Star Charge®

# Titan 180 Premium

# Installation manual

Version number / document number：1.0/DC/DC0210TYAZCN

Wanbang Digital Energy Co., Ltd.

## Legal Notices

Wanbang Digital Energy Co., Ltd.
39 Longhui Road, Wujin High-tech Zone, Changzhou, China
Customer service：+86 400-8280-768
www.starcharge.com

## Content

# 1. General

## 1.1 Document purpose

The purpose of this document is to guide the construction personnel to complete the site installation of TITAN 180 premium.

## 1.2 Scope of application

### 1.2.1 Type of equipment applicable to this manual

TITAN 180 premium

### 1.2.2 Personnel applicable to this manual

Professional electrical equipment installers

## 1.3 Definition of relevant warning symbols

| NO. | symbol | Content |
|---|---|---|
| 1 |  | **“Warning” symbol indicates danger**<br>Failure to pay attention to the procedures, practices or improper implementation may cause installer injuries and death. Only after the conditions referred to are fully understood and fulfilled, the operation accompanied the "electrical hazard" symbol can be performed. |
| 2 |  | **"Caution" symbol indicates danger**<br>Failure to pay attention to the procedures, practices or improper implementation may cause product damaged or destroyed. Only after the conditions referred to are fully understood and fulfilled, the operation accompanied the "caution" symbol can be performed. |
| 3 |  | **“Prompt” indicates skill or useful information**<br>Tips and useful information are marked with “prompt”. It does not contain information to warn about dangerous or harmful functions. |
| 4 |  | **“Garbage disposal” symbol indicates electrical and electronic waste**<br>This symbol is located on the product, in the instruction manual, or on the packaging. It indicates that electrical and electronic equipment and its accessories should be separately disposed from ordinary household waste. Materials can be reused according to this symbol. You can make a huge contribution to environmental protection by reusing old equipment, materials, or other forms of reuse. |

Table1 Definition of warning symbol

## 2. Preparation before installation

### 2.1 General construction tools

| NO. | Category | Name | Uses | Picture |
|---|---|---|---|---|
| 1 | Cable preparation tools | Electrician knife | Stripping of insulation sheath |  |
| 2 | Installation tools | Wire stripping pliers | Stripping of insulation layer |  |
| 3 | Installation tools | Wire pressing pliers | Terminal bonding |  |
| 4 | Installation tools | Percussion drilling | Component installation |  |
| 5 | Installation tools | Electric air pick machine | Notching |  |
| 6 | Installation tools | Cutting machine | Tube Cutting |  |
| 7 | Installation tools | Heat gun | Thermal shrinkage of insulating materials |  |
| 8 | Installation tools | Fuse machine | Welded PE pipe |  |
| 9 | Installation tools | Hexagon socket wrench (set) | Install and remove screw |  |
| 10 | Installation tools | Open End Wrenches (set includes No.13) | Install and remove nut |  |
| 11 | Installation tools | Angle grinder | Polishing of materials |  |
| 12 | Installation tools | Phillips screwdriver (full set) | Mounting and removing screw |  |

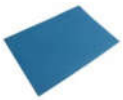
| | | | | |
|---|---|---|---|---|
| 13 | Measuring instrument | Laser level meter | Horizontal measurement |  |
| 14 | Measuring instrument | Horizontal rule | Horizontal measurement |  |
| 15 | Measuring instrument | Multimeter | Measure voltage, current, etc. |  |
| 16 | Assistive devices | Insulation mat | Place the disassembled parts |  |
| 17 | Means of transport | Forklift truck | Transportation equipment |  |
| 18 | Means of transport | crane | Transportation equipment |  |
| 19 | Installation tools | Cable clamp | RJ45 connector pressure line |  |

Table 2 General construction tools

**2.2 Materials for installation**

**2.2.1 Cable Copper nose**

(1). 150 square cable corresponding terminal: DT-150 copper terminal.

(2). 70 square cable corresponding terminal: DT-70 copper terminal.

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

**2.2.2 Other materials**

(1). Fireproof mud

(2). Heat shrinkable tube for cable copper nose , insulating tape and other accessories

**2.3 Installation personnel requirements**

(1). The safety management regulations of the construction site shall be observed when entering the construction site.

