



Charging pile Instructions

Edition : V1.3.0



About the manual

The manual is prepared for users of Floor-type DC Charging Piles.

Please read the manual carefully before installation, operation, maintenance or inspection of the product.

Technical service

If any problems found during the use of the charging pile, kindly please contact our technical service department as below:

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For more information, please visit our website: [http:// www.mindrasolar.com/](http://www.mindrasolar.com/)

In order to protect and respect intellectual property rights, no companies or individuals shall provide information in this manual to the third party without any authorization.

To ensure the accuracy, the manual has been carefully reviewed. If any errors found while using, any comments will be welcomed.

If any conflicts found between the manual and new products, please refer to the extra specification attached.

Mindra Green energy LLP reserves the right to improve product technologies and interpret this manual. Product technologies and the manual are subject to changes without prior notice and relevant technical agreements shall prevail.

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Safety Instructions

Please pay special attention to all safety information in the manual. Personal injuries or casualties might be caused if precautions mentioned in the manual not be observed. Any personal injury or equipment damages due to customer's failure in following this manual shall not be responsible by YUTONG Company.

Warning   ---- means potential dangers. If not avoid, personal injuries may be caused.

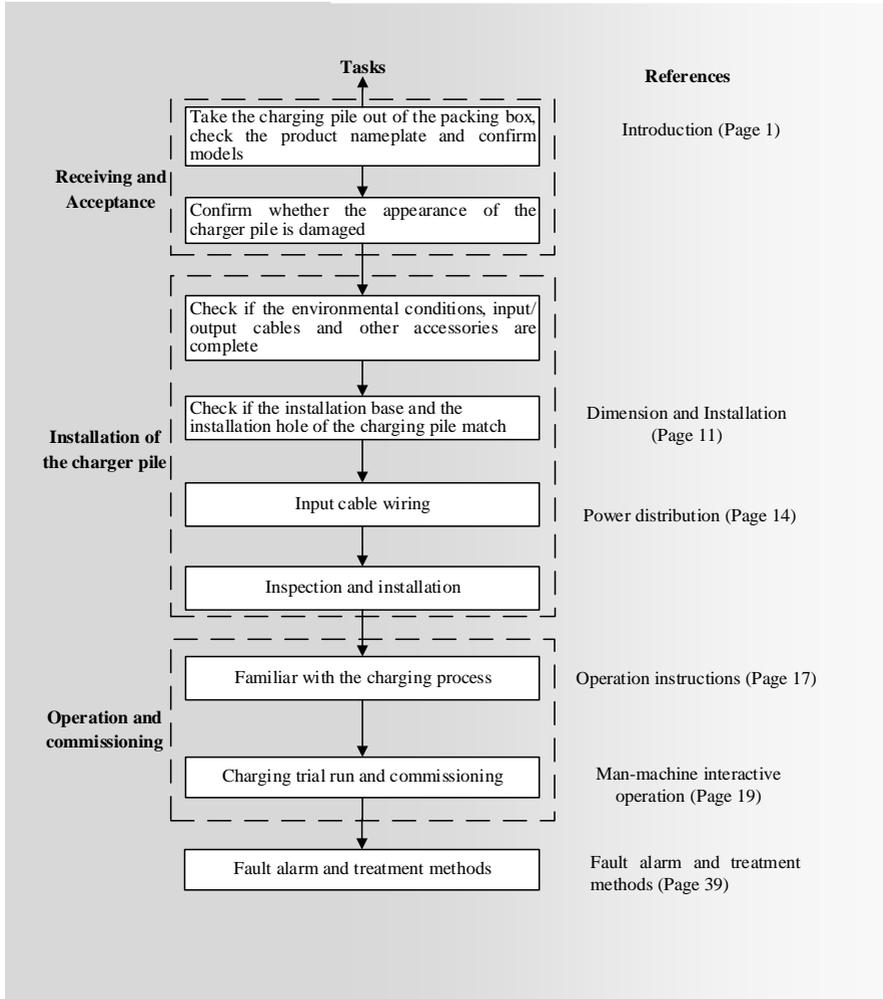
★ Safety Precautions

- Please observe the instructions when using charging pile.
- Do not carry out wiring when power on.
- In case of abnormal situations, please stop using and contact the manufacturer.
- Please contact the manufacturer timely in case of abnormal situations during the operation. Maintenance carried out by other personnel except for professional technicians may cause further damage, injuries or accidents.
- Do not open the charging pile when the equipment is live or with residual voltage.
- Reliable earthing shall be well ensured, otherwise, degrading of insulation performance may cause leakage or electric shock.
- The charging pile installation and maintenance could only be operated by qualified electric engineers.
- Maintenance and inspection must not be carried out until discharge is confirmed complete after the main circuit is disconnected.
- Do not use the direct current charging pile which has been damaged or has faulty parts.
- The vehicle connector must not be placed randomly. The plug shall be inserted back to the protective socket after completion of charging.



Rapid Installation Guidance

Installation and Commission Flowchart





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1. Introduction

1.1 Product Introduction

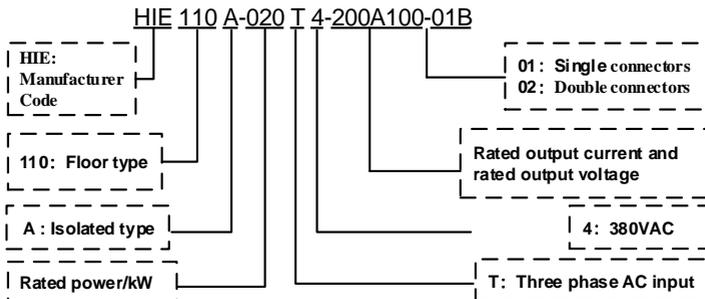
The DC charging pile, which is an isolated DC charging pile focusing on product safety performance, is mainly used for quick charging of pure electric vehicles. Charging piles of this type are designed for outdoor floor types with waterproof, dustproof and corrosion proof function and have environmental protection design with protection grade of IP 54.

The product, with modular design concept, has integrate the vehicle connector, human-machine interface (HMI), charger, communication and billing parts together into one cabinet so that it can easily achieve convenient installation and debugging, simple operation and maintenance, etc.

Products could be applied on large-scale parking lots, residential areas, shopping malls, hospitals, transfer stations, airports, docks, parks and scenic spots, etc.



1.2 Product Model



Product model



2. Product Model Specification

Model	Output power	Remark
HIE110A-020T4-200A100-01B	20kW	

3. Normative Reference and Specification

GB/T18487.1-2015	Electric vehicle conductive charging system - Part 1: General requirements
GB/T18487.1-2015	Electric vehicle conductive charging system - Part 2: Electromagnetic compatibility requirements for non-vehicle conduction power supply equipment
GB/T 20234.1-2015	Connection device for conducting charge of electric vehicle - Part 1: General requirements
GB/T 20234.3-2015	Connection device for conducting charge of electric vehicle - Part 3: DC Charging Interface
GB/T 27930-2015	Communication protocol between off-board conduction charger and battery management system of electric vehicle
GB/T 34658-2017	The consistency of communication protocol test between non-on-board conduction charger and battery management system
GB/T 34657.1-2017	Electric vehicle conduction charging interoperability test specification - Part 1: Power supply equipment
Q/GDW 1591-2014	Technical specifications for the inspection of off-board chargers of electric vehicles
Q/GDW 1233-2014	General requirements for electric vehicles off-board chargers
Q/GDW 1235-2014	Communication protocol of electric vehicles off-board chargers
Q/GDW 1234.1	Specification for charging interface for electric vehicles - Part 1: General requirements
Q/GDW 1234.3	Specification for charging interfaces for electric vehicles - Part 3: DC charging interfaces
NB/T 33001-2018	Technical conditions of electric vehicles off-board conducting chargers
NB/T 33008.1-2018	Test specification of electric vehicles charging equipment - Part 1: Off-board charger



4. Environmental Conditions

No.	Item	Index			Unit	Remark
		Working	Transportation	Storage		
1	Temperature	-30 ~ 55	-40 ~ 70	-40 ~ 70	°C	Derating will be needed above 50°C
2	Humidity	5 ~ 95	/	5 ~ 95	%	Condensation free
3	Altitude	≤2500	/	≤2500	m	
4	Cooling method	Forced air cooling			-	

5. Electric Characteristics

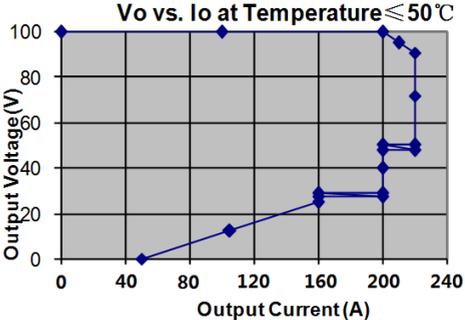
5.1 Input characteristics

No.	Item	Index	Unit	Remark
1	AC input voltage	320~480	VAC	System input line voltage
2	Rated AC input voltage	400	VAC	3P+N+PE
3	AC input frequency range	45~65	Hz	Rated frequency 50Hz/60Hz
4	Power factor	≥0.99	-	Rated input voltage, rated load
5	THD	≤5(The equipment of Grade A)	%	3P+N+PE
6	AC input system	Three-phase-five-wire system	-	3P+N+PE
7	Rated Input Current	31	A	Input 400 VAC, each phase with full load

5.2 Output characteristics

No.	Item	Index	Unit	Remark
1	Output voltage adjustable range	30~100	VDC	Subsection continuous adjustment by monitoring segmentation
2	Output Current adjustable range	0~220	A	220A@ under90VDC , 200A/100V



