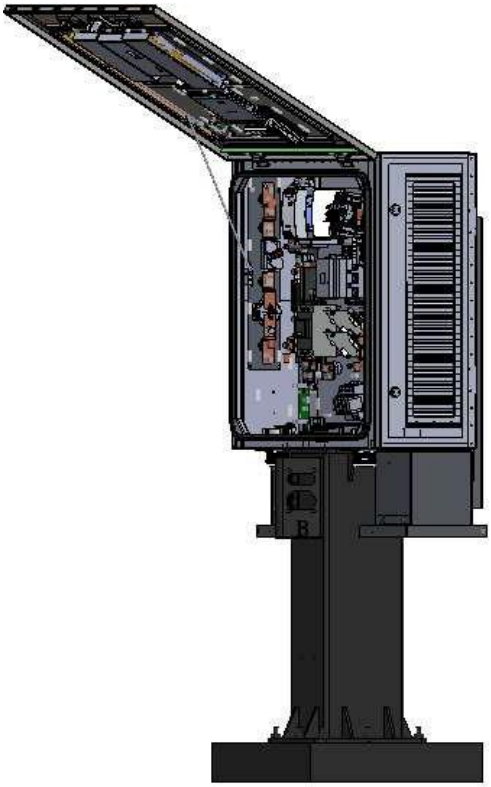


Figure 33 Opening the front door

(6) Fix the connector holder with 4 M5× 20 bolts screws on the pole, as shown in Figure 34.

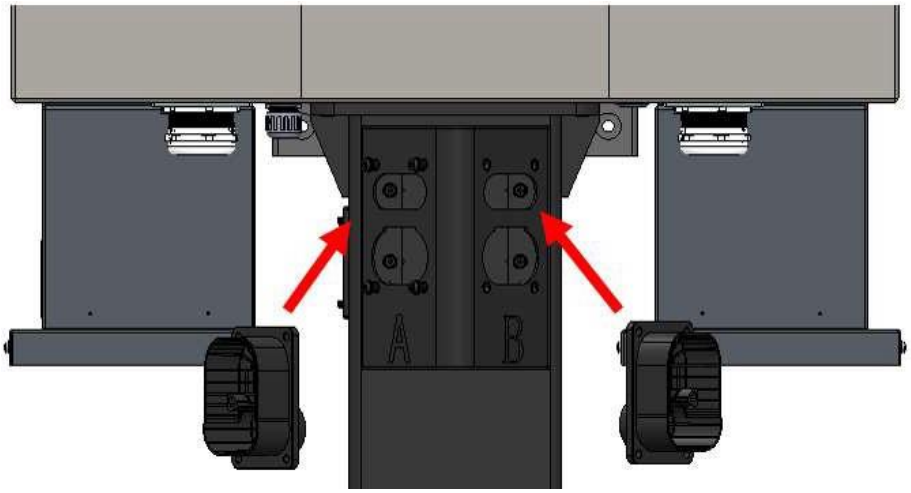


Figure 34 Installation diagram of connector holder

(7) Refer to the wall-mounted installation for the CMS installation steps. After the pole-mounted installation is completed, the diagram sketch is shown in Figure 35.

Figure 35 Effect drawing of pole-mounted installation

Warning: The instruction and correct procedures shall be strictly followed. Failure to pay attention to the procedures, practices or improper implementation may cause installation personnel's injury and death.

4.Inspection after installation (the live parts can only be operated by the engineers with relevant local qualifications)

4.1 Installation and wiring check

4.1.1 Equipment and equipment fixing inspection

(1) The appearance of charging equipment shall clean and tidy without bumps or damages, its position shall be consistent with the base and fixed firmly without looseness.

(2) The orientation of equipment shall meet the installation standards.

(3) Missing parts shall be avoided.

(4) Measure and ensure that the levelness meets the specified requirements using a spirit level.

4.1.2 Cable laying and connection inspection

(1) Check whether the insulating jacket of cable is scratched or damaged.

(2) Check whether the power cable terminals are compliant and whether the wiring is firm.

(3) Check whether the wiring terminal of communication cable is correct and there is no looseness.

(4) Check whether there are hanging cable signs.

(5) Check whether the bending radius of cable meets the requirements.

(6) Check whether the ground wire is led to the grounding grid for each device.

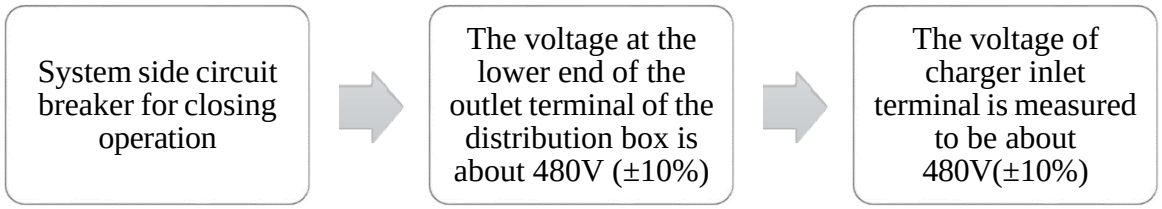
4.2 Check before power on

(1) Short circuit: Check whether there is short circuit between low-voltage power distribution cabinet to the power inlet, three-phase wire, neutral wire and ground wire of the charger.

