

XCHARGE



V1.1

Installation and Operation Manual

NZS
Series

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1.1 Preface

This document is valid for Net Zero Series Products.

This manual describes the features and functions as well as safety information and instructions, scope of delivery, system overview, installation, electrical connection, commissioning, troubleshooting, maintenance and storage, and technical data of the XCHARGE Net Zero Series facility.

This product is made to meet the future energy storage demand. Different from the current charging logic, this product is integrated with energy storage system and more flexible in application of in peak and valley power consumption as well as lack of grid power capacity. NZS enables optimized energy supply and demands among grid, batteries and EVs and demonstrates its advantages in high-Charging –Power with less input.

Due to the high technical modularity and the different customer requirements, there are different variants which differ in the maximum output power, the installed cables and connectors. The components shown in this manual are all example graphics. The illustrations and explanations refer to a typical device design. The design of your device may differ from the description in the manual. Please read this document carefully before using the device for the first time.

Only the charged energy in kWh may be billed in accordance with calibration law.

1.2 Target Group

This document is intended for :

- Customers who have purchased or are ordering a NZS model and would like to learn more about installation and maintenance.
- Contractors who are responsible for site preparation and/or installation of NZS.
- Contractors who are qualified electricians performing installation, commissioning, maintenance or repair of the XCHARGE NZS Models.
- XCHARGE employees and after-sales service personnel who are responsible for NZS Models.

The instructions in this document may only be performed by qualified persons who must have the following skills:

- Knowledge of how batteries work and are operated
- Knowledge of, and adherence to the locally applicable connection requirements, standards, and directives

- Knowledge of, and adherence to this document and the associated system documentation, including all safety instructions
- Knowledge of the relevant safety and accident prevention regulations.
- Ability to recognize risks and avoid dangers
- Training in dealing with the hazards associated with the installation and operation of electrical equipment and batteries
- Training in the installation and commissioning of electrical equipment

In case of loss or damage due to improper use or unauthorized modification of the product, XCHARGE shall not be liable for the product, the purchaser or any third party. The same also applies if the maintenance provided by XCHARGE is not strictly observed.

1.3 Important Safety Instructions



Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

- 1、 Please use personal protective equipment to avoid such hazards. And emergency personnel should respond appropriately to possible incidents at power generation by standard operating procedures.
- 2、 If the smoke detection alarm or other heat signs are reported, the responder should remain within the safety zone until it is safe to enter the site according to the emergency plan.
- 3、 Please do not operate in cloudy, rainy weather or similar conditions as this may lead to possible electrical issue. Do not install or use the charging station near flammable, explosive materials or steam.
- 4 This product contains the following hazardous chemicals: battery electrolyte, refrigerant, ethylene glycol antifreeze. If the battery modules leak electrolytes, contact with the leaking liquid or gas should be avoided.
- 5、 All wiring of this product requires qualified electricians to complete, and confirm the wiring harness is in good condition. The shutdown sequence only isolates the battery and associated hazardous voltages. Personnel must be extreme care and wear appropriate PPE at all times. Always consult site-specific schematics and manuals to ensure proper isolation of electrical equipment.
- 6、 Do not attempt to open, disassemble or modify the charging station without qualified personnel.



WARNING

Indicates a hazardous situation that, if not avoided, could result in serious injury.

- 1、 All personnel operating Net Zero Series shall be properly trained and qualified. Personnel should read and understand all manuals and project documentation and comply with the requirements and instructions contained therein.
- 2、 The long period of the shutdown of thermal management and communication systems may result in equipment damage and failure to detect and communicate faults.
- 3、 Transport and lift the battery module carefully. Take the weight and off-COG of the Energy Storage System into account.








CAUTION




Indicates a hazardous situation that, could result in minor or moderate injury.

- 1、 Wear suitable personal protective equipment for all work on the battery system.
- 2、 Disconnecting the contactor under load may damage the Net Zero Series. Please use the emergency stop button only in a situation emergency.
- 3、 Please do not start operation until the system has been fully commissioned and checked by XCHARGE technicians or until all required scheduled maintenance has been carried out. Before installing or cleaning the charging station, disconnect the power supply.
- 4、 Please use the charging station within the parameter range as defined in the specification. Do not use the charging station for non-charging purposes or for vehicles that do not support the on Screen showed charging standards.
- 5、 In the event of any defects such as cracks, wear and tear, malfunctioning parts or other damage, stop using the charging station immediately and call for service.
- 6、 Do not start or drive your electric vehicle if the socket is still connected. The user is liable for damage to the electric vehicle and the charging station caused by the case addressed earlier.
- 7、 Please transport the charging station carefully. Avoid strong external shocks. Do not pull, twist or step on the charging station to avoid damage to parts. Avoid and prevent damage to the charging station by moisture, liquids and foreign objects at all times. Do not use if water is present or if you suspect that the station is damaged or corrosive. Do not touch the charging station, charging cable and charging plug with wires, tools or other sharp objects.

1.4 Signs

Signs	Description
	Earthing Connect an earth terminal to earth
	General Warning Sign Identify a hazard that may result in damage to the operator, machinery, other equipment and / or contamination.
	Electricity Hazard Warning of electrical voltage
	Crushing of Hands Touching the device may result in hand injuries
	No access for people with active implanted cardiac devices

These signs below are also used on the nameplate of NZS:

Signs	Description
	Pay attention to documentation Observe all documentation supplied with the product.
	WEEE Symbol Do not dispose of the product with household waste. Please observe the applicable disposal regulations at the place of installation for electronic waste.
	CE-symbol

1.5 Designation in the Document

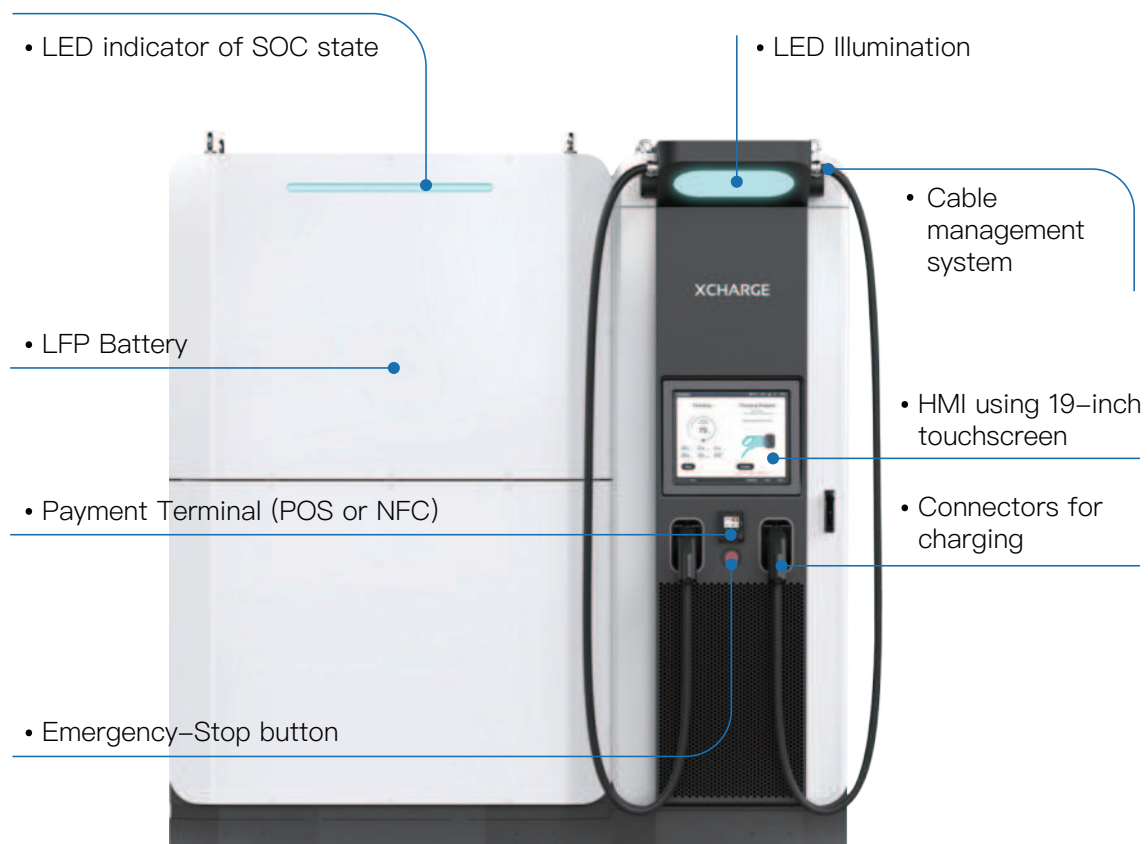
AC	Alternating Current
BMS	Battery Management System
BCU	Battery Control Unit
BIC	Battery Information Collector
BMU	Battery Management Unit
BOL	Beginning of Life
BOP	Balance of Plant
COG	Center of Gravity
DMC	Distribution Management Cabinet
DC	Direct Current
EMCU	Energy Management Control Unit
ERP	Emergency Response Plan
ESS	Energy Storage System
FAT	Factory Acceptance Test
HMI	Human Machine Interface
HVAC	Heating Ventilation Air Conditioning
LFP	Lithium Iron Phosphate
NZS	Net Zero Series
OCPD	Over-current Protection Device
PPE	Personnel Protective Equipment
SAT	Site Acceptance Test
SOP	Standard Operating Procedures
SPD	Surge Protection Device
SOC	State of Charge

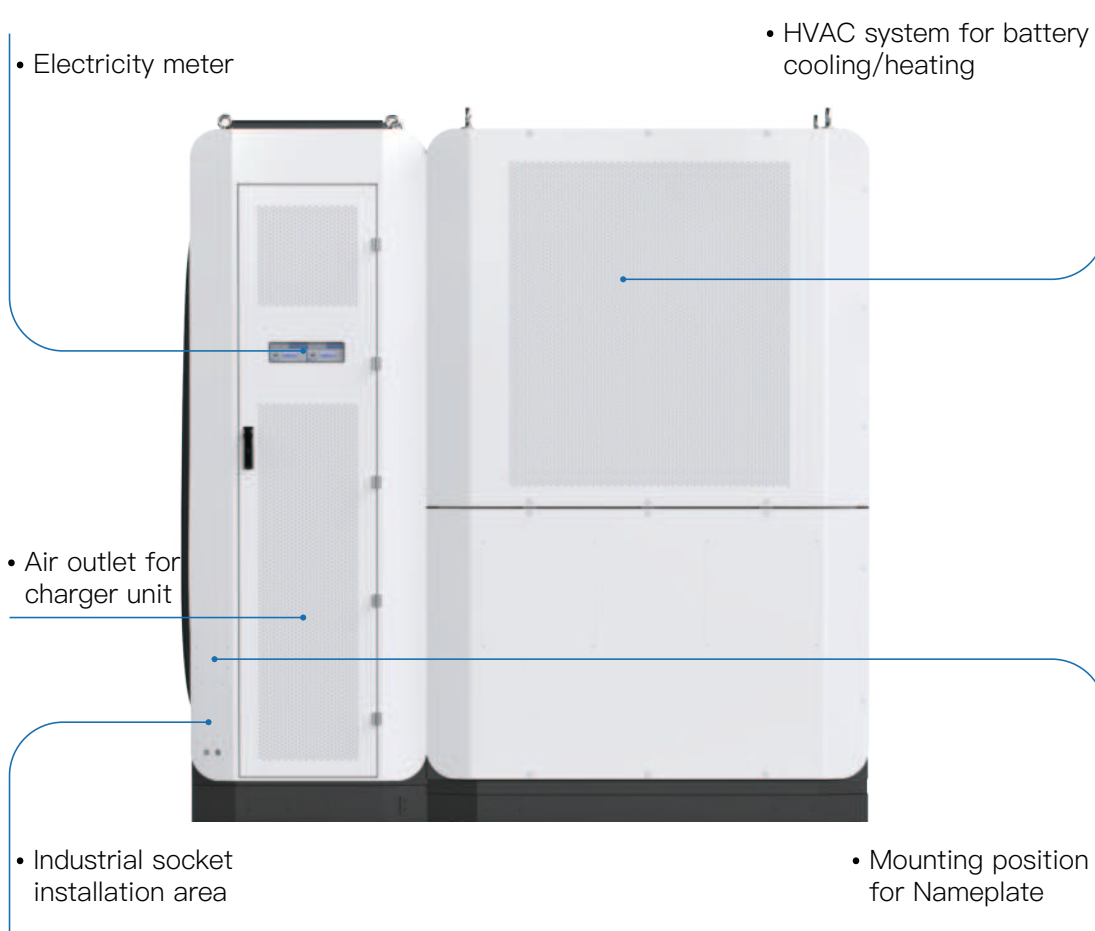


2.1 Product Introduction

XCHARGE Net Zero Series Product integrates Energy-storage-system (ESS), including Lithium Iron Phosphate Battery. NZS offers the synergy of energy storage and fast charging experience to shape the future of carbon neutral transition. Designed with the essence of XCHARGE, this disruptive technology applies a completely new modular upgrade and intelligent software system for the whole E-mobility market. It is a significant proof point to cut carbon emissions in our entire product portfolio and make EV charging green.

A complete charging system consists of a ESS and an EV Charger. The EV Charger features a human-machine interface, two fixed charging connectors (can be configured with cable management system if needed), an industrial socket for cable connection, and support for multiple payment methods.



