

USER MANUAL



Electric Vehicle AC Charger

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1 About this manual

1.1 Applicable chargers

LIVOLTEK A0070230E11
LIVOLTEK A0070230E12
LIVOLTEK A0110400E11
LIVOLTEK A0220400E11

1.2 Applicable readers

Charger user
Charger installer
Charger maintenance personnel

1.3 Sign description

Sign	Description
 INDICATE	Description text, indicating supplementary description and interpretation of the text.
 NOTICE	Attention text, meaning to remind the user of some important operations or prevent potential injury and property loss.
 WARNING	Warning text, indicating that there are potential risks. If not avoided, it may cause injury accidents, charger damage or charging interruption.

1.4 Manual preservation

Please read this manual carefully before using the charger and keep it for future reference.

2 Safety statements



Quality requirements for installation and maintenance personnel:
Have the qualification certificate or experience in electrical power system installation and maintenance, and have the qualification to engage in relevant work (such as live working). In addition, they must have the following knowledge and operating skills.
-Have basic knowledge and installation skills of charger.
-Have basic knowledge and operation skills of electrical power line wiring.
-Have basic power safety knowledge and skills, and be able to read the contents of this manual.



The product is a charger that can charge electric vehicles in indoor and outdoor areas.
Local laws and regulations shall be observed when installing and using charger.
In any case, the use of the charger shall comply with the environmental conditions established for the charger.

The storage of charger shall meet the following requirements:
-Before charger installation, it is necessary to store the charger and its supporting components in a dry and ventilated place indoors to avoid rain, exposure, etc.

The charger is developed, produced and inspected according to relevant safety standards. Therefore, if the instructions and safety technical tips for the specified purpose are followed, the product will not cause property damage or endanger personnel health under normal circumstances.

The instructions contained in this manual must be strictly followed, otherwise there may be potential safety hazards or failure of safety devices. Although relevant safety tips are described in this manual, attention must be paid to the safety regulations and accident prevention regulations in accordance with the corresponding application.



Persons not authorized by LIVOLTEK are not allowed to open the charger.
Do not disassemble, repair or refit the charger and relevant ancillary facilities without permission. Improper operation may cause damage, water leakage, electric leakage and other damage to the charger or potential personal injury. If you need maintenance, modification, etc., please contact LIVOLTEK customer service.

Do not put flammable, explosive or combustible materials, chemicals, combustible gases and other dangerous articles near the charger.

Children are not allowed to approach or use the charger during charging to avoid accidental injury.

Please start and stop the charging according to the user manual and relevant prompts provided by LIVOLTEK. When plugging in and out the vehicle connector, pay attention to the appropriate force and press the unlock button (Type 1).

When inserting the vehicle connector, ensure that the lock catch of the vehicle connector head is fully fastened to the groove of the vehicle inlet to ensure full connection (Type 1); Do not pull the vehicle connector too hard, and pull the vehicle connector forcibly in the locked state.

It is forbidden to drive and move the vehicle during charging, and it is forbidden to draw the vehicle connector directly during charging.

In case of leakage, fire, electric shock or other abnormal emergency during charging, please press the emergency stop button immediately.

After the charging operation is completed normally, please plug the vehicle connector back into the socket in the charger in time to avoid the vehicle connector being directly exposed to the outside as far as possible to prevent the vehicle connector from abnormal contamination.

In thunderstorm weather, the vehicle connector and vehicle inlet shall not be exposed to the rain, and the rain shall not contact the charging interface to prevent electric leakage and electric shock; if there is no canopy or incomplete shelter, it is recommended not to charge as far as possible. After the rain stops, check whether the charger and vehicle connector have water

leakage, and charge only after it is confirmed to be safe.

In wet weather, it shall be confirmed that the vehicle connector and vehicle inlet are dry. If the charger or vehicle connector is found to be abnormally wet and soaked, charging shall be prohibited.

It is strictly prohibited to use the charger when the charger (including vehicle connector, charging cable, leakage protection device and other auxiliary parts) has defects, abnormal cracks, bare charging line, etc. if there are abnormalities or doubts about the use safety of the charger, you can contact LIVOLTEK customer service in time.

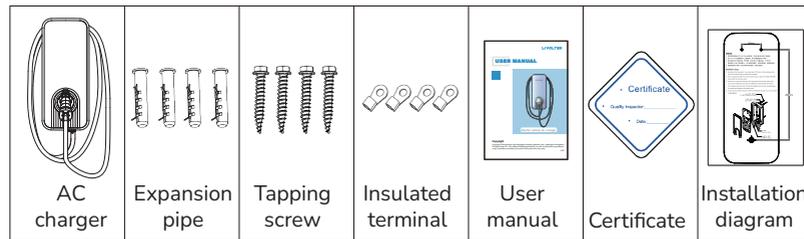
It is strictly forbidden to touch the vehicle connector and vehicle inlet with metal objects. If the vehicle connector and vehicle inlet are found to be damaged by melting and foreign matters, please stop using the charger immediately and consult the LIVOLTEK customer service for proper treatment.

For the unused charger, it is recommended to disconnect the circuit breaker associated with the charger to prevent power loss or unknown accidents.

Adaptors or conversion adaptors are not allowed to be used.

Cord extension sets are not allowed to be used.

