

# Installation Manual

## BYD Wall-mounted AC Charging Box





## Dedicated Service Commitment from BYD Auto

### Dear valuable customers:

We are determined to strive for continuous improvement to ensure our products and services meet your requirement. Our commitments to our customers include the following:

- I. We shall ensure that our charger is safe and user-friendly.
- II. Our maintenance service shall be of high quality of standard.
- III. In the case of any doubt or requirement, we will respond actively in a timely manner.
- IV. Your comments on our service quality are highly appreciated. We would also record your complaint in detail, if any and try to solve it as soon as possible.

**Version Date: 201402**

COPYRIGHT © 2013 BYD AUTO Industry Co., Ltd. ALL RIGHTS RESERVED.

No part of this manual and/or data herein may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or information recording and retrieval system, for any purpose, without the express written permission of BYD AUTO Industry Co., Ltd.

“BYD” is a tradename of “BYD AUTO Industry Co., Ltd.”



## CONTENTS

Foreword .....	1
01 Introduction.....	2
1.1 Notes on symbols.....	2
1.2 Transportation .....	2
02 Installation Instruction .....	3
2.1 About safety.....	3
2.2 Installation environment condition.....	4
2.3 Unpacking .....	6
2.4 Installation method .....	6
2.4.1 Installation steps .....	7
2.4.2 Cable installation.....	9
Attachment 1 .....	13



## Foreword

Thank you for choosing BYD wall-mounted AC Charging Box (hereinafter referred to as the Charging Box). For better use and maintenance of the Charging Box, please read and keep the user manual carefully.

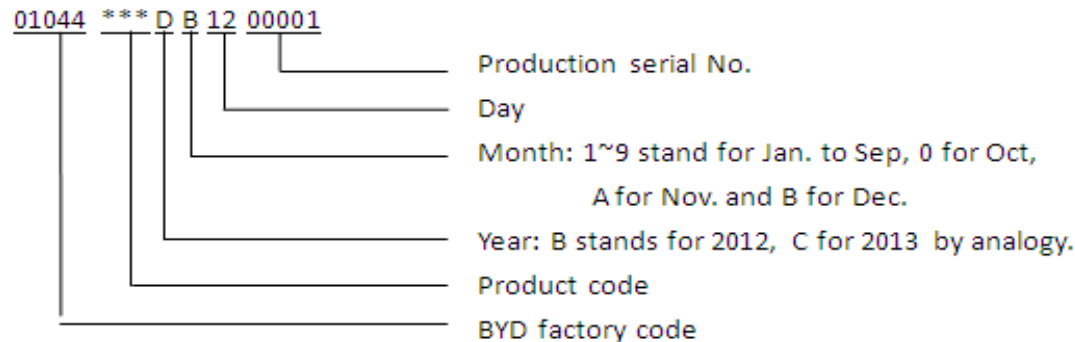
The Charging Box is designed to charge BYD electric vehicle, which may be installed in a garage or on a parking lot. As the Charging Box contains a number of high voltage lines, low voltage lines and complicated electronic components, please do not disassemble or refit these lines and components, or any fault so caused thereby would not be covered by warranty provided by BYD, and any personal injury incurred not be of our liability.

This User Manual is provided ONLY to help you use this product properly, and shall not be construed as any specification of the product configuration. For the product configuration, please refer to the contract (if any) related to this product or contact your distributor. The illustrations provided in this Manual are for reference only. Actual auto may differ in appearance.

Model:



Serial No:



BYD Auto Industry Company Limited reserves the right to modify technical property and content in the user manual without restraint and prior notice.

For better service, please provide accurate contact method. In case of any change, please contact BYD authorized service station to update it in the system.

Please keep informed of related national laws and regulations as well as your local policies.

Thank you again for choosing BYD wall-mounted Charging Box. Your valuable suggestions and comments will be appreciated.

## 1.1 Notes on symbols

### **DANGER!**

- ▲ The symbol indicates that improper operation might endanger user's safety or cause severe damage to the product. Please read and observe notes on the symbol carefully.

### **WARNING!**

- ▲ The symbol indicates that improper operation might endanger user's safety or cause major damage to the product. Please read and observe notes on the symbol carefully.