(2). When entering the construction site, the safety helmet must be properly worn (tie the lower jaw belt, the safety helmet is in good condition), do not wear loose clothing, slippers or other unsafe clothing, do not drink to work, and do not smoke at the construction site.

(3). Operators at high altitude must wear safety helmets, hang up safety belts, wear non-slip shoes, and fasten labor tools.

(4). If the work site is dusty or has spray paint work, protective masks must be worn.

(5). Do not enter dangerous areas such as the hoisting area and below the vertical operation to prevent objects from striking.

(6). Keep as far away as possible from various mechanical equipment, electrical circuits, and prevent mechanical and electrical injuries.

(7). Those who use mobile power tools must master their use skills and precautions. Wear insulated shoes and insulated gloves as much as possible. The metal case must be grounded or zero - protected.

(8). Temporary on-site electricity, electricity box should be kept intact, damaged electrical components must be replaced in time.

(9). Rubber cable shall be used for the temporary electric wires on the site. No plastic splines are allowed. No wires shall be directly inserted into the socket.

(10). Try to avoid living working.

(11). Enter the edge of foundation pits, roofs, and other openings, and concentrate to prevent falls from falling.

(12). Pay attention to the ground environmental conditions such as nails and steel bars, and prevent sticking, bumping, hanging, falling and other injuries.

(13). The on-site construction protective facilities, safety signs, warning signs, etc. cannot be removed without authorization.

(14). Strengthen on-site maintenance of construction equipment to maintain intact rate, and prohibit operation with problems and overloading.

**2.4 Handover of construction drawings**

After the installer arrives at the site, first ask the store staff for a drawing of the installation location of the equipment, and check that the cables and concrete foundation of each equipment meet the requirements.

**2.5 Inspection of electric power cables**

The recommended type of power cable for Titan 180 premium is YJV-0.6/1KV-3 *150mm$^2$ +2*70mm$^2$ (Copper wire). This type of cable is also suitable for Titan 150 and Titan 120 versions. The length over the concerete foundation surface is about 1m/ 3.28ft. Please check and verify the cable type before installation.

**2.6 Requirements for concrete foundation**

The cement foundation shall be poured before the product is installed. The size of the concrete foundation is 900mm*850mm*600mm, and the buried depth of the foundation is 400mm, which is 200mm higher than the ground height. The design of concrete foundation can be adjusted according to the requirements of customers and the actual situation on site.The top view is shown in Figure 1.

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

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

(3).The drain on the foundation surface is slightly inclined to avoid standing water.

(4). The foundation is filled with C20 concrete. Reserve an outlet hole on the foundation for cable, as shown in the Figure1.

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

(6).4 M10 screws with length L=250 were used for fixed embedding. The screws were embedded