3	U/I curve diagram			
4	Voltage error	$\leq \pm 0.5$	%	
5	Current error	$\leq \pm 1$	%	Output DC current $\geq 30A$
		$\leq \pm 1$	A	Output DC current $< 30A$
6	Stabilized voltage precision	$\leq \pm 0.5$	%	
7	Stabilized current precision	$\leq \pm 1$	%	
8	Ripple factor	$X_{rms} \leq 1$ $X_{pp} \leq 1$	%	
9	Current Ripple	1.5	A	$f \leq 10Hz$
		6		$f \leq 5000Hz$
		9		$f \leq 150000Hz$
10	Efficiency	≥ 93	%	10-30% of output power
		≥ 94		31-40% of output power
		≥ 95		41-60% of output power
		≥ 94		61-100% of output power
11	Current sharing unbalance	$\leq \pm 5$	%	No less than 4 modules together; 50% and above load.
12	Current control time	≥ 20	A/s	
13	Current stopping rate	≥ 100	A/s	



5.3 Protection characteristics

No.	Item	Index	Unit	Remark
1	Input undervoltage protection point	320	VAC	Adjustable
2	Input overvoltage protection point	480	VAC	Adjustable
3	Inputting phase loss protection	yes	-	
4	Input overcurrent protection	yes	-	In case of input overcurrent, the charging module inside the equipment tests the input overcurrent to cut off inputs, to achieve self protection.
5	Output overvoltage protection	yes	-	Adjustable
6	Output overcurrent protection	yes	-	Adjustable
7	Short-circuit protection	yes	-	
8	Over-temperature alarm	50 - 75	℃	Module inlet temperature is greater than 50, and automatic linear reduction in terms of temperature
9	Over-temperature protection	75	℃	The environmental over temperature protection point is 75℃. When the DC board temperature is greater than 80℃, the module will stop working. When the temperature of DC board is lower than 70℃, it can resume operation automatically
10	Over-temperature alarm of charging plug	95	℃	Adjustable
11	Over-temperature protection of charging plug	105	℃	Adjustable
12	Fan opening temperature	Air inlet : >35	℃	Adjustable
		Air outlet : >45		
13	Temperature protection of air inlet	55	℃	Adjustable
14	Temperature protection of air outlet	75	℃	Adjustable
15	Temperature alarm of air inlet	80	℃	Adjustable
16	Temperature alarm of air outlet	100	℃	Adjustable



17	Emergency shutdown protection	yes	-	Press emergency button, in case of emergencies.	
18	Input inrush current	$\leq 110\%$	A	Input current	
19	Soft-starting time	3~8	S		
20	Start output pulse	voltage	$\leq 5\%$	V	Output DC current $\geq 30A$ Output DC current $< 30A$
		current	$\leq 5\%$ ≤ 1.5	A	
21	Output current measured error	$\leq \pm (1.5\%I_m+1)$	A	I_m : actual output current of charger	
22	Output voltage measured error	$\leq \pm 5$	V		
23	Measured value update time	≤ 1	S		
24	Output insulation protection	yes	-	In case of $100\Omega/V < R < 500\Omega/V$, the charger sounds an alarm of abnormal insulation but still normally charges; in case of $< 100\Omega/V$, the charger stops charging.	
25	Contactor adhesion alarm	yes	-		
26	Battery voltage detection function	yes	-		
27	Battery voltage reverse function	yes	-		
28	Countercurrent protection function	yes	-		
29	Door protection function	yes	-		

5.4 EMC characteristics

No.	Item	Index	Unit	Remark
1	Electrostatic immunity	Level 3	-	
2	Radiofrequency electromagnetic field radiation immunity	Level 3	-	
3	Power frequency magnetic field immunity test	Level 5	-	
4	Electrical fast transient pulse group immunity	Level 4	-	
5	Surge (impact) immunity	Level 4	-	
6	Test of disturbance immunity of radio frequency field induction	Level 3	-	
7	Voltage sag, short - time interruption immunity	Level 3	-	



8	Harmonic current emission limit test	Type A	-	
9	Voltage fluctuation and scintillation test	Type A	-	
10	Conduct disturbance test of power terminal	Type A	-	
11	Signal port conduct harassment test	Type A	-	
12	Protect keyless access to system for radiation harassment inspection	Type A	-	
13	Enclosure port radiation harassment test	Type A	-	

5.5 Safety features

No.	Item	Index	Unit	Remark	
1	Impulse withstand voltage	Input-Earth	≤ 10	mA	2.8kVDC
		Output-Earth	≤ 10	mA	2.8kVDC
		Input -Output	≤ 10	mA	2.8kVDC
2	Insulation resistance	Input-Earth	≥ 10	M Ω	500VDC
		Output-Earth	≥ 10	M Ω	500VDC
		Input -Output	≥ 10	M Ω	500VDC
3	Dielectric strength	Input-Earth	No breakdown and insulation damage	-	Thunder electric wave $\pm 6KV$
		Output-Earth			
		Input -Output			
4	Grounding impedance	The maximum resistance is under 100 m Ω between the charging machine and the site.		m Ω	
5	Electric clearance	≥ 14	mm		
6	Creepage distance	≥ 16	mm		
7	Touch current	≤ 3.5	mA		
8	RCD	YES			
9	Ac input lightning	Maximum continuous operating voltage is 385VAC ;	-		



	protection	Nominal discharge current is 20kA ; Maximum discharge current is 40kA Voltage protection level is under 1.8kV		
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5.6 Other characteristics

No.	Item	Index	Unit	Remark
1	DC output charging interface	GB/T20234.1-2015 GB/T20234.3-2015	-	
2	Low voltage auxiliary power supply	12V/10A	-	Optional 24V or 12V/24V switch; Voltage error: 12V±0.6v
3	Standby power consumption	≤N×50	W	N: charging interface quantity
4	Noise	≤65	dB	
5	Current display accuracy	≤±1	%	
6	Voltage display accuracy	≤±0.5	%	
7	IP protection class	IP55	-	
8	Cables of the charging gun	5	M	
9	The protection of three proofing	moisture proofing, salt spray proofing and fungus proofing	-	There are several printed circuit boards in the system. The connector and other circuits carry out moisture proofing, salt spray proofing and fungus proofing treatment to ensure that the charger can run normally in the environment of damp and salt fog.
10	Antirust protection	Anti oxidation	-	The double layer antirust measures are taken for the iron shell of the system and the iron support and parts exposed outside. The non iron metal shell has anti oxidation protection film or anti oxidation treatment.
11	Environmental protection	Meet requirements of 2011/65/EU; no cadmium, hydride and fluoride	-	



5.7 Indicator light

No.	Indicator light	Charger state		
		Power	Charging	Fault
1	Yellow	ON	OFF	OFF
2	Green	OFF	Rolling blinking	OFF
3	Red	OFF	OFF	ON



6. Product Characteristics

No.	Item	Index	Remark
1	Wireless communication	2G/3G/4G	Different operators are available
2	LAN	Support	Optional
3	Charging card management system	Support	Complete business card making and card issuing system, with asynchronous settlement function
4	Back office management system	Support	
5	Remote upgrading function	Support	
6	HMI interaction	Support	LCD display screen equipped
7	Charging record	> 1000 pieces	
8	Fault record	> 1000 pieces	
9	Power drop data saving function	Support	
10	Alarming and protection function	Support	
11	Card start	Support	
12	Screen button start	Support	
13	Plug the charger	Support	Optional
14	APP charging	Support	Optional
15	Communication protocol	OCPP1.6J	

7. Dimension and Installation

7.1 Dimensions

Please refer to figure 7.1 and chart 7.1 for the external dimensions of the charger.

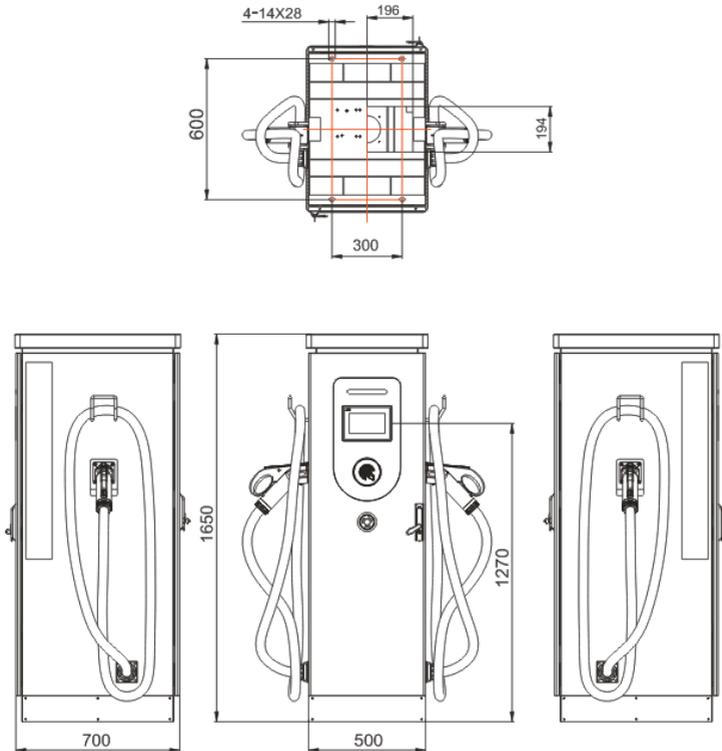


Figure 7.1 Charging Pile Dimension

Chart 7.1 Detailed Dimension Data of Charging Pile (Unit : mm)