### **ATTENTION!**

- ▲ The symbol indicates that improper operation might endanger user's safety or cause certain damage to the product.

### **NOTICE!**

- ▲ The symbol indicates that improper operation might endanger user's safety or cause minor damage to the product.

## 1.2 Transportation

- ▲ Transportation equipment used must withstand the weight of the Charging Box.
- ▲ During transportation, please place the Charging Box in the direction indicated by the mark. Do not incline or invert it.

### **DANGER!**

**Improper handling during transportation may cause damage to the charging box!**

- ▲ Please consider barycentre or centre of gravity of a Charging Box and transport it in a correct way to avoid tilt, damage or injury to pedestrians.

## 02 Installation Instruction

### 2.1 About safety

- ▲ In this section, general installation specifications are provided, which must be complied with during the whole installation.
- ▲ The section is prepared for product installer and covers installation procedure and installation notes of the product.
- ▲ Please read the section carefully before installing and observe notes in the section during installation. Damage caused by improper operation or not following the instruction shall not be the liability of BYD.
- ▲ It is assumed that installers are fully aware of electric installation and corresponding regulations.
- ▲ Please read all safety notes. All operation of the Charging Box must be performed in strict compliance with the safety notes.



#### **DANGER!**

**Improper operation may causes electric shock!**

- ▲ Incompliance with correct procedure might cause electric shock. Incompliance with the guide, operation instruction and safety notes might cause electric shock and severe injury.

#### **NOTICE!**

- ▲ Warning signs must always be visible. In case of damage, please replace them immediately.
- ▲ Please keep documents near the Charging Box within the reach of service and maintenance personnel and take care of it properly.



## 2.2 Environment and conditions of installation

**Table 2.1 environment and conditions for installation of the Charging Box**

Installation environment	Indoor/outdoor
Atmosphere pressure	80 kPa ~ 110 kPa
Air flow speed	7,000 m <sup>3</sup> /h
Maximum altitude	≤2,000 m
Wall surface evenness	≤0.25%
Wall surface gradient	≤5°
Vertical gradient of the Charging Box	≤5°
Minimum distance from Charging Box to ground	≥110 cm
Minimum distance from both sides to a Charging Box	≥50 cm
Concrete requirement for wall surface and foundation	Strength grade of concrete should be above C30#
Load bearing for installation on wall surface (wall-mounted)	≥55 kg
Requirements for foundation (when it is required to mount bracket)	Concrete base dimension≥1m*1m; Buried depth≥0.5m
Load bearing for unit area (when it is required to mount bracket)	≥2000 kg/m <sup>2</sup>

For the safe operation of Charging Box, the installation site must meet the following conditions:

- ▲ The installation location must be accessible at any time;
- ▲ The Charging Box shall not be installed in places where there is severe vibration or explosive exists, such as inflammable gases, vapor or dust.
- ▲ The Charging Box shall not be installed in places which are low-lying or easily waterlogged.
- ▲ With good ventilation.
- ▲ The installation location shall ensure convenience to observe indicators and operate.
- ▲ The installation place shall be clean.

