User Manual

BGM1000 Series Barrier Gate (APP Version)

Date: January 2023

Doc Version: 1.2

English

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For further details, please visit our Company's website www.zkteco.com.

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The product will be updated from time to time without prior notice. The latest operation procedures and relevant documents are available on http://www.zkteco.com.

If there is any issue related to the product, please contact us.

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About the Company

ZKTeco is one of the world's largest manufacturer of RFID and Biometric (Fingerprint, Facial, Finger-vein) readers. Product offerings include Access Control readers and panels, Near & Far-range Facial Recognition Cameras, Elevator/floor access controllers, Turnstiles, License Plate Recognition (LPR) gate controllers and Consumer products including battery-operated fingerprint and face-reader Door Locks. Our security solutions are multi-lingual and localized in over 18 different languages. At the ZKTeco state-of-the-art 700,000 square foot ISO9001-certified manufacturing facility, we control manufacturing, product design, component assembly, and logistics/shipping, all under one roof.

The founders of ZKTeco have been determined for independent research and development of biometric verification procedures and the productization of biometric verification SDK, which was initially widely applied in PC security and identity authentication fields. With the continuous enhancement of the development and plenty of market applications, the team has gradually constructed an identity authentication ecosystem and smart security ecosystem, which are based on biometric verification techniques. With years of experience in the industrialization of biometric verifications, ZKTeco was officially established in 2007 and now has been one of the globally leading enterprises in the biometric verification industry owning various patents and being selected as the National High-tech Enterprise for 6 consecutive years. Its products are protected by intellectual property rights.

About the Manual

This manual introduces the operations of BGM1000 Series Barrier Gate (APP Version).

All figures displayed are for illustration purposes only. Figures in this manual may not be exactly consistent with the actual products.

Document Conventions

Conventions used in this manual are listed below:

GUI Conventions

For Software	
Convention	**Description**
Bold font	Used to identify software interface names e.g., **OK**, **Confirm**, **Cancel**.
>	Multi-level menus are separated by these brackets. For example, File > Create > Folder.
For Device	
Convention	**Description**
< >	Button or key names for devices. For example, press <OK>.
[ ]	Window names, menu items, data table, and field names are inside square brackets. For example, pop up the [New User] window.
/	Multi-level menus are separated by forwarding slashes. For example, [File/Create/Folder].

Symbols

Convention	Description
	This represents a note that needs to pay more attention to.
	The general information which helps in performing the operations faster.
	The information which is significant.
	Care taken to avoid danger or mistakes.
	The statement or event that warns of something or that serves as a cautionary example.

Table of Contents

1 Overview

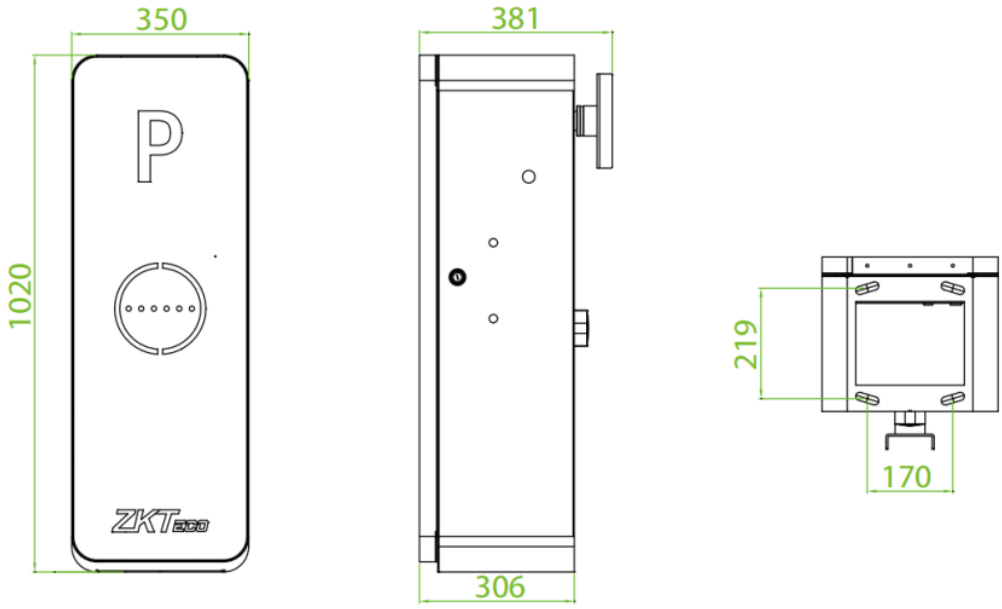
BGM1000 series barrier gate is a high-performance barrier gate that adopts ZKTeco's interactive LED chassis design. It controls the flow of the traffic in and out of the premises providing maximum security at a low cost. It adopts ARM7 embedded system control core, brushless DC motor, and SCM421 material gear transmission structure to offer maximum efficiency.

