

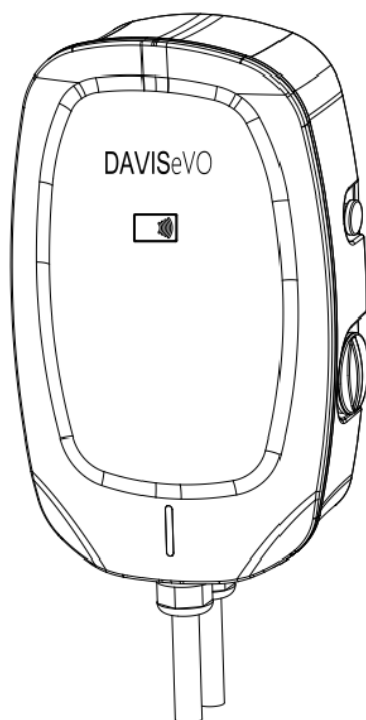
DAVISEVO EV AC Charger

Installation and Operation Manual

DVC10-A7KGP1E

DVC10-A11KGP1E

DVC10-A22KGP1E



Document version V1.0

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IMPORTANT

Before operating or maintaining this charger, please read this manual carefully, paying extra attention to the safety warnings and precautions.

Safety Information

In order to ensure safety for yourself and others, and to prevent damage to your vehicle and charger, please carefully read and strictly follow the instructions and warning statements provided in this manual for charger operation. It is of utmost importance to prohibit children from using this equipment, and parents should closely supervise their children when they are near the charger.

DANGER

Operators must steer clear of these hazardous conditions and adhere to local safety standards when operating the equipment. Failure to do so may result in serious injuries and other significant losses.

WARNING

Indicates a potentially harmful situation. To prevent harm, it's essential to comply with relevant standards. Failure to do so could lead to serious injury and losses.

Safety Instructions

The following safety warnings cover most situations that DAVIS LIGHTING is aware of. However, DAVIS LIGHTING cannot anticipate or advise on all possible warnings. It is crucial to verify the operational procedures to ensure both your personal safety and the proper functioning of the charger.

SAFETY WARNINGS

- Engineers in charge of charger installations must hold electrical licenses in compliance with local laws and regulations.
- Ensure that the chargers are securely and reliably grounded, and that the ground connections comply with local standards and criteria.
- Do not install or use this charger near flammable, explosive, harsh, or combustible materials, chemicals or vapors.
- Supervise children around the charger and prohibit them from operating it.
- Do not insert fingers or foreign objects into the electric vehicle connector.
- Do not use the charger if the flexible power cord or EV cable shows signs of being frayed, broken, or damaged.
- It is recommended to use copper conductors with 105°C wire insulation (UL1015).
- Do not operate the charger outside its operating temperature range of -13 to 131 °F (-25 to 55 °C).
- Incorrect installation and testing of the charger could potentially damage the vehicle's battery, components, or the charger itself.
- Handle the charger with care during transportation. Do not subject it to strong force or impact or pull to prevent damage to it or other components.

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1. About this manual

1.1 Using this manual

- This manual is only applicable to the installation and operation of DVC10 series 7KW, 11KW and 22kW AC power supply Charger.
- This manual provides the information required to perform the following work:
 - Installation work of the charger.
 - Daily fault diagnosis and maintenance of the charger.
- The manual may be updated with the product upgrade iteration, but the change may not affect the normal reading and execution of the user.

1.2 Applicable areas

This manual is applicable to the EU Community countries and other areas that use charging standard IEC61851-1& IEC61851-21-2.

1.3 Applicable group

- This manual is designed for qualified engineers with electrical license.
- In addition to being used by professional engineers, users can also strictly follow the process described in this document to perform simple maintenance.

1.4 Illustration

The illustrations in this document have shown most of the product information including some normal functions and typical settings of the product.

1.5 How to use this manual

It is essential to comprehend all the contents of this manual before using the charger to ensure proper operation.

1.6 General Introduction

The DAVIS DVC10 series AC charger is designed for charging electric vehicles or plug-in hybrid electric vehicles in your home or apartment. Our chargers provide safe, reliable, fast, and intelligent charging solutions. The primary difference between the DAVIS 7KW, 11KW, and 22KW EV AC chargers is the electrical installation type, with the latter two (11KW and 22KW) supporting 400V voltage input. However, the installation procedures for all three models are similar. This manual describes the installation steps for both single-phase and three-phase inputs and provides instructions on how to install and use the charger. You can also access the chargers via Wi-Fi, control them, and check their status through a mobile app.

Intended Use

The DAVIS^{eVO} EV AC charger for home is designed for the AC charging of electrical vehicles (EVs). It is suitable for both indoor and sheltered outdoor use.

Note: The images and illustrations description in this manual may differ slightly from the actual product.