Charging Pile Power	Length (L)	Width (W)	Height (H)
20kW	700	500	1650



7.2 Installation Method and Installation Hole Size

- (1) The charging pile is required to be installed on the cement column that shall be buried in the ground mostly to ensure safe and stable running, referring to Figure 7.2.1
- (2) The charging pile input line entries from the bottom, and enough space shall be reserved inside cement column.
- (3) Four expansion screws shall be used to fix charging pile on the cement column, and the screw size shall be determined by installation size and based on on-site requirements. Please refer to figure 7.2.2, chart 7.2.2 and chart 7.2.3 for specific size.
- (4) During the installation, enough distance between the charging pile and wall shall be ensured. The installation distance between the back door of the charging pile and wall shall be no less than 700 mm, and the distance between the side face of the charging pile and wall shall be no less than 500 mm.
- (5) The canopy shall be built together with the charging pile.
- (6) The above installation method is just a sample for reference. Relevant installation methods shall be chose according to the actual onsite situation Please refer to the construction instruction for details.
- (7) For input lines, specified cables are recommended. See Chart 7.2.1 for details:

Chart 7.2.1 Cables Specification

Charging pile power	AC Input Voltage	Max. Input Current	Recommended Cable Specification (Copper Core)
20kW	400V \pm 20%	39A	YJV22-0.6/1kV-3*16mm ² -2*10mm ²

Note: To ensure the power consumption safety of different onsite, the recommended cable specification is relatively larger. Customer could choose proper cable according to actual onsite situation.

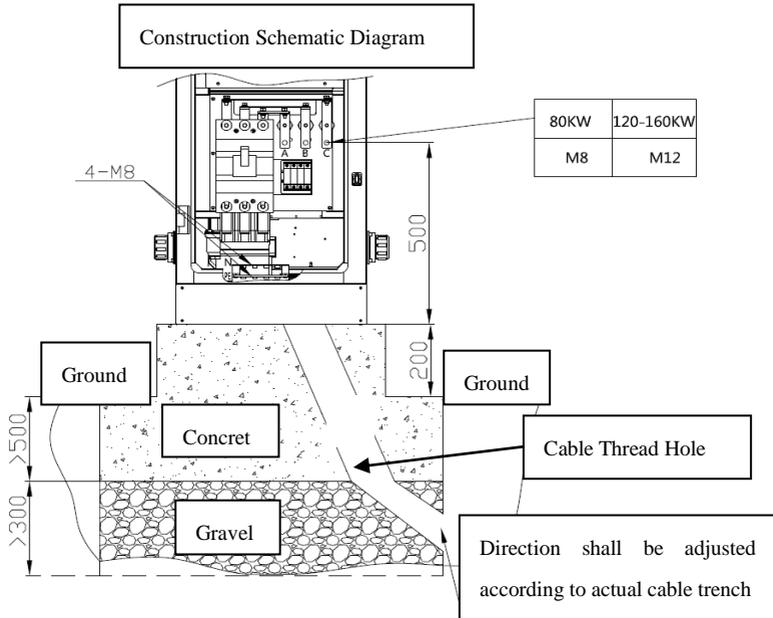


Figure 7.2.1 Construction Drawing

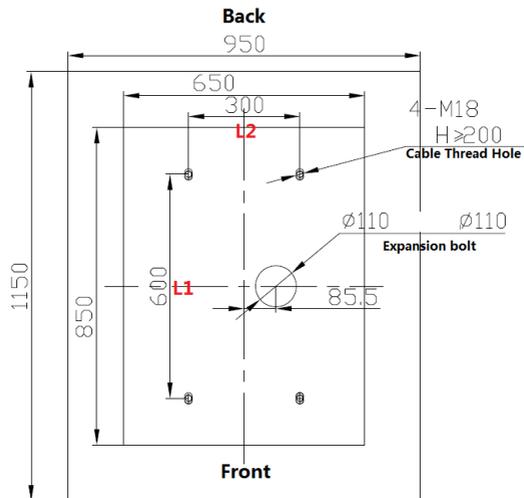


Figure 7.2.2 Concrete Installation Dimension

Chart 7.2.3 Charging pile installation hole size and diameter parameters

Charging pile power	Installation Hole (unit : mm)		Installation Diameter ΦD mm
	L1	L2	
20kW	600	300	Expansion bolt Φ12

Note: Installation Hole need to be chose according to actual onsite situation. Please refer to construction specification for details. The above drawings are just for reference.

8. Power Distribution

8.1 Input AC Power Distribution Wiring

Input AC Power Distribution: First open the front door of the charging pile, then three-phase five-wire AC power supply (400VAC) need to be connected successively according to the input wiring marks A, B and C from left to right. The mark N and PE shall be connected to the lower zero copper bar and ground copper bar, as shown in figure 8.1.

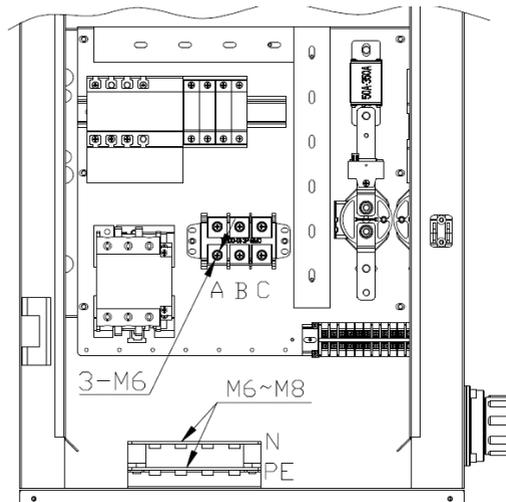


Figure 8.1 Charging Pile Input AC Wiring Drawing

8.2 Output DC Vehicle Connector Plug Pin Definition

The output DC vehicle connector plug pin number/identification and function definition are shown in figure 8.2 and chart 8.2.

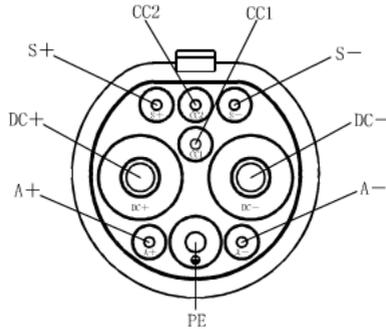


Figure 8.2 Output DC Vehicle Connector Plug Pin Position Schematic Diagram

Chart 8.2 DC Vehicle Connector Plug Pin Number/identification and Function Definition

Pin No./Identification	Rated Voltage and Rated Current	Function Definition
1—DC+	750V/1000V 80A/125A/200A/250A	DC power supply positive, connect DC power supply and battery positive pole
2—DC-	750V/1000V 80A/125A/200A/250A	DC power supply negative, connect DC power supply negative and battery negative
3—PE	-	Protect ground (PE), connect power supply equipment ground wire and vehicle level platform
4—S+	0 ~ 30V 2A	Charging communication CAN-H, connecting the communication line between the non-on-board charger and the electric vehicle
5—S-	0 ~ 30V 2A	Charging communication CAN-L, connecting the communication line between the



		non-on-board charger and the electric vehicle
6—CC1	0 ~ 30V 2A	Charging connection confirmation
7—CC2	0 ~ 30V 2A	Charging connection confirmation
8—A+	0 ~ 30V 2A	Low voltage auxiliary power supply positive. It is connected to the low voltage auxiliary power supply provided by the non-car charger for the electric vehicle
9—A-	0 ~ 30V 2A	Low voltage auxiliary power supply negative. It is connected to the low voltage auxiliary power supply provided by the non-car charger



9. Operation Instruction

9.1 Checks before Charging

9.1.1 Safe checking before charging

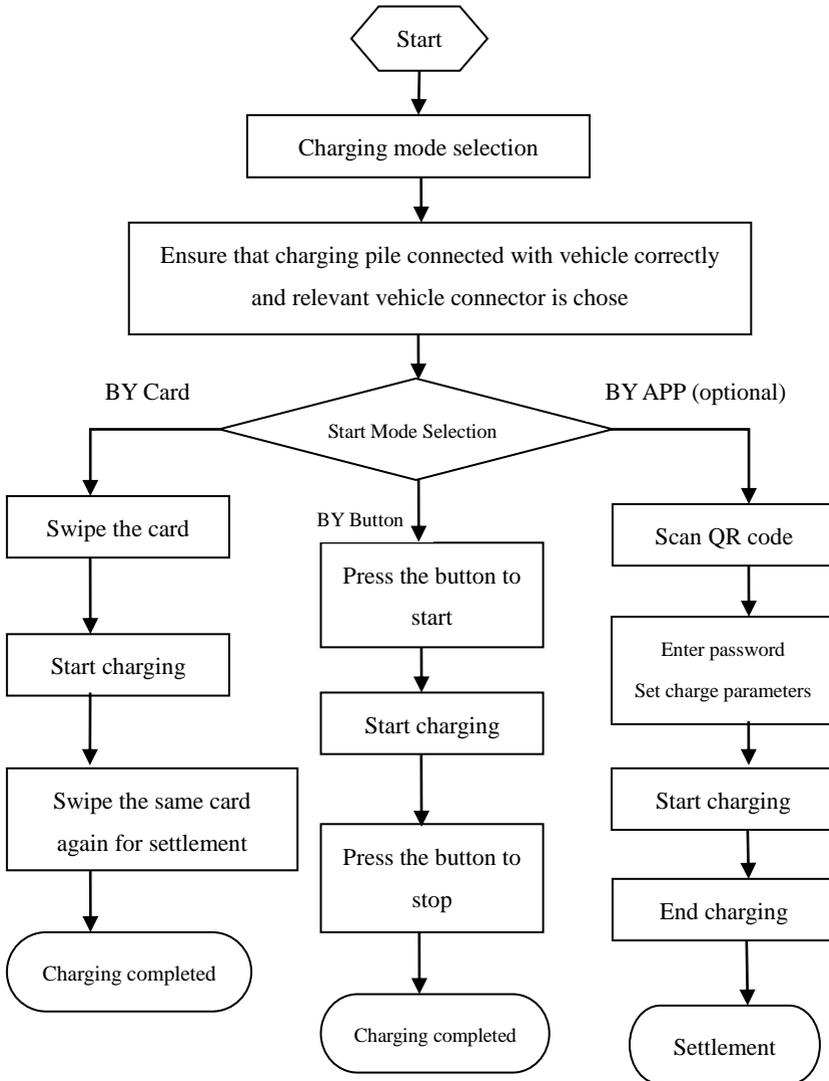
- Ensure that the products has no scratching, rust, deformation and other damages.
- Ensure that the power supply socket is safe enough and no residuals left inside the plug and vehicle inlet.
- Please stop using immediately if charging cables were found exposed or plugs shell damaged
- Keep the plug always in dry state. In case of water accumulation, please clear the water with dry and clean cloth under totally power off state.