3 Packing list

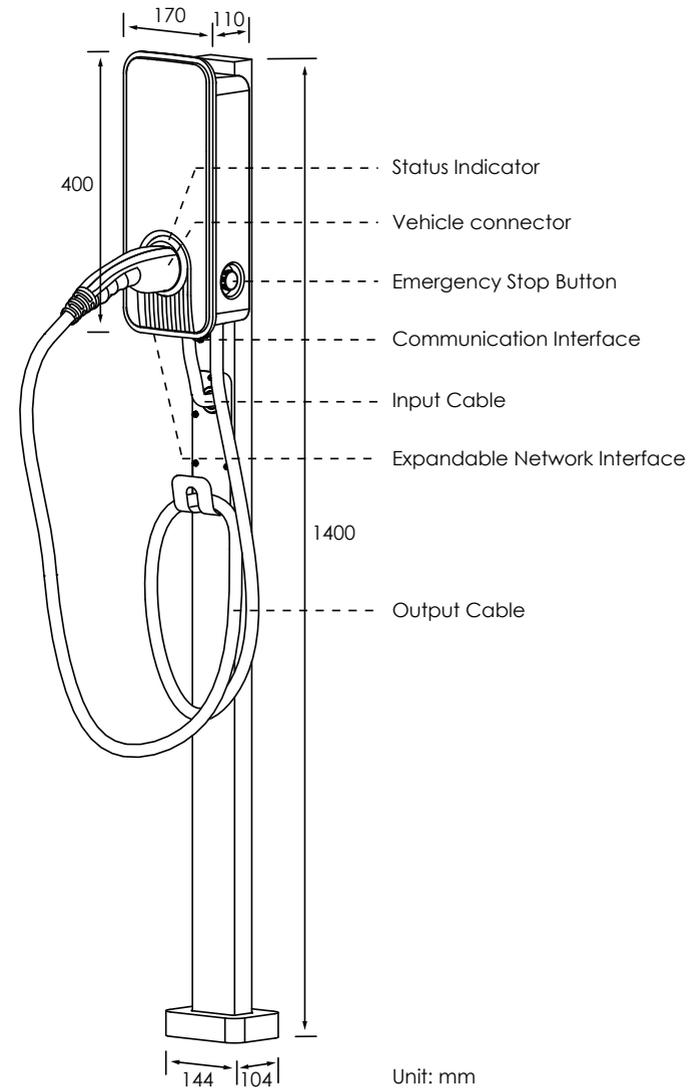


Item	Model	Quantity
AC charger	A0070230E11/A0070230E12 A0110400E11/A0220400E11	1 PCS
Expansion pipe	Φ 6X28 mm	4 PCS
Tapping screw	ST3.9X27	4 PCS
Insulated terminal	RV5.5-5 (A0070230E11/A0070230E12)	4 PCS
	E2512 (A0110400E11)	6 PCS
	E6012 (A0220400E11)	6 PCS
User manual		1PCS
Certificate		1PCS
Installation diagram		1PCS

4 Product introduction

LIVOLTEK charger supports wall mounted and column mounted installation, and the installation site is flexible; With overvoltage, undervoltage, overcurrent and other protection, IP degree reaches IP54, safe and reliable use; In addition, a variety of communication interfaces are reserved in the charger, which can be interconnected with electricity meters, inverters and other communication, so as to realize richer scene applications.

4.1 Product appearance



4.2 Technical parameter

Product	Single-phase AC EV Charger		Three-phase AC EV Charger	
	Model	A0070230E11	A0070230E12	A0110400E11
Charging Interface Type	Type 2/5m	Type 1/5m	Type 2/5m	Type 2/5m
Rated Power	7.3kW	7.3kW	11kW	22kW
Input Voltage	230Vac±10%		400Vac±10%	
Current Range	0~32A	0~32A	0~16A	0~32A
Rated Frequency	50Hz/60Hz			
Way of Starting	Plug & Charge/APP (RFID Optional)			
Noise	0dB			
Operating Temperature	-30 C ~ 50 C			
Storage Temperature	-40 C ~ 70 C			
Operating Humidity	5% ~ 95%RH			
Operating Altitude	≤2000m			
IP Degree	IP54			
Dimension	170*400*110mm (W*H*D)			
G.W./N.W.	4.3kg/3.7kg	4.3kg/3.7kg	4.6kg/3.8kg	5.9kg/5.1kg
Way of Installation	Wall Mounting (Column Optional)			
Status Indication	3 Color LED			
Way of Communication	Bluetooth (WiFi/Ethernet/4G Optional)			
Electricity Measurement	Support			
External Communication	RS485/CAN			
Communication Protocol	OCPP 1.6			
Residual Current Protection	30mA Type A RCBO External/6mA DC RCD Internal			
Multiple Protection	With Over Voltage Protection, Under Voltage Protection, Overcurrent Protection, Grounding Protection, Surge Protection, Short Circuit Protection, Fault Self-check and Other Multiple Protection Functions.			
Standard	IEC-61851-1-2017/IEC-61851-21-2-2018			

4.3 Safety protection

Electrical protection

The LIVOLTEK charger has the functions of overvoltage protection, undervoltage protection, overcurrent protection, short circuit protection, leakage protection and grounding protection.

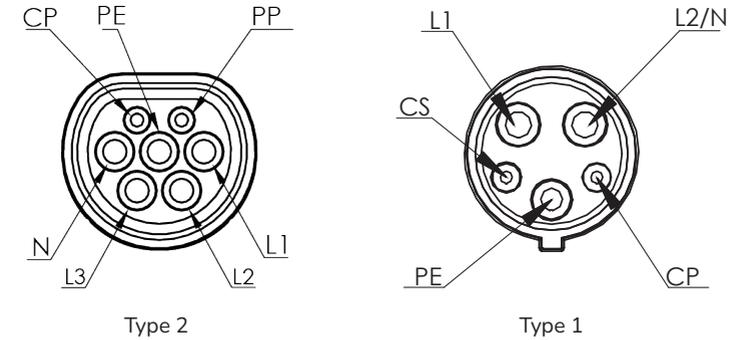
Emergency stop protection

In case of power failure in case of emergency during charging, press the emergency stop button to stop charging immediately.