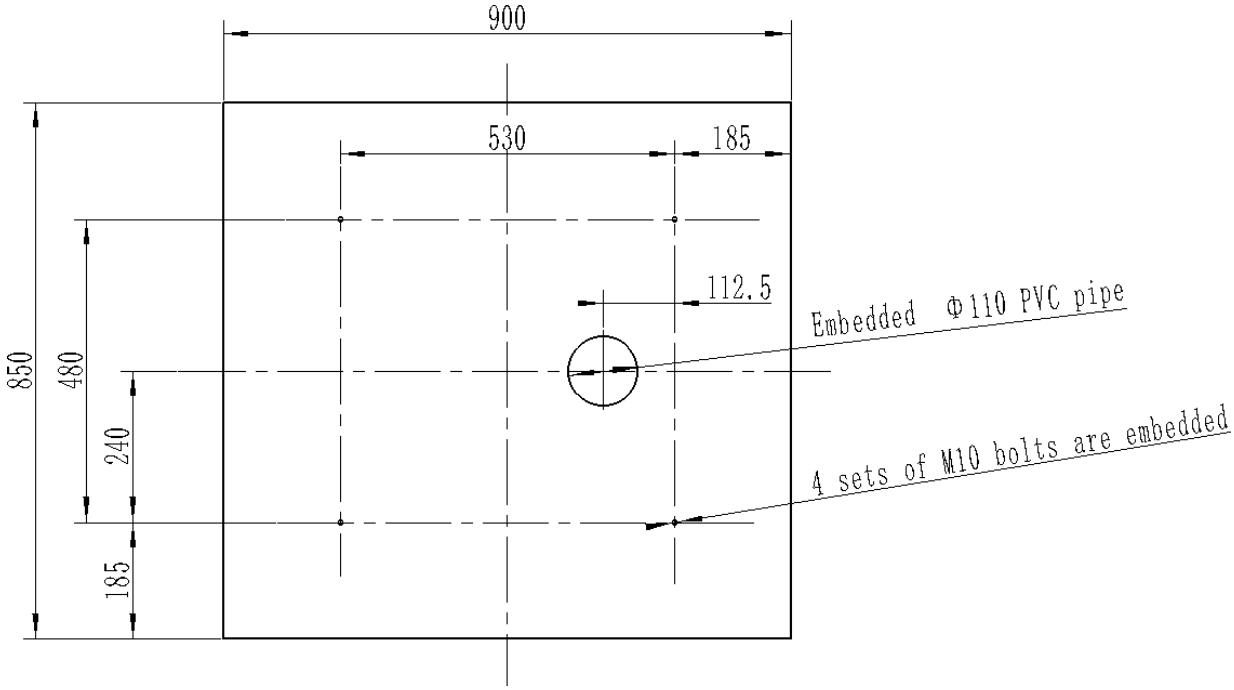



FIG. 1 Top view of charging pile cement foundation

Three views of installation and construction are as follows:

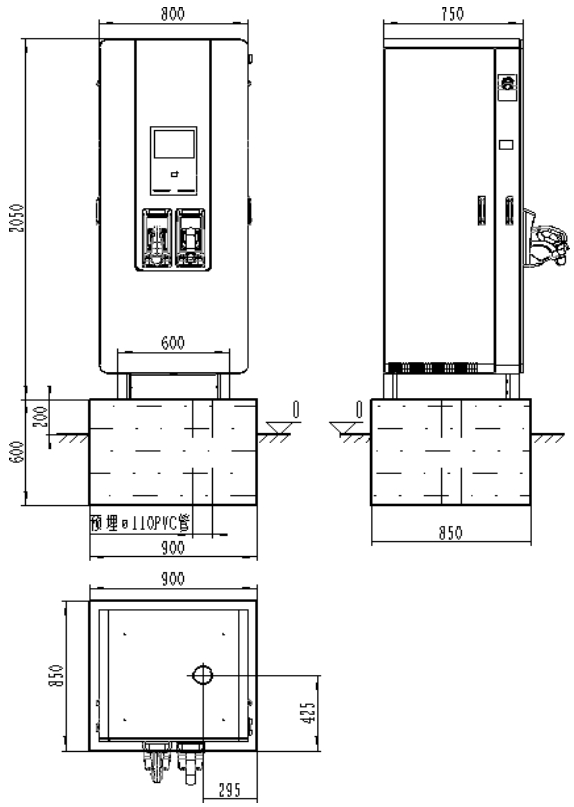



FIG. 2 Three views of installation and construction

### 2.7 Equipment spacing requirements

(1). Maintenance distance requirement

When charging piles need to be installed on the back or side near walls or other obstacles, a certain maintenance distance needs to be set aside. Please refer to Figure 3 below：