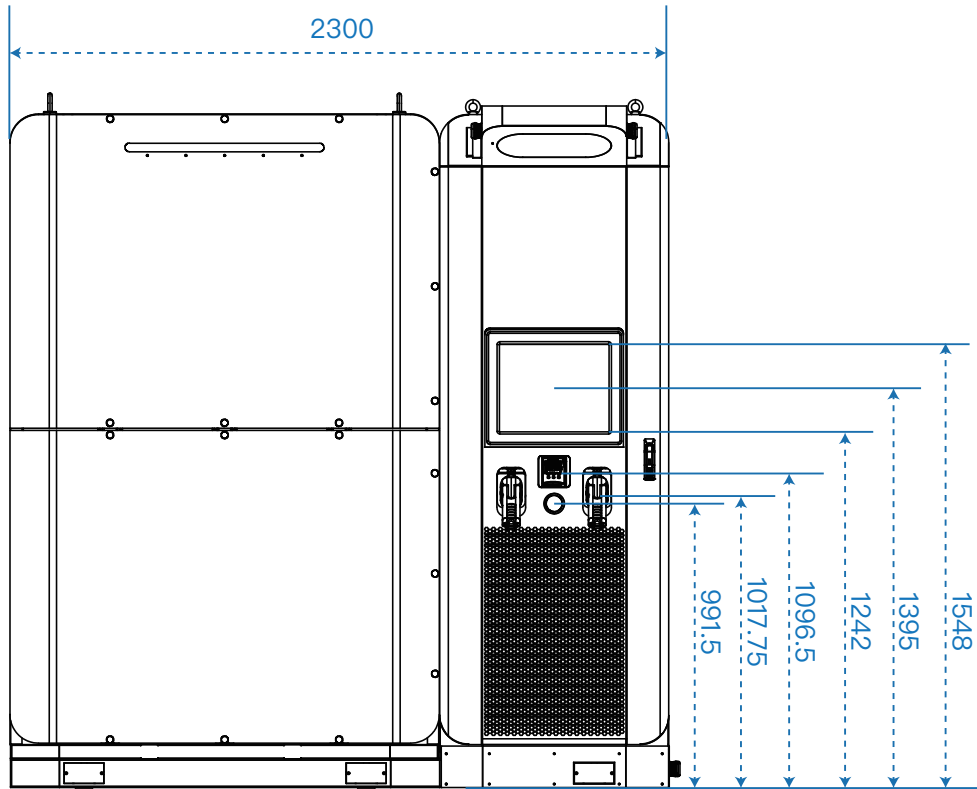


NZS charger can be configured with one or two ESS:

N **Z** **S** / **2** **3** **3**

Net Zero Series

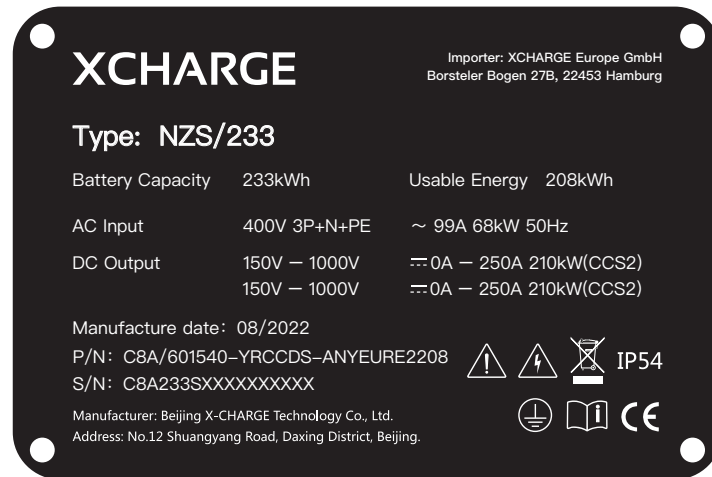
Battery Volume: 233kWh(1 ESS left)
or 466kWh(2 ESS one for each side)



2.2 Technical Parameters

Nameplate

To ensure safe installation and usage of NZS, the nameplate should be checked, as compliance with CE certification and output input parameters are shown on nameplate. The nameplate is mounted on the left lower corner of back side of the charging station as introduced in product picture. It contains type of charger, input/output, battery capacity, manufacture date and address, part number, serial number and safety signs.



Electrical Parameters

Battery Performance	Type	Lithium iron phosphate
	Battery Capacity	233kWh / 2*233kWh
	Usable Energy (SAT)	208 kWh/2*208 kWh
	Max. recharge Power	30kW/60kW
	Battery charging Rate	≤0.5C
	Battery discharge Rate	≤1C
	Battery Efficiency	≥94.5% under 0.25C
Charging System	IP Ranking	IP65
	Connectors	2
	Charging power	DC Max.150kW +30kW/60kW=180kW/210kW
	Power distribution	2 connectors intelligent distribution
	Charging voltage	300V~1000V
	Efficiency	≥96.5%

Input & Output	Input Voltage	3Phase 400VAC +/- 15%
	Circuit breaker	Type A
	Input Frequency	50Hz±1Hz
	Output Voltage Range	150VDC–1000VDC
	Constant–power voltage output range	300VDC–1000VDC
	Nominal power output	150kW + 30kW/60kW
	Current output	250A CCS2 continuously (200A optional)

General Parameters

Basic Parameters	Type	DC charging station
	Dimension	2.3m*0.8m*2.35m (w*d*h)
	Installation	Floor type
	Material	Industrial Grade Alloy
	Color	White weather–resistant coating
	Weight	3600kg
Environment Parameter	Applicable site	Outdoors
	Operating temperature	–25°C–55°C (over 45°C derating)
	Storage Temperature	SOC 30% – 60% Long term: –20°C–35°C <12 months Short term: –20°C–45°C <3 months
	Humidity	≤95%, No condensation
	Altitude	≤2000m
	Noise Emission	≤75dB under nominal situation
	EMC Emission	Class B
	Medium	No explosive hazardous, No toxic & harmful gases.
Payment System	RFID, credit card	
Connectivity	GSM & LTE & LAN (Min. distance from wireless Module to User >200mm)	
Communication	Ocpp 1.6J	
Battery cooling	Liquid–cooled	
Fire suppression system	Aerosol	
Auxiliary power	5kW @45°	

RF Output Power	GSM900: 880–915MHz(UL), 925–960MHz(DL) 33.04dBm
	DCS1800: 1710–1785MHz(UL), 1805–1880MHz(DL) 30.92dBm
	WCDMA B1: 1920–1980MHz(UL), 2110–2170MHz(DL) 23.5dBm
	WCDMA B8: 880–915MHz(UL), 925–960MHz(DL) 22.8dBm
	LTE Band 1: 1920–1980MHz(UL), 2110–2170MHz(DL) 23.6dBm
	LTE Band 3: 1710–1785MHz(UL), 1805–1880MHz(DL) 23.5dBm
	LTE Band 7: 2500–2570MHz(UL), 2620–2690MHz(DL) 23.0dBm
	LTE Band 8: 880–915MHz(UL), 925–960MHz(DL) 23.1dBm
	LTE Band 20: 832–862MHz(UL), 791–821MHz(DL) 22.0dBm
LTE Band 28: 703–748MHz(UL), 758–803MHz(DL) 21.8dBm	
LTE Band 40: 2300–2400MHz(UL/DL) 23.6dBm	

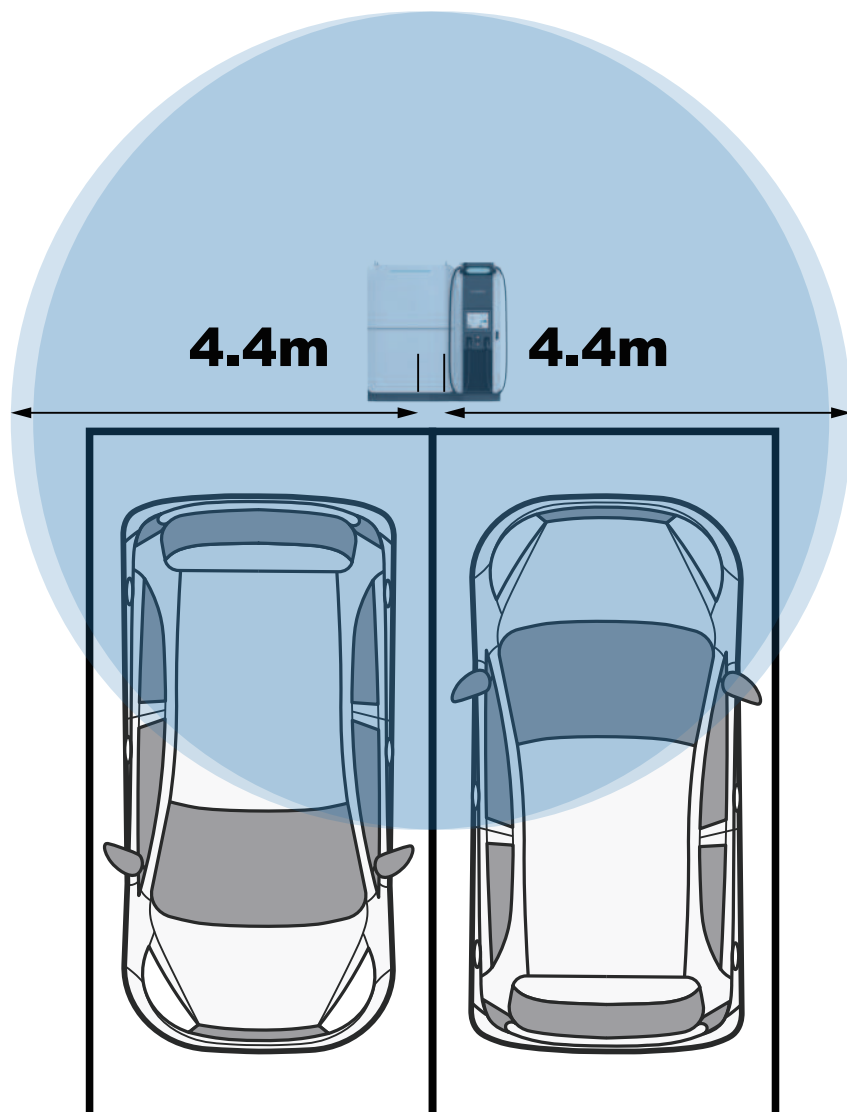
Compliance	
Safety and Low voltage electrical	IEC 61851-1:2017
	EN 61851-1: 2019
	EN 61851-23: 2014
	EN 61851-24: 2014
	IEC 62477-1: 2012+A1
	EN 62477-1 :2012+A11+A1
EMC	IEC 61000-6-2:2016
	IEC 61000-6-4:2018
RED	EN 301908-1
	EN 300330
	EN IEC 62311:2020
Battery System	IEC 62619
	IEC 61000
Transportation	UN38.3

Charging Connectors

CCS Combo 2 different current varieties are available to choose. There are three kinds of current level to use 200A, 250A and 300A. Of which, 250A and 300A cables can support up to 400A for certain period based on ambient temperature and connector temperature. For each, cable length is free to be customized from 3m to 10m.

The usable DC-Power on a DC-outlet is limited by the maximum current of the used DC-charging cable. The effective current carrying capacity of the charging interfaces is specified on the nameplate.

Net Zero Series is by default configured with a cable length of 5m. It can offer at least 4.4m cable radius at the height of ground level covering the parking space.



2.3 Applicable scenarios

Because of low input requirement, NZS is flexible to be applied in various scenarios:

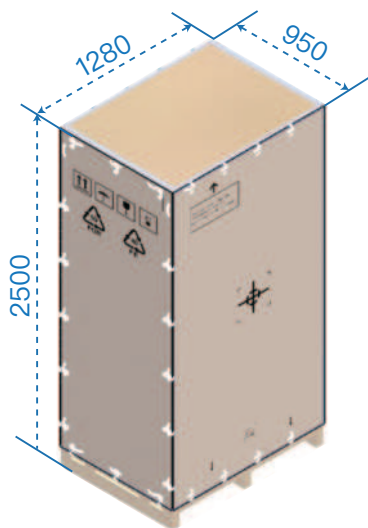
- Highway refueling stations: Due to remote location, there is only limited power supply condition at refueling stations on highway. NZS only needs max. 70kW for input and output more than 200kW, which realize fast charging demand on highway.
- Commercial Center: In case of a large price difference between day and night, NZS supports charging battery with low price and discharge power to vehicle during peak hours, which significantly increase profit for CPOs.
- Retailers: Industrial socket simplify cable connection procedure.

3.0 / Package and Transportation >>>

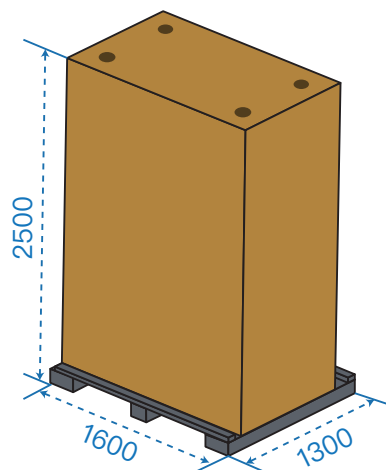
3.1 Package

Net Zero Series is packed in recyclable wooden Package (PLYWOOD). Charger unit, ESS unit and basement are packed separately in 3 packages.

Following are package pictures for charger unit (left) and ESS unit (right) with their dimensions. Charge package is formed from a wooden pallet and 5 pieces of wooden boards. Different with Charger unit, center-of-gravity for ESS shifts to the front of system. To ensure transportation safety, instead of wooden pallet, ESS package is formed from a metal pallet and 5 pieces of wooden boards.

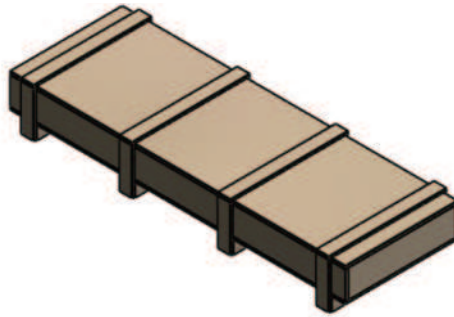


(Charger unit)



(ESS unit)

Package of metal basement is made with full PLYWOOD, showed in following picture.



(Package of metal basement)

3.2 Transportation

To transport the product in package, forklift must be prepared before transportation.

The lashing and securing method is suitable for transportation. For charger unit, at least two binding belts must be through top of charger and fasten the product. For ESS, 4 binding belts must pass through 4 rings to cross-fasten the ESS.

4.0 / Installation >>>

DANGER

Danger to life due to improper installation!

Failure to observe the ambient conditions can lead to dangerous situations when dealing with electricity.

Do not install and use the charger near flammable, explosive, rough or combustible materials or chemicals or steam.

4.1 Preparation before installation

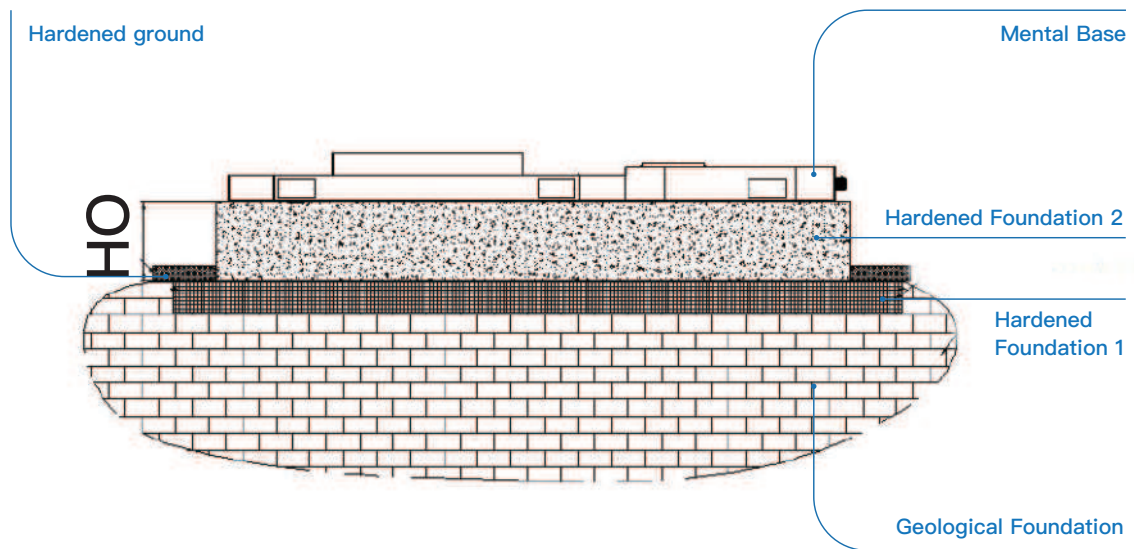
The product is delivered to a warehouse by a logistics company and handed over to the customer. Normally, XCHARGE is not responsible for transporting the charger to the final installation site. During Installation there will be XCHARGE Service Colleagues for guidance. Before installation, please ensure following list well prepared.