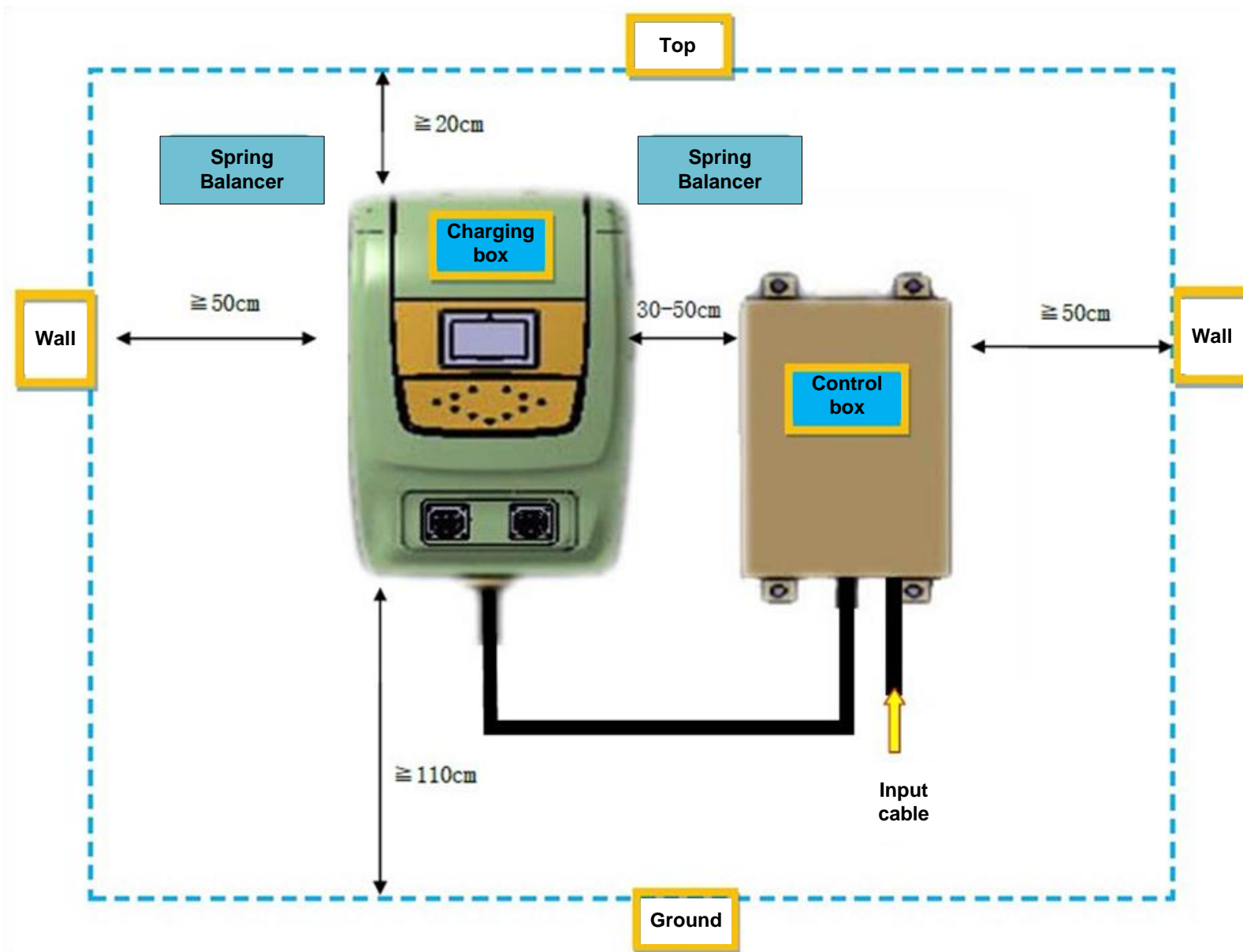


Fig. 2.1 Diagram of minimum installing distance



## 2.3. Unpacking

- Before unpacking, please make sure the box placed in the direction indicated by the sign.
- Handle with care while unpacking.
- Please confirm all materials in the packing box (refer to Attachment 1).

### WARNING!

- ▲ Please check the BOM in the packing box on the spot. In case of absence of certain parts, please contact your dealer immediately and do not install the Charging Box.

## 2.4 Installation method

- Please prepare the tools as follows

**Table2.2 Installation tools list**

NO.	Description	NO.	Description
1	Phillips screwdriver	5	Crimping Pliers
2	Monkey spanner	6	Wire stripping pliers
3	Sockets wrenches	7	φ 6 and φ 10 percussion drills (in case of installing the stand columns, use φ 16)
4	Internal hexagonal wrench		

### DANGER!

**Installation by non-professionals may cause danger!**

- ▲ Only trained and licensed electricians are allowed to install a Charging Box.

## 2. 4.1 Installation steps

- Step 1: Use four M8x50 expansion bolts to fix the installation bracket at A, B, C, D, as is shown in Fig. 2.2.(It is necessary to punch the wall in advance and the distance between A and ground is 1.3m.)