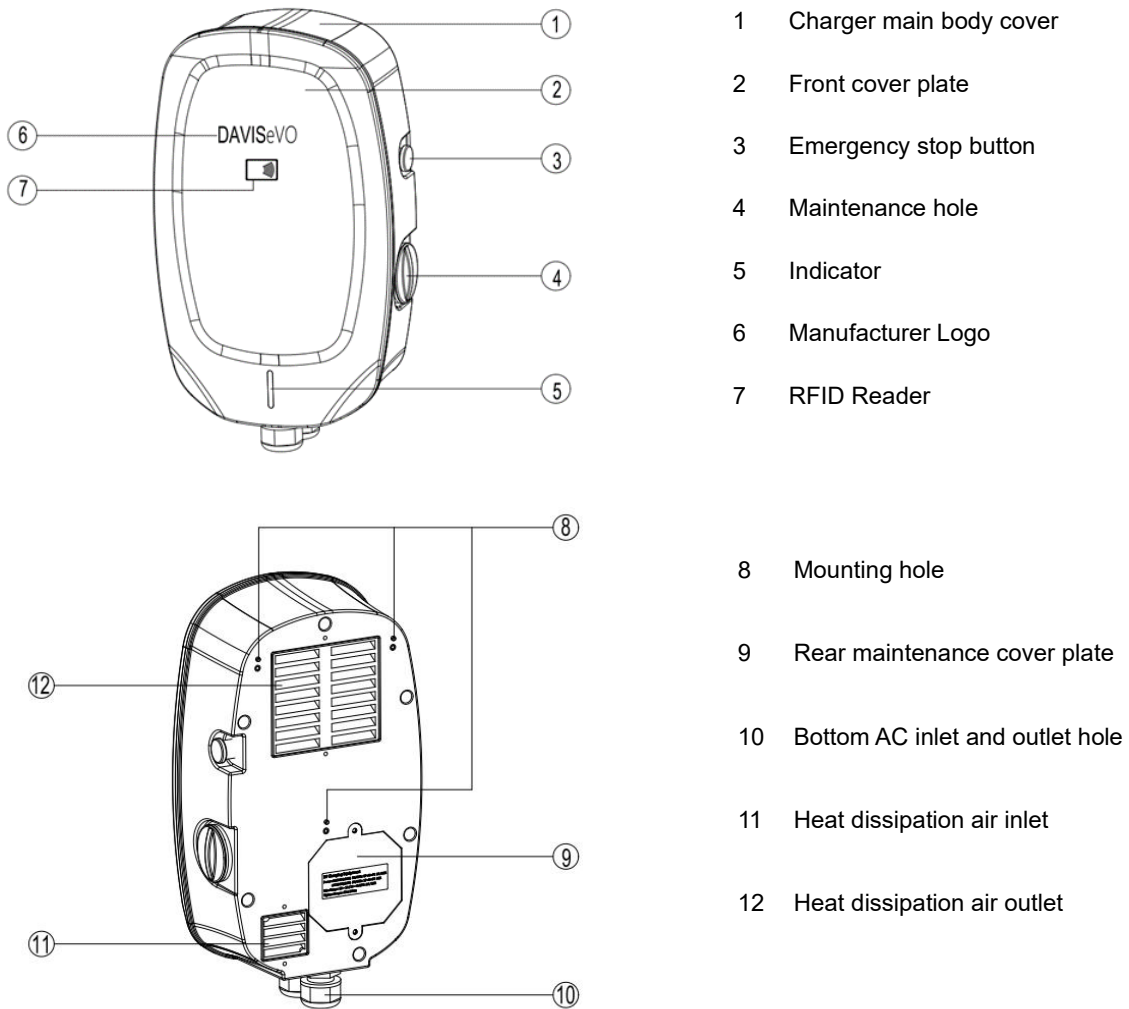
1.7 Abbreviations and term

Abbreviations	Definition
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AC	Alternating current power supply
DC	Direct current power supply
EMC	Electromagnetic compatibility
EV	Electric vehicle
EVSE	Electric vehicle power supply Charger
RFID	Radio frequency identification
PE	Protective ground

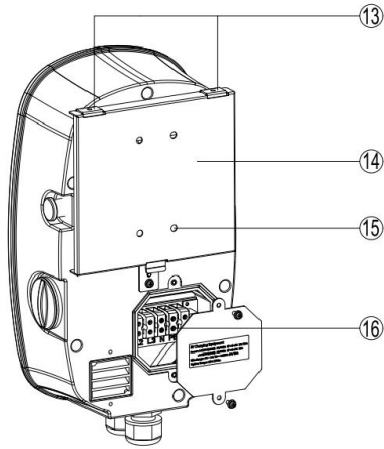
Note: All terms may not be explained in this manual, which may help the engineer understand the operation about the Charger.

1.8 Product overview

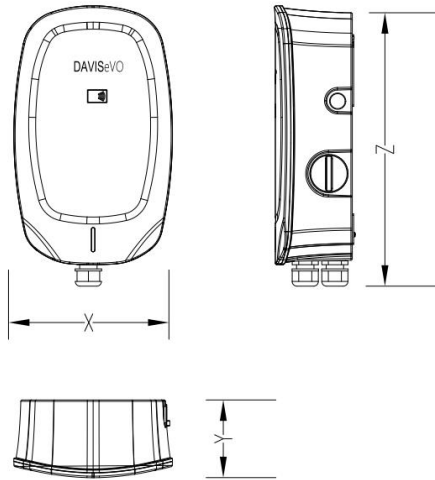


Note: Heat dissipation fan is only equipped on the 22KW charger.