No.	Name	Pieces	Usage
1	Forklift trucks	1	≥5T, for product unloading
2	cranes	1	≥5T, for lifting and installation
3	Bolts	12	<ul style="list-style-type: none"> • 4pcs M12*35 for connection between Metal base and charger • 4pcs M12*100 for connection between Metal base and ESS • 4pcs M14*80 for leveling between ESS and Charger • 5pcs M12*150 Expansion bolts
4	Anti-theft screw tools	1	Door security screw removal
5	Sockets	1	Fastening of case and base screws
6	Electric screwdrivers	1	Removal and tightening of front and rear door body screws
7	Insulated torque spanners	1	Check and mark torque values
8	Herringbone ladders	1	Remove ropes for lifting
9	Glass glue	1	Sealing screw gap
10	Insulated gloves	1	For safety during ESS installation
11	Safety helmet	1	Protection against falling objects and other dangerous impacts
12	Insulated floor mats	1	For safety during ESS installation
13	Expansion bolts	5	M12 fix metal base to concrete base
14	Leveling ruler	1	Check levelness

Foot print of NZS is 2300 mm x 800 mm. The space requirement of NZS is calculated as front at least 1.6m to open the front door and rear at least 0.5m to ensure tightening screws and basic operation.

The metal base of this product needs to be fixed to a concrete base, please refer to the diagram below to create the installation base in advance on site. The requirement for this concrete base is as follows:

- Concrete base height $H_0 \geq 300\text{mm}$
- Load bearing capacity $> 4.5 \text{ t / m}^2$
- Foundation area $\geq 2700\text{mm} \times 1200\text{mm}$ (200mm more each side)
- Foundation Horizontal degree $\geq 3\text{mm/m}^2$



4.2 Unpacking

CAUTION

- Check whether the outer package is complete, there is no breakage, crack, scratch, etc.
- Considering that the center of gravity of the products is high and to one side, when forklift trucks are handling the products, the fork arms should be spread out as far as possible, the fork arms should be inserted into the pallet as deep as possible in the front and rear directions, and the start/stop and transfer should be carried out slowly.

Do not push the outer package or equipment by external force to prevent the risk of tipping.

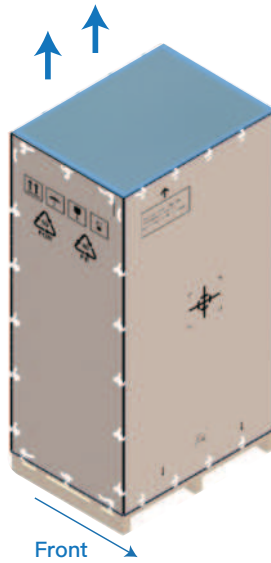
- It is necessary to pay attention to vertical transportation. If the indicator turns red, it can be assumed that there might be strong shocks and tilts during transportation. Please check the package and products carefully.



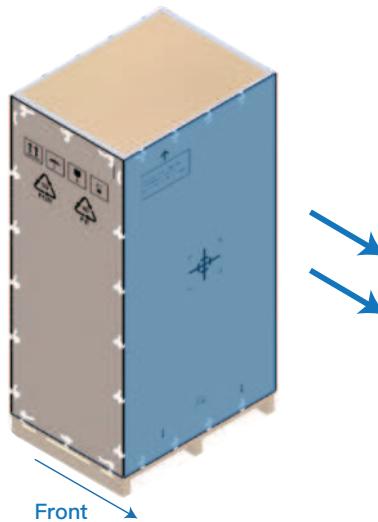
Unloading and unpacking steps are as follows:

- Forklift specifications: ESS weighs 2.6T and requires a motorized forklift with a rated lifting weight of $\geq 5T$.
- Untie the tie-down straps on the truck.
- After confirming the safety within the forklift operation radius, start the forklift operation and put the ESS, Charger, Metal Base on a level horizontal ground.
- Remove the outer wooden box with a crowbar (charger as an example)

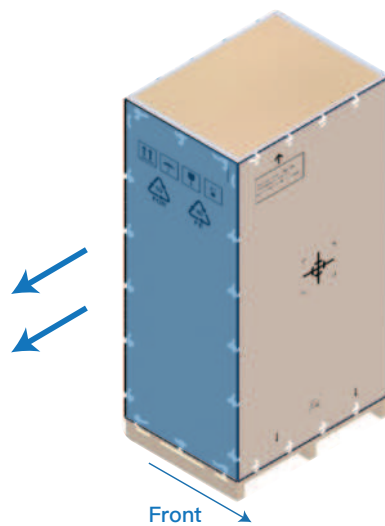
(1) Release metal buckles of top cover and remove the cover



(2) Release metal buckles of front cover and remove the front cover



(3) Release metal buckles for left cover and remove left wooden cover

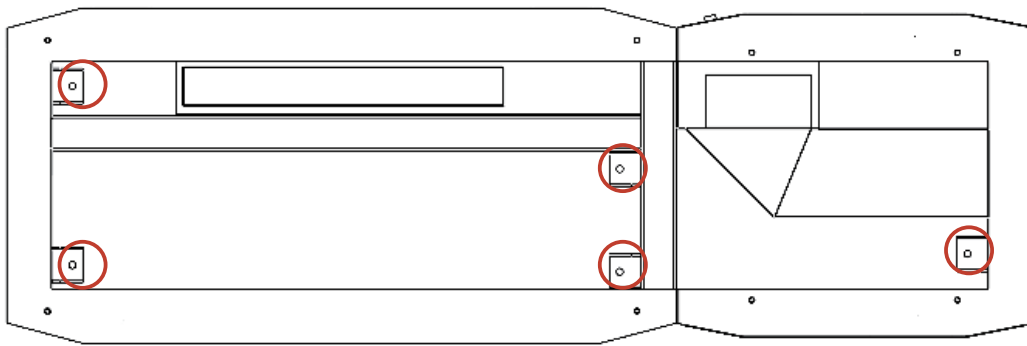


(4) Release other buckles with colleague's help and then remove all wooden covers

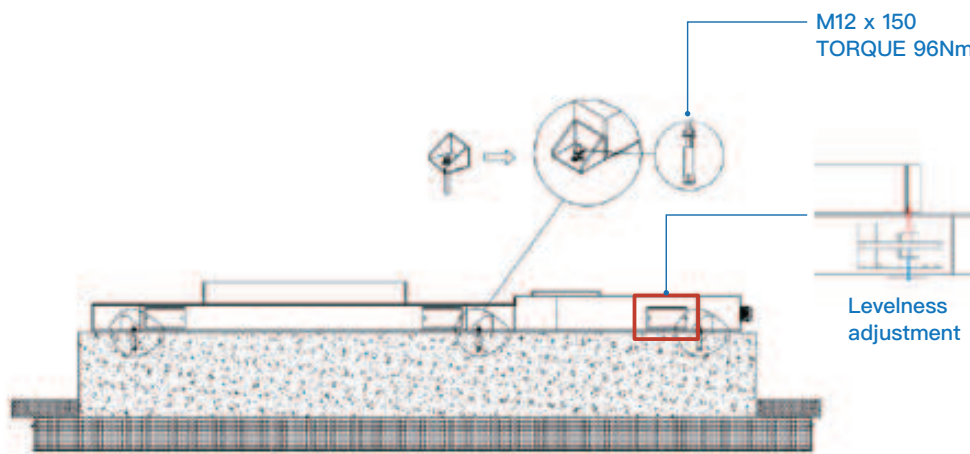
4.3 Installation of Products

Metal Base Installation

Prepare the impact drill, confirm the drill bit specification M12, check the specification and number of expansion screws. Referring to the following fixed hole position, use the impact drill to align the hole center drilling, drilling depth of 150mm.

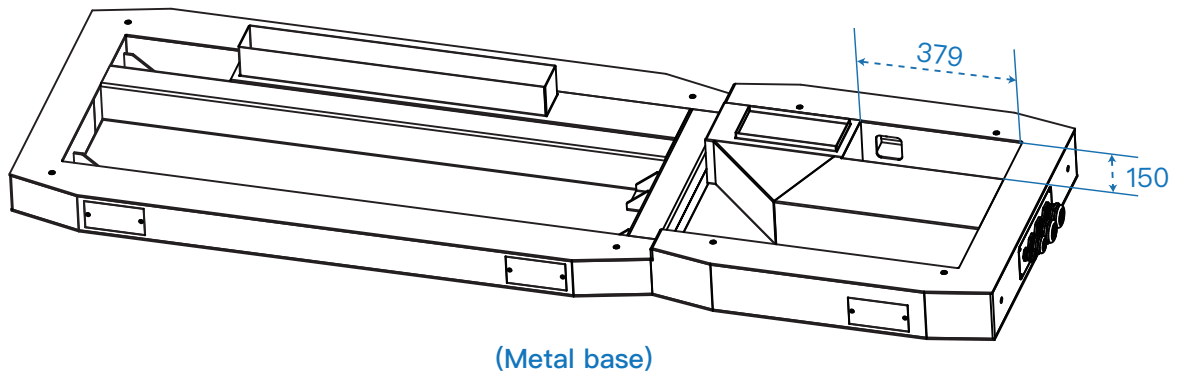


Put the metal base on concrete base. After cleaning up the residue of drilling, put 5pcs expansion bolts (M12x150mm stainless steel) into the corresponding holes, use a hammer to pound the bolts to the end, then add nuts + spacers and tighten them with a socket, confirm the torque of 96N·M via torque wrench.



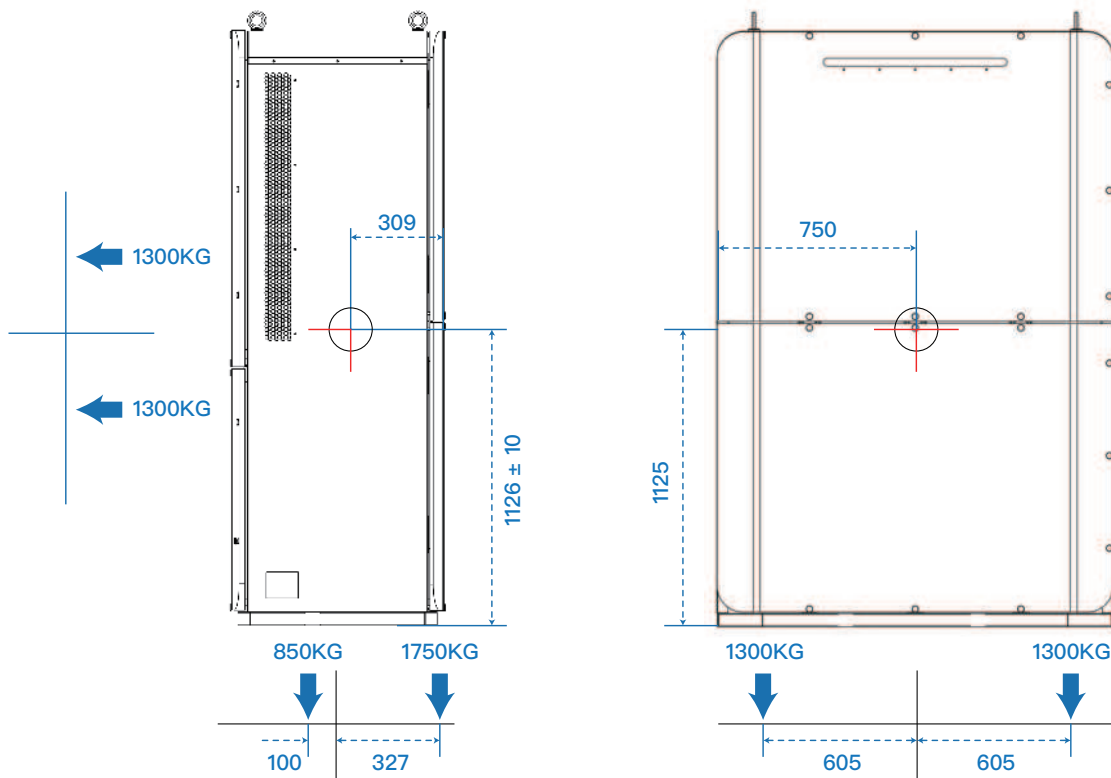
After installation, please take care of levelness of metal base. Use leveling ruler to check levelness, if it's over $\pm 1\text{mm}$, please adjust levelness with leveling mechanism. There are two bolts designed for leveling mechanism. Tightening upper bolt is used for raise up while lower bolts is used for bringing down the base. Please adjust 6 set of bolts front and back based on measured levelness via spanner till levelness is $\leq \pm 1\text{mm}$.

NZS offers different kinds of cable connection varieties. One of them is to connect input cables directly to input busbar inside of charger. In this case, cable can go from underground, through concret foundation, to charger inside from its bottom. If this is the choice, cable groove in foundation should be cut as showed in the red marked area. It is directly under the cable entrance holes of charger unit.