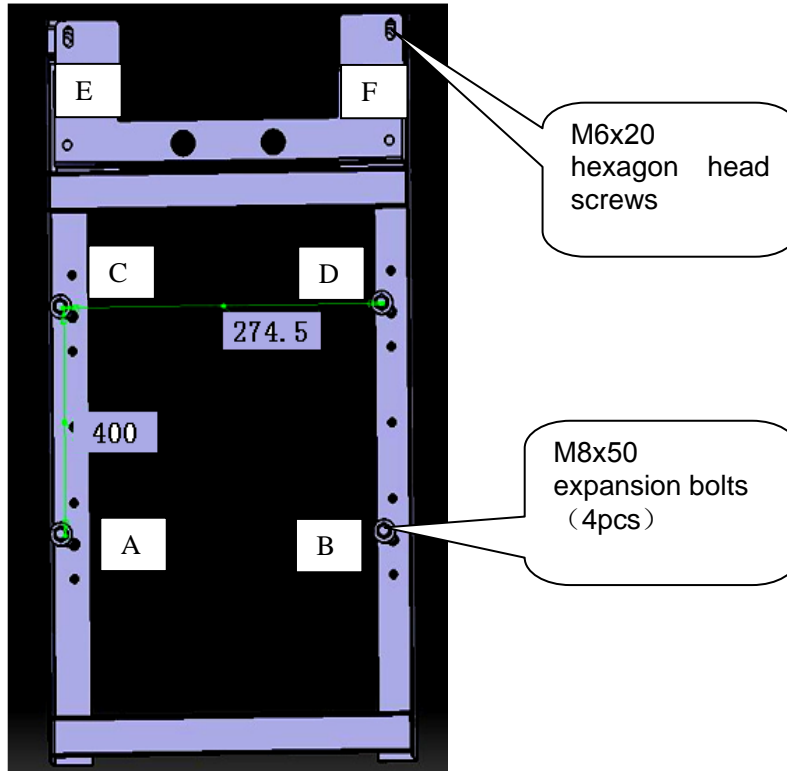


Diagram of installation bracket dimension (Unit in mm)

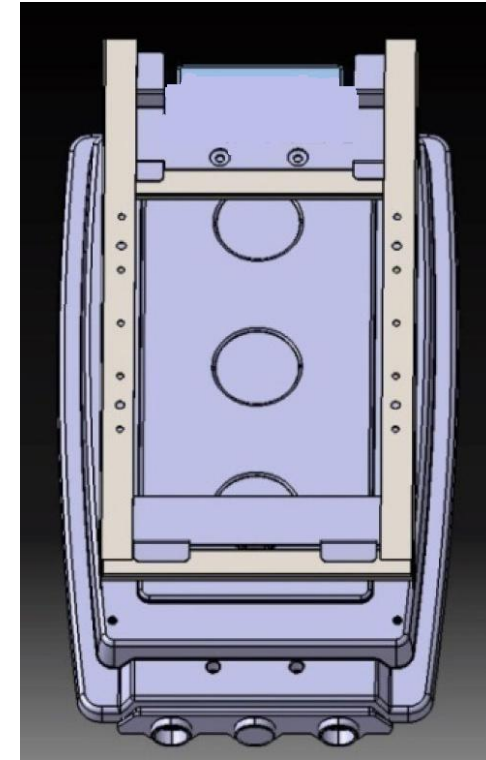


Diagram of installation bracket dimension

Fig. 2.2 Installation diagram of installation bracket

- Step 2: Hang the Charging Box on the well-mounted installation bracket.
- Step 3: Use two M6x20 screws to fix the Charging Box and the installation bracket.(at E and F)
- Step 4: Use four M8x50 expansion bolts to fix the Control box as is shown in Fig. 2.3.
- Step 5: Connect the cables of Charging Box to the inside of the control box, then connect the power cord to the control box. For detailed operation of cable installation, refer to "2.4.2 cable installation".