It has the advantages of high speed, efficiency, stable quality, user-friendly customization, comprehensive performance, and so on. It can be used in real-time application areas such as offices, hospitals, public places, residential areas to ease traffic issues.

2 Features and Functionalities

- The operating speed is 1.5s, and the speed can be adjusted according to different boom arm lengths.
- Reversible left and right directions.
- The transmission mechanism is simple, compact, and easy to install on-site.
- Interactive and stylish chassis LED design.
- Equipped with digital control monitoring, thus supports delay in automatic close, automatic test, rise/fall output status display.
- Supports automatic power-off, manual rise of the boom arm, anti-smash, and fire linkage functions.
- The angle of rise/fall of the arm can be adjusted, and the digital encoder is adopted to limit the position automatically, thus replacing the traditional limiting procedure. The position control is accurate.
- 24V backup battery can be used to ensure the normal operation of the barrier when power is off.
- The chassis is made of a 2.0mm metal sheet through an electrophoretic and powder spraying process.
- The boom will bounce back when it is blocked.

3 Appearance and Dimensions



4 Specifications

Model	BGM1030 L/R	BGM1045 L/R	BGM1060 L/R	BGM1045 L/R-LED	BGM1145 L/R-90
Operating Speed	1.5s	2.5s	5s	2.5s	2.5s
Boom Arm Length	3m	4.5m	6m	4.5m	4.5m
Boom Arm Type	Straight boom	Telescopic boom		Straight boom with LED	Folding boom
Chassis Dimension (W*L*H)	350*300*1020 (mm)				
Motor Type	DC 24V brushless motor				
Output Power	120W				
Rated Current	6A				
Power Supply	AC 220V, 50Hz / AC 110V, 60Hz				
Operating Temperature	-35°C to 70°C				
Operating Humidity	<90%				
Motor MCBF	3 million times				
Remote Control Distance	≤30m				
Chassis Weight	45kg				