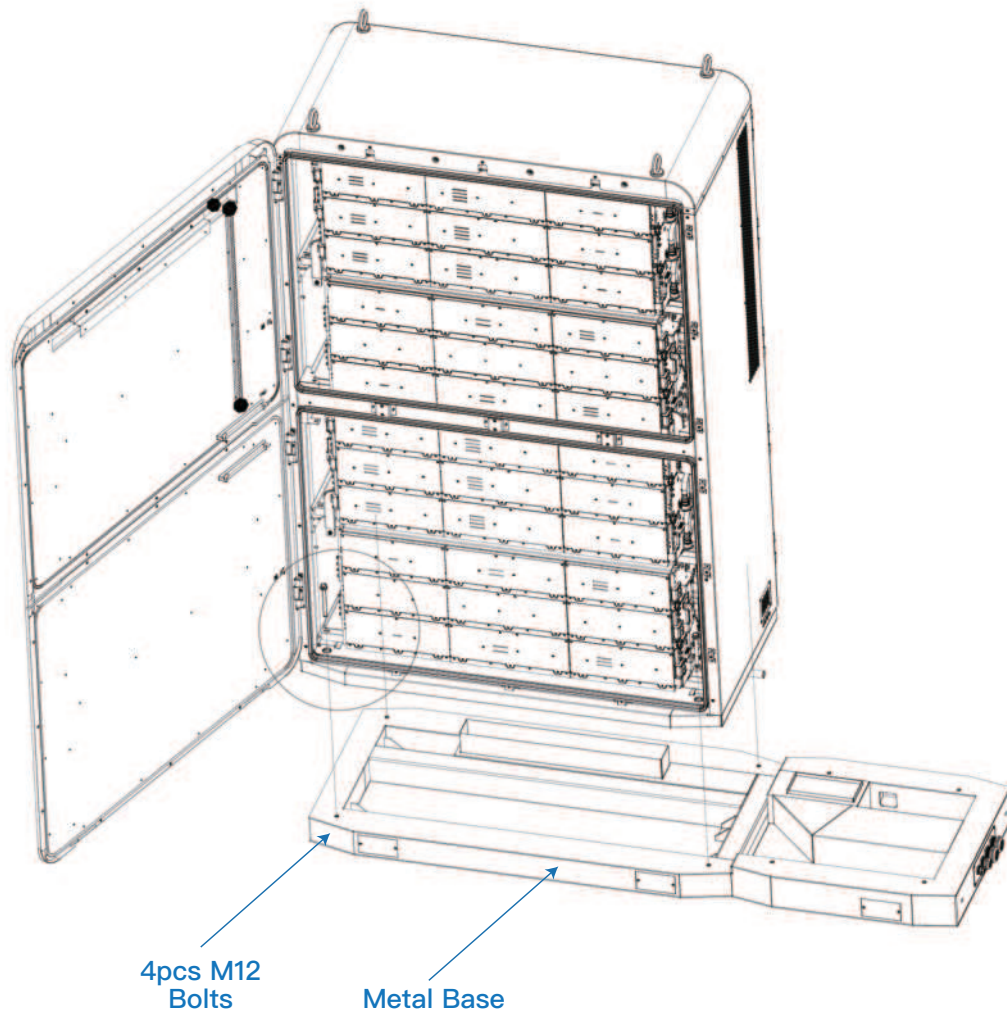
ESS Installation

Battery characteristics and ESS inside layout result in high design weight and off-COG (center of gravity). COG of ESS is biased towards the front as shown in following picture. So it's necessary to use crane to loose bolts and tighten bolts.



Installation steps:

- Crane specifications: the weight of ESS is 2.6T, the need to use the rated lifting weight $\geq 5T$ motor crane, sling 4 (equal length), each sling length $\geq 5m$.
- Climb up the man-ladder, connect the sling with the 4 rings on the top of ESS, and pull the sling until it is taut, but do not lift the equipment so that the cardboard is off the ground. (To avoid product from tipping due to bias of COG during disassembly bolts)
- Unscrew the bolts on the lower door frame of the equipment, open the lower front and rear doors, and use a socket wrench to take out the four bolts connecting the equipment to the base, then close doors.
- Lift ESS from the transportation base on the predetermined position of the metal base, confirm holes on ESS corresponding to holes on metal base. Before the bolts and base fastening, the sling needs to be straightened and in a taut state. Open the front and rear 2 doors, use the M12 combination screws (4PCS) to fix ESS to metal base and tighten it with a socket. Confirm the torque of 96NM with the help of torque wrench.
- Apply glass glue to the 4 screws and the gap around the screw holes to seal the screws and the gap, and then fasten the 2 lower doors.

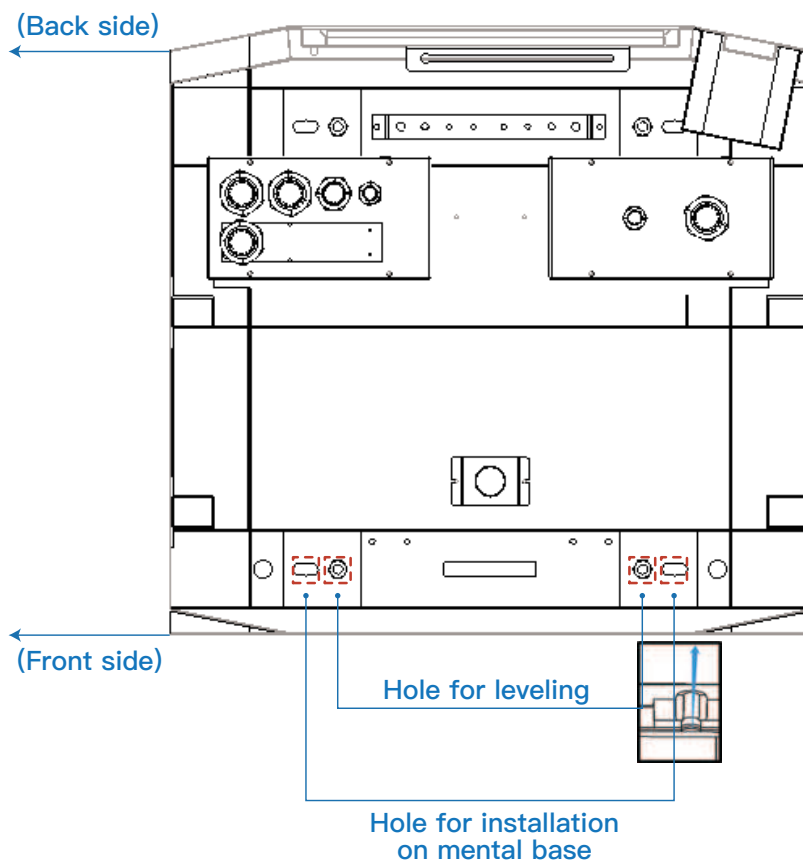


Charger Installation

There is production tolerance during ESS and charger production. Assembly two part together might result in superimposed tolerance, so that a slant gap will present between ESS and charger. To avoid this, a separate leveling mechanism is designed for charger part. The installation must be metal base first, then ESS, charger at last and leveling adjustment for charger after all installation finished.

Installation of charger and leveling steps are as follows:

- Open the front and rear doors, and use a socket wrench to take out the four bolts connecting the equipment to the base, then close doors.
- Climb up the man-ladder, connect the sling with the 4 rings on the top of charger
- Lift charger part from the transportation base on the predetermined position of the metal base, confirm the long through-holes on charger corresponding to holes on metal base. Open the front and rear doors, use the M12 combination screws (4PCS) to fix charger to metal base and tighten it with a socket. Confirm the torque of 96NM with the help of torque wrench.
- If there is gap between charger part and ESS, please adjust 4pc M14 screws till no significant gap between ESS and charger. Tighten the screws and raise up the charger. Then close front and rear doors.

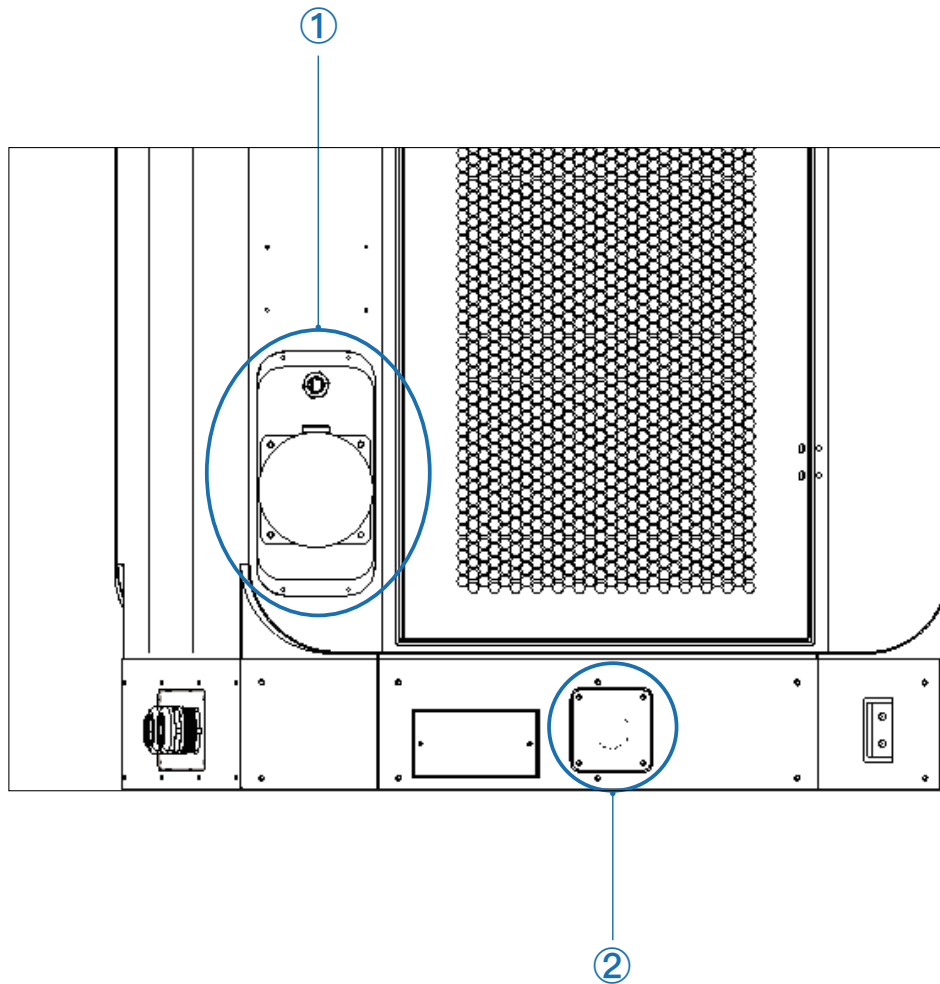


Grid Connection

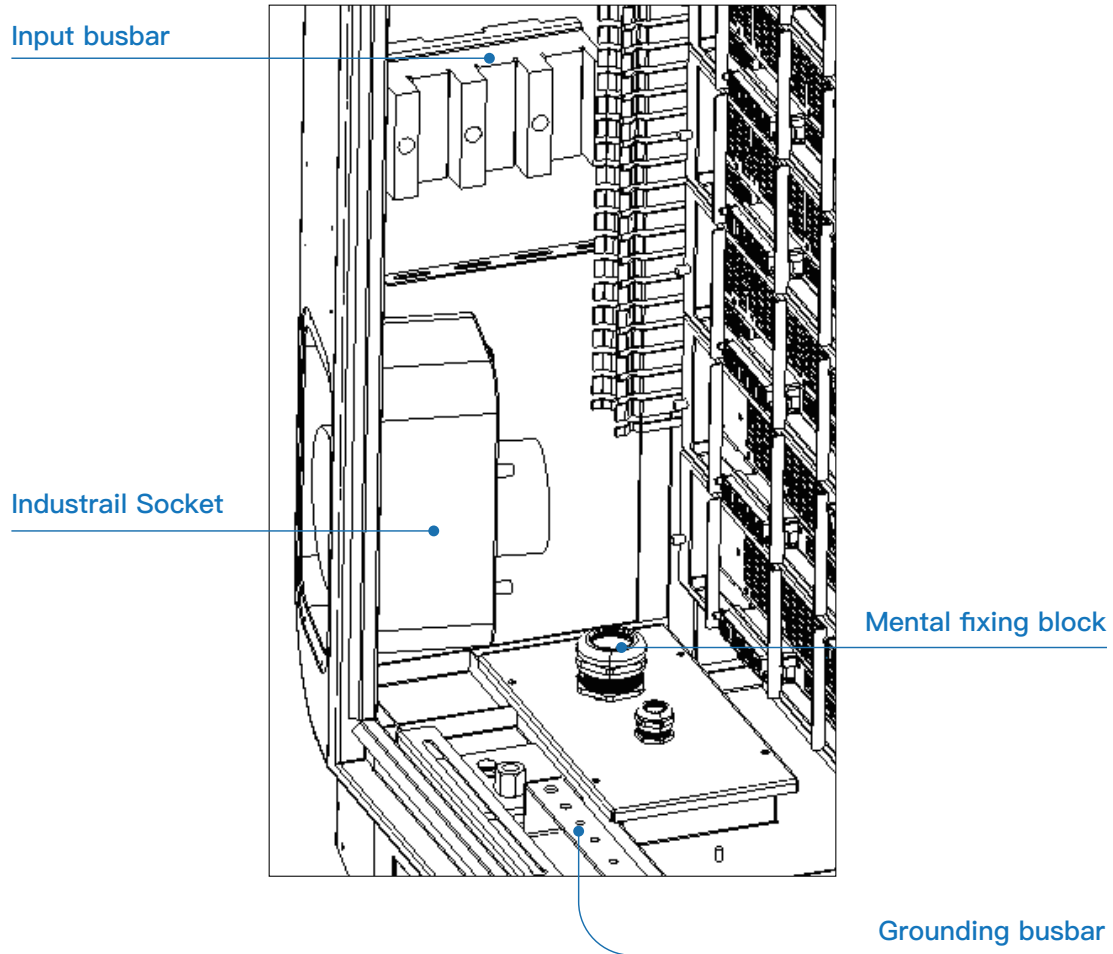
Power supply requirements:

Power	Nominal Voltage	Nominal Current	Cable dimension	Diameter
68kW	400V P+N+PE, 50Hz	99A	5 x 35mm ²	30 – 35mm

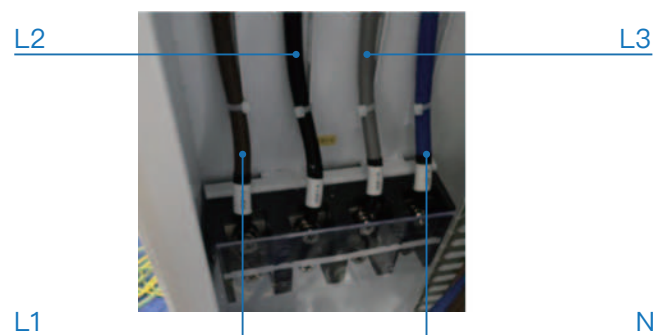
As mentioned in 4.3.1, NZS provides different alternatives for grid connection. Besides cable going through concret foundation directly up to charger inside, industrial socket can also be chosen to connect charger with grid, as shown in bellowing picture, marked as ①. You can connect cables to the industrial plug, which is provided with charger. Then plug in to the socket on left corner of charger back side. Input Cable connection is finished.



To connect like usual, the hole marked with ② on metal base can also be used for input connection. Please open rear door and disconnect the cables for industrial socket on left side of charger inside. Input cable go through metal base and enter charger inside through metal cable glands. Connect L1, L2, L3, N on the input bus bar and PE on grounding bar.