Generally, the emergency stop button cannot be touched at will. It can only be used in case of emergency. If the emergency stop button is pressed, the output of the charger will be powered off, but there is still power at the incoming end. The owner shall not disassemble it without permission to avoid accidents.

If the emergency stop button is touched by mistake, causing the charger to stop charging, please rotate and reset the emergency stop button according to the direction indicated by the emergency stop button to remove the fault state.

4.4 Charging interface



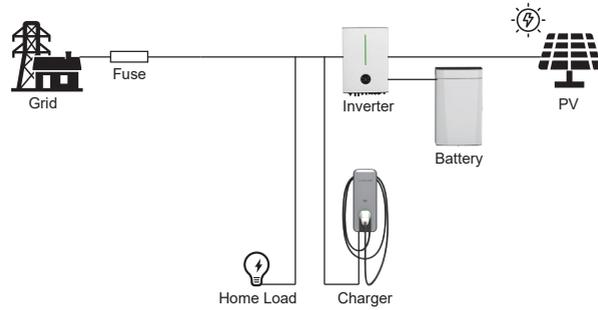
4.5 Indicator status

Indicator Status	Charger status
ⓐ Always On	Standby
ⓐ Flashing	Charging complete
ⓑ Slow Flashing	Plug in complete and wait for charging
ⓑ Fast Flashing	Starting charging
ⓑ Always On	Charging
ⓐ → ⓑ Repeating	CP status abnormal
ⓐ → ⓐ → ⓑ Repeating	Emergency stop fault
ⓐ → ⓐ → ⓐ → ⓑ Repeating	Leakage current fault
ⓐ → ⓐ → ⓐ → ⓐ → ⓑ Repeating	Overvoltage fault
ⓐ → ⓐ → ⓐ → ⓐ → ⓐ → ⓑ Repeating	Overcurrent fault
ⓐ → ⓑ → ⓑ Repeating	Undervoltage fault
ⓐ → ⓐ → ⓑ → ⓑ Repeating	Grounding fault
ⓐ → ⓐ → ⓐ → ⓑ → ⓑ Repeating	Relay fault

Note: "G" stands for green light, "B" stands for blue light, "R" stands for red light, "ⓐ" stands for always on, "ⓐ" stands for flashing.

4.6 Charging modes

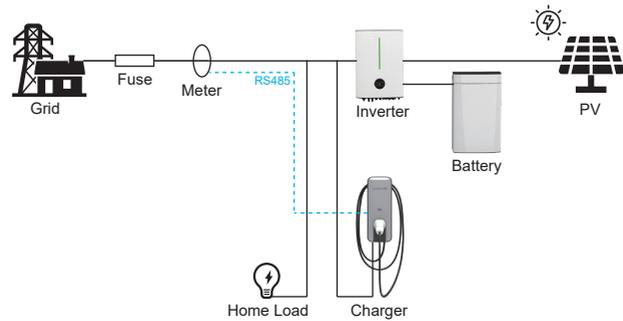
Fast mode



In this mode, the vehicle will be charged at fixed restricted charging power. This power can come from a renewable energy source or simply from the grid.

If you don't have solar panels, the LIVOLTEK EV charger will charge just like an ordinary Mode 3 charger.

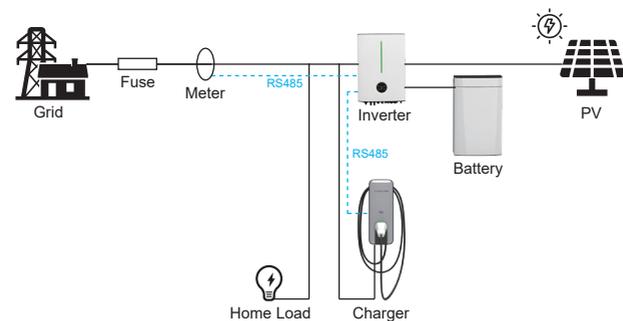
Dynamic mode



In this mode, the vehicle will be charged at dynamic maximum charging power. The charging power is continuously adjusted in response to changes in generation or power being consumed elsewhere in the home.

LIVOLTEK EV charger is adaptive with any renewable generation, whatever solar panel or wind turbine you have.

ECO mode



In this mode, it is a mixture of green energy and energy imported from the grid and LIVOLTEK battery pack. ECO mode minimises the use of grid power and can charge using 100% green energy.

If the surplus generation drops below 1.4kW, extra power will be drawn from LIVOLTEK battery pack or the grid to top it back up to protect your car.

Note: In three-phase power grid, the real-time power calculation of home load in Dynamic mode and ECO mode will be based on the maximum value of three-phase current.

5 Installation & wiring

5.1 Tools preparation

Tool	Illustration	Function
Multimeter		Check electrical performance.
Electric Drill		Drill mounting holes.
Hot Air Gun		Heating shrinkable tube.
Cross Screwdriver/PH2		Set screws.
Wire Stripper		Cut and peel wires.
Crimping Pliers		Press insulated terminals.
Hammer		Fix expansion pipes.
Wrench/17mm		Fix expansion bolts of column.
Slotted Screwdriver/2mm		Set screws.

5.2 Installation environment requirements

It is recommended that the charger be installed by an authorized service provider of LIVOLTEK.

The installation position of charger shall not be close to dangerous positions such as water pipe, gas pipe and steam pipe.

The charger shall not be installed in places with severe vibration or high temperature.

The installation position of charger should not be set in low-lying places where it is easy to accumulate water or drip.