1.8 Product Overview

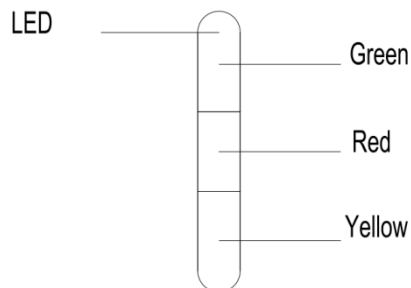


- 13 Mounting bracket
- 14 Rear plate
- 15 Wall installation hole
- 16 AC wire connector



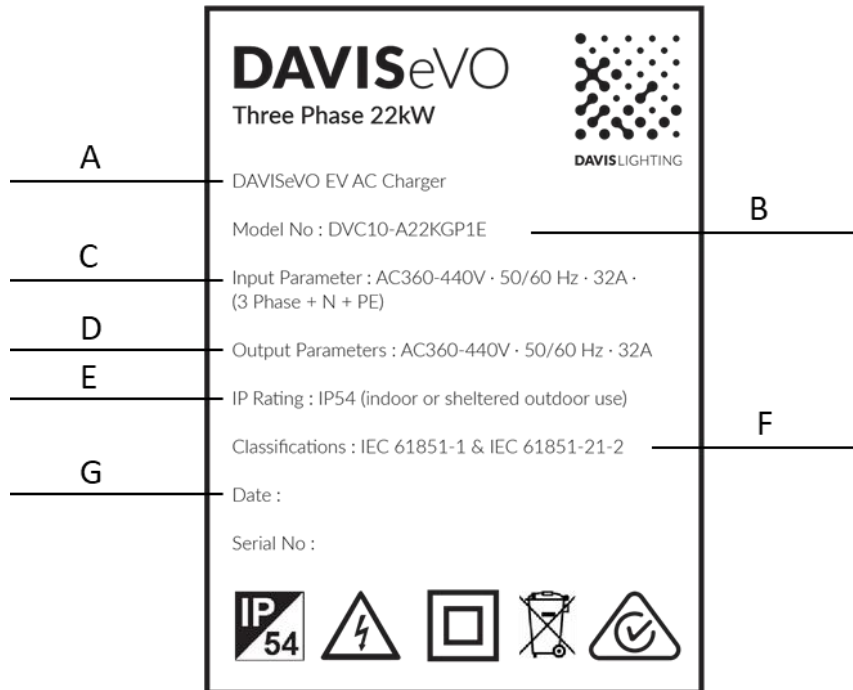
- X Width of the charger
 - Y Depth of the charger
 - Z Height of the charger
- X: 230 mm Y: 115 mm Z: 375 mm

1.9 LED indicator



Green	Solid Green	The charger is on standby / A charging session has ended
	Not illuminated	The charger is off
RED	Solid Green and Red	The charger is faulty
Yellow	Solid Yellow and Green	The charger is charging the vehicle

2. Specifications



2.1 Product name plate

A	Product name	E	Protection degree
B	Product model	F	Implementation standards
C	Input characteristics	G	Production date and bar code
D	Output characteristics	-	-

Note: The data in the figure is only a reference and does not represent the physical nameplate of the product. To view the applicable data, find the nameplate on the charger.

2.2 Product technical parameters

Electrical parameters					
Model		DVC10-A7KGP1E	DVC10-A11KGP1E	DVC10-A22KGP1E	Comment
Input parameters	Input mode	Single-phase three-wire	Three-phase five-wire		Note: The product is suitable for T-N system.
	Voltage range	220-240Vac	360-440Vac		Note: The product works normally within this voltage range.
	Frequency range	45~65 Hz			-
	Rated frequency	50/60 Hz			-
	Rated voltage	230Vac	400Vac		-
	Rated current	≤32A	≤16A	≤32A	-
Output parameters	Rated voltage	230Vac	400Vac		Note: The output voltage varies with the input voltage.
	Rated current	≤32A	≤16A	≤32A	-
	Rated power	7 kW	11 kW	22 kW	-
Power factor		≥0.99			Rating condition
Efficiency		≥99.5%			Rating condition
Standby power consumption		≤5 W			Rating condition
Current measurement range		10mA~50A; ±0.5%	10mA~25A; ±0.5%	10mA~50A; ±0.5%	-
Accuracy class		Level 1.0			-
Input protection type		Type A RCD; ≤30mA			-
Protective function		Leakage current protection; Over current protection; Short circuit protection; Detection gun disconnection protection; Grounding protection, over-voltage and under-voltage protection; Load imbalance protection (only applies to three-phase five-wire).			Note: Lightning protection for its own control core.
Input connector		3 Pin terminal	5 Pin terminal		Note:8~10 AWG
Charge interface	Quantity	One			-
	Length	Charging gun wire, total length 5m (including 0.3m)			Note : Customizable.
	Type	EN IEC 62196-2016: AC Type 2			-
Insulation	Input to	Under normal atmospheric pressure, in the environment of relative humidity			-



DAVIS^{eVO}

Resistance	Output	≤ 90%, the insulation resistance between each live circuit and between the live circuits and the ground is not less than 10MΩ at 1000V DC voltage.	
	Input to PE		
	Output to PE		
Withstand voltage	Input to Output	AC2500V/1min/10mA	-
	Input to PE	AC2500V/1min/10mA	-
	Output to PE	AC2500V/1min/10mA	-
	Leakage current	<5mA (230V ac /400V ac 、50/60Hz input)	-
System parameters			
Standby power	<5W		-
Shell Material	Plastic (ABS+PC)		-
Panel Material	Plastic (ABS+PC)		-
Appearance Size	width* height*depth:230*375*115(mm)		Tolerance ±2mm.
Network communication	2.4G WIFI Network		-
Networking Protocols*	Customizable OCPP1.6J		-
Start-up method	Swipe card to start, network to start (mobile APP)		-
charging method	Full of intelligence		-
Cool-down method	Natural cooling	Intelligent air cooling	-
Protection	IP54		
Application environment	Indoor and outdoor parking charging station		
Weight	About 3.5kg	About 4kg	About 5kg
Installation	Wall mounted installation; column type(option)		
Accessories list	1. Charger; 2. Quick Reference Guide; 3. Factory test report; 4. RFID card; 5. Mounting bracket; 6. Support rear plate; 7. Screws		

3. Preparation for charger installation

3.1 General requirements

- Obtain permission to install this charger in accordance with local regulations.
- The AC power supply is accessible at the installation location.
- Ensure that the power cable is disconnected during installation.