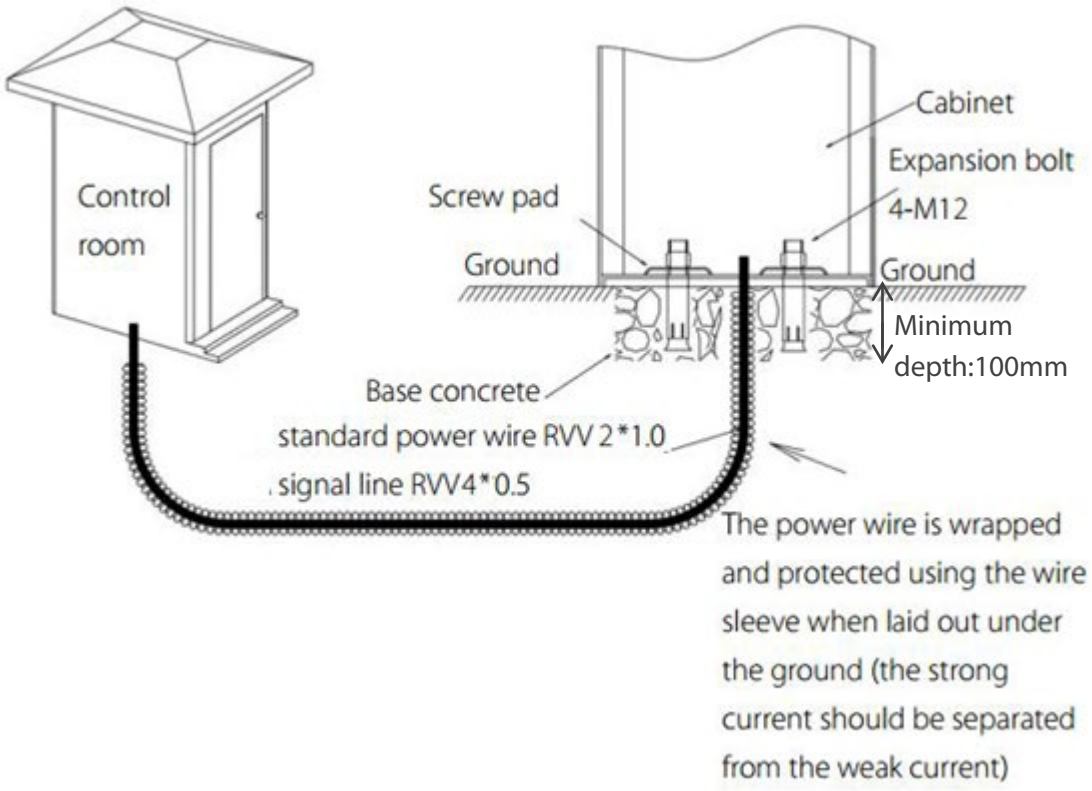
5 Installation Procedure

5.1 Installation Precautions

1. Install the parking barrier on a flattened ground. A cement foundation is required before installation if the ground is not solid and flat.
2. It is possible to reduce the length of the boom arm, but it cannot be increased. After the boom arm has been cut, it is important to set the spring balance again to achieve a new balance. The bottom of the spring contains two plastic nuts designed to adjust the new balance.
3. When powered on, do not change the wire connection inside.
4. Connect the GND to the cabinet for ensured protection.

5.2 Cable Embedding

1. A φ25 protective sleeve and a cable are required.
2. The route cables must pass through the protective sleeves.
3. Use a tool to open the cable tray on the ground.



5.3 Boom Arm Installation

5.3.1 Boom Arm Installation Procedure

1. Separate the secondary boom arm from the upper boom arm and fasten it with two screws., as shown in Figure 1.

2. The procedure of installing the boom arm to the chassis is shown in Figure 2.

Figure 1 Connect the main boom arm with the Secondary arm together by 2 screws

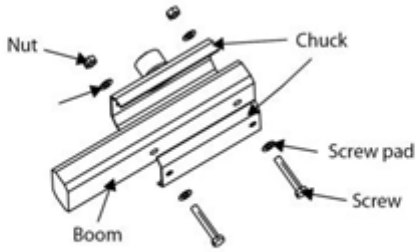


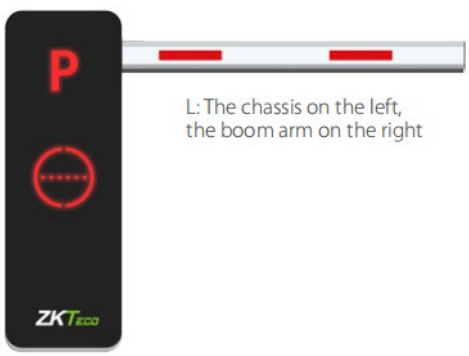
Figure 2 Install the Boom Arm to the Chassis

Note:

1) Before the barrier is powered on to run the test process, be sure to install the barrier boom arm of the corresponding length for the test. If the barrier boom arm is not installed, please adjust and remove the spring under the guidance of a professional.

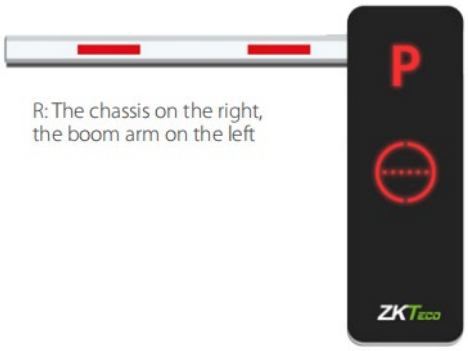
2) If the length of the barrier boom arm is cut and adjusted, the tightness of the spring and the position of the hanging hole need to be adjusted accordingly to avoid the abnormal working status that cannot drop the boom.