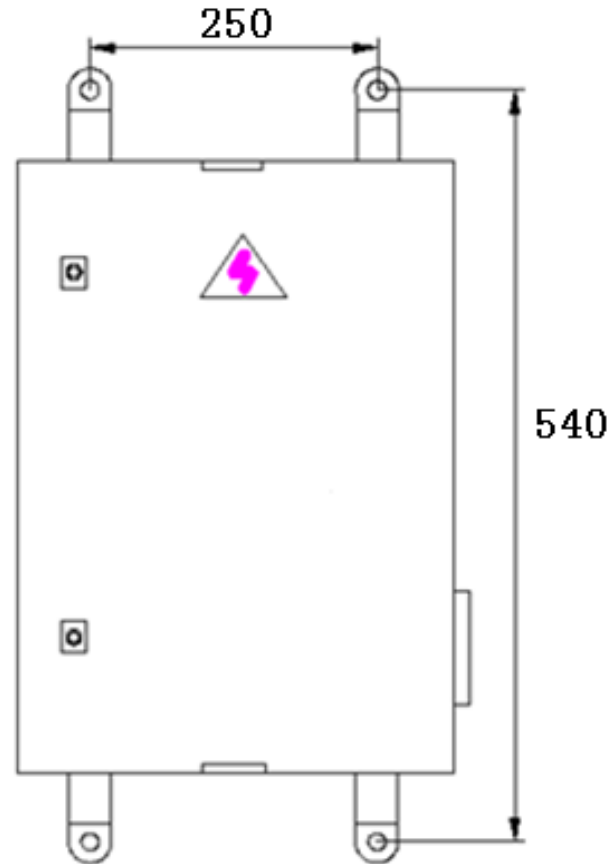


Fig. 2.3 dimension of the control box (Unit in mm)

- Step6: Use  $\Phi 6$  expansion rubber plug and M4 x20 Self-tapping screws to fix the spring balancer in the position shown in Fig. 2.1.
- Step7: Fix the hook of the spring balancer to the hanging folders, and hang up the cables of the charging connector. The distance between the cables of hanging folders and charging connector is 1.5m.



Fig 2.4 Spring balancer and cable clamp (Unit in mm)

Note: the installation method of wall-mounted charging box is above, if you choose the optional equipment of the mounting bracket of charging box, please refer to the Attachment 2: instruction for installation of the mounting bracket of charging box.

## 2.4.2 Cable installation

- Installation requirement

- 1) The charging box with three-phase input voltage, shall apply Three-phase Five-Wire System (TN-S) to its supply power; for the charging box with single-phase input voltage, the supply power shall be connected to L, N, and PE (in case of US single-phase 240 V, to L1, L2 and PE respectively). Cable color shall comply with the requirements of local standards.
- 2) The charging box shall be equipped with an independent distribution circuit without sharing it with other electrical products.
- 3) The input cable of the charging box shall be copper strand and the terminals shall be crimped as is required. (for detailed information, please refer to Attachment 1.)
- 4) To meet the requirements of protection class, the form of input cable entry of charging box shall be limited to the following two options:

The input cable shall use type EVE or type EVT.

**Fig.2.3 list of multi-core cable requirements**

Model	Cable conductor	Cable diameter	In pipe or NOT	Pipe diameter	Remark
EVA080K	35mm <sup>2</sup> *5	42mm-48mm	Not obligatory	—	Use 75mm wrench to tighten the External pressure type cable fixed head
EVA040K	16mm <sup>2</sup> *5	32mm-38mm	Not obligatory	—	Use 62mm wrench to tighten the External pressure type cable fixed head.
EVA020K	16mm <sup>2</sup> *5	32mm-38mm	Not obligatory	—	
EVA015K	16mm <sup>2</sup> *3	No	Yes	32mm-38mm	Use 62mm wrench to tighten the External pressure type cable fixed head.
EVA007K	6mm <sup>2</sup> *3	No	Yes	32mm-38mm	

In the case of using single-core copper strand wire, the wire shall be in pipe, and the pipe diameter is as follows:

**Fig.2.4 list of single-core cable requirements**

Model	Cable conductor	Cable diameter	In pipe or NOT	Pipe diameter	Remark
EVA080K	35mm <sup>2</sup> *5	No	Yes	42mm-48mm	Use 75mm wrench to tighten the External pressure type cable fixed head
EVA040K	16mm <sup>2</sup> *5	No	Yes	32mm-38mm	Use 62mm wrench to tighten the External pressure type cable fixed head.
EVA020K	16mm <sup>2</sup> *5	No	Yes		
EVA015K	16mm <sup>2</sup> *3	No	Yes		
EVA007K	6mm <sup>2</sup> *3	No	Yes		

**Note:** the power input lines need to be crimped with tube type insulated terminals or copper terminals.

**WARNING!**

- ▲ During installation, do not alter any part in the Charging Box except the connecting terminal.
- ▲ Please ensure reliable input earthing to avoid electric shock.
- ▲ It is required that the torque is 3.5~4.5N.m when connecting the power input cable to the terminal of the Charging Box.