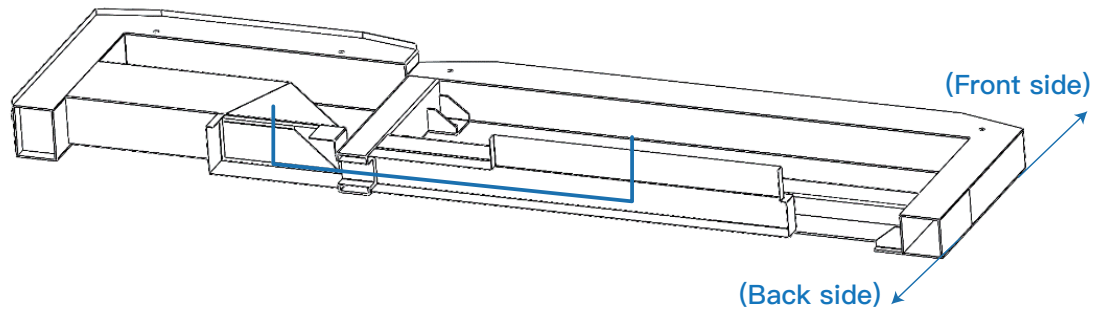


The connection sequence of main-side supply cables should be corresponding to instruction in following picture (Industrial socket cable are connected by default on input busbar. To switch to normal connection, socket cable should be disconnected firstly then connect supply cables on busbar).



Battery Connection

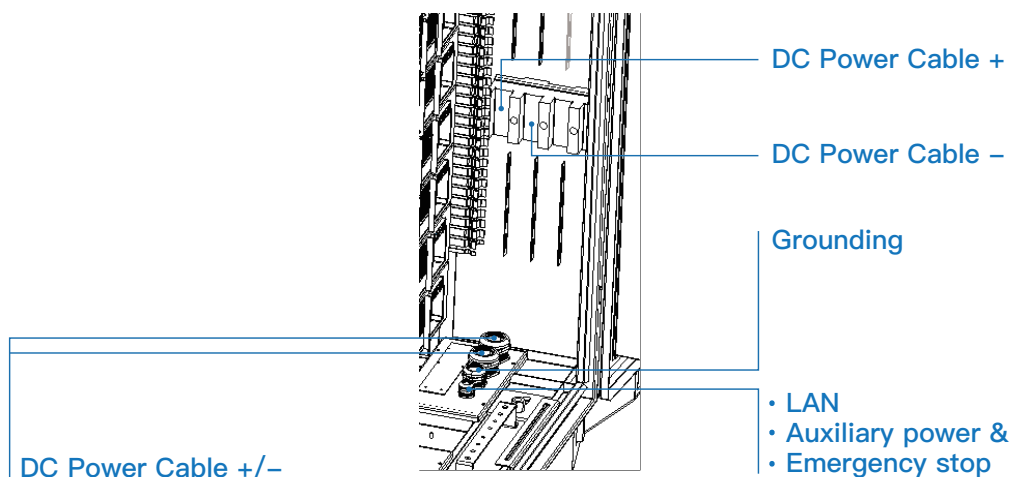
Metal base enables cable connection between ESS and charger. A channel in metal base, as shown with a red path, consists of ESS cabinet and charger cabinet without any underground grooves.





Interface between ESS and charger are presented in below table:

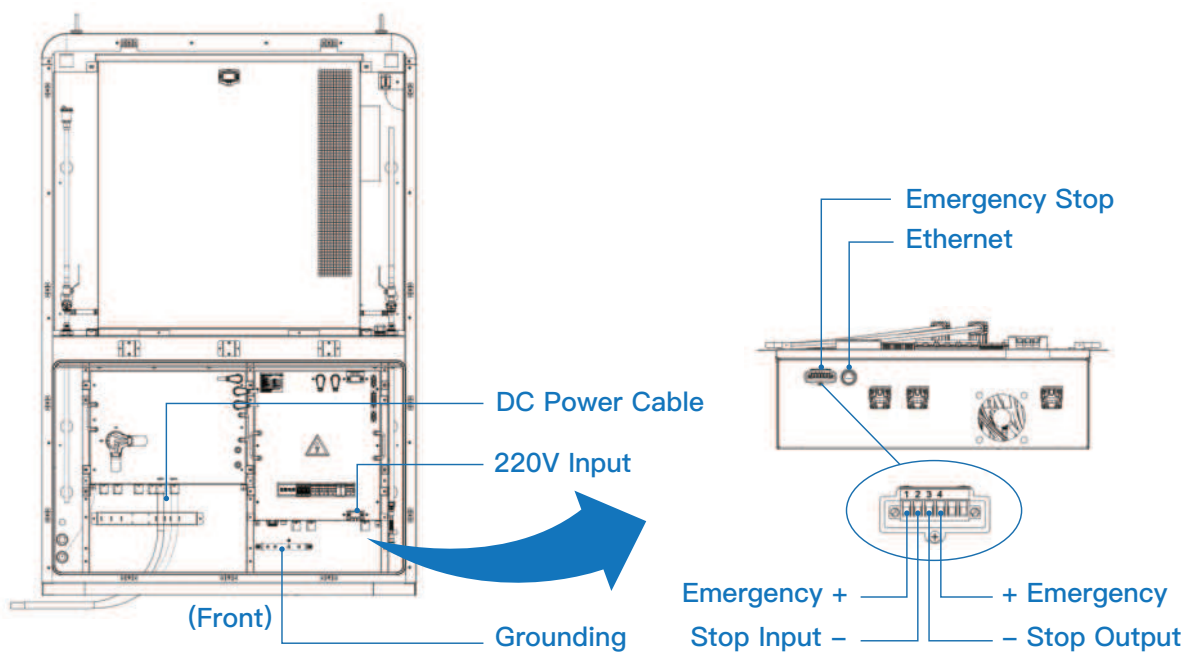
No.	Interface type	Quantity	Description
1	DC Power Cable	1 way	4/0AWG or 120mm ²
2	External Communication Interface	1 way	1 way Ethernet interface CAT5e/6
3	Auxiliary power supply AC 230V/50Hz	1 way	12AWG / 4 mm ²
4	Grounding	1 way	50mm ²
5	Emergency Stop Input/Output	2 ways	20AWG

DC Power Cables output from busbar for ESS connection and go through the cable gland on bottom to ESS cabinet.



Use an electric screwdriver to remove the screws on the rear lower door panel, then move the door aside and confirm that the switch is disconnected according to the following table power state. Then connect cables referring to electrical diagram.

Switch	Status	Status confirmation
BMS Insulation Switch	 Horizontal	Off
Circuit Breaker	 Downward	Off



After finishing input cable connection, please turn to front and start connection for Battery packs. Use an electric screwdriver to unscrew the screws on the upper and lower door panels of the battery compartment, then open the compartment door.

Windproof pole is designed to avoid deformation or damage of door during severe weather, showed in following picture. Two poles are at lower side of upper door and top side of lower door, which is easy to get and operate.



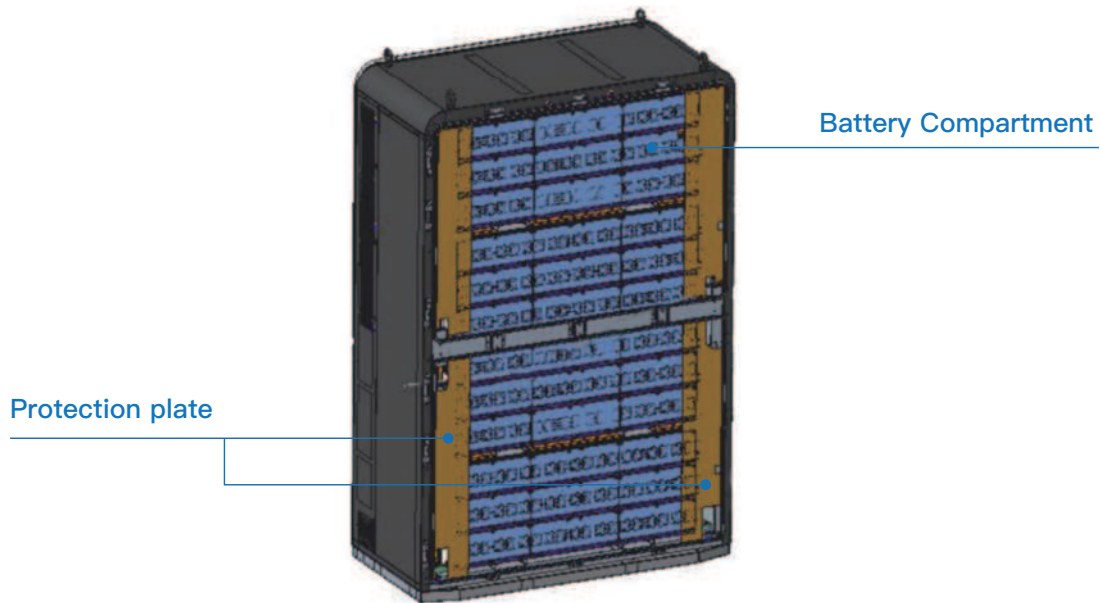
(Windproof pole)

After opening the door, wind proof poles need to be adjusted to fix door position. During battery connection, operation and any maintenance, poles must be put at right position as showed in following picture.



(Windproof pole)

To ensure insulation safety, there are four pieces of protection plate assembled in front of battery. Protection plates need to be disassembled firstly, then connect copper bar with battery.



Take out copper row 1 (2PCS), M6*16 hexagonal combination screws (4PCS), M8 flange face nuts (2PCS) from the accessories, put copper row 1 to the left, fix the first group and the second group of cell modules, the third group and the fourth group of cell modules, respectively, and tighten them with a socket. Check the torque with the help of torque wrench (M6 screw 10NM, M8 flange nut 15NM), and then wrap with high temperature insulation tape.



Copper row 1



Copper row 2

Take out the copper row 2 (1PC), M6 hexagonal combination screw (2PCS), M8 flange face nut (1PC) from the accessories. The second and third group of battery modules are fixed to the right with copper row 2 and tightened with a socket and check the torque with the help of a torque wrench (M6 screw 10 NM, M8 flange nut 15NM), then wrap with high temperature insulating tape. Close the upper and lower doors of the battery compartment and tighten the screws.

Open the small left and right windows on rear upper door of ESS. Open the inlet and outlet liquid cooling valves on the left and right side respectively, then close the barn door and fasten the screws.

No.	Part	Location	Fasteners	Value(Um)
1	ESS	Fix ESS with metal base	M12*100	96
2		DC power output	M8 nuts	15
3		Grounding	M8*16	15
4		Batter copper	M6*16	10
5		220V input	M5*10	5
6	Metal base	Fix metal base with concrete base	M12 expansion screws	96
7	Charger	Fix charger with base	M12*35	40
8		Input cable	M10*4 + M8*1	18
9		Output to ESS	M10*2	10

Final check:

- Check whether the battery grounding resistance is less than 0.1Ω.
- Check if the positive and negative poles of battery withstand voltage of large 2500VAC.
- Check if N to PE (charger input) Voltage is 0V
- Check if PE to N resistance is less than 1000mΩ
- Assemble all protection plates and close all doors



DANGER

LOCOUT / TAGOUT

Before set-up, maintenance, service, or repair.

Checklist before commissioning:

- All operators follow requirements in for safe work practices and appropriate PPE.
- LOCKOUT-listing procedure should be applied properly.
- All operators should be trained for NZS maintenance and fully aware of the risk.

5.1 Switch on the Charging system



DANGER

Mortal danger due to electrocution!

The contact with high power parts can result in electric shock, burns or death.

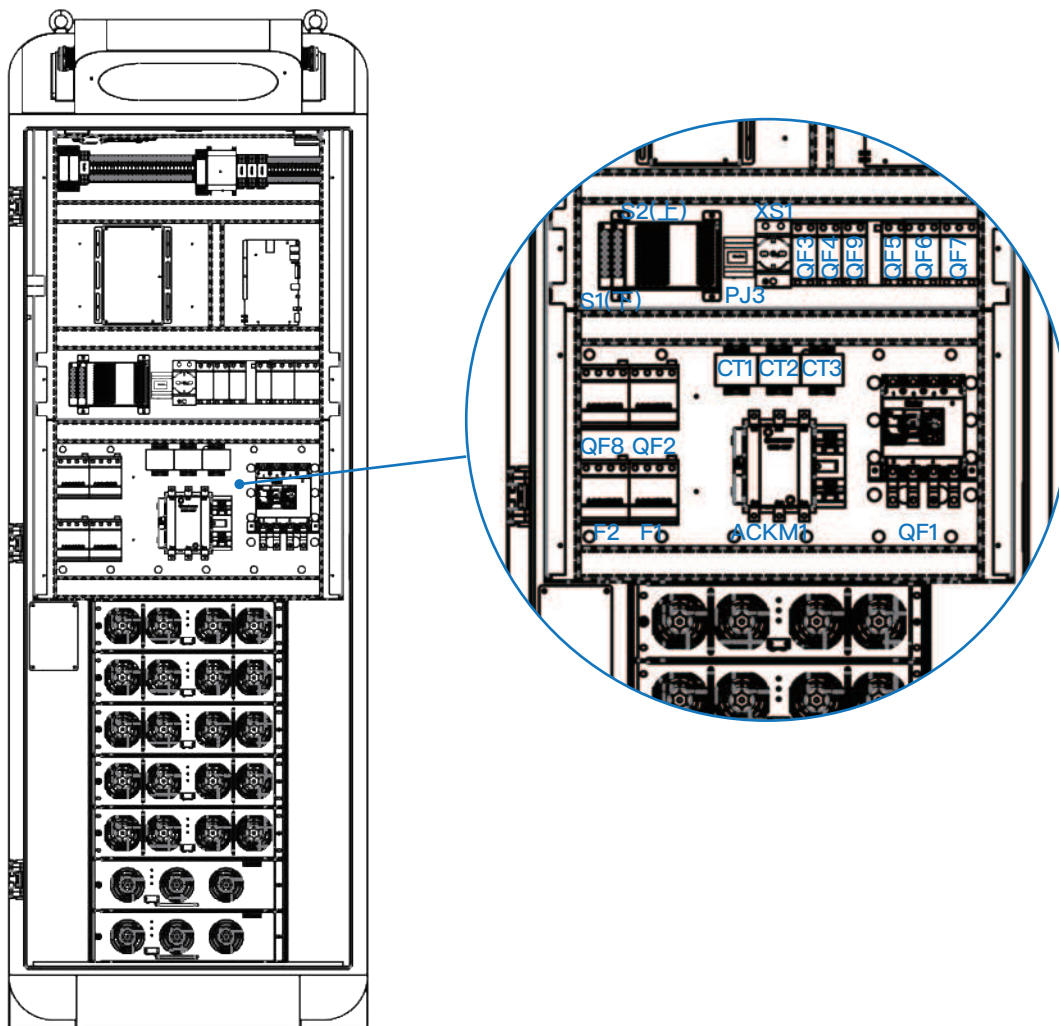
Checklist before switching on:

- Visual check if there is any damage or deformation of the product.
- Visual inspection of coolant leakage, especially inlet and outlet of air conditioning.
- Check if there is trace of condensation inside of charger and battery compartment.
- Make sure that the main switch in the middle right hand behind the front door of the NZS charger is switched off.
- It must be ensured that no AC voltage is applied to the mains connections.
- It must be ensured that all connections are made correctly.
- Insert the mains fuses in distribution box and make sure that the fuse holders are properly closed.
- Please check that the addresses have been set correctly on Power Module M1–M7.