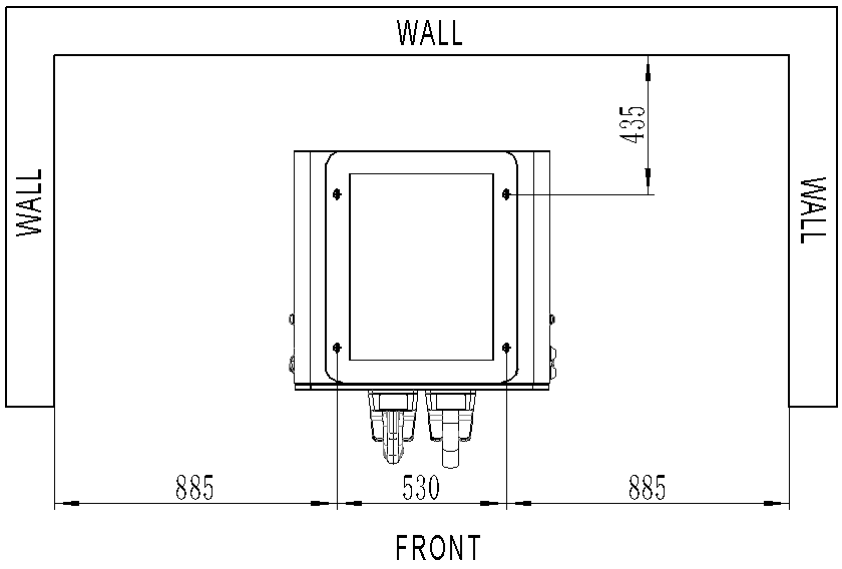



FIG. 3 Chargers maintenance distance diagram

(2). Distance requirement for single or back to back parking Spaces

When the charging pile is installed in the middle of a parking space or a parking space with back to back, it is suggested to set aside 1000mm/ 3.3ft space between the car and the charging pile to facilitate the use of the charging pile, as shown in Figure 4:

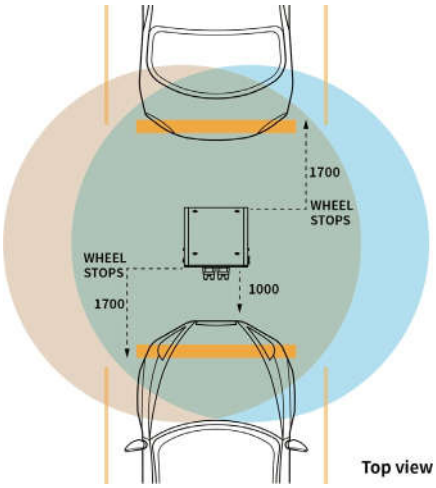



FIG. 4 Distance requirements for single or back-to-back parking Spaces

(3). Distance requirement for multiple adjacent parking Spaces

When the charger is installed between two parking spaces, in order to ensure sufficient maintenance distance between the car and the charging pile quality inspection, it is recommended that the minimum distance from the charging pile bottom center to the car stall be 1700mm/5.6 feet, as shown in Figure 5:

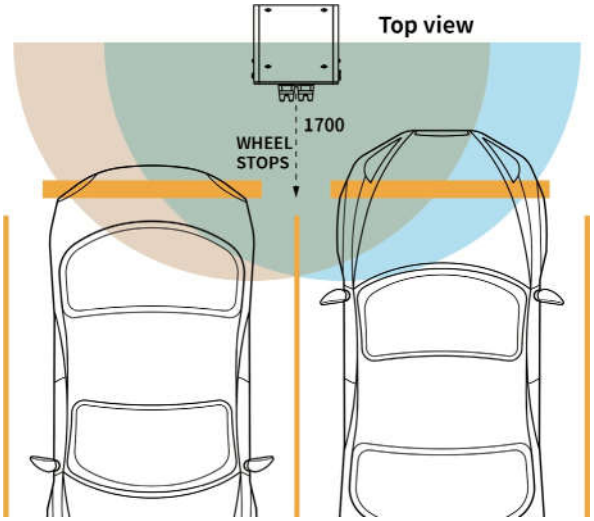



FIG. 5 Distance requirements for multiple adjacent parking Spaces

**2.8 Current and distribution capacity requirements**

If the charging pile is running at full power, the power grid capacity should meet 200KVA and the rated current parameter is 280A. It is recommended that the parameters of the superior circuit breaker should be Ue:400Vac, In: 400A, thermo-magnetic type, Icu ≥Ics ≥40kA, 4P.

**2.9 Ground/insulation resistance requirements**

(1). Check the civil grounding resistance test report to ensure that the resistance of the grounding grid produced on site must be ≤ 4Ω.

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

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

## 3. Installation steps

### 3.1 Unpacking and unpacking inspection

#### 3.1.1 Equipment unpacking packing drawing and attachment list

| Name | Package | Configuration | Package Size(mm) | Weight | Attachment paper | Parts List |
|---|---|---|---|---|---|---|
| DC charger | Wooden box | Standard | 1090*1000*2220（W*D*H） | 410kg | Certificate of conformity<br>Factory inspection report<br>User manual | Isolation switch operating handle*1<br>Key*3<br>IC card*2<br>Hoisting bolt*4 |
| Power module | Carton | Standard | 1200*800*330（W*D*H） | 110kg | | |

Table 3 Equipment unpacking list

#### 3.1.2 Inspection of unpacking

(1). Check the packing list number and equipment quantity.

(2). Check equipment nameplate information.

(3). Check whether the random files are complete.