The charger shall be installed vertically, and the center of gravity shall not be too high to prevent overturning or tilting.

The installation position shall be convenient for charging, and the wiring length shall be shortened during line laying to reduce cable energy consumption.

The connection between the wall mounted charger and the wall shall be fixed. The installation wall shall be able to bear the gravity of the charger and its accessories, and shall not tilt after installation.

It is recommended that the charger be installed in an environment with sunshade or umbrella.

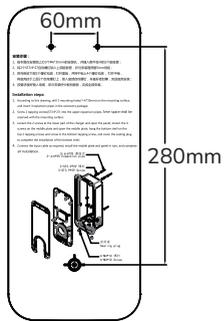
The lighting and access at the installation site of charger must be guaranteed.

A certain space shall be reserved for the installation of charger to facilitate the inspection and maintenance of technicians.

Ensure that the grounding wire is reliably connected to the grounding wire of the power supply system nearby.

5.3 Installation of charger

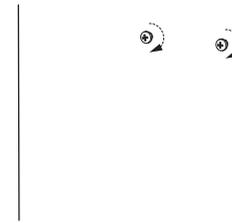
Wall mounted installation



1. Drill 3 mounting holes ($\Phi 6 \times 35$ mm) on the mounting surface according to the installation hole diagram.

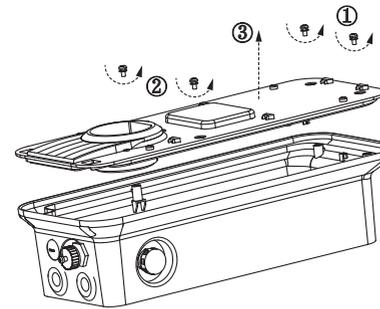
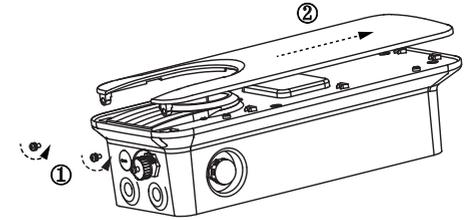
Note: the installation height of the charger shall ensure that the lowest point of the vehicle connector when stored shall be located at a height between 0.5m and 1.5m above ground level.

2. Insert the 3 expansion pipes ($\Phi 6 \times 28$ mm) into the holes.



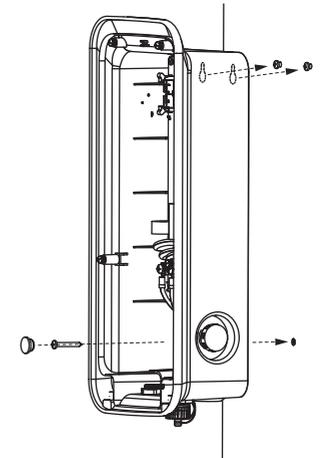
3. Lock 2 ST3.9x27 tapping screws into the upper expansion pipe and reserve a 5mm distance from the mounting surface.

4. Loosen the 2 screws at the lower part of the charger, push the panel upward and open it.

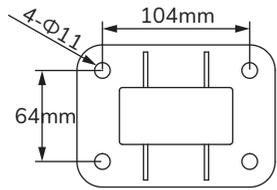


5. Loosen the 4 screws on the middle plate and open the middle plate.

6. Hang the bottom shell on the 2 tapping screws above, lock the bottom tapping screw, and cover the sealing plug to complete the installation of the bottom shell.



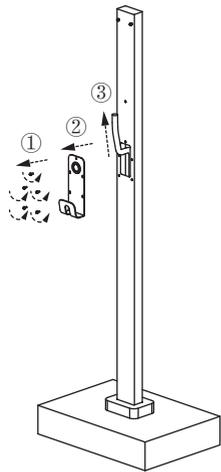
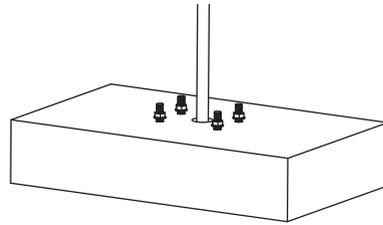
Column mounted installation



1. Drill four installation holes ($\Phi 12 \times 120$ mm) on the cement base according to the column installation hole diagram.

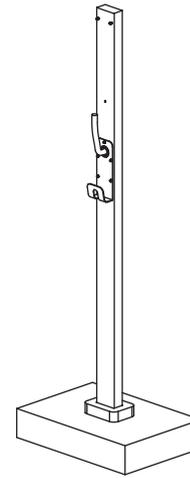
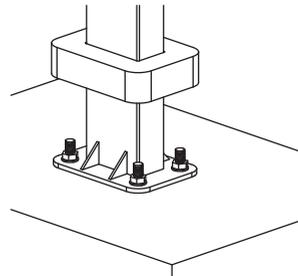
Note: the height of the cement base shall ensure that the lowest point of the vehicle connector when stored shall be located at a height between 0.5m and 1.5m above ground level when the charger is installed on the column.

2. Install four M8x100 expansion bolts into the mounting holes and fasten the expansion bolts to ensure that the exposed height of the expansion bolts is between 15 ~ 25mm.



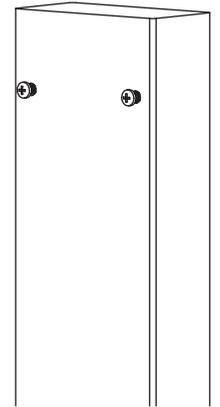
3. Loosen the 5 screws on the hook and take down the hook, pass the cable of the cement base through the inside of the column and lead out from the cable outlet of the column.

4. Lift the bottom cover, align the column with the installation holes of the cement base one by one, and then tighten the four M8x100 expansion bolts.