3.2. Environment and tool requirements

Prepare before installation:

- Search and prepare a suitable installation location
- Ensure that the installation location has a wall suitable for mounting the charger. The expansion bolts used to secure the rear plate should have a bearing capacity of at least 20kg.
- In addition to the above, you may also need to prepare the following tools: Drilling machine, Wire stripper, Crimping pliers insulation tape, pipe terminals, etc.

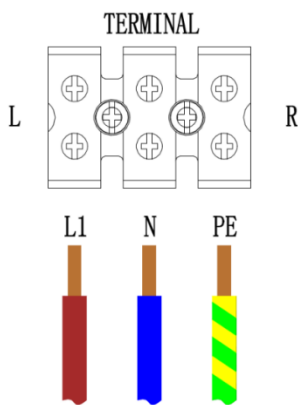
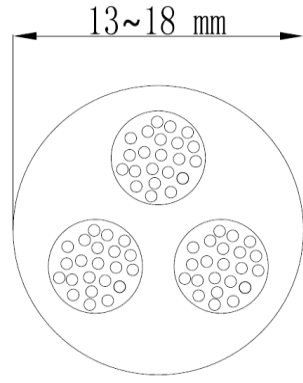
3.3 Unpack the Charger

- Remove the charger from its packing case.
- Take out the packing materials and installation accessories, then set them aside
- Check all parts to ensure that all materials have been delivered.
 - a. Charger
 - b. RFID card
 - c. Quick Reference Guide
 - d. Mounting bracket
 - e. Support rear plate
 - f. 5M 4x12 Screws
- Inspect the charger and installation parts for any damage. If there is any damage or if parts are missing, please contact the local supplier representative or the manufacturer's after-sales service.

4. Electrical installation of charger

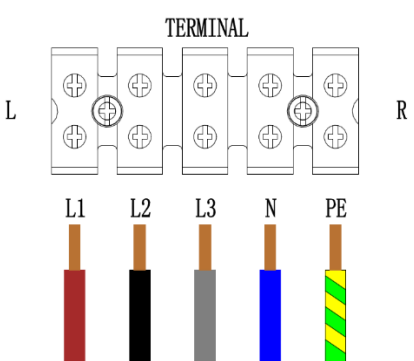
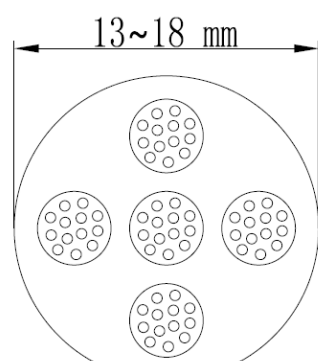
4.1 General Specification

Before performing any electrical installations, ensure that you have a clear understanding of the following electrical regulations for the charger:

Wiring terminal definition	Cable requirement
	

Note: 1. For the DVC10-A7KGP1E charger, the maximum continuous working current is 32A, and the cable must meet these requirements. We recommend using a 10 AWG cable with a 600Vac withstand voltage rating. However, you may also opt for a larger cable size.
 2. For single-phase AC chargers, the power cable can have a sheath, but its maximum allowable diameter should not exceed the range shown in the diagram above; otherwise, assembly cannot be completed.

For the charger models DVC10-A11KGP1E and DVC10-A22KGP1E, they are suitable for 360-440Vac three-phase AC power (TN):

Wiring terminal definition	General Requirement
	

Note: 1. For the DVC10-A11KGP1E charger, the maximum continuous working current is 16A, and the cable should meet the above requirements. It is recommended to use a 12 AWG cable with a 600Vac withstand voltage rating.

2. For the DVC10-A22KGP1E charger, the maximum continuous working current is 32A, and the cable should meet the requirements outlined above. We recommend using a 10 AWG cable with a 600Vac withstand voltage rating. However, you can opt for a larger cable size if desired.

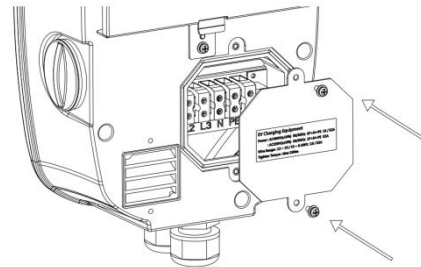
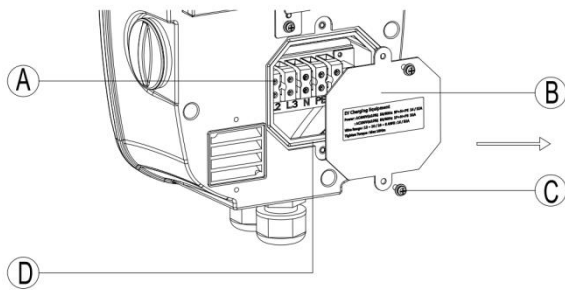
3. For single-phase AC chargers, the power cable can have a sheath, but its maximum allowable diameter should not exceed the range shown in the diagram above; otherwise, assembly cannot be completed.