9.1.2 Attentions in Operation Process

- If the fault light was on or in fault displayed in the screen, please stop using and contact the staff for help.
- When multiple charging connectors are used simutanously, special attention need to be paid when swiping the card for settlement. Please check carefully about the charging plug used is plug A or B before the settlement to avoid misoperation.
- Please refer to relevant instruction when operate the charging equipments.
- Pay attention to insertion and extraction force of the vehicle connector to avoid overexertion.
- Ensure that the vehicle connector is completely connected to the vehicle inlet, and the plug is completely perpendicular to the vehicle without any external influence.
- In the process of swiping the card, a prompt beep will be given out if the card swiping process is successful, otherwise the operation may fail.
- In case of emergency, please press down the emergency stop button. Charging is not allowed after that. If charging pile is in working state, charging process will be stopped immediately also.
- A regular check of the lightning arrester firing pin or indicating window needs to be carried out. If the firing pin is protruded or indicating window turned red, it means the

lightning arrester has been damaged and shall be replaced immediately.

9.2 Charging Operation Flow Chart



9.3 Charging Operation Description

9.3.1 Charging Operation Instruction

1. Homepage

Turn on the system power and after starting up, the system will initialize and enter the homepage, as shown in figure 9.3.1.1.



Figure 9.3.1.1

2. Startup Mode Selection

Users can choose different ways to start the charging pile:

Start by swiping card: Click the screen to select the charging mode, select the connector to start charging, and follow step 3.

Setting method: enter the "setting interface" -- function setting -- startup mode, and select start by swiping the card.

The charging pile can be started and stopped by using a charging card.

Start by button: Directly click the screen to select the charging mode, select the charging connector and start charging, and follow step 3.

Setting method: enter the "setting interface" -- function setting -- startup mode, and select start by button.

The charging pile can be started without card. Click the "start" and "stop" buttons on the screen to start charging. The password of dynamic administrator is required.

Start by APP: Click the [QR code charging] button at the lower right corner of the main interface, and the interface pop-up box will be shown in figure 9.3.1.2.

Open the relevant charging APP of the mobile phone and scan the QR code corresponding to position scrambling on the left and right sides of the screen, and click [start charging] on the APP. The interface will directly jump to the charging information display interface, as shown in figure 9.3.1.11 below.

Opening method of QR code function: enter the setting interface -- function setting – QR code function, and select "yes".



Figure 9.3.1.2 (For APP user)

3. Charging Mode Selection

Following step 2, after entering the homepage, four kinds of different charging modes could be chose.

- Automatic Charging Mode: The charging pile will be communicated with vehicle on-board BMS and the whole charging process and charging time will be controlled by BMS.
- Reservation Charging Mode: Manually set the charging start time and duration time. When the well set start time reached, charging pile will start charging automatically. When the set duration time reached, charging process will be stopped automatically. If the reserved start time is prior at the current time, charging pile will start charging at the

reserved time of the next day by default. If the duration time is set as '0', the charging process will be controlled by vehicle BMS and vehicle will be fully charged automatically.

- Ration Charging Mode: Manually set the electricity quantity needed. When the set electricity quantity reached, the charging process will be stopped.
- SOC Charging Mode: Manually set the SOC value. When the set SOC value reached, the charging process will be stopped automatically. If the set SOC value is smaller than the actual vehicle SOC value, charging pile will stop immediately.

If automatic charging mode be chose, system will enter vehicle connector choosing page.

After connector chose, the charging process will begin. See figure 9.3.1.3

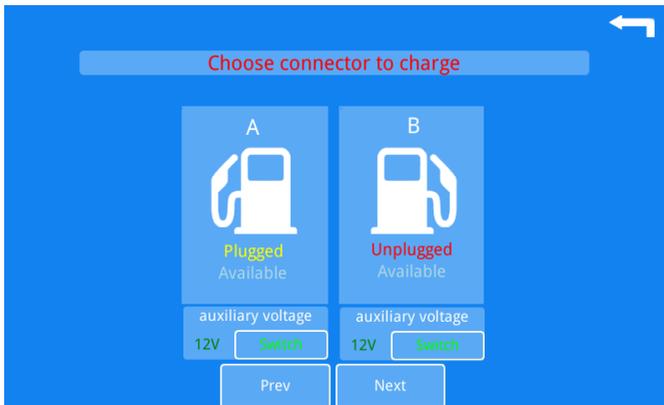


Figure 9.3.1.3

If reservation charging mode chose, system will enter charging start time and duration time setting page. See figure 9.3.1.4. After relevant parameters setting finished, click “next” to enter vehicle connector choosing page just as figure 9.3.1.3.

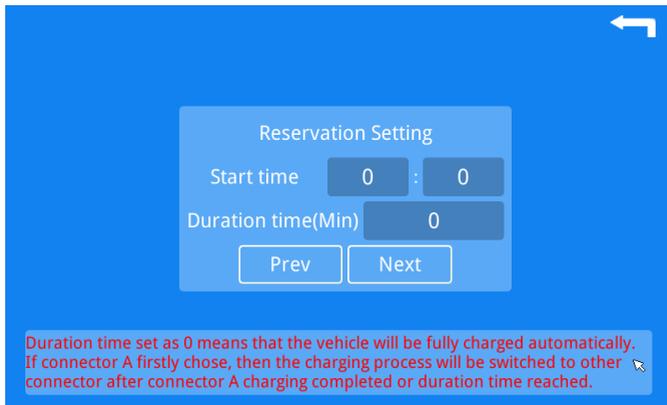


Figure 9.3.1.4

If ration charging mode chose, system will enter electricity quantity setting page. See figure 9.3.1.5. After relevant parameter setting finished, click “next” to enter vehicle connector choosing page just as figure 9.3.1.3.

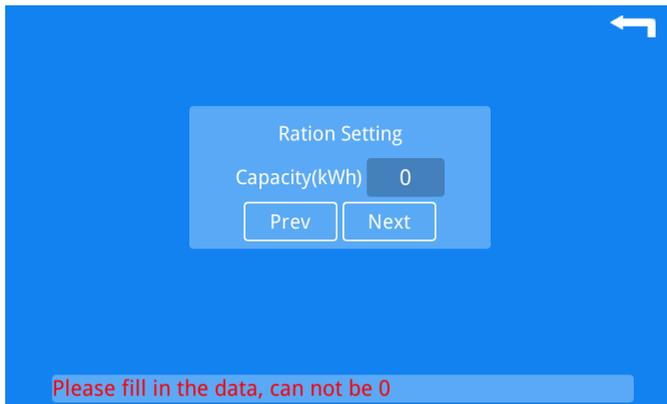


Figure 9.3.1.5

If SOC charging mode chose, system will enter vehicle target SOC value setting page. See figure 9.3.1.6. After relevant parameter setting finished, click “next” to enter vehicle connector choosing page just as figure 9.3.1.3.

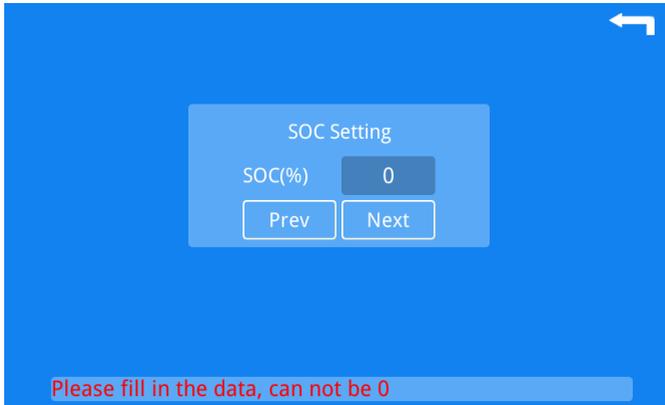


Figure 9.3.1.6

4. Charging Connector Selection

Following step 3, choose the charging connector used to charge and reliably connected with the vehicle. The user shall judge whether the auxiliary power supply voltage of the vehicle is 12V or 24V according to the vehicle model. If the auxiliary power supply of the vehicle is 12V, click [next step] directly. If the auxiliary power supply of the vehicle is 24V, then click the "switch" button below and the auxiliary power supply will be automatically changed to 24V. After the plug is extracted after charging, the auxiliary power will be restored to 12V by default, and it needs to be reselected for the next charging. As shown in figure 9.3.1.7 below, the 'A' connector is selected and the auxiliary power is 12V. Unplugged or faulty connector position cannot be selected.