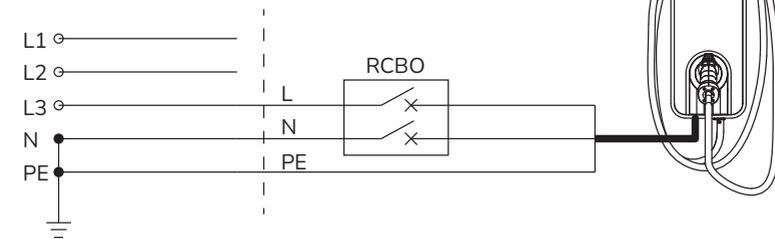
5. Thread the hook through the cable and tighten the 5 screws.

6. Refer to the above steps "4, 5 and 6" of "Wall mounted installation" to complete the installation of the bottom shell and column.



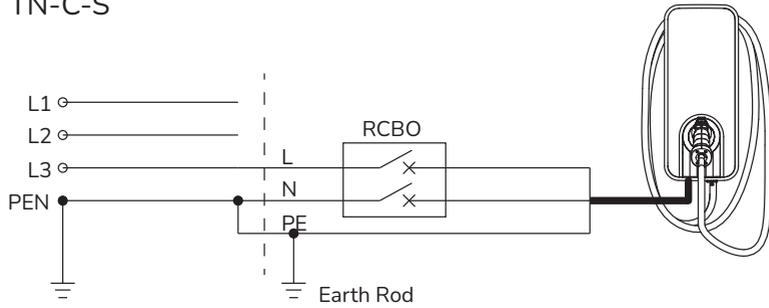
5.4 Grid architecture wiring

TN-S



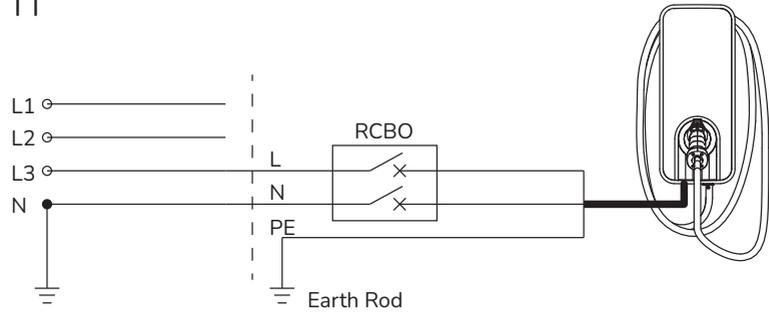
Note: RCBO is mandatory. The three-phase AC charger is additionally connected to L1 and L2.

TN-C-S



Note: RCBO and earth rod are mandatory. The three-phase AC charger is additionally connected to L1 and L2.

TT

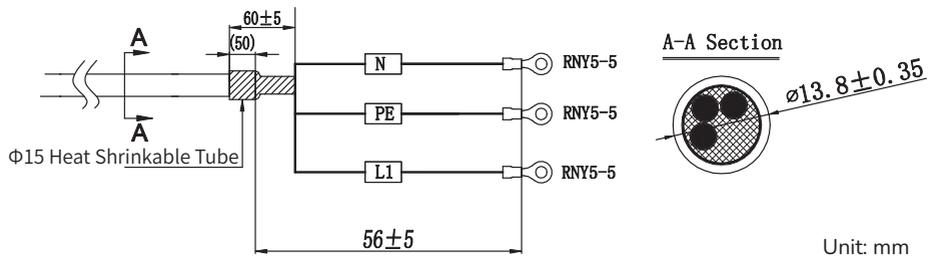


Note: RCBO and earth rod are mandatory. The three-phase AC charger is additionally connected to L1 and L2.

5.5 Input cable preparation

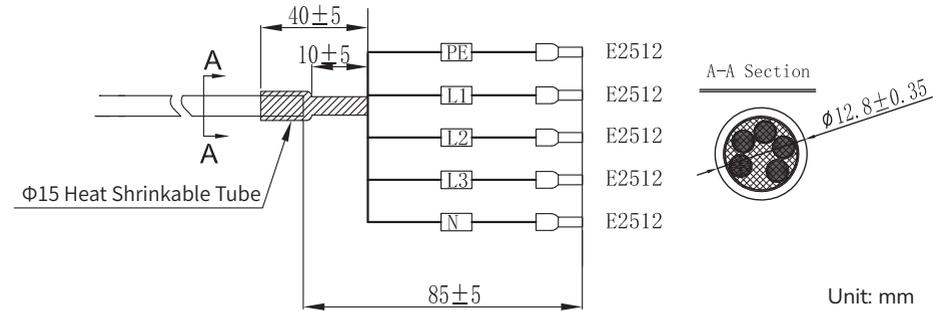
A0070230E11/A0070230E12

It is recommended that the specification of AC incoming cable is 3x6mm², the specific treatment method of incoming cable is shown in the figure below:



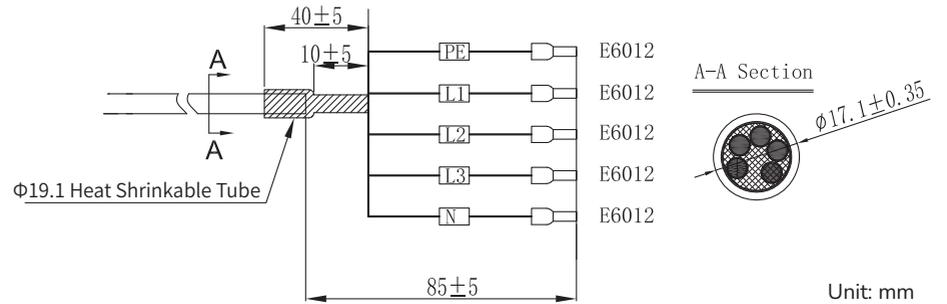
A0110400E11

It is recommended that the specification of AC incoming cable is 5x2.5mm², the specific treatment method of incoming cable is shown in the figure below:



A0220400E11

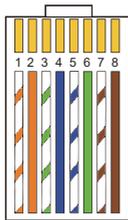
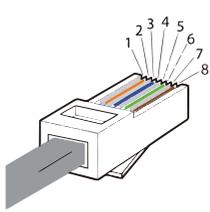
It is recommended that the specification of AC incoming cable is 5x6mm², the specific treatment method of incoming cable is shown in the figure below:



5.6 Communication network cable preparation

If the charger needs RS485 communication, it is recommended to adopt EIA /TIA 568B standard network cable. The specific treatment method of network cable is shown in the figure below:

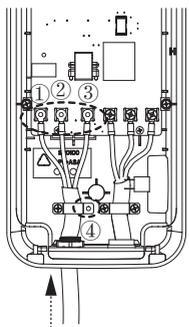




- ① White with orange stripes
- ② Orange
- ③ White with green stripes
- ④ Blue
- ⑤ White with blue stripes
- ⑥ Green
- ⑦ White with brown stripes
- ⑧ Brown

PIN	1	2	3	4	5	6	7	8
Definition	CANH	CANL	RS485B1	RS485A1	NC	NC	RS485A2	RS485B2

5.7 Wiring of charger

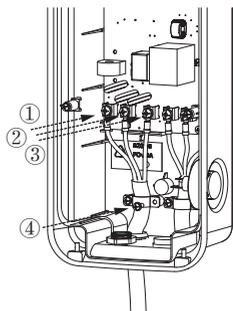


1. First loosen the four screws ① ② ③ ④, pass the input cable through the incoming sealing ring of the charger, and then pass through the incoming cable hoop.

2. According to the corresponding "L", "N" and "PE" terminal blocks on the control board, connect the "L", "N" and "PE" lines of the cable and fix them with reserved M5x10 screws. After adjusting the position of the cable, lock the cable hoop with reserved screws.

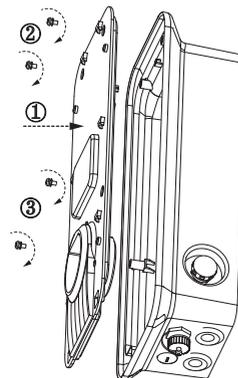
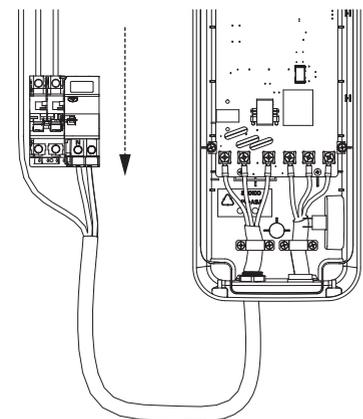
Note: the torque for screw installation is $2.8N \cdot m$.

A0110400E11/A0220400E11 wiring correspond to "L1", "L2", "L3", "N" and "PE".



3. One 40A RCBO (type A / 30mA) must be forcibly connected to the front end of the incoming line of the charger, and the corresponding wiring shall be subject to the requirements of the circuit breaker.

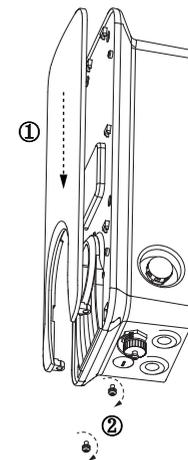
Note: A0070230E11/ A0070230E12 corresponds to 2P RCBO, A0110400E11/A0220400E11 correspond to 4P RCBO.



4. Install the middle plate on the bottom shell and fasten it with the reserved screws.

5. Fix the panel to the middle panel and fasten it with reserved screws to complete the wiring of the charger.

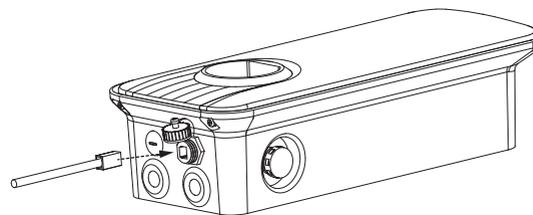
Note: It is recommended to connect one 1P + N + PE surge protection device (Class C) at the front end of the incoming line of the charger, A0070230E11/ A0070230E12 corresponds to 1P + N + PE surge protection device, A0110400E11/A0220400E11 correspond to 3P + N + PE surge protection device. And the corresponding wiring shall be subject to the requirements of the surge protection device.



5.8 External communication wiring of charger

When the charger is used with the electricity meter or inverter, the charger and the electricity meter or inverter need to connect a network cable for RS485 communication.

The wiring of the charger is shown in the figure.



The other end of the network cable PIN3 (white with green stripes) is connected to RS485B of the electricity meter or inverter, and PIN4 (blue) is connected to RS485A of the electricity meter or inverter. The detailed wiring of the electricity meter and inverter shall be subject to the equipment requirements.



6 Operating instructions

6.1 Plug and charge

The charger supports plug and charge.

When the charger is in standby, the user first inserts the vehicle connector into the vehicle inlet. After the car recognizes that the vehicle connector is inserted, the charger starts charging. When the vehicle battery is full or the vehicle end actively stops charging, the charging is completed. At this time, please pull out the vehicle connector and plug it back into the socket in the charger.

6.2 Charging with RFID card

The charger supports charging with swiping card.