4.2 Electrical installation procedure

Since the connection of the cable is made in the rear plate of the charger, the electrical installation work should be completed before the mechanical installation.

(1) Cable pre-treatment

- Measure the actual length of the AC power cable according to the installation location of the charger, and pretreat the cable (If possible, crimp the cable to a tubular terminal for subsequent connection) for preparation.
- Remove the rear plate maintenance cover
- Use a screwdriver to remove the maintenance cover screws, revealing the terminal connected to the AC cable and the power distribution module.
- Please keep the maintenance cover and fixing screws aside for future use.



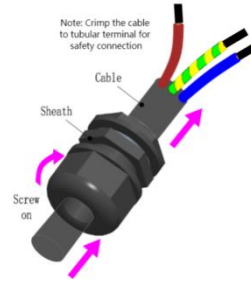
A: Wiring terminal; B: Maintenance cover plate;
 C: Screws; D: Waterproof seal.

Note: Be sure not to discard the related parts when removing the maintenance cover, such as waterproof seals and securing screws

(2) Pre-install cables

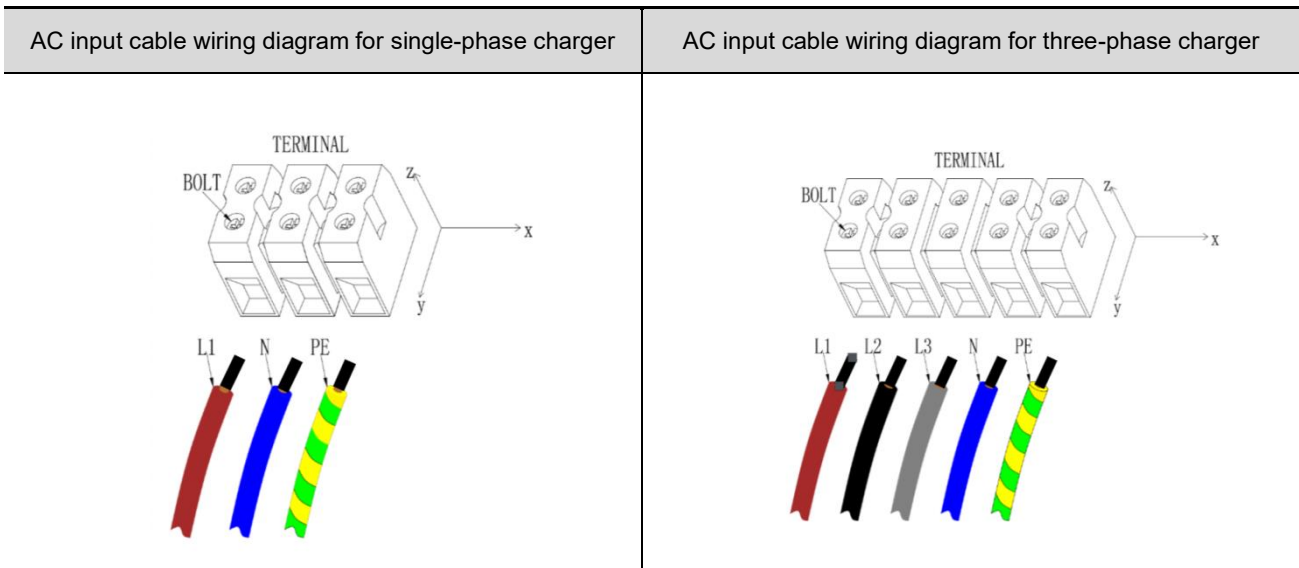
- Loosen the waterproof jacket of the cable by turning it counterclockwise.
- Insert the pre-treated cable into the waterproof jacket, leaving a cable length of approximately 10~15mm based on the installation position for easy access to the terminal. **(Note: Crimping the cable to a tubular terminal is essential for a secure connection.)**
- To secure the waterproof jacket, turn it counterclockwise until it's tightened.

Loosen the cable waterproof jacket	Cable and waterproof jacket installation
------------------------------------	--



(3) Charger AC input cable connection

- Use a screwdriver to unscrew and loosen the fixing screws on the wiring terminals.
- Attach the cable to the appropriate terminal port, following the installation diagram for guidance. Then, use a screwdriver to secure the screws to the specified torque level. (Recommended torque: Max 2 Nm. / 10.6 Lbf.in)
- Once the connection is made, gently pull the cable with slight force to ensure it remains securely in place. If the cable doesn't come loose, the connection is secure.



Note: 1. Engineers can differentiate the wiring by examining the markings on the terminal row in addition to referring to the pictures provided above for AC input cable connections.

2. Before connecting the AC input cable to the power grid network, please complete the mechanical installation of the charger first to ensure safety.

(4) Install the rear plate maintenance cover

- Ensure that you remove any debris that may be left inside the charger after installing the AC input cable.

- Before installing the maintenance cover, check the waterproof seal strip to ensure it is correctly installed in the groove.
- Reattach the maintenance cover plate and securely fasten the fixing screws with a screwdriver.