**Installation method:**

- 1) Connect the cables equipped in the Charging Box to the circuit breaker in the control box, and make sure the corresponding phase lines are correctly connected. Please refer to fig.2.5 and fig.2.6.
- 2) For the three-phase input power Charging Box, connect the wiring harness of Phase A (L1) / Phase B (L2) / Phase C (L3) / N in the power grid to the circuit

breaker of the control box, while PE (yellow & green) is directly connected to the earthing terminals inside the control box, as is shown in fig.2.5 and fig.2.6.

3) For the single-phase input power Charging Box, connect the wiring harness of L, N, and PE(L1, L2, PE in the model EVA015KS/01) to the circuit breaker of the control box, as is shown in fig.2.5 and fig.2.6.

**WARNING!**

- ▲ The input wire harness of the Charging Box must be connected correctly. The phase sequence should be in compliance with that marked on the input line of the Charging Box.
- ▲ To avoid any over-heating, burning accidents and other phenomena due to poor contact, the cable and wire harness connection should be firm and reliable, also the screw should be tight.
- ▲ Notice its I-direction when install the residual current circuit breaker.

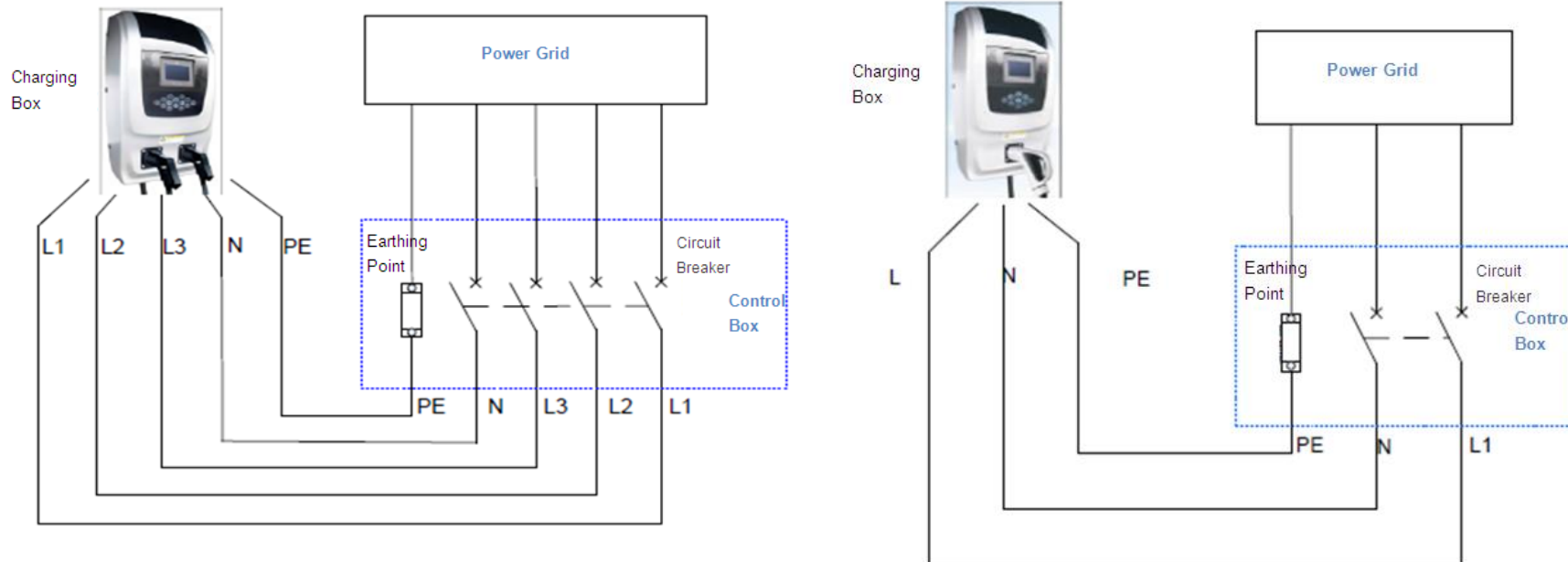


Fig. 2.5 Electric diagram of cable connection



Fig 2.6 Wiring diagram of internal cable of Control box

- Installation examination