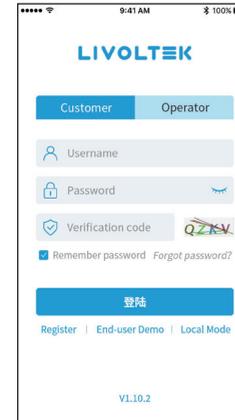
When the charger is in standby, the user first inserts the vehicle connector into the vehicle inlet, and then swipes the card to start charging. When the vehicle battery is full or swipes the card to stop charging, the charging is completed. At this time, please pull out the vehicle connector and plug it back into the socket in the charger.

6.3 Charging with APP

The charger supports charging with APP.

When the charger is in standby, the user first inserts the vehicle connector into the vehicle inlet, and then starts charging through APP. When the vehicle battery is full or the charging is stopped through APP, the charging is completed. At this time, please pull out the vehicle connector and plug it back into the socket in the charger.

6.4 APP operating instructions



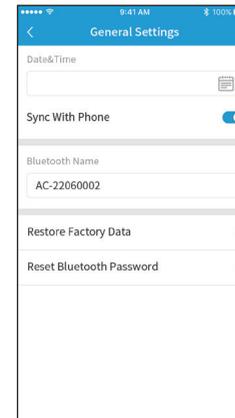
1 Access the charger via Bluetooth.

Step 1: Open LIVOLTEK APP, enter “**Local Mode > Bluetooth Mode**” on the login page, and select the charger for access.

Note: The name of charger is AC-{SN last 8 digits}.

Step 2: Turn on the mobile phone Bluetooth, search the charger, enter the initial password **111111** to pair with the charger.

After accessing the charger with LIVOLTEK APP, the user can modify or reset the Bluetooth password in “**Settings > General Settings > Reset Bluetooth Password**”.

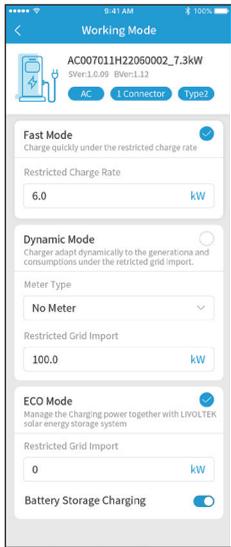


2 Complete the charger configurations.

After entering the home page, access the charger setting items through the “” icon, enter “**Settings**” and complete the charger configurations.

Configure “**Date & Time**”.

Enter “**Settings > General Settings**”. When “**Sync With Phone**” is turned on, the time will be synchronized automatically or you can set the time manually.



Configure “Working Mode”.

“Fast Mode”: Charge quickly under the restricted charge rate.

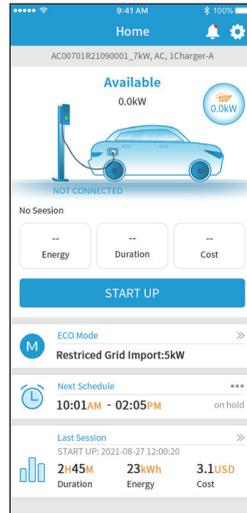
“Dynamic Mode”: Charger adapt dynamically to the generations and consumptions under the restricted grid import.

“ECO Mode”: Manage the charging power together with LIVOLTEK solar energy storage system.

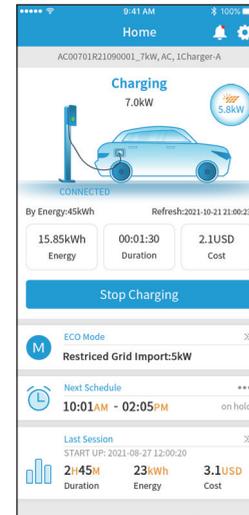
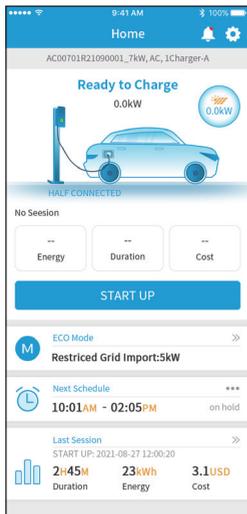
Note: Only 1 mode can be enable at the same time. “Dynamic Mode” needs to be used with the electricity meter, and “ECO Mode” needs to be used with the LIVOLTEK inverter and energy storage system.

3 Start-up charging.

Step 1: Check the status of the charger, only when it is “Available”, you can insert the vehicle connector into the vehicle inlet.

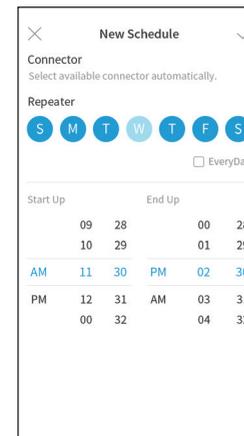
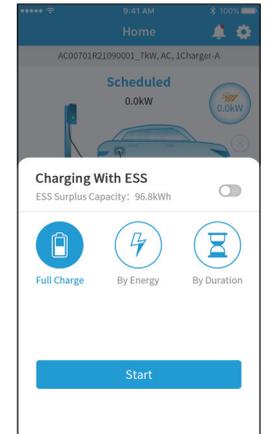


Step 2: And when it is “Ready to Charge”, you can touch the “START UP” to charge.



Step 3: Select a charging strategy, enter cut-off condition through the “Start” button, and then start charging.