Insert SIM card if connect Network via 4G.

After confirmation of checklist, charging station is able to be powered up by turning on the main switch (MCCB), please follow the procedure below to complete the commissioning.

- Turn on QF2 and QF8, then turn on QF1.
- Turn on all other switches.
- Check that the start page is displayed.
- Make sure the 3G / 4G / LAN icon appears on the home screen.
- Make sure the connection of backend symbol is shown stable.



5.2 Switch on Energy–Storage–System

DANGER

Mortal danger due to electrocution!

The contact with high power parts can result in electric shock, burns or death.

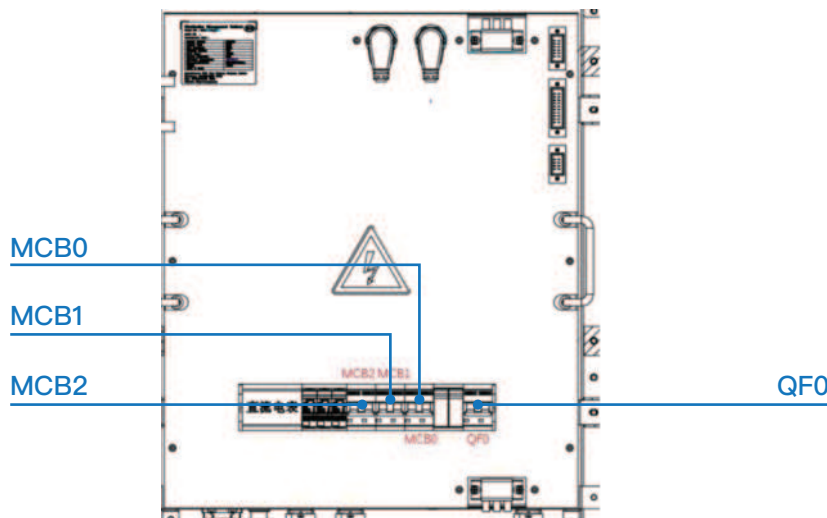
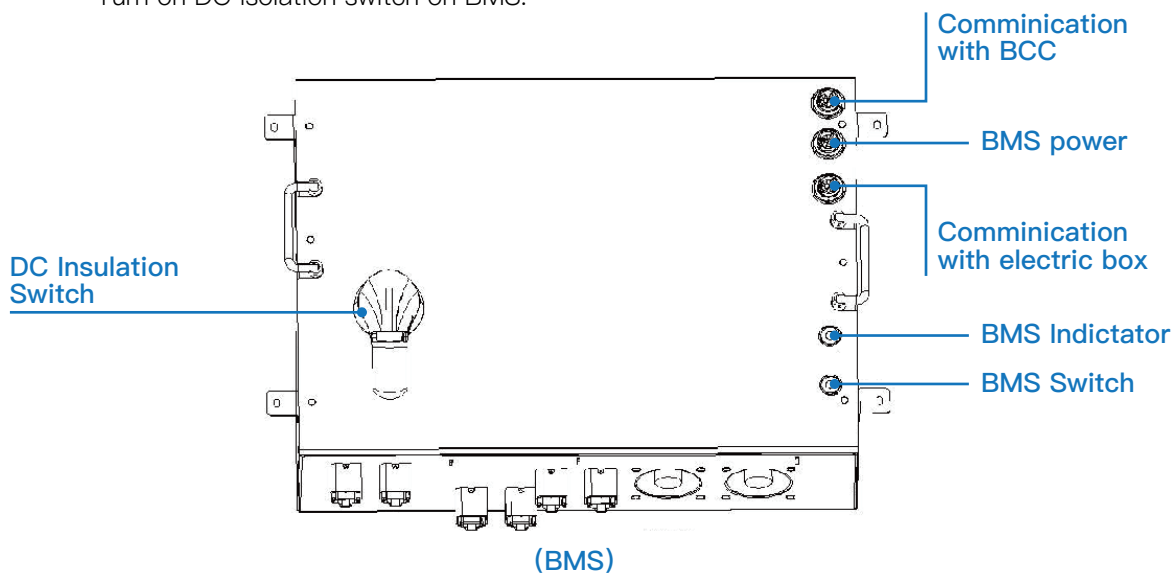
All auxiliary power supply been activated and operational.

All valves for air conditioner in/out are open.

All electrical connections are checked (both internal and with charger side).

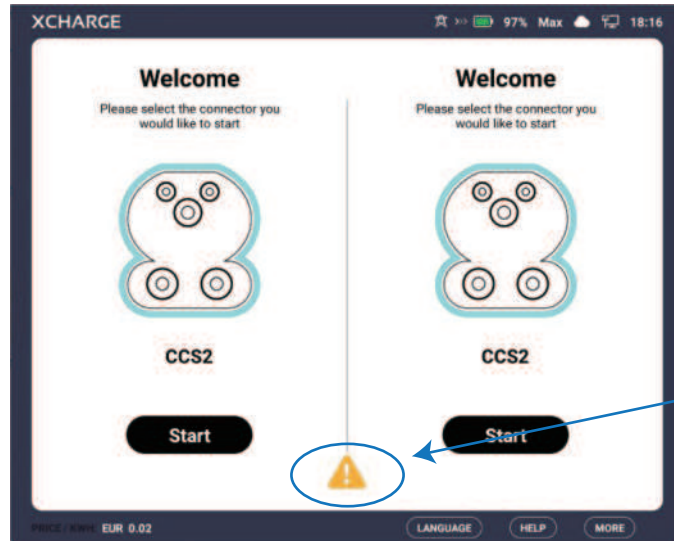
Commissioning procedure:

- Turn on all circuit breaker in ESS to activate auxiliary power supply in following sequence:
QF0 – MCB0 – MCB1– MCB2
- Turn on BMS switch.
- Turn on DC isolation switch on BMS.



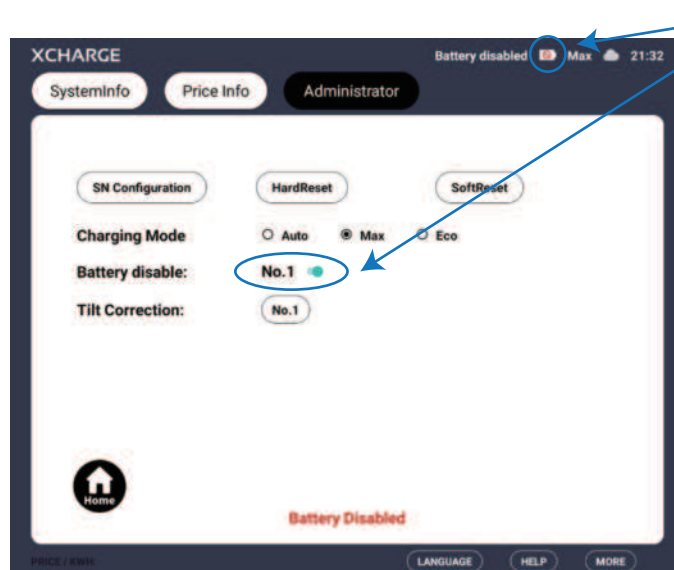
5.3 Checklist when switching on

From HMI display on Charger side, check the battery status and configuration. Check if there is yellow warning button, click button to check warning messages.



If the battery information could be read correctly, it means the connection between the battery system and the charger side is all right. Default execution status is Battery disabled. You can enable battery in Administrator page. As showed in following picture, “Battery disable” is turned on. Battery can not be used for now. Click No.1, enable the No.1 battery. Battery status on right top area of screen should turn to green.

If there is “C0253 Tilt angle abnormal message” in yellow warning page, please make sure that the whole system is at a stable horizontal plane and all bottom screws have been tightened. To eliminate this message, you could turn to Administrator page to correct the angle. Click Tilt Correction No.1, the tilt angle of No.1 battery will be corrected.



Battery LED indicator & status.

LED color	LED display	Status
Blue	Static	Inactive
Blue	Flow to left	Discharging
Blue	Flow to right	Charging
Yellow	Static	Warning message
Red	Static	Fault (not allow to use)

5.4 Function Test

After confirmation of normal working status, function test must be carried out in following procedure:

- Check if NFC reader or POS terminal works normal
- Check if Network connection is normal, if 4G module and router works well
- Start charging session, check function of screen, fan working status, output power
- Check charging function for each connector
- Check battery charging and discharging status



19 Inch touch screen is integrated on charger unit for operating. Charging status, battery status, working modes and multiple configurations are available on the screen.






6.1 Main Page

The main page is showed in bellow:



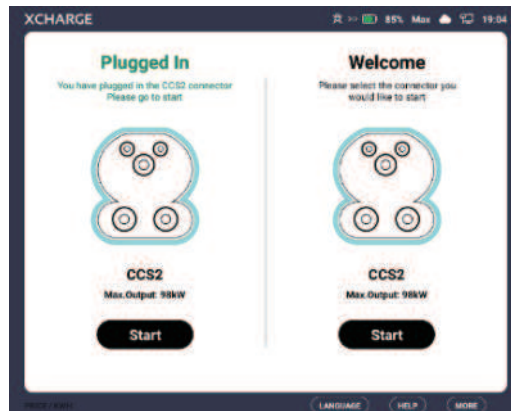
Battery symbol with different color on top-right corner indicates battery status. Energy direction to vehicle or to battery were also perform there.

⑤	Item
97%	SOC
Max	Working Mode
	Backend Connection
	Network Connection
18:16	Time

⑤	Item
	Charge vehicle using Battery's energy
	Charge battery using grid power
	Battery Low
	Battery fault
Battery disabled 	Battery is disabled and cannot be used

6.2 Charging Process

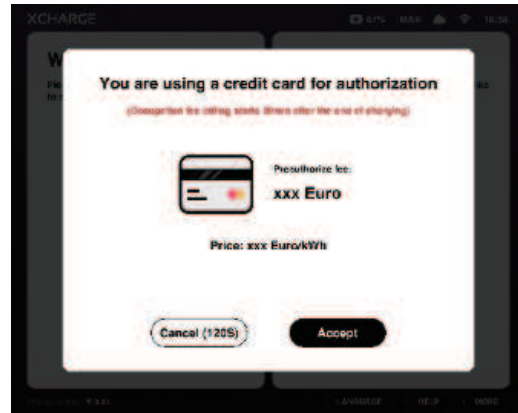
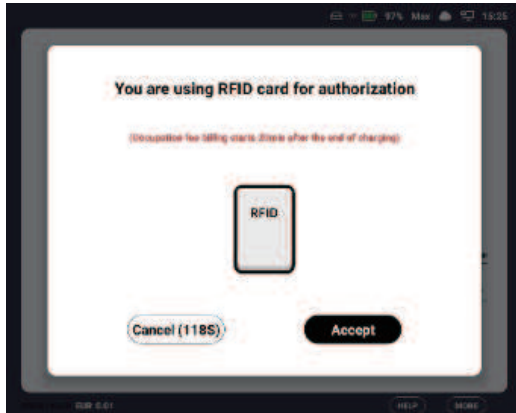
1) Charger is configured with two connectors. To start charging, please select connector you would like to use (refer to available power) and click “Start” to next page. If connector is plugged in before “Start”, status will change from “Welcom” to “Plugged In”.



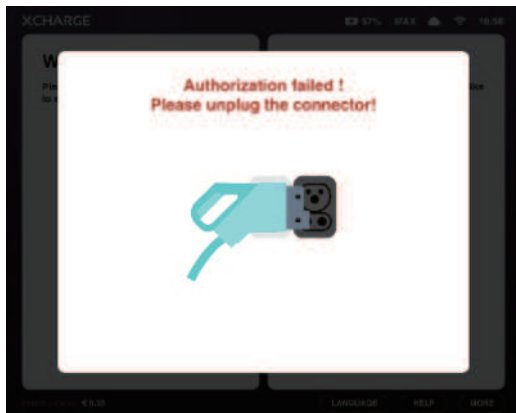
2) There are totally 120s for plug in and tap the card. It can be NFC Terminal to tap RFID card or POS Terminal, which enables usage of credit card.



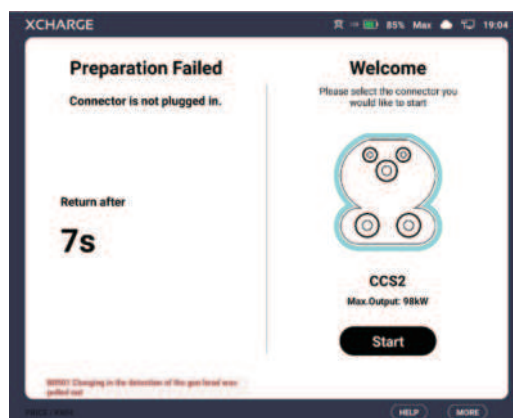
3) After tapping card, card will be performed on screen. In case of credit card, preauthorize fee and charging price will be presented. Please select “Accept” for authorization and go to next step.



4) If authorization failed, a reminder of unplug connector will be presented on screen. If card has been successfully authorized, charging station will start self-check to prepare for charging. There is 120s count down for preparation. Normally it takes around 60 seconds for preparation because of start-up time of power modules and battery.



5) If connector was not plugged in, self-check can not be passed. There will be error message for a reminder and will return to main page after a few seconds.

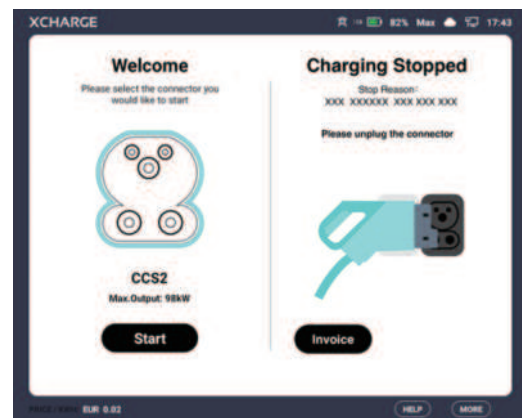
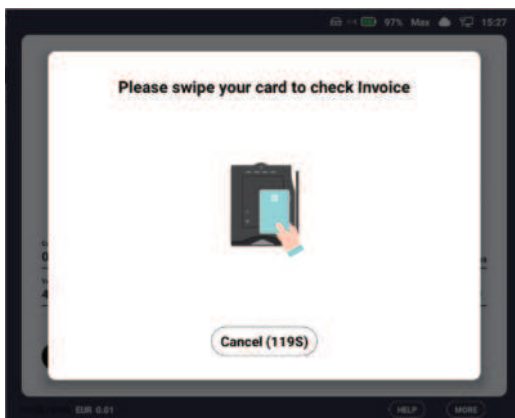


6) During charging process, real-time values like charging SOC of vehicle, current, voltage, power, energy, cost, charging time, are performed on screen.