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

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

(6). Check the appearance of the equipment is good, whether there is deformation, knock, stains and other conditions.

#### 3.1.3 Notes for unpacking

(1). The installer shall unpack the container in the presence of the owner and fill in the unpacking record in detail. See appendix 1 for the unpacking record.

(2). After unpacking, please ask the owner's representative to confirm and sign on the equipment unpacking record sheet.

(3). If any problem is found in the process of unpacking and acceptance of the equipment, it shall not only record the accident, but also wait for the negotiation between the owner and the supplier.

#### 3.1.4 Check before installation

The installer needs to complete the pre-installation confirmation check before installation, see Appendix 2.

### 3.2 Equipment fixed

(1). Using a phillips screwdriver, first remove the front, rear and left sealing plates of the base, as shown in Figure 6.

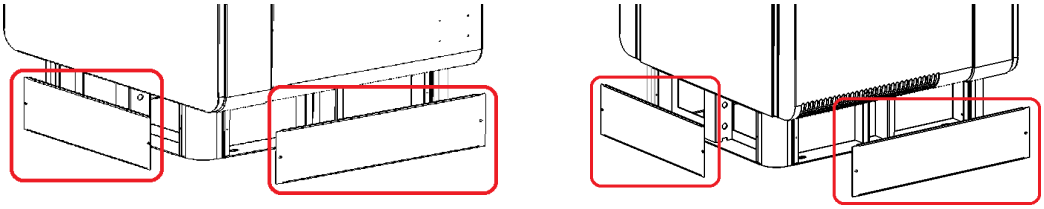


FIG. 6 Schematic diagram of sealing plate before and after charging pile

(2). Forklift or crane can be used for transport：

Instructions for forklift: The charging pile is placed on the concrete foundation from the sealing plate hole fork, and the four holes are placed on the bolt. The 3D rendering of the base is shown in Figure 8.

Crane description: Select appropriate hoisting ropes and machinery according to the weight, remove the left and right cover plates of the base, and each of the top 4 lifting ring bolts shall have a rope at each lifting point. The included angle of the rope shall be between 45° and 60°. The force center of the hook shall be located at the symmetrical force center, as shown in Figure 7. The charging pile is hoisted according to the lifting operation specification, and the 4 hole positions of the base are aligned with the anchor bolts and the charger's cable inlet port is aligned with the embedded PVC pipe and placed on the concrete foundation. The 3d rendering of the base is shown in Figure 8.

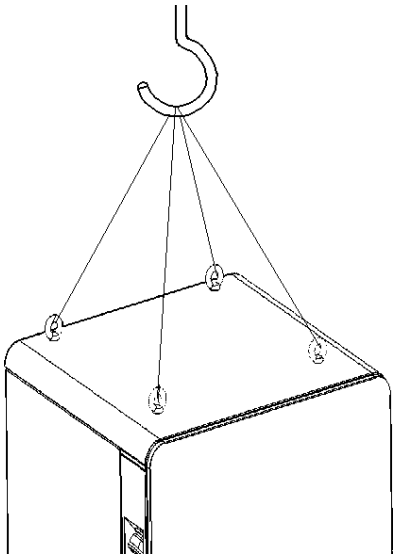


FIG. 7 Schematic diagram of charging pile lifting

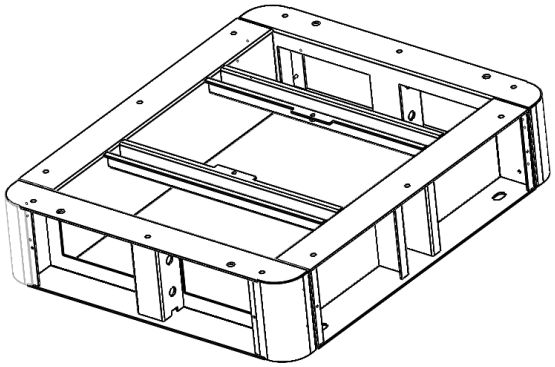


FIG. 8 Three renderings of charging pile mounting base

(3). Fix the charging pile with nut and washer.

(4). Reinstall the base sealing plate and the charging pile is fixed.

### 3.3 Electrical wiring of equipment

(1). Open the right door of the device and import the power cable from the bottom of the cabinet.