When examining installation connection, all electric connection on site must be examined to ensure correct and firm connection.

- 1) Cable diameter in compliance with the requirements.
- 2) Ensure the reliable connection of the terminal.
- 3) Ensure torque at connection in compliance with the requirements.
- 4) Notice the I-direction of the residual current circuit breaker.
- 5) The nylon cable gland of the control box Input& Output cable should be lock without leaking.
- 6) After installation, the test insulation resistance value of input cable to ground(L1 to PE, L2 to PE, L3 to PE, N to PE) should be  $\geq 30M\Omega$ (Test voltage is DC 500V, testing time is 1minute ).
- 7) Correct phase sequence connection.



**WARNING!**

**Missing some inspection items may cause danger!**

After installation completed, make sure that the above item acceptance have been finished before being energized.

## Attachment 1

### Charging box mounting bracket installation instructions

- **Step 1:** Take the Charging Box mounting bracket installation instructions as a reference to finish the installation
- **Step 2:** Use 4 M14\*150 expansion bolts to fasten the stand column of the mounting bracket on cement court, as shown in Fig 1.

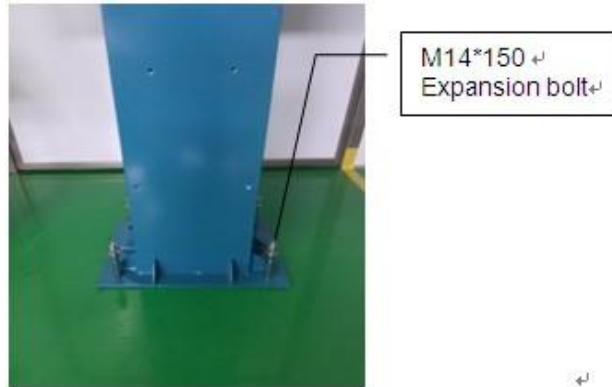


Fig 1 Mounting bracket fastening diagram



Fig 2 Rack fastening diagram

- **Step 3:** Use 4 M8\*20 cross pan head combination screws to fasten the charging box rack, as shown in Figure 2.