(2) Power voltage before power-on: Before powering on the equipment, check whether the power voltage at the upper end of the MCCB in the power distribution cabinet is normal, and there are no exceptions such as phase loss, overvoltage, undervoltage and incorrect phase sequence.

4.3 Power-on inspection

(1) After confirming that the equipment wiring is complete and correct, power on the equipment. The power operation is as follows:



(2) Complete the overall installation.

5.Installation environment

Do not perform installation operations outdoor on rainy days.

Environmental conditions	**Recommended range**
Ambient temperature	-30℃ ~ 55℃
Altitude	≤2000m
Humidity	5% ~ 95%RH, no condensation inside the charger
Dust level	≤1mg/m^3
Corrosive substances	No pollutants, such as salt, acid, smoke, etc.
Vibration	≤1.5mm/s^2
Insects, pests, vermin animals, termites	None
Mold	None
Damp	Rain prevention
Fire prevention	No flammable substances on top and bottom of cabinet

Table 4 Installation environment

6. Completion documents

No.	File name	Page	Document Necessity
1	Unpacking record form	1	√
2	Pre-installation checklist of Athena 60 DC charging equipment	1	√

Appendix 1

Unpacking record form					
Owner's name				Unpacking date	
No.	Case	Name of goods	Quantity	Acceptance	Notes
Unpacking conclusions	Installation unit			Owner's unit	
Signature block					

Appendix 2

Pre-installation checklist				
Project name::				
Civil construction unit:		Equipment installation unit:		
Sub-project	No	Main acceptance items	Acceptance record	Treatment measures
Installation plan	1	Whether the on-site equipment installation complies with the construction plan design drawings		
Power distribution cabinet MCCB	1	Meet the requirements in Chapter 2.8		
Cable type	1	Meet the requirement in Chapter 2.5		
	2	Network cable cat6a (if Ethernet communication is required)		
Concrete foundation	1	Dimensions meet requirements		
	2	Foundation bolts meet the requirements of Chapter 2.6		
Maintenance distance	1	The maintenance distance meets the equipment spacing requirements in Chapter 2.7		
In conclusion:				
Note: (1) In the acceptance record, fill in "√" or "×" according to the on-site situation; (2) At the conclusion, fill in "qualified" or "need to rectify" according to the on-site situation				
Signature of person in charge of inspection: _____				

Athena 60 AN

Main Features

- Over 94% peak efficiency & 200A high output current.
- Installation space-saving: support wall-mounted installation, only 350mm thickness of the wall box.
- Connect to any backend based on OCPP 1.6J protocol.
- Equipped cable management system. (Optional)

Specifications

General Information	
Input Rating	480Vac±10%, 3 phases, 50/60Hz, L1+L2+L3+PE
Power Factor	≥0.98 @ Full Load
Efficiency	≥94% @ Full Load (Peak)
Output Interface	CCS1+CCS1 or CCS1+CHAdeMO
Output Power	60kW max.
Output Voltage	CCS1: 200-1000Vdc, CHAdeMO: 200-600Vdc
Output Current	CCS1: 200A max./connector, CHAdeMO: 125A max./connector
User Interface	
Display	7 inches touch screen
Support Language	English (Other languages available upon request)
Button and Switch	Mechanical Buttons & Emergency Button
RFID Reader	ISO/IEC 14443 A/B, ISO/IEC 18092, IEC/ISO 15693
Communication	
Network Interface	4G, Wi-Fi, Ethernet
Protocol (EVSE&Backend)	OCPP 1.6J
Protocol (EVSE&EV)	DIN 70121, ISO 15118
Environmental	
Operating Temperature	-30℃ to 55℃ (Derating from 50℃)
Storage Temperature	-40℃ to 70℃
Humidity	5% to 95% no condensation
Altitude	≤2000m above sea level
Mechanical	
NEMA enclosure	Type 3R
IK Rating	IK10 (Screen is IK08)
Cooling	Forced Air
Charging Cable Length	4.5m
Dimensions (WxHxD)	750*750*380mm
Weight	Approx. 125kg (excluding power modules)
Installation	Wall mounting, Pole mounting (Pole is optional)
Certification and standards	
Standards and compliance	FCC part 15 Class A, UL 2202, UL 2231-1, UL 2231-2
Certification	UL

*Cable Management System and Pole are optional.

*Cable Management System will be packaged separately from EVSE.

Note: Pictures are for reference only, please prevail in kind.