(2). Make the power cable go through the waterproof gland as shown in Figure 9, reserve the corresponding length, press the copper nose, and connect it to the corresponding terminal, and ensure that the copper nose bolts of the wiring connection are not loose; When wiring, avoid the scratch and damage of the cable insulation sheath, so as to avoid short circuit.

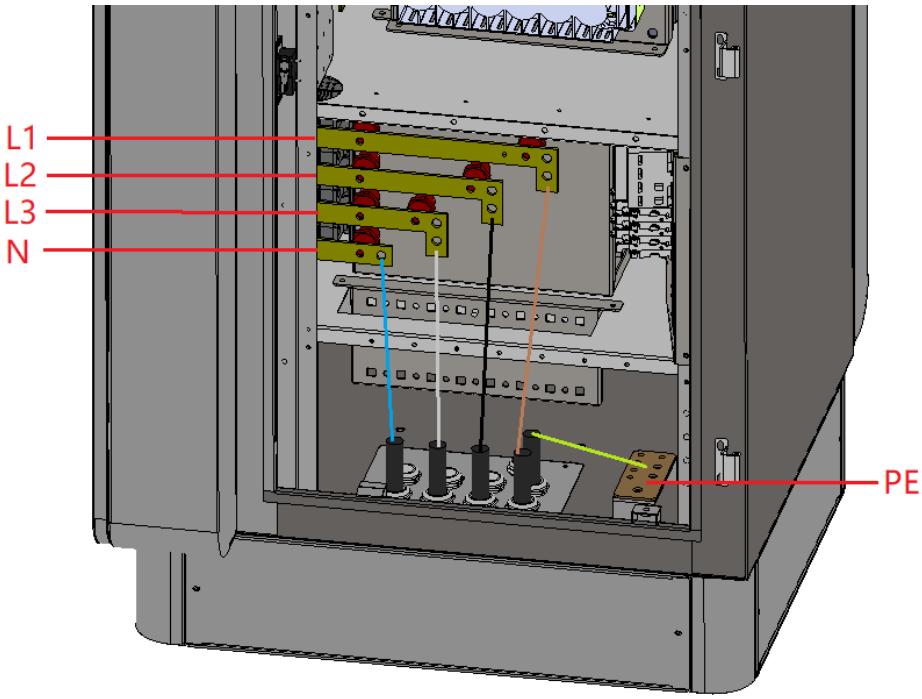



FIG.9 Terminal wiring diagram

(3). If the Ethernet conmmunication is required, open the right door of the equipment, make the network cable go through the bottom of the cabinet, and connect it to the Ethernet port on the mainboard. The location of the Ethernet port is shown in Figure 10.

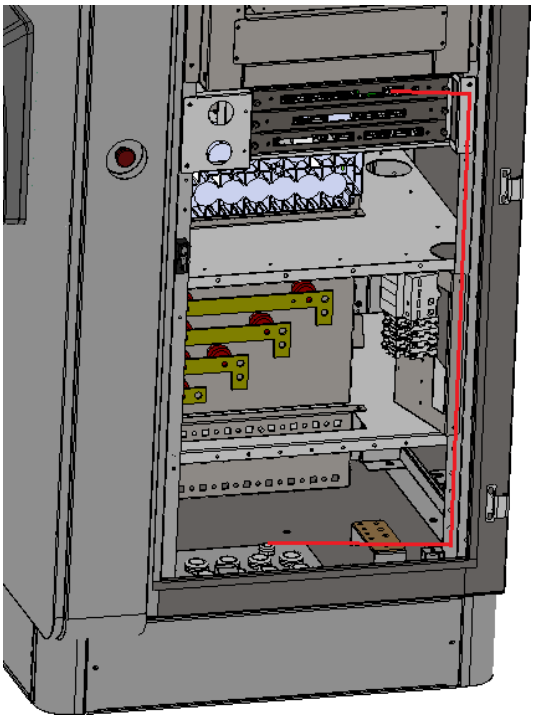


FIG.10 Network cable connection

### 3.4 Block off

(1). Clean the stains and sundries on the cable entry of the equipment.

(2). Tighten and seal the cable glands.

**Warning:** Must follow the instruction and correct procedures.
Failure to pay attention to the procedures, practices or improper implementation may cause installer's injury and death.