If start mode is set as "By card": Click "next" to enter card swiping page, see figure 9.3.1.8. Make sure informations of vehicle connector number, IC card number, etc are correct. Then put the card in card swiping area to start the charging process and system will enter charging information displaying page (see figure 9.3.1.9). If wrong information found, please click "prev" at the bottom or "back" at the top right to rechoose charging mode and then swipe the card.

If start mode is set as "By button": Click "next" and charging pile will start the charging process directly and system will enter charging information displaying page (see figure 9.3.1.10).

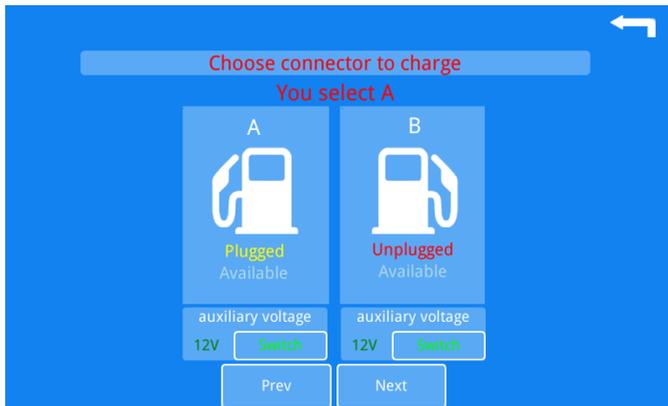


Figure 9.3.1.7

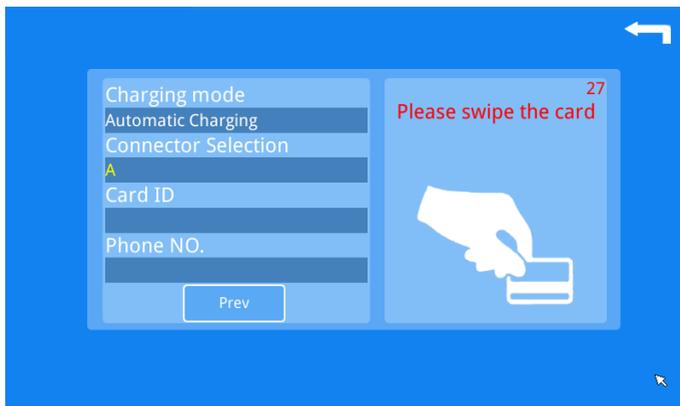


Figure 9.3.1.8

5. Charging Information Displaying Page

Following Step 4, system will enter charging information displaying page after charging pile started. The following information could be check at this page: vehicle SOC, charging voltage, current, power, electricity quantity used. See figure 9.3.1.9, figure 9.3.1.10, figure 9.3.1.11.

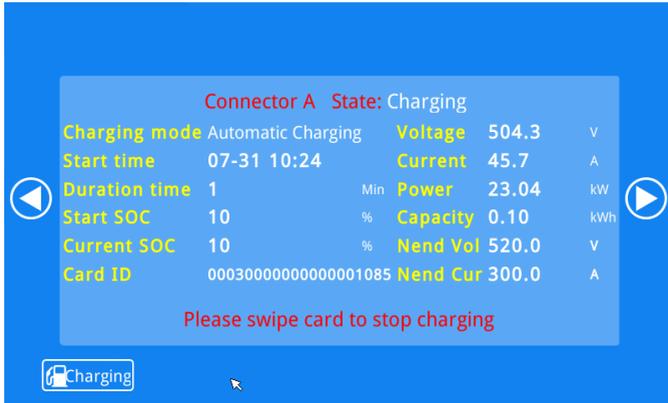


Figure 9.3.1.9

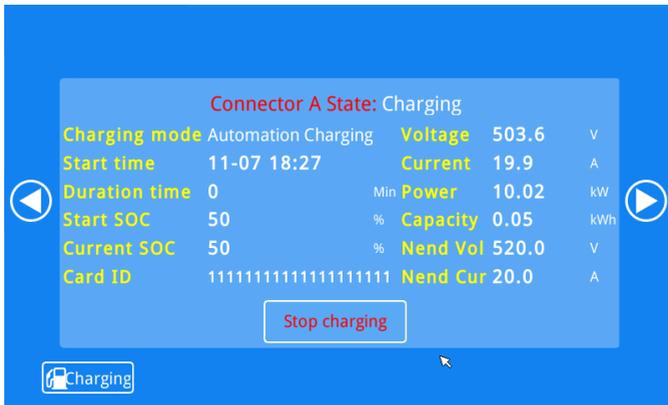


Figure 9.3.1.10

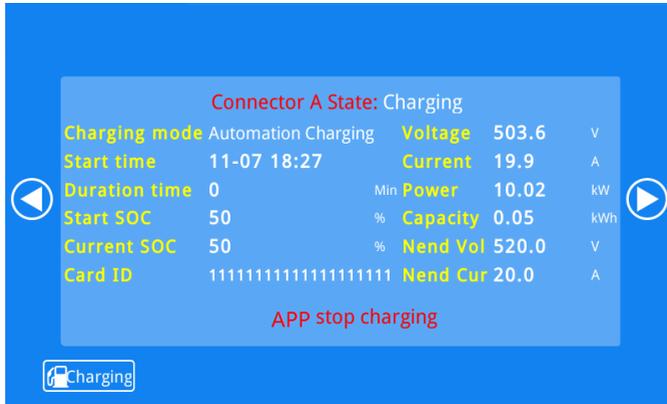


Figure 9.3.1.11

If other vehicle connectors need to be used, click “charging” at the bottom left of charging information displaying page (see figure 9.3.1.9) and system will back to the homepage (see figure 9.3.1.1). Then the above steps shall be followed to choose vehicle connector and start charging process. Charging information of different vehicle connectors could be checked by

clicking “” or “” buttons of the charging information displaying page during charging process.

When system is back to the homepage and customer need to check the current charging information or stop the charging process, click “settle” at the bottom left of the homepage, system could jump to the charging information displaying page directly (see figure 9.3.1.9, figure 9.3.1.10, figure 9.3.1.11).

6. Settlement Page

Following step 5, if customer need to stop the current charging process, then swiping the card at card swipping area (start mode is by card) or clicking “stop charging” at the bottom of charging information displaying page (start mode is by button) could be chose to stop charging process and enter settlement page. See figure 9.3.1.12.

When automatic charging mode is chose, charging pile will automatically enter settlement page after vehicle fully charged. See figure 9.3.1.12. After the self-settlement finished by charging pile, system will jump back to the homepage and the charging process has been finished. See figure 9.3.1.1

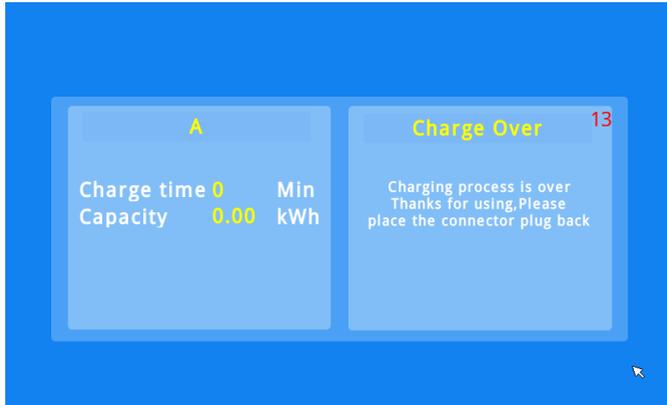


Figure 9.3.1.12

9.3.2 System Setting

1. Entering System Menu Page

Click “system” at the bottom left of the homepage and username and password dialog will popped up, see figure 9.3.2.1. Username: USER, Password: 4567, then click “OK” to enter system setting page. See figure 9.3.2.2

Related setting of charging pile function and parameters could be set in the system setting page. Except that the module parameter modification need authorization from the manufacturer, other parameters are totally open to the customer. The charging pile parameters have all been set as default before delivery and usually customer need not to set unless onsite situation required.