Note: Please refrain from removing the waterproof sealing strip during installation. Doing so may compromise the charger's waterproofing, allowing water to enter and potentially causing short circuits and damage.

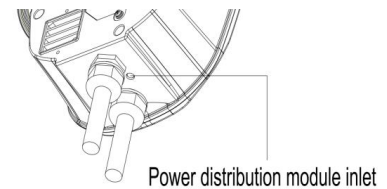
5. Mechanical installation of the Charger

5.1 Installation procedure of power distribution module (Optional)

- When this function module is not attached, please disregard this installation procedure and proceed with the subsequent mechanical installation.
- This installation procedure involves the removal and installation of the maintenance cover plate.

(1) Cable hole pre-treatment

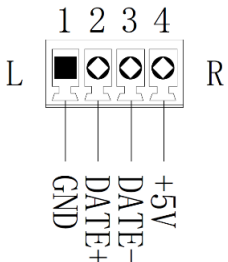
Identify the wire hole for the power distribution module located at the charger's bottom. Use appropriate tools like screwdrivers to prepare the wire holes by removing any obstructing material. Then, open the prepared sealant shell. Carefully insert the wire into the sealant hole and ensure it is properly secured.



(2) Power distribution module cable connection

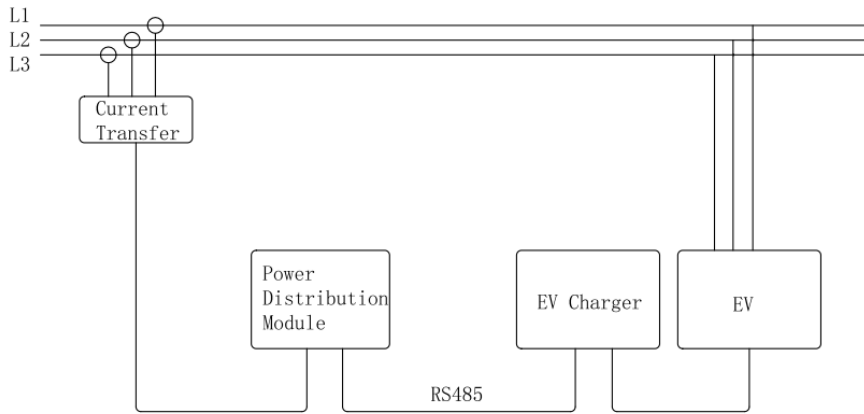
Insert the cable through the glue hole, connect the wires to their corresponding interfaces as defined, and then tighten the fixing screws.

Install the rear cover plate after the above wiring harness connection is completed.

4 PIN terminal wiring definition	General specification for the wiring
	<p>Recommended cables: UL2464-4 * 22 AWG or 24 AWG four-core wire (or other four-core wire)</p> <p>Recommended length: The recommended cable length is not more than 40 meters except in exceptional circumstances.</p>

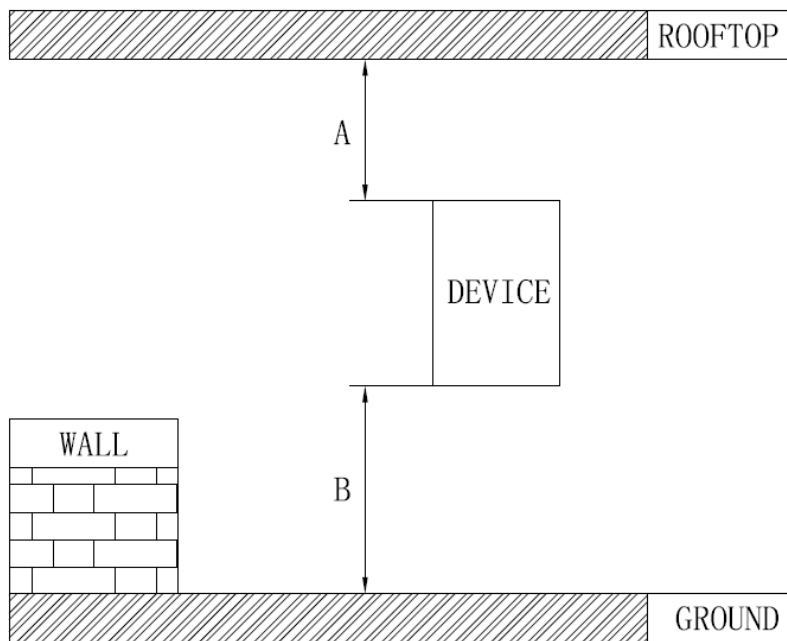
(3) Power distribution module installation

Install the module on the side of the charger, then insert the current transfer to the power input wire L (L1, L2, L3 for three-phase).