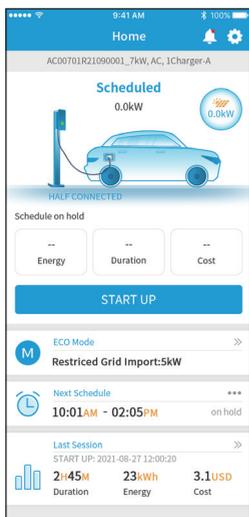
Note: If you have a LIVOLTEK solar ESS system, you can choose whether to enable “Charging With ESS”. When enabled, energy can be taken from the ESS battery to EV.



4 Create a charging schedule.

Step 1: Touch schedule list hot zone as shown in the home page to enter Schedule page, and press the “+” icon to enter the new schedule page to create a charging schedule.

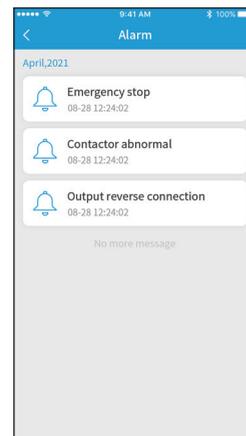
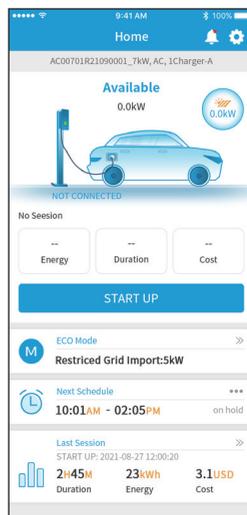
Step 2: Set the charging “Start Up” time and “End Up” time and “Repeater” rules, and then confirm to create the charging schedule.



Step 3: After successful creation, return to the home page. You can see that the schedule has been “on hold” and the state of the charger has changed to “Scheduled”.

5 View historical sessions.

Enter the historical session page through the “>>” icon on the right side of “Last Session” on the home page to view all historical sessions of the charger.



6 View historical alarms.

Enter the alarm center page through the “🔔” icon at the top of the home page to view all historical alarms of the charger.

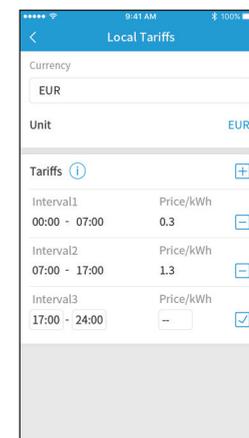
7 Local tariffs setting.

The charger supports estimating charging costs by setting local tariffs. You can set the charging tariff in “Settings > Local Tariff Settings”.

Note: Time phased electricity price is supported. The start and end time of the local tariffs must be an hour or half an hour, and the minimum time interval unit is half an hour.



Livoltex APP



7 Troubleshooting

Fault	Possible cause	Recommended measure
The status indicator is not on	No power input.	Check whether the input cable is reliably connected and whether the front circuit breaker is closed.
Ⓡ → Ⓡ → Ⓡ → Ⓡ → Ⓡ → Ⓡ Repeating	Input voltage too high.	Measure the input voltage with a multimeter. If it exceeds 264Vac for a short time, wait until the power grid returns to normal voltage before use.
Ⓡ → Ⓡ → Ⓡ → Ⓡ Repeating	Input voltage too low.	Measure the input voltage with a multimeter. If it is lower than 195Vac for a short time, wait until the power grid returns to normal voltage before use.

(R) → (R) → (R) → (R) → (R) → (B) Repeating	The EV demand current exceeds the output current value of the charger.	Re insert the vehicle connector and try to start the charging again. If the fault continues to be reported, you need to contact the after-sales service of EV.
(R) → (R) → (B) Repeating	Emergency stop button not reset.	Reset the emergency stop button according to the direction indicated by the emergency stop button before use.
(R) → (R) → (B) → (B) Repeating	Poor input or output grounding.	Check whether the connection of input PE and output PE is tight and reliable. After troubleshooting, power on again.
(R) → (B) Repeating	CP voltage sampling value is not 6V.	Please contact the after-sales service personnel to check whether the problem is the charger or the EV.
Unable to start charging	The vehicle connector is not reliably connected to the vehicle inlet.	Check whether the vehicle connector is fully inserted into the vehicle inlet.
	There is foreign matter on the charging interface.	Check whether there are foreign matters at the charging interface and contact the manufacturer for treatment in time.

Note: If the problem still cannot be solved, please contact the manufacturer for after-sales service in time. "B" stands for blue light, "R" for red light and "⊙" for flashing.

8 Disclaimer

There are clear requirements and conditions for the transportation, storage, installation and use of electric vehicle charger. LIVOLTEK is not responsible for providing free relevant services, technical support or compensation, including but not limited to:

The charger has expired the warranty period and has not purchased extended warranty service.

A valid serial number, warranty card or invoice for the charger cannot be provided.

The charger was damaged by human factors.

Damage of charger caused by force majeure (such as earthquake, flood, storm, fire, etc.).

The installation and use of charger violate relevant local policies and regulations.

The installation and use of charger do not meet the requirements in this manual.

Change the hardware or software of the charger without authorization from LIVOLTEK.

Obtain relevant communication protocols from other illegal channels without authorization of LIVOLTEK.

Establish the monitoring system without authorization from LIVOLTEK.

LIVOLTEK reserves the right to interpret all contents of this user manual.

LIVOLTEK

Dear customer, thank you for choosing LIVOLTEK product.

For registering product warranty, please prepare everything ready and register on <https://www.livoltek.com/registration.html>.

Product Information	
Product Model	
Product S/N	
Installation Date	
Installation Company	
Personal Information	
Your Name	
Your Contact Number	
Your Email Address	
Your Home Address	

*Warranties should be registered within 6 months of installation, however it is recommended that they are registered no more than 6 weeks following the successful installation and commissioning of the product where possible, thanks for your cooperation.