Figure 9.3.2.1

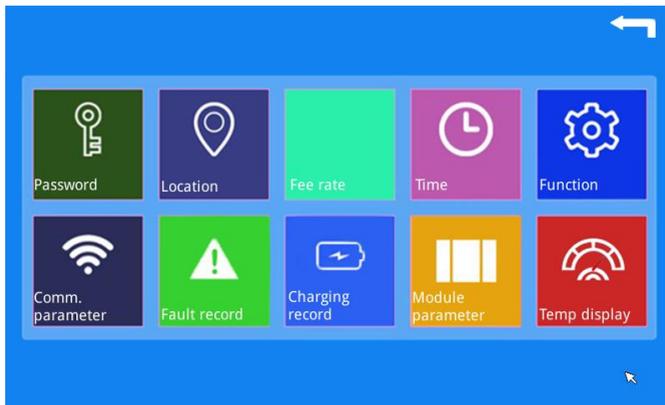
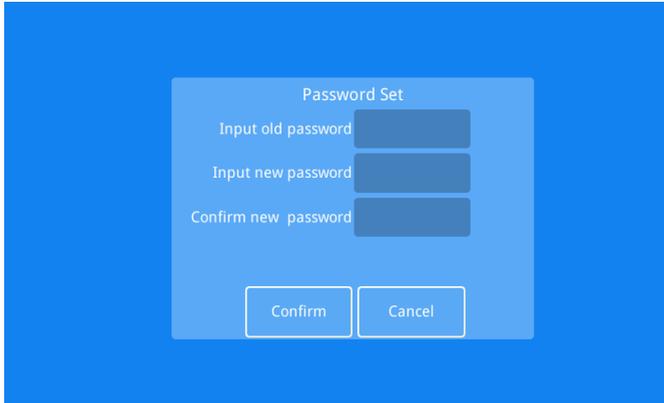


Figure 9.3.2.2

2. Password Setting

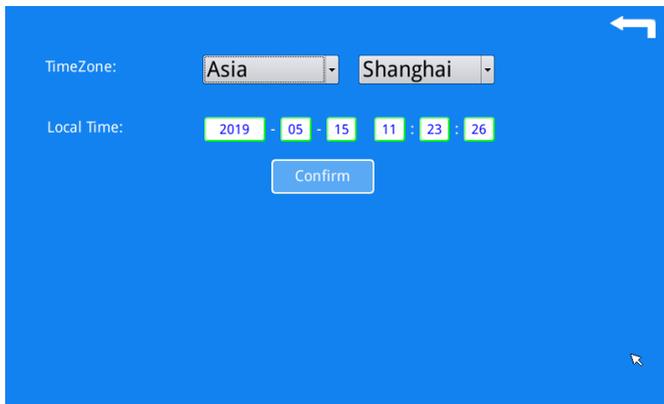
Click “password” at system menu page (see figure 9.3.2.2) and enter password modification page. Default password: 4567. If password modification needed, then new password shall be filled and click “confirm” to finish changing process. See figure 9.3.2.3.

**Figure 9.3.2.3**

Note: Please keep a record of the new password in case of forgotten

3. Time Setting

Click “time” at system menu page (see figure 9.3.2.2) to set local time. Proper time zone, city and accurate time shall be chose and then click “confirm” to finish the modification process. See figure 9.3.2.4.

**Figure 9.3.2.4**

4. Function Setting

Click “function” at system menu page (see figure 9.3.2.2) to set charging pile function. See figure 9.3.2.5.

- (1) Start mode: Could be switched among the following two modes, namely, by card and by button.

- (2) Power Output Mode: Could be switched between intelligent mode and priority mode.
Intelligent Mode: the charging pile power will be equally distributed by two vehicle connectors.
Priority Mode: Firstly choosed vehicle connector will work with full power output and the other connector will be in waiting state and then automatically begin charging process when the firstly choosed connector finished charging.
- (3) Language: Different languages could be chose.
- (4) QR Code Function: Open or close QR code function could be chose.
- (5) Screen Brightness: Adjustable
- (6) Screen Sleep Time: Adjustable, sleep time set as “0” means that the screen sleep function is closed.
- (7) BMS default auxiliary voltage setting: the default BMS auxiliary voltage 12V could be switched to 24V (no connector inserted state).

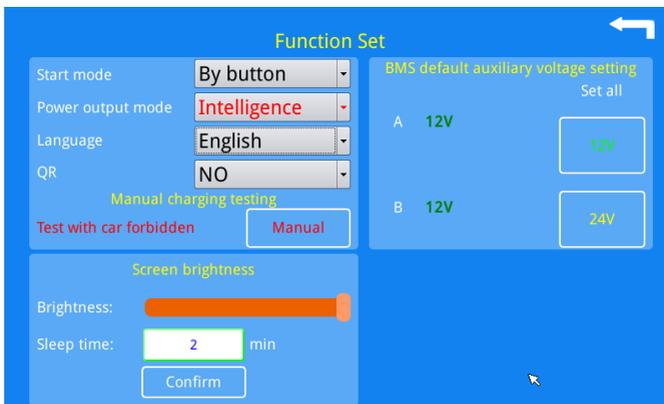
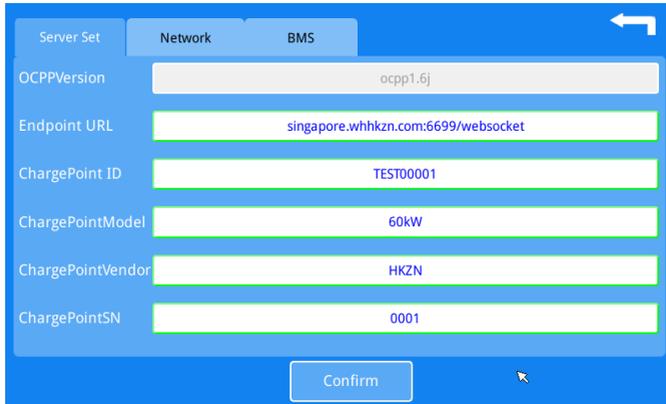


Figure 9.3.2.5

5. Communication Parameter Setting

Click “comm. parameter” at system menu page (see figure 9.3.2.2) and charging pile communication parameter could be set.

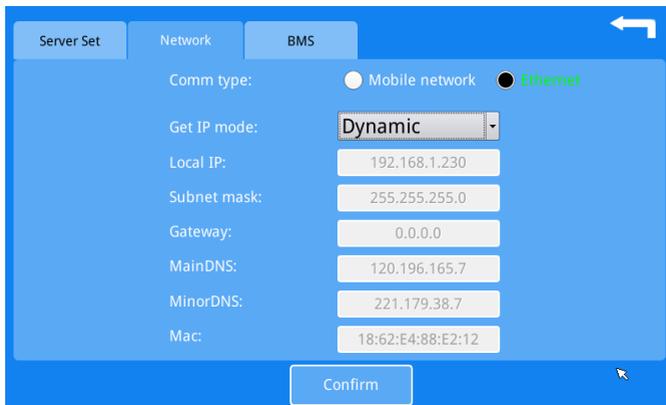
- (1) Server Setting: Set server address, charging pile ID, charging pile model, charging pile supplier, and charging pile SN code. See figure 9.3.2.6.



Field	Value
OCPPVersion	ocpp1.6j
Endpoint URL	singapore.whhkzn.com:6699/websocket
ChargePoint ID	TEST00001
ChargePointModel	60kw
ChargePointVendor	HKZN
ChargePointSN	0001

Figure 9.3.2.6

- (2) Ethernet Setting: Set IP acquiring mode: dynamic/manual. In manual mode, the following parameters could be set: local IP, subnet mask, gateway, DNS, MAC address. See figure 9.3.2.7.



Field	Value
Comm type:	<input type="radio"/> Mobile network <input checked="" type="radio"/> Ethernet
Get IP mode:	Dynamic
Local IP:	192.168.1.230
Subnet mask:	255.255.255.0
Gateway:	0.0.0.0
MainDNS:	120.196.165.7
MinorDNS:	221.179.38.7
Mac:	18:62:E4:88:E2:12

Figure 9.3.2.7



	TIME	Fault code	Fault content
1	19-05-06 08:43:34	01 51	System :Minute board 2 CAN communication timeout
2	19-05-06 08:43:34	01 50	System :Minute board 1 CAN communication timeout
3	19-04-26 17:37:51	01 50	System :Minute board 1 CAN communication timeout
4	19-04-26 17:37:51	01 51	System :Minute board 2 CAN communication timeout
5	19-04-26 12:37:41	02 03	Journal:System parameter change
6	19-04-26 12:37:40	02 03	Journal:System parameter change
7	19-04-26 12:16:16	02 03	Journal:System parameter change
8	19-04-26 12:16:15	02 03	Journal:System parameter change
9	19-04-26 12:14:27	11 20	A Connector:BMS communication timeout
10	19-04-26 12:06:01	11 20	A Connector:BMS communication timeout

1 / 206 Home Pre page Next page Last page Delete

Figure 9.3.2.10

Clicking “prev page”, “next page” could turn pages to check historical fault information. Clicking “home”, “last page” could jump to the first page and the last page of the fault record quickly.

7. Charging Record Inquiry

Clicking “charging record” at system menu page (see 9.3.2.2) could check historical charging information of charging pile. See figure 9.3.1.11.

	TransactionId	IdTagStart	Reason	TimestampStart	TimestampStop	Meter
1	0	00030000000001200142	4	2019-04-26 12:37:56	2019-04-26 12:39:37	
2	0	00030000000001200142	4	2019-04-26 12:16:32	2019-04-26 12:19:48	
3	0	00030000000001200142	4	2019-04-26 12:13:20	2019-04-26 12:14:36	
4	0	00030000000001200142	4	2019-04-26 12:07:33	2019-04-26 12:09:58	
5	0	00030000000001200142	4	2019-04-26 12:04:54	2019-04-26 12:06:12	
6	0	00030000000001200142	4	2019-04-26 11:57:24	2019-04-26 12:01:10	
7	0	00030000000001200142	4	2019-04-26 11:54:28	2019-04-26 11:55:53	
8	0	00030000000001202448	4	2019-04-19 16:01:52	2019-04-19 16:04:38	
9	0	00030000000001200142	4	2019-04-19 15:00:51	2019-04-19 15:02:53	
10	0	00030000000001200142	4	2019-04-19 14:41:24	2019-04-19 14:45:08	

1 / 14 Home Pre page Next page Last page Del record

Figure 9.3.2.11

Clicking “prev page”, “next page” could turn pages to check historical charging information. Clicking “home”, “last page” could jump to the first page and the last page of

the charging record quickly.

8. Temperature Displaying

Clicking “temp. displaying” at system menu page (see figure 9.3.2.2) could check real-time temperature of charging pile inlet/outlet and DC+/DC- of all vehicle connectors. See figure 9.3.2.12.