7) In case you want to stop charging, please click “Stop” and tap the same card to stop the session and check invoice.

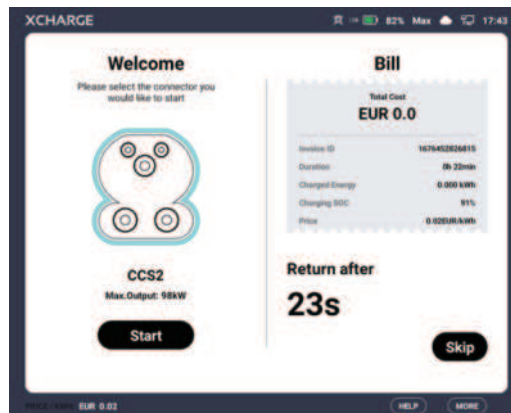
Charging session can also be stopped due to vehicle battery full or other reason. In this case, screen will turn to charging stopped page automatically and present stop reason. To check Billing data, please click ”Invoice” and tap the same card as start charging.



8) Total cost, Energy Price, Charged Energy, Invoice ID and SOC can be checked from invoice. Reminder of unplug connector will be performed under invoice.



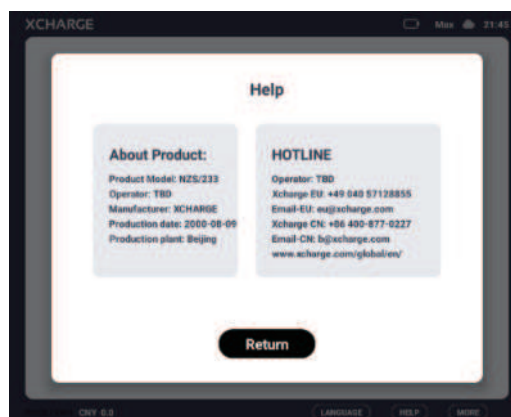
9) After unplug connector, screen will turn to main page automatically after 30 seconds. Or you can click “Skio” to switch to main page manually.



6.3 Information and Settings

“Language”, “Help”, “More” are available at bottom of screen to check more charger information and settings.

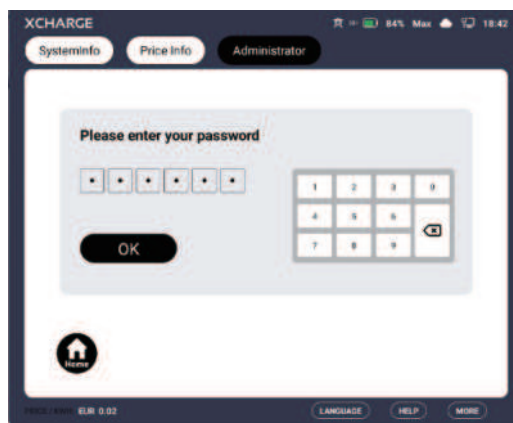
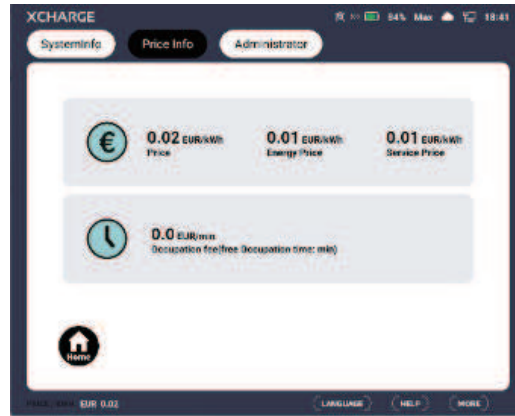
1) Click “help” to check Operator information and hotline. Operator Hotline is for end–users to ask for help. Xcharge’s Phone number is for operation help and maintenance.



2) Click “Language” to change language for User interface. Choose the language and click “OK” to change.



3) Click “more” to check system information, price and change settings in “Administrator”. To enter “Administrator”, please enter the correct password and click “OK”.



4) In “Administrator”, you can check SN Configuration, trigger “hardreset” and “soft-reset”, switch working modes, switch status of battery, correct Tilt angle. This page is only available during “stand-by” time. It’s not allowed to enter during charging session.

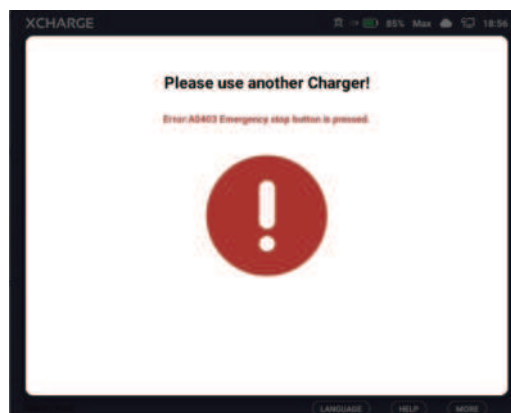


5) Long press “more”, you can access in detailed parameter page. Power module working status, battery working data, air conditioning data are presented in this page.

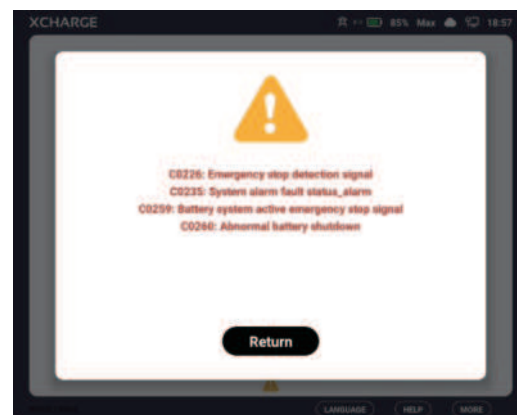
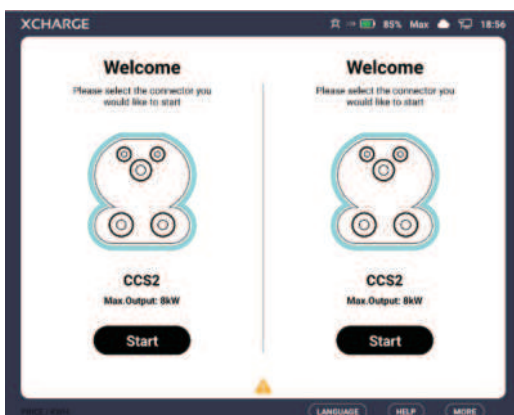


6.4 Error Messages

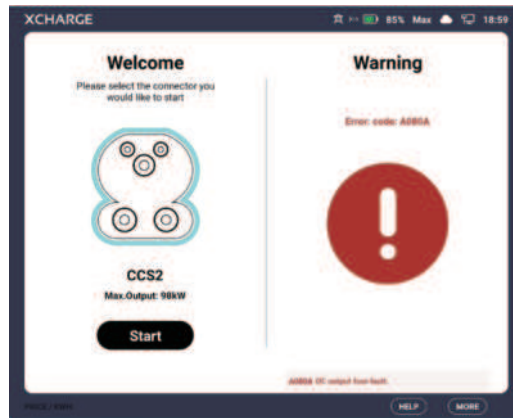
1) If there is any fault which result in whole charger not-working, the whole screen will present a warning symbol with explanation, for example Emergency Stop.



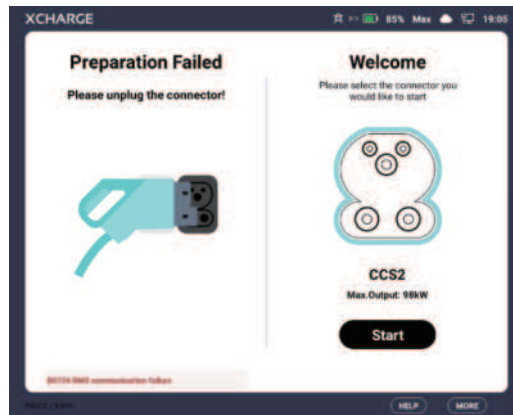
2) If warning doesn't affect whole charger, connectors are still available for charging. Yellow warning button will blink at bottom of screen. Click “warning button”, warning messages will be listed in a pop-up window.



3) If the fault only affect one connector, the fault message will be presented only for one side.



4) If there is any fault result in preparation failure, error message will be presented under preparation page and only for the preparing connector.





7.1 General Requirements

Make sure to plug the charging connector back into the correct plug holder after charging and let the charging cable hang freely. Check the charging station and the charging cable regularly. You can contact customer service for replacement or maintenance if you notice any damage.

- NZS is powder coated. This coating must be kept in good condition;
- We suggest that NZS must be cleaned twice a year (adjusted to the current situation);
- Remove coarse dirt by spraying with low pressure line water instead of high-pressure jet;
- Apply a neutral or weak alkaline cleaning solution and let it soak;
- Use only cleaning agents with a PH between 6 and 8;
- Do not use cleaning agents with abrasive ingredients;
- Do not use abrasive tools;
- Remove dirt with a hand pad made of nylon fleece;
- Check the coating regularly for damage;
- Call customer service if coating damage occurs.

Please always wear appropriate personal protective equipment when performing any operations, repairs, maintenance and other activities in the ESS field. The following personal protective equipment is considered a minimum requirement.

- Safety boots with non-perforated soles and steel toes
- Tight fitting flame-retardant coveralls
- Appropriate flame-retardant work pants
- Individually fitted hearing protection
- Safety gloves
- Any other prescribed protective equipment must also be used.

The operator must be a qualified electrician and competent to work on the system. The capability must be evaluated and approved by XCHARGE.

- Operators must be authorized and trained in electrical operating skills. Otherwise, the operator must not operate the system to avoid improper operation of the equipment and cause serious injury.
- The operator should be fully familiar with the structure and operating principles of the entire storage system.
- The operator should be fully familiar with this manual.
- The operator should be fully familiar with the relevant standards of the country where the project is located.
- Personnel entrusted to perform the work are able to assess their assigned tasks and identify possible risks.
- Only authorized and trained electricians should perform maintenance work and change the settings and connections of the equipment

7.2 Maintenance Procedure

To ensure operation safety of charging station, regular maintenance to control system status is necessary. All points below should be carried out by trained operator or Xchanger after-sales colleagues. Before execution, please make sure the system is in a safe condition and has been powered off.

Cabinet Inspection

Check the cabinet door lock (power off)

- Check whether the door lock of charger can be opened and closed smoothly (check both sides)
- Check whether the cabinet door opens and closes smoothly (check both sides).
- Check whether two windows on back side of ESS open and close smoothly.
- Check whether the cabinet door is deformed.

Cabinet check (power off)

- Check whether the cabinet appearance is damaged.
- Check whether the cabinet is rusted.
- Open the cabinet door and check whether the cabinet is damaged inside.
- Open the cabinet door and check whether there is condensation water, dust and debris in the bottom of the cabinet.
- Check whether there are foreign objects in metal base.
- Checking that the enclosure door seals are not peeling or deteriorating.

Check filter mat on front door of charger unit.

Battery holder check (power off)

- Inspecting battery holder for deformation or bending.
- Checking for damaged or loose battery holder welds.
- Check for loose or missing bolts mounted on the battery holder.

Connection Inspection

Input/Output Cable Connection (power off)

- Check whether the grounding cables are loose or damaged.
- Check whether the input/output copper busbar is rusted or oxidized.
- Check whether the input cables are damaged.
- Check whether torque of screws is at standard value.

Protective measures and parts

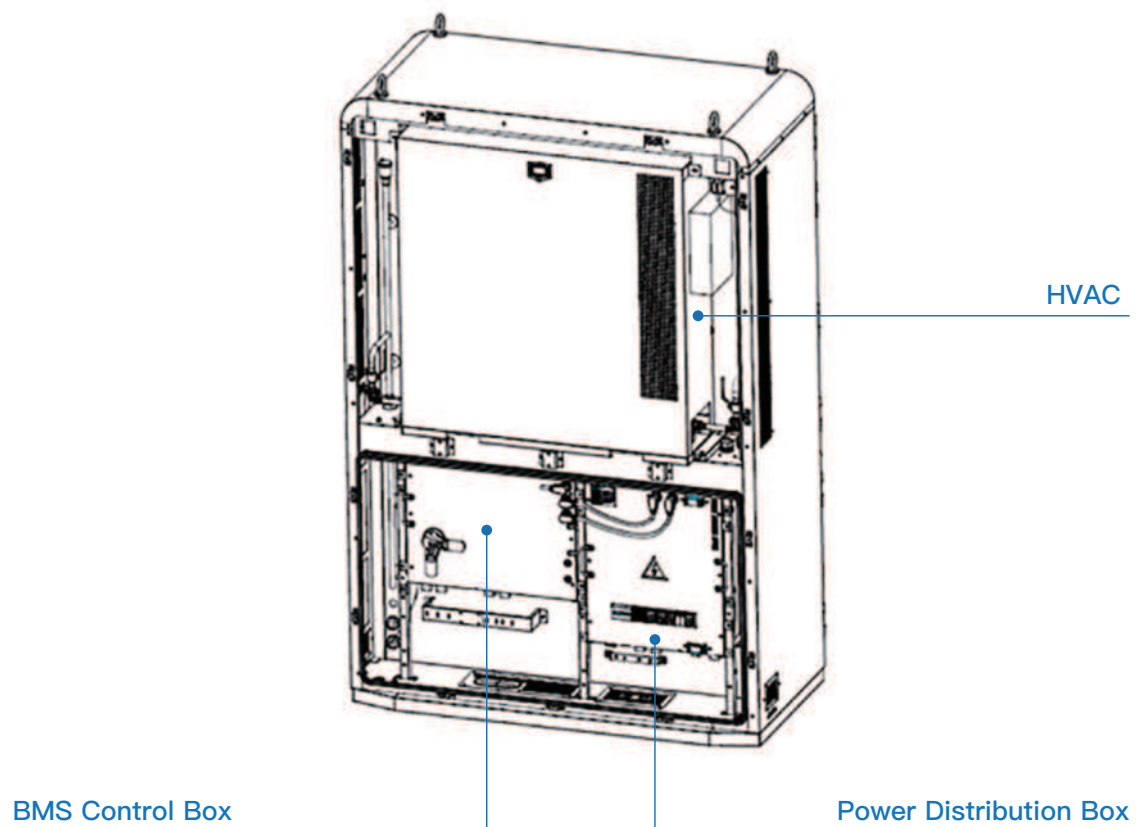
- Check resistance between the ground of power supply and all externally accessible, non-insulated cabinet parts.
- Check if function display marked on overvoltage protection is green.