5.2 General Specification

- The engineer or user should supply four expansion bolts measuring M6x50mm, with a load-bearing capacity of at least 10kg.
- Refer to the detailed charger installation space requirements as follows:



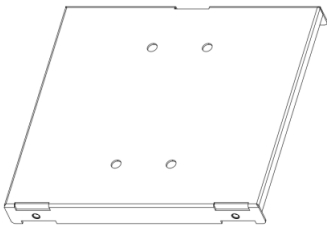
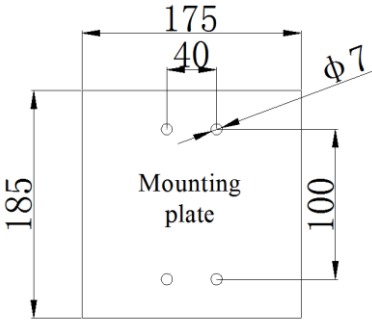
Specific technical data:

parameter	Recommended Specification (mm)
A	≥300
B (Indoor installation)	≥900
B (Outdoor installation)	≥1300

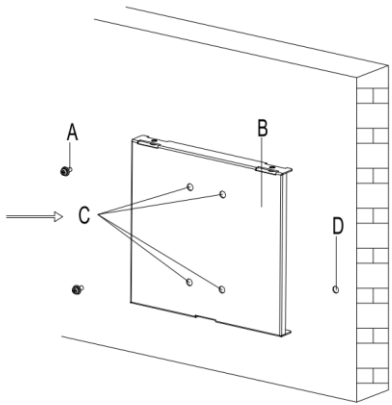
Note: The range of installation size can be selected according to local regulatory requirements or actual installation conditions of the location.

5.3 Support rear plate mounting

- After selecting the installation location, drill the holes on the wall, and the holes aperture should be suitable for the M6 x 50 type expansion bolt. This data can be obtained from the technical parameters of the expansion bolt. Fixing the installation rear plate to the wall with the expansion bolt. Torque parameters of bolt can be obtained through technical parameters.
- After installing the rear plate, check to ensure it is properly secured and not loose.

Support rear plate	Rear plate install size
	

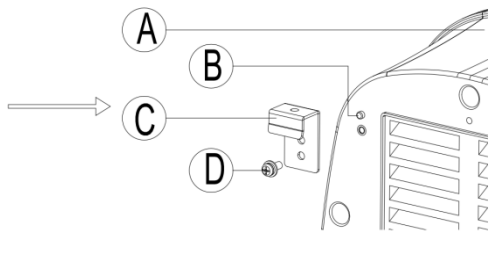
Installation schematic diagram of the support rear plate

	A Expansion bolt
	B Support rear plate
	C Fixing hole
	D Wall installation hole

5.4 Mounting bracket installation

Locate the mounting brackets and fixing screws included in the charger package. Refer to the provided images for the installation instructions.

Installation Schematic diagram of the support hanging ear	
A	Charger main body cover
B	Locating pin
C	Mounting bracket

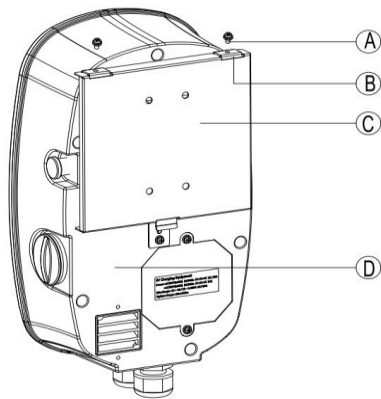


D M4 x 10 screw

5.5 Installation the whole Charger

- Install the charger into the rear plate from top to bottom, aligning it with the mounting bracket and the mounting holes.
- Use a screwdriver to secure the mounting bracket to the location where it connects with the rear plate.

Installation schematic diagram of the support hanging ear installation



A Mounting Screw

B Mounting bracket

C Mounting rear plate fixed to the wall

D Charger main body housing

5.6 End and check

- After completing the installation steps mentioned above, you also need to perform the following tasks:
- If the charger does not come with parts for mounting the gun cable, install the necessary parts according to the installation situation.
- Secure the cable in place using cable ties or other suitable methods.
- Site Cleaning: Dispose of site debris, garbage, and charger packaging boxes correctly after installation. The factory test report, user manual, and user RFID card should be properly retained by the user.

6. Charger power supply operation

6.1 Power on operation

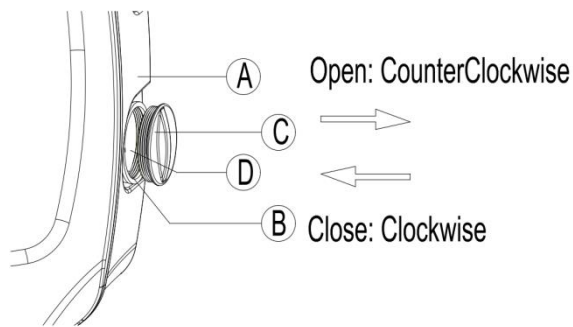
- Before powering on the charger, ensure that the following steps have been completed:
- Ensure that the procedures for charger installation have been executed correctly.
- Inspect the electrical wires for leakage or incorrect connections to prevent power accidents.
- For safety reasons, it is recommended to power on the charger with the presence of professional personnel.
- Connect the cable to AC power supply network.

6.2 Close the Charger power switch

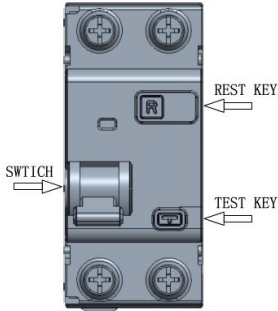
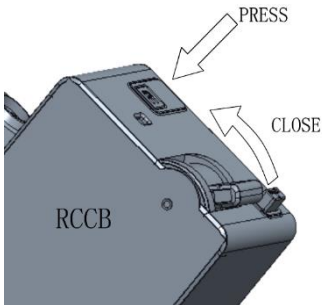
- Turn and unscrew the maintenance cover on the right side to visually inspect the internal charger-residual current protector. Refer to the schematic diagram for detailed instructions.
- Before closing the residual current charger, press the "RESET" button to reset it; otherwise, the closing operation will be invalid. Refer to the schematic diagram for detailed instructions.
- Close the switch of the residual current device for 3 to 5 seconds. The charger will emit a "click" sound, and the green status indicator will remain on, indicating that the charger has started successfully.
- After the charger has started normally, ensure that the maintenance cover is restored to its original position.