Charging pile inlet/outlet fan closing temperature need to be set (the fan will be closed when the temperature meet and less than the set value). Charging pile inlet/outlet over temperature alarm and protective temperature threshold and charging connector plugs temperature protection and alarm threshold also need to be set. See figure 9.3.2.12.

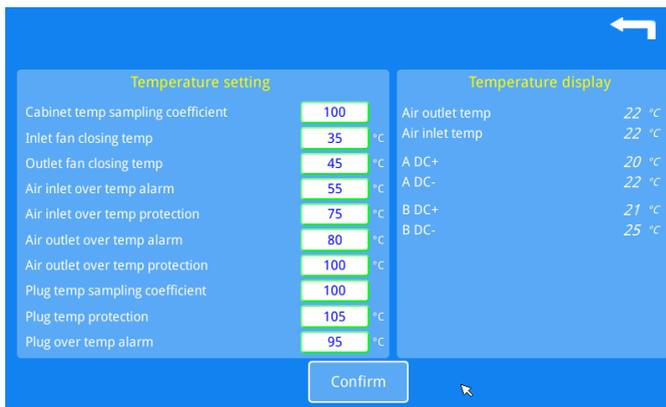


Figure 9.3.2.12

9.3.3 Help

Clicking “help” at the homepage (see figure 9.3.1.1) could enter help page. Customer could get a brief understanding of the charging steps and relevant information of charging pile and the software version in this page. See figure 9.3.3.1 and figure 9.3.3.2.

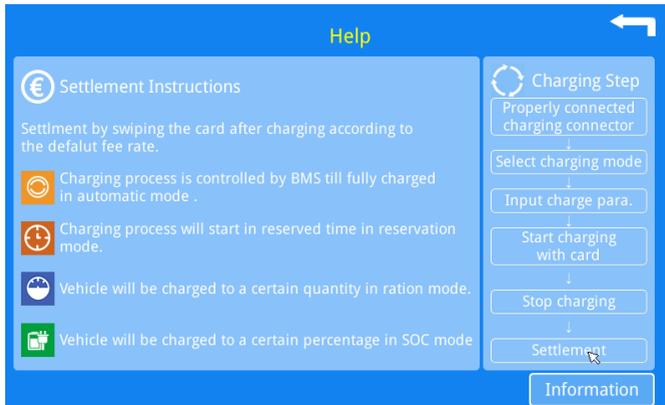


Figure 9.3.3.1

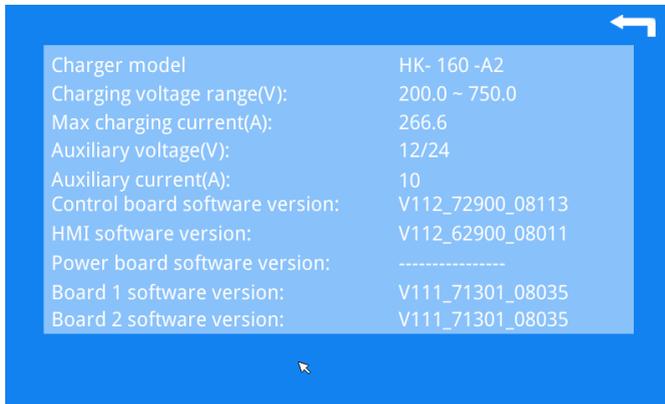


Figure 9.3.3.2

9.3.4 System Upgrading Instructions

When system in remote upgrading process, charging pile will be suspended to use and prompt message will be popped out. See figure 9.3.4.

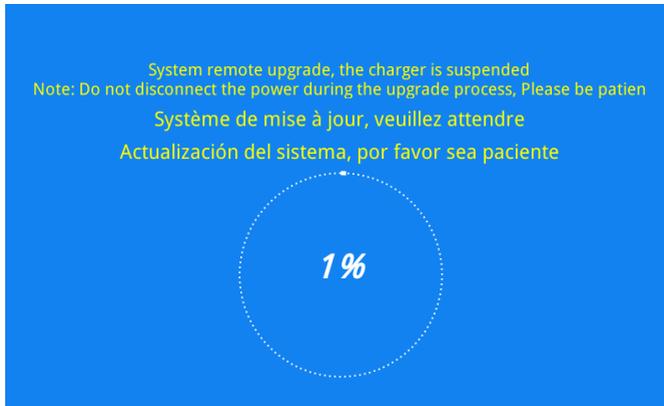


Figure 9.3.4

Tips: Please wait patiently for the system upgrading completed.

9.3.5 Charging Pile Suspended Instructions

Charging pile is suspended and prompt message will popped out. See figure 9.3.5.

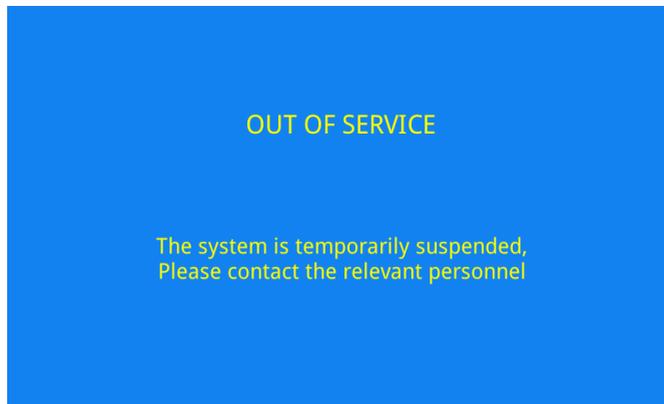


Figure 9.3.5

Tips: Please contact the staff for restoring.

9.3.6 Emergency Unlocking Instructions for Electronic Lock of Charging Connector

When the user is unable to unplug the charging plug from the vehicle socket after charging finished:

- The charging plug is equipped with an emergency unlock key. Firstly, insert the

unlock key slowly into the reserved emergency unlock function hole. Then rotate the key gently to right to make the electromagnetic lock lever return back. If there is no unlock key on the charging plug, a small word screwdriver could be used to replace the unlock key, as shown in figure 9.3.6.1 below (take the charging plug of wall brand for example, other manufacturers may have different unlocking methods).

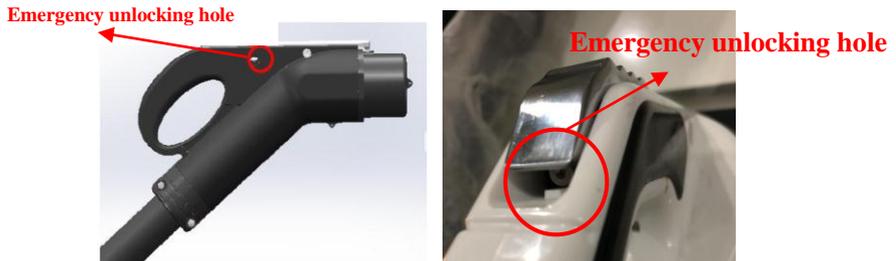


Figure 9.3.6.1

- Check the front and end side of the mechanical lock of the charging plug. If it is found that it can be pressed, but not completely pressed, and the charging plug cannot be pulled out, it is probably because mutual interference between the front hook of the mechanical lock hook of the charging plug and the socket groove. Recommended solution is to lift the charging plug up a little, shake it gently from side to side several times, and press the end of the mechanical lock hook again until the front end of the mechanical lock hook completely pops out of the groove, and then draw the plug again, as shown in figure 9.3.6.2 below.

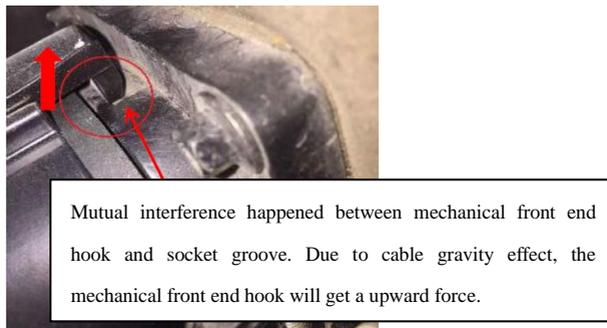


Figure 9.3.6.2

9.3.7 Emergency Switch Operation Instructions

When emergency switch be pressed down, charging pile display screen will pop out emergency fault prompt message. See figure 9.3.7.

Emergency switch shall be pressed down immediately when the following situation occurred:

- In case of current leakage, emergency switch shall be pressed down immediately.
- In case of abnormal situation like fire or electric shock, emergency switch shall be pressed down immediately.
- In case of abnormal situation of charging pile faults like charging process could not be stopped or internal wiring short circuit happened, emergency switch shall be pressed down immediately.
- If the emergency switch be pressed down in non-charging state, the fault light will be on and display screen will jump to emergency fault page.
- When emergent situation has been disposed, the emergency switch needs to be reset, otherwise the charging pile could not work.

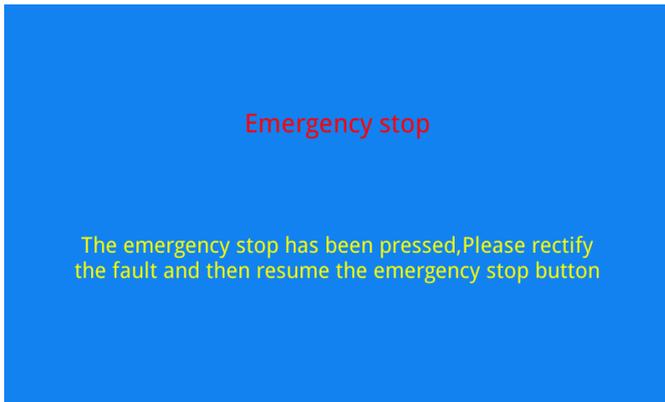


Figure 9.3.7



10. Fault Alarm and Treatment

10.1 Fault and Recovery

The charging pile can realize self-monitoring during the running process. In case of fault, related fault code will be displayed in charging fault record page, the fault light will be on, and the output of charging pile will be cut off.