## 4. Inspection after installation(Live parts shall be operated by local qualified engineer)

### 4.1 Installation wiring check

#### 4.1.1Equipment and fixed inspection

(1). The charger has a neat appearance, no knock and damage. Also, the position is consistent with the base and firmly fixed without looseness.

(2). Equipment orientation meets installation criteria.

(3). No missing installation of equipment installation accessories.

(4). The instrument book of spirit level meets the requirements.

#### 4.1.2 Cable laying and connection inspection

(1). Check whether the cable insulation skin is scratched or damaged.

(2). Check whether the copper nose of power cable is in compliance and whether the wiring is reliable.

(3). Check that the terminals of communication cable are correct and not loose.

(4). Check whether there are hanging cable signs.

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

(6). Check whether the ground wire is introduced into the grounding grid in each box.

.

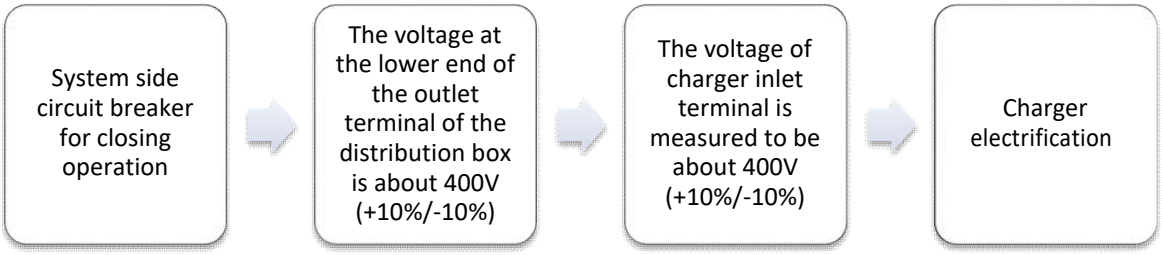
**4.2 Check before power-on**

(1). Short circuit: check the power supply line of the low voltage distribution cabinet connected to the charging pile, and check whether there is a short circuit between the three-phase hot wire, neutral wire and ground wire.

(2). Power supply voltage before power supply: before power supply of equipment, please check whether the power supply voltage on upper end of MCCB in the low-voltage distribution cabinet is normal, ensure there are no lack-phase, over voltage, under voltage, phase sequence abnormality and other abnormalities.

**4.3 Check after power-on**

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




(2). Complete the overall installation.

## 5. Installation environment

The environmental conditions listed in the table below should be taken into consideration when selecting the installation site of the high-power charger. The accumulation of dust or sand in the equipment may cause premature damage to the equipment.

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

Table 4 Installation environment

## 6. Completion information

| No. | File name | Page | Document Necessity |
|---|---|---|---|
| 1 | Unpacking record sheet | 1 | √ |
| 2 | Pre-installation checklist | 1 | √ |

**Appendix 1**

| Unpacking record | | | | | | |
|---|---|---|---|---|---|---|
| Name of dealership | | | | Date of unpacking | | |
| NO. | Name of commodity | The actual commodity | Quantity | Qualified number | Equipment situation | Note |
| 1 | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| Unpacking result | | | | | | |
| Signature block | Installation unit | | | Owner's unit | | |

**Appendix 2**

| Pre-installation checklist | | | | |
|---|---|---|---|---|
| Project name:： | | | | |
| Civil construction unit： | | Equipment installation unit： | | |
| Sub-project | No | Main acceptance items | Acceptance record | Treatment measures |
| Installation plan | 1 | Whether the on-site equipment installation complies with the construction plan design drawings | | |
| Distribution box circuit breaker | 1 | Meet the equipment installation requirements (the maximum input current of the equipment is 180A) | | |
| Cable type | 1 | YJV-0.6/1KV-3 *150mm$^2$ +2*70mm$^2$ | | |
| | 2 | Network cable cat6a (if Ethernet communication is required) | | |
| Cement foundation | 1 | Dimensions meet requirements | | |
| | 2 | Foundation bolts meet the requirements of section 2.6 in the installation manual | | |
| Maintenance distance | 1 | The maintenance distance meets the equipment spacing requirements in section 2.7 | | |
| In conclusion： | | | | |
| Note: (1) In the acceptance record, fill in "√" or "×" according to the on-site situation; (2) At the conclusion, fill in "qualified" or "need to rectify" according to the on-site situation | | | | |
| Signature of person in charge of inspection：_____ | | | | |