Detailed operation is shown in the schematic diagram.

Schematic diagram of the maintenance cover

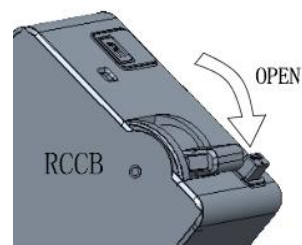


A	Charger main body cover
B	Residual current charger
C	Maintenance cover
D	Waterproof sealing strip

<p>Schematic diagram of the key position of the residual current device</p>		<p>Schematic diagram of the residual current device closing operation</p>	
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6.3 Power-off operation

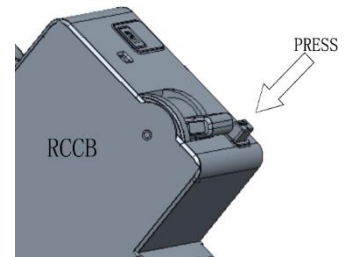
- Perform maintenance work on the charger.
- Conduct charger fault diagnosis.
- Dismantle and dispose of the charger and associated component.



7. Maintenance and fault diagnosis

7.1 Maintenance

- Users shall conduct maintenance inspection of the charger, including the following items:
- Check whether the charger power supply cable and charging gun cable are damaged.
- Inspect the charger shell for any signs of damage. If you notice substantial damage, stop using the charger immediately.
- If feasible, perform this check on a monthly basis.
- Remove the maintenance cover on the side of the charger to visually inspect this device.
- Press the "T" key on the charger; the protector should trip and disconnect under normal function. If it does not trip normally, refer to the following chapter for detailed solutions.



7.2 Fault diagnosis

The following troubleshooting table can be used to check the common faults in the routine maintenance.

Issue or malfunction	Potential factor	Possible solutions
Charger not starting	The residual current device is not switched on.	Switch on the residual current device
	Incorrect phase sequence wiring.	Check the AC wiring connection.
Charger overloads and disconnects	Overload on the electric vehicle side	<ol style="list-style-type: none"> 1. Check whether the vehicle load matches the charger. 2. Check and connect the electric vehicle's charging cables. 3. Correctly connect the electric vehicle charging cable.
Input voltage issues	Incorrect AC power supply	Check whether the charger requires a single-phase or three-phase connection.
Charger overheating and frequent circuit breaker tripping	Ambient temperature exceeds the charger's operating temperature range	<ol style="list-style-type: none"> 1. Reduce the current output using the mobile APP. 2. Inspect the operating temperature indicated on the charger's nameplate. 3. Place the charger in an area with a regular temperature and proper ventilation. 4. If the problem persists, discontinue use and contact the manufacturer's local representative or after-sales service.
Frequent circuit breaker trips during charger operation	Residual current device has a fault	<ol style="list-style-type: none"> 1. Replace the residual current device with one of the same specifications. 2. If the problem persists, discontinue use and contact the manufacturer's local representative or after-sales service.
	Residual current in the charging power supply network	<ol style="list-style-type: none"> 1. Check whether the AC power supply at the front end of the network is properly grounded. 2. Install the charger grounding conductor.
Charger "ground fault"	The charger is experiencing grounding issues.	<ol style="list-style-type: none"> 1. Verify if the charger's electrical ground cable is properly installed. 2. Install the protection ground cable correctly. 3. Install the ground conductor for the power supply network.
The Charger's Red LED is Always On	The Charger's emergency stop button is pressed	<ol style="list-style-type: none"> 1. Reset the emergency stop button. 2. If the problem persists, discontinue use of the charger and contact the manufacturer's local representative or after-sales service point
Abnormal Vehicle	Faulty electric vehicle charging cable	<ol style="list-style-type: none"> 1. Check the condition of the electric vehicle charging cable. 2. Replace the charging cable for electric vehicles if necessary.

Connection or Authorization Failure	Disabled RFID card	<ol style="list-style-type: none"> 1. Make sure that the RFID card is provided by the manufacturer. 2. Make sure that the RFID card is properly registered and available. 3. If the RFID card disabled, please contact the manufacturer's local representative or after-sales service point to obtain a new RFID card. 4. Restarting the charger may resolve this issue
Charger Has No Network Connection	Absence of WIFI LAN	<ol style="list-style-type: none"> 1. Check the WIFI LAN strength at the Charger installation site to ensure that the charger is within the coverage of the WIFI LAN. REWRITE: Check the strength of WIFI LAN signal at the charger installation site to ensure it is within the coverage of the WIFI LAN.
	Interruption in the connection between the charger and the router.	<ol style="list-style-type: none"> 1. Manually connect the charger to the WIFI LAN

8. DAVIS LIGHTING Service

If you have any questions about the product, please contact the manufacturer's local supplier representative or the manufacturer's after-sales service. When seeking information or applying for service support, please provide the following information:

- Charger's Nameplate Information.
- Warning Error Code or Charger Product Name (Accessible via the App).

Our company offers comprehensive technical support services, and customers can get in touch with us through their local office or our customer service center hotline.

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