Charging pile faults could be reset automatically by swiping the card. After settlement completed, faults will be warned and reset, charging pile will enter standby state. If fault has not been cleared, charging pile could not work normally after started a second time. Only after the fault has been cleared, charging pile could work by a restarting.

This manual only provides some simple solutions to the problems.

10.2 Fault Alarm and Treatment

System log category classification number: 2

Such kind of failures are used only for system events or logging records. Only the screen record will show them. Neither the fault light will not light up when these failures happened, nor will these failures be uploaded to the back office platform. On-site maintenance does not need to judge such faults.

System Fault classification number: 1

These kinds of faults are the most serious types, software shall not intervene. In case of such failure, starting charging process or forcing stop of charging pile is forbidden.

Fault code	Fault name	Treatment
11	Input under voltage	Check incoming voltage
12	Input overvoltage	Check incoming voltage
13	Default phase of input	Check incoming voltage
20	System storage fault	Check SD card
21	Server communication fault	Check GPRS module
22	Card reader communication fault	Check the card reader
30	Access control signal abnormal	Check if the front door is opened
31	Emergency stop signal abnormal	Check if “Emergency Stop” in pressed down state



33	Cabinet temperature signal abnormal alarm	Check if the ambient temperature is too high
36	Cabinet temperature signal abnormal protection	Check if the ambient temperature is too high
42/43	Parallel contactor 1/2 feedback signal abnormal	Check parallel contactor 1/2 feedback signal line
50~53	Control board 1~4 CAN communication timeout	Check control board 1~4 CAN communication line
60~67	Parallel contactor 3~10 feedback signal abnormal	Check parallel contactor 3~10 feedback signal
70	Power control board communication timeout	Check the communication line of the power control board
71~74	Communication timeout between vehicle connector 1~4 and power control board	Check the communication line of vehicle connector 1~4 and power supply board
80~140	Switch board 1~60 communication timeout	Check the communication line of the switch board and power supply board in the power cabinet
141~200	Switch board 1~60 contactor adhesion	Check whether the relay of the switch board adhesive

Vehicle Connector Fault classification number: 11 (Connector 1) ~ 18 (Connector 8)

Such fault happens only in charging process. Treatment of stop charging pile or ignore the faults need to be chose according to fault severity. The faults could be cleared in standby state.

Fault code	Fault name	Treatment method
2	Meter communication fault	Check the meter
3	Meter displayed value not accurate	Check the meter
4	Output over current	Check if the actual current is too large
5	Insufficient IC card balance	Recharge IC card
6	Wrong virtual card charging request	
7	Blacklist card	



8	Incorrect match between IC card and vehicle	Back office bound data not matched
9	Incorrect match of Vehicle VIN code	VIN white list of the charging pile not matched
10	Abnormal charging connection between vehicle connector and vehicle	Confirm if the connector is properly connected
11	Abnormal connection between the vehicle connector and vehicle PE	Confirm if the connector is properly connected
20	BMS communication timeout	Check CAN line
21	Battery voltage not detected	Check sampling circuit
22	Charging current always detected as 0	Check if there is required current
26	Charging voltage abnormal	Check if the charging report conforms to the actual output
27	Charging current abnormal	Check if the Hall sensor is damaged
28	Battery connection reversal	Check if the connector wire is reversely connected
30	Output contactor feedback signal abnormal	Check the output contactor feedback signal line
31	Discharge contactor feedback signal abnormal	Check the discharge contactor feedback signal line
40	Insulation detector communication fault	Check the insulation detector
41	Module output voltage abnormal during insulation detection	Check if the module has output voltage
42	Insulation test fails	Check the insulation resistance value of the charging pile output circuit to the earth
43	Insulation resistance value abnormal	Check the insulation resistance value of the charging pile output circuit to the earth
44	Electronic lock feedback signal abnormal	Check the electronic lock feedback signal line
45/46	Plug temperature feedback signal 1/2 abnormal	Check plug 1/2 temperature feedback signal line



51	Output short circuit	Check if the output is short-circuited
60/61	Slave-machine 1/2communication timeout	Check the communication line between the slave-machine 1/2 and main control board
75	Highest single voltage is greater than the protection value	Check the BMS communication message

Power Module Fault classification number: 31 (Module 0) ~ 94 (Module 64)

Fault Code	Fault Name	Treatment
37	CAN communication abnormal	Check the communication line between the charging module and the control board

BMS Fault classification number: 21 (Connector 1) ~ 28 (Connector 8)

Fault codes 50-86 these faults are reported as fault codes by the vehicle end. In case of such faults, the charging message should be intercepted and submitted to the R&D for analysis.

Fault codes 101 ~ 112 refer to the fault codes reported by the European standard SECC (PLC). In case of failure, the SECC (PLC) shall be checked for interference or hardware damage, and shall be replaced after comparison test and verification.



11. Package, Transportation and Storage

Package

Product name, model, manufacturer information shall be printed on the packing case and Qualification Certificate, Delivery Inspection Report, Users Manual, accessories and parts list supplied by the manufacturer shall be placed inside the case.

Transportation

Transportation by vehicle, ship and aircraft is applicable. Situations like severe vibration, impact, exposure to the sun and rain, package dumping, etc shall be avoided during the transportation process. The loading and unloading operation shall also be paid enough attention to avoid product damages.

Storage

This product shall be stored in the packing case if not installed. The ambient temperature of the warehouse is -40°C - 70°C and relative humidity is 5%-95%. No harmful gases, flammable and explosive materials and corrosive chemicals shall be put inside the warehouse, as well as no strong mechanical vibration, shock and strong magnetic field. The packing case shall be at least 20cm away from the ground, at least 50cm away from places like the wall, heat source place, and window or air inlet. The storage period under such specified conditions is usually 2 years and a new inspection of the product shall be carried out if exceed 2 years.



12. Maintenance and Repair

Due to influences by changeable environment of the charging piles such as temperature, humidity, fog, etc and the ageing of charging pile inner parts, various types of faults of charging pile might occur. Therefore, a regular examination and maintenance of charging pile must be done in product storage and using process.

Customer need to carry out the following inspection for every charging pile.

Regularly Inspection (Daily Inspection) :

(1) Check the fixation of the charging pile to check if fall off and shaking situation happens.

(2) Whether there is any extra things, damages or cracks on the surface of the charging pile and charging pile inclined or not .

(3) Check whether the door of charging pile is locked and the waterproof sealing strip is fastened.

(4) Check whether the vehicle connectors are in right place and confirm no water or other liquid left inside the plug before charging process.

(5) Check whether the air inlet and outlet channel is clean or the thermo vent unblocked. The cleaning of the air channel needs to be done every two weeks.

(6) Check whether the charging pile in normal power supply and all the lights are good .

(7) Check whether the display in normal work.

(8) Check whether the ID card reader in normal work.

(9) Check whether the charging pile is in normal work.

(10) Check whether the plug is in normal work.

Electrical and Controlling System Inspection (Monthly Routine Inspection)

(1) Good connection between the charging pile and earth need to be ensured and clear marks need to be labeled for earth terminals.



- (2) The insulation resistance of the independent electrical circuit of charging pile to the earth and among the circuits shall not be lower than the specified value.
- (3) Check whether the terminals of the input cable are tightly connected.
- (4) Check whether the power distribution wire and internal control line of charging pile ageing or not.
- (5) Check whether the control board and internal components of charging pile ageing or not.
- (6) Check whether the input power voltage of charging pile and voltage to earth is in normal value range.
- (7) Check the leakage current of charger pile in normal value range.
- (8) Check whether the internal earth line and other terminals, connectors, charging pile inner power supply, communication wiring terminals are detached or loose.
- (9) Check whether the main components like breaker, contactor have damages or abnormal conditions.
- (10) Whether the charging pile has peculiar smell, burning spoors or black dust.

Maintenance

- (1) Check whether the connection part of the charger pile is firm, and whether the charger pile base is cracked or damaged.
- (2) Pay enough attention to safety. Charging pile parts repairing or changing must be operated in power off condition to avoid electric shock or personal injury.
- (3) Charging pile maintenance specification need to be strictly implemented and problems found need to be disposed timely in order to avoid further loss.
- (4) When power is off for maintenance, warning signs of “Maintenance! Any operation forbidden!” must be hung at the equipment to ensure personal safety.
- (5) Security measures must be well improved and insulation shoes must be worn during maintenance operation to avoid personal injury and electric shock.



NOTICE:

- 1. The company will not be responsible for any vehicle connectors' damages caused by incorrect placing or man-made rotating and twisting behaviors.**
- 2. Any abnormal operations like cutting off breaker with load or extracting vehicle connector with load, etc must be forbidden during charging process. Long time of improper operation of charging pile might affect the service life of the components. The company will not be responsible for damages caused by incorrect operation.**
- 3. The input power meets charging pile demands or not need to be taken into consideration by users. The company will not be responsible for any damages caused by incorrect operation of users.**
- 4. The maintenance and maintenance items in this manual may be different from the actual models, please refer to the actual models.**

To continuously improve products, the company reserves the right to change design specifications. 202006(V1.3.0)



ADOPT ECOLOGICAL PAPER PRINTING
FOR THIS MANUAL

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