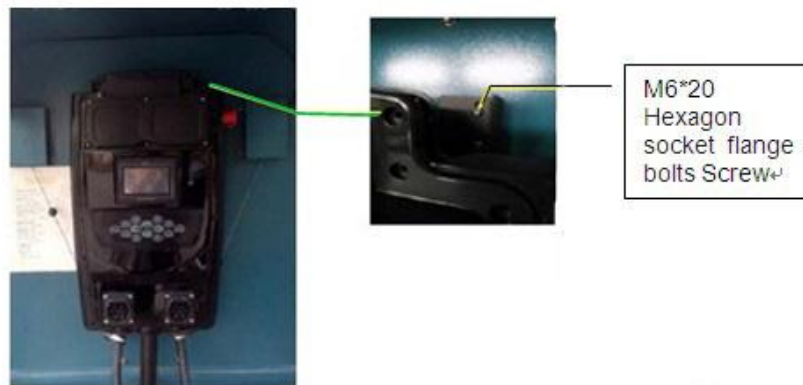


Fig 3 Charging Box fastening diagram

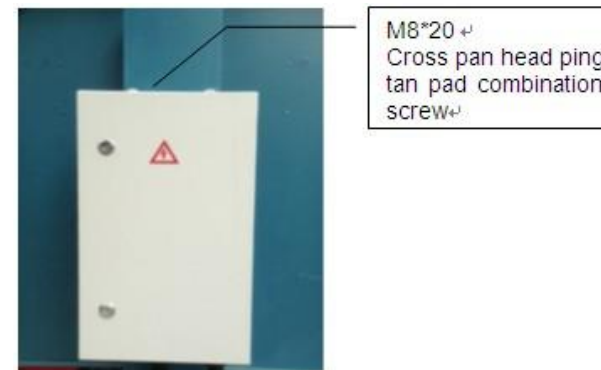


Fig 4 Control box fastening diagram



- **Step 4:** Hang the wall-mounted Charging Box on the rack and use 2 M6\*20 hexagon socket flange bolts to fasten the Charging Box, as shown in Fig 3.
- **Step 5:** Use 4 M8\*20 cross pan head ping tan pad combination screws to fasten the control box on the back of the fixed column, as shown in Fig 4.
- **Step 6:** Use 4 M4\*10 cross pan head ping tan pad combination screws to fasten the protection shield for spring balancer, as shown in Fig 5.
- **Step 7:** Use M6\*20 hexagon screw to install the fixed suspension clamp for the charging connector, and fit the protecting bush, as shown in Fig 6.



Fig 5 Protection shield for spring balancer fastening diagram

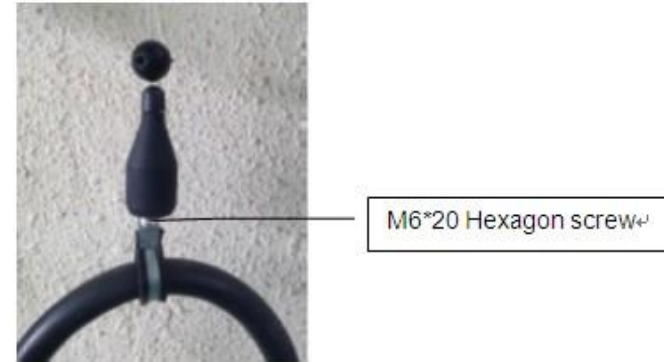


Fig 6 spring balancer fastening diagram

- **Step 8** Cable installation, please refer to “2.4.2 Cable Installation” on page 14.
- **Step 9** The power grid input cables should be came from a hole digged on the cement base and connected to the control box vertically. The position of the hole is shown as Fig 7.

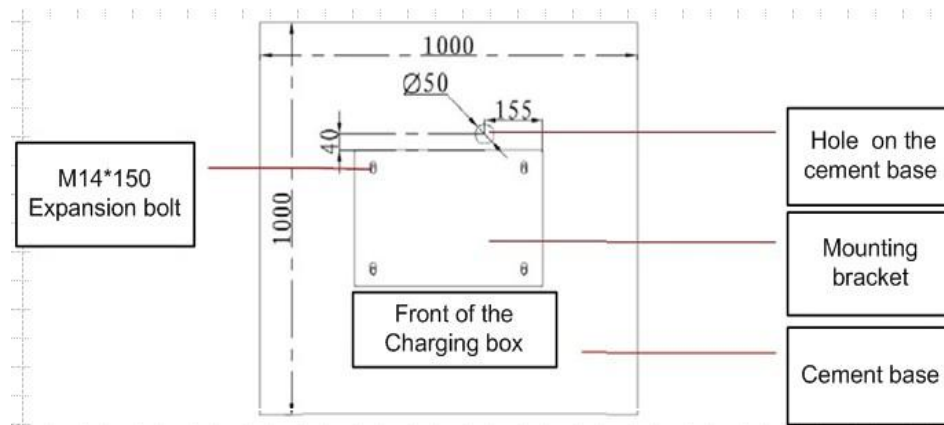


Fig 7 Cement base dimension diagram



## Statement

BYD Wall-Mounted AC Charging Box set stated above shall not be used until officially delivered by Party B (supplier) and officially accepted by Party A (user). Otherwise, Party B shall not be liable for any result thereby.



BYD Auto Industry Company Limited.

Address: No. 3009, BYD Road, Pingshan New District, Shenzhen, Guangdong Province, P.R. China.

Website: <http://www.byd.com.cn>

Tel: +86-0755-89888888

All information provided in this user manual are based on the latest data. BYD reserves the right to modify it without prior notice.

BYD reserves the right of final explanation.