Battery Module Maintenance (power off)

- Check the battery module for obvious leakage and judge by the smell. (Strong chemical odor)
- Check the battery module for bumps or obvious deformation.
- Check the voltage of the battery module and observe the data with a multimeter at the DC position of the battery module. Do not touch the battery electrodes directly with your hands.

- Check the cell voltage module of the battery. Observe the registration data through Backend.
- Check whether the battery pack is firmly installed.
- Checking whether there is any obvious swelling of the battery pack.
- Whether there is obvious crystallization or electrolyte on the surface of the case.
- Checking whether the battery jumper wire copper plate is loose, damaged or burnt.
- Checking whether the refrigeration water pipes are connected tightly and whether there is any coolant leakage or seepage.
- Checking whether the communication wiring connector is firmly connected.

Sub-System in ESS



Battery Management System (BMS) maintenance (power off)

- Inspecting the BMS control box for cosmetic defects, such as dirt, deformation, damage and scratches on the housing.
- Checking whether the BMS control box is firmly installed.
- Checking that the DC power and signal lines are firmly connected.
- Inspecting the DC disconnect switch handle and the BMS rocker switch for damage.

HVAC System maintenance (power off)

HVAC is used in NZS connecting cooling and heating pipes, to regulate temperature throughout whole ESS, with 50% ethylene glycol solution as coolant.

- Coolant system check (power off)
 - Check the water pump inlet for blockage. Cleaning the dirt with a brush.
 - Whether the coolant line liquid level is too low.
 - Checking coolant leaks.
 - Remove the valve filter and check if the coolant filter is clogged or dirty (optional)
- Inspection of HVAC electric control system (power off)
 - Checking whether there are damaged or burnt components in the electric box.
 - Checking whether there is loose wiring in electric control box.
 - Checking whether the heating tube is firmly installed and the surface is free of burn.
 - Working status, mode, temperature of air-conditioning cooling battery after power-up should be checked through the HVAC screen.

Power distribution box (power off)

- Visual inspection of power distribution box (power off)
 - Check whether the box is firmly installed.
 - Check whether surface MCBs and connectors are damaged.
 - Check whether the SPD window shows green.
- Wiring connection check (power failure)
 - Check whether the auxiliary power lines are firmly connected.
 - Check whether the signal lines are firmly connected.
 - Check whether the network cable is firmly connected.
 - Check whether the ground wire is firmly connected.
- Power distribution box component test (power-up)
 - Check and record the auxiliary power supply interface voltage. Single-phase voltage should be within 220V $\pm 10\%$.
 - Checking that the DC meter is energized and that the sampling data values are displayed correctly.

Fire alarm system (power off)

- Check that temperature and smoke detection sensors are securely mounted.
- Check that temperature and smoke detection sensors are not clogged or dirty.
- Check that the temperature and smoke sensor indicators blink periodically when the power is switched on.

7.3 Fault Diagnosis

NZS is equipped with automatic diagnosis function and the error will be displayed directly on the screen and sent to the backend.

When the charging station is online, users can call the customer service. We will arrange an online technician for remote repair charging error.

If the charging station does not connect to the network, please call customer service and we will organize a repair and maintenance team as soon as possible.

Error Cluster	Category	Error Level	Severity	Remark
A****	EVSE error	E1	Charger error	Charger unfunctional
B****	EV error	E2	Charging service abnormal	Charging terminated; charger is able to work
C****	Others	E3	Status report	Record only, no impact to operation

Error Code	Description	Level	Responsibility
A0101	Communication failure between host A55 and DCB.	E1	EVSE
A0103	DC meter 485 detection failure.	E1	EVSE
A0104	Power module CAN communication failure	E2	EVSE
A0105	Insulation communication module alarm	E2	EVSE
A0106	Timeout for DCB message report	E2	EVSE
A0107	AC meter communication failure	E3	EVSE
A0108	Communication failure with NFC.	E3	EVSE
A0109	Communication failure with LED board.	E3	EVSE
A010A	Bluetooth board communication failure.	E3	EVSE
A010B	Fan failure	E3	EVSE
A010C	DCB receives TCU abnormality	E2	EVSE
A010D	Other faults (try not to use)	E2	EVSE
A010E	Timeout waiting for TCU VIN verification result	E2	EVSE
A010F	Vehicle authentication not pass (VIN verification)	E2	EVSE
A010G	Fan speed control board communication failure	E3	EVSE
A0201	Insulation Warning	E3	EVSE
A0202	Insulation Fault	E2	EVSE
A0301	Power module alarm.	E2	EVSE
A0302	Power module address conflict	E2	EVSE
A0303	Power module failure M	E3	EVSE
A0304	Power module status change (x available)	E3	EVSE
A0305	Power module input out of phase	E3	EVSE
A0306	Power module fan fault.	E3	EVSE
A0307	Power module overtemperature fault.	E3	EVSE
A0308	Power module AC input fault.	E3	EVSE
A0309	Power module output short-circuit fault.	E3	EVSE
A030A	Power module output overcurrent fault.	E3	EVSE
A030B	Power module output overvoltage fault.	E3	EVSE
A030C	Power module output undervoltage fault.	E3	EVSE
A030D	Power module input overvoltage fault.	E3	EVSE
A030E	Power module input undervoltage fault.	E3	EVSE
A030F	Power module drain fault.	E3	EVSE
A0310	Power module current limit.	E3	EVSE
A0311	Power module shutdown.	E3	EVSE
A0312	No power module available.	E3	EVSE

Error Code	Description	Level	Responsibility
A0401	Door Alarm Failure	E1	EVSE
A0403	Emergency stop button is pressed.	E1	EVSE
A0404	SPD alarm	E1	EVSE
A0405	DC lightning alarm	E1	EVSE
A0406	Connector Contactor fault	E2	EVSE
A0407	Smoke sensor failure.	E1	EVSE
A0408	Inside temperature alarm	E1	EVSE
A0409	Inside humidity alarm.	E1	EVSE
A040A	Tilt angle alarm	E1	EVSE
A0418	Powerbox Fault	E2	EVSE
A0419	Tilt Sensor fault	E1	EVSE
A0501	Connector Temperature alarm	E2	EVSE
A0504	Connector is abnormal (CC abnormal)	E2	EVSE
A0601	BMS demand voltage is too low or too high	E2	EV
A0602	BMS demand voltage is too high.	E2	EV
A0603	BMS demand voltage is too low.	E2	EV
A0701	A-phase voltage is too high.	E1	EVSE
A0702	A-phase voltage is too low.	E1	EVSE
A0703	B-phase voltage is too high.	E1	EVSE
A0704	B-phase voltage is too low.	E1	EVSE
A0705	C-phase voltage is too high.	E1	EVSE
A0706	C-phase voltage is too low.	E1	EVSE
A0707	Ground cable alarm.	E1	EVSE
A0708	N cable not connected.	E1	EVSE
A0709	AC input circuit breaker fault.	E1	EVSE
A070A	AC input contactor rejection fault.	E1	EVSE
A070B	AC input contactor sticking fault.	E1	EVSE
A070C	System power down fault. 220V no input.	E1	EVSE
A070D	AC meter reading abnormal.	E3	EVSE
A070E	AC input out of phase.	E1	EVSE
A0801	overvoltage.	E2	EVSE
A0802	undervoltage.	E2	EVSE
A0803	short circuit.	E2	EVSE
A0804	overload.	E2	EVSE
A0805	Battery reverse connection.	E2	EV

Error Code	Description	Level	Responsibility
A0806	DC detection failure.	E1	EVSE
A0807	Drain detection failure.	E1	EVSE
A0808	Parallel contactor miss failure.	E1	EVSE
A0809	Parallel contactor sticking fault.	E1	EVSE
A080A	DC bus output fuse failure.	E2	EVSE
A080B	Powerbox pre-charge failure fault	E1	EVSE
A080C	Powerbox response failure.	E1	EVSE
A080D	Battery undervoltage	E1	EVSE
A080E	Battery over-voltage	E1	EVSE
A080F	DC meter reading is abnormal.	E2	EVSE
A0810	Connector contactor miss failure.	E1	EVSE
A0811	Connector contactor sticking failure.	E2	EVSE
A0812	Pre-charge timeout.	E2	EVSE
A0901	Auxiliary power supply is not powered on.	E2	EV
A0A01	CRM timeout.	E2	EV
A0A02	CRM00 timeout.	E2	EV
A0A03	CRMa timeout.	E1	EVSE
A0A04	CRO timeout.	E1	EVSE
A0A05	CTS timeout.	E1	EVSE
A0A06	CML timeout.	E1	EVSE
A0A07	CCS timeout.	E1	EVSE
A0A08	CST timeout.	E1	EVSE
A0A09	CSD timeout.	E1	EVSE
A0A0A	Other timeout faults	E1	EVSE

Error Code	Description	Level	Responsibility
B0401	Waiting for Switch(k) = ON Timeout	E1	EVSE
B0402	DC bus voltage over 10v before charging	E1	EVSE
B0403	Vehicle side Switch(k) status error	E1	EVSE
B0404	Vehicle Prepare-status error	E1	EVSE
B0405	Waiting for output voltage timeout	E3	EVSE
B0406	Insulation detection completed Drain voltage abnormal	E1	EVSE
B0407	The car reported 102.4 error	E2	EVSE
B0408	CAN message communication timeout	E2	EVSE

Error Code	Description	Level	Responsibility
B0409	Waiting for CAN message communication timeout	E2	EV
B040A	Failed waiting for the car contactor closure	E2	EV
B040B	Waiting for current request failure	E2	EV
B040C	Charging stoped drain abnormal	E2	EV
B040D	Charging stop waiting for car disconnection timeout	E2	EV
B040E	The car reports charging system error	E2	EV
B040F	Abnormal output voltage	E2	EV
B0410	Abnormal output current	E2	EV
B0411	Wrong battery polarity	E2	EV
B0412	Insulation fault error	E2	EV
B0413	electromagnetic lock locking failure	E2	EV
B0414	CAN initialization failure	E2	EV
B0415	VEHICLE_SHIFT_POSITION on car end stopped	E2	EV
B0416	Waiting for Switch(k) = OFF Timeout	E2	EV
B0417	Waiting for communication shutdown abnormal	E2	EV
B0418	Switch(k) state before charging is abnormal	E2	EV
B0419	EV target battery voltage abnormal	E2	EV
B041A	EV battery mismatch	E2	EV
B041B	Request current failure	E2	EV
B041C	Minimum current error	E2	EV
B041D	Car request to stop before charging	E2	EV
B041E	Charging remaining time is 0	E2	EV
B041F	Waiting for power module preparation timeout	E2	EVSE
B0420	Vehicle_Charging_Enabled status error	E2	EV
B0421	Waiting for current below 5A timeout	E2	EV
B0422	Batter_OverVoltage	E2	EV
B0423	Batter_UnderVoltage	E2	EV
B0424	Batter_Current_Deviation Error	E2	EV
B0425	Batter_High_temperature	E2	EV
B0426	Batter_Votage_Deviation Error	E2	EV
B0427	Not match	E2	EV
B0501	Connector being pulled out during charging	E2	EV
B0502	Waiting for charging timeout	E2	EV
B0503	SessionStop from Car	E2	EV
B0504	Insulation failure Stop	E2	EV

Error Code	Description	Level	Responsibility
B0505	Demand over Max. allowable voltage of car	E2	EV
B0506	Demand over Max. allowable Current of car	E2	EV
B0507	DC output overvoltage	E2	EV
B0508	DC output overcurrent	E2	EV
B0509	CP voltage abnormal	E2	EV
B050A	Battery reverse connection	E2	EV
B050B	Output overvoltage before charging	E2	EV
B050C	Output overvoltage after insulation detection	E2	EV
B050D	Output undervoltage	E2	EV
B050E	Waiting to allow charging timeout	E2	EV
B050F	CCS1 Connector	E2	EV
B0510	Doesn't match	E2	EV

Error Code	Description	Level	Responsibility
C0201	communication failure between DCB and Battery Controller	E3	ESS
C0202	Charging general overcurrent alarm	E3	ESS
C0203	Discharge general overcurrent alarm	E3	ESS
C0204	General high voltage alarm	E3	ESS
C0205	General low voltage alarm	E3	ESS
C0206	General high temperature alarm	E3	ESS
C0207	General low temperature alarm	E3	ESS
C0208	Severe high voltage alarm	E3	ESS
C0209	Severe low voltage alarm	E3	ESS
C0210	Severe low temperature alarm	E3	ESS
C0211	Charging serious overcurrent alarm	E3	ESS
C0212	Discharge serious overcurrent alarm	E3	ESS
C0213	Over-temperature power reduction	E3	ESS
C0214	Total voltage over the upper limit alarm	E3	ESS
C0215	Total voltage over lower limit alarm	E3	ESS
C0216	BMU sampling circuit abnormal	E3	ESS
C0217	Battery high temperature damage	E3	ESS
C0218	Voltage sampling wire disconnection	E3	ESS
C0219	Temperature sampling wire disconnection	E3	ESS

Error Code	Description	Level	Responsibility
C0220	Master–slave internal CAN disconnection	E2	EV
C0222	Insulation monitoring abnormal	E2	EV
C0224	SPD signal	E2	EV
C0225	Tilt angle too large	E2	EV
C0226	Emergency stop detection signal	E2	EV
C0227	Fire aerosol action signal	E2	EV
C0228	Water sensor detection signal	E2	EV
C0229	air conditioner communication abnormality	E2	EV
C0230	Communication abnormality of DC meter	E2	EV
C0232	Communication disconnection with tilt sensor	E2	EV
C0233	Abnormal communication with DCB	E2	EV
C0234	Communication interruption with BECU1	E2	EV
C0235	System alarm fault status_alarm	E2	EV
C0236	System alarm fault status_fault	E2	EV
C0237	Volume alarm	E2	EV
C0238	High water pressure alarm	E2	EV
C0239	Low water pressure alarm	E2	EV
C0240	Charging current over limit alarm	E2	EV
C0241	Discharge current over limit alarm	E2	EV
C0242	Isolation switch not sucked	E2	EV
C0243	Pre–charge current abnormal	E2	EV
C0244	Stopping current unsafe	E2	EV
C0245	Lowering limit value alarm	E2	EVSE
C0246	Isolation switch back check abnormal	E2	EV
C0247	BMS control box high temperature fault	E2	EV
C0248	Insulation board CAN disconnection	E2	EV
C0249	Inside temperature sensor failure	E2	EV
C0250	Outside temperature sensor failure	E2	EV
C0251	Inside humidity sensor failure	E2	EV
C0252	Humidity alarm	E2	EV
C0253	Tilt angle abnormal	E2	EV
C0254	Severe inside overtemperature	E2	EV
C0255	Severe outside over–temperature	E2	EV
C0256	Severe high temperature failure	E2	EV
C0257	Fuse failure	E2	EV

Error Code	Description	Level	Responsibility
C0258	Communication interruption with EMCU	E3	ESS
C0259	Battery system active emergency stop signal	E3	ESS



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