6 Left and Right Directions



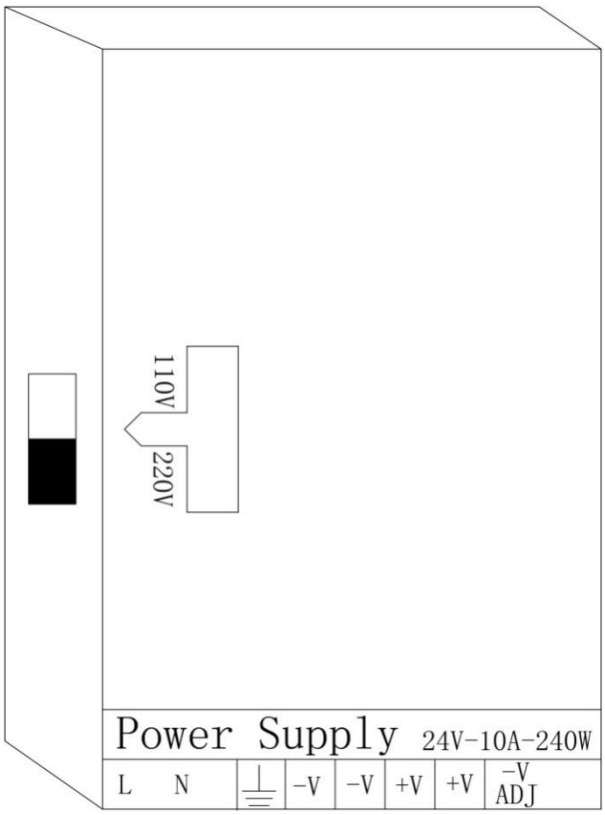
L: The chassis on the left, the boom arm on the right

R: The chassis on the right, the boom arm on the left



7 Mainboard Wiring Instructions

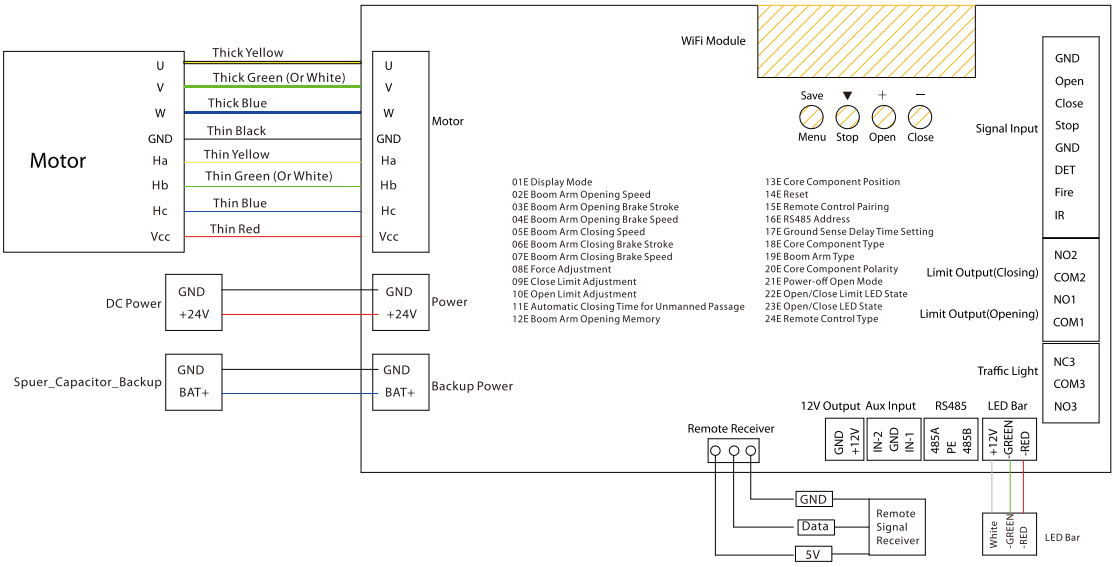
1. Please disconnect the power supply before wiring.
2. To Please note that to change the input voltage, you must set the **DIP switch to 110V** as shown in the below image:



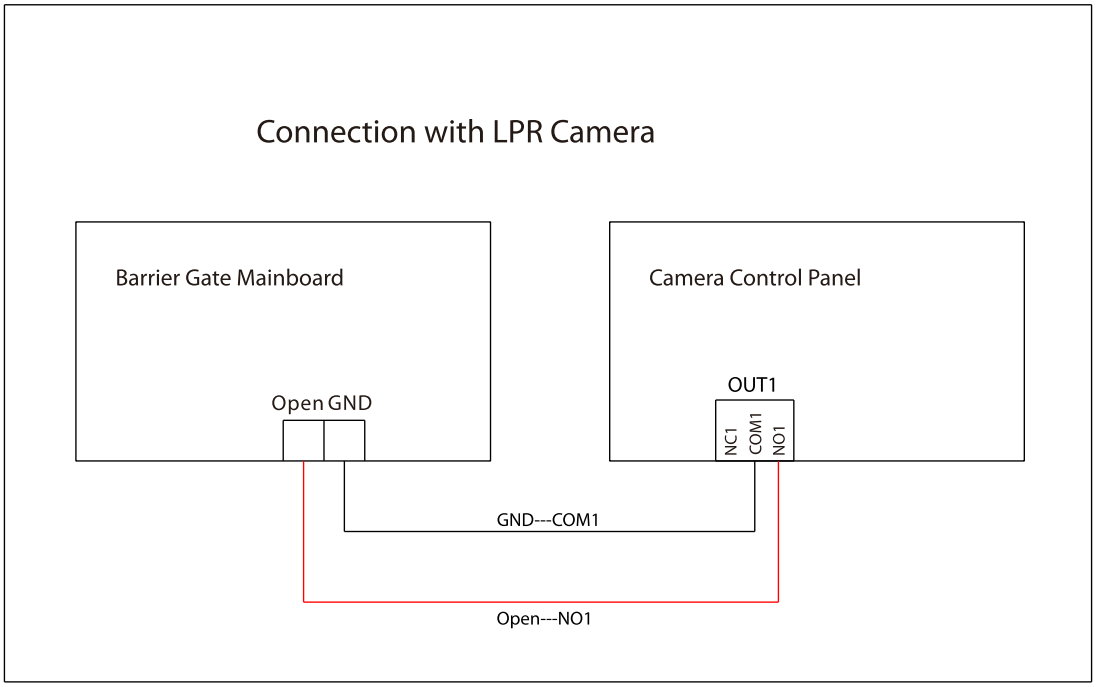
3. Check carefully whether the terminals are tightened and whether the wiring is firm.

7.1 Wire Connection of the New Mainboard

Wiring diagram of new control board of the app version:

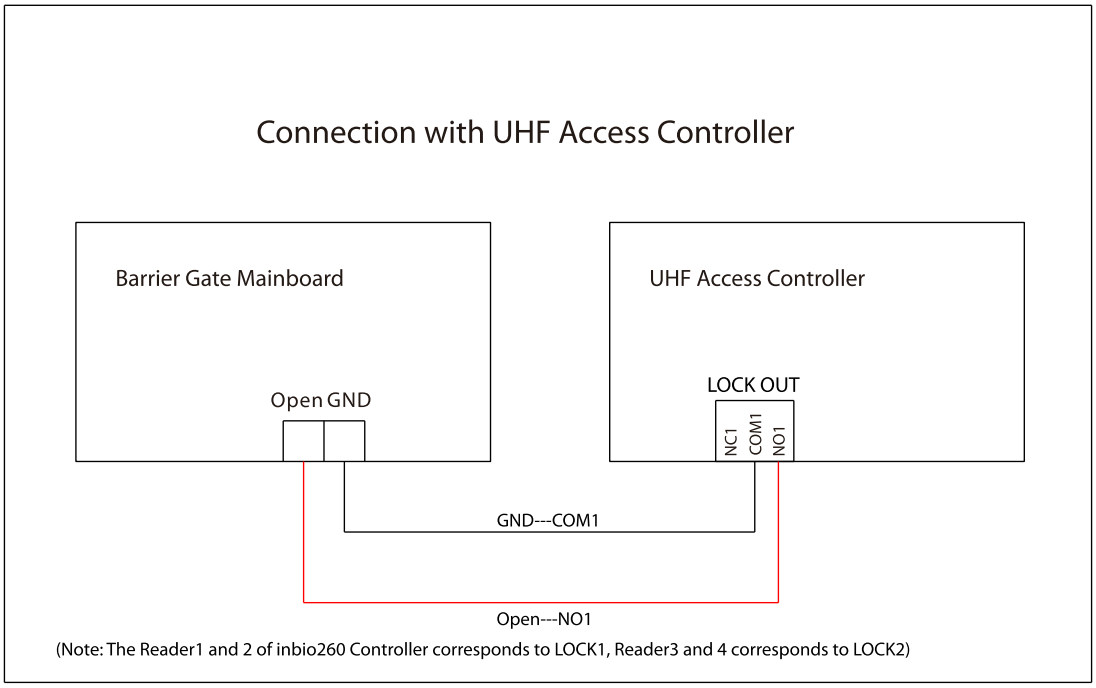


7.2 Connection with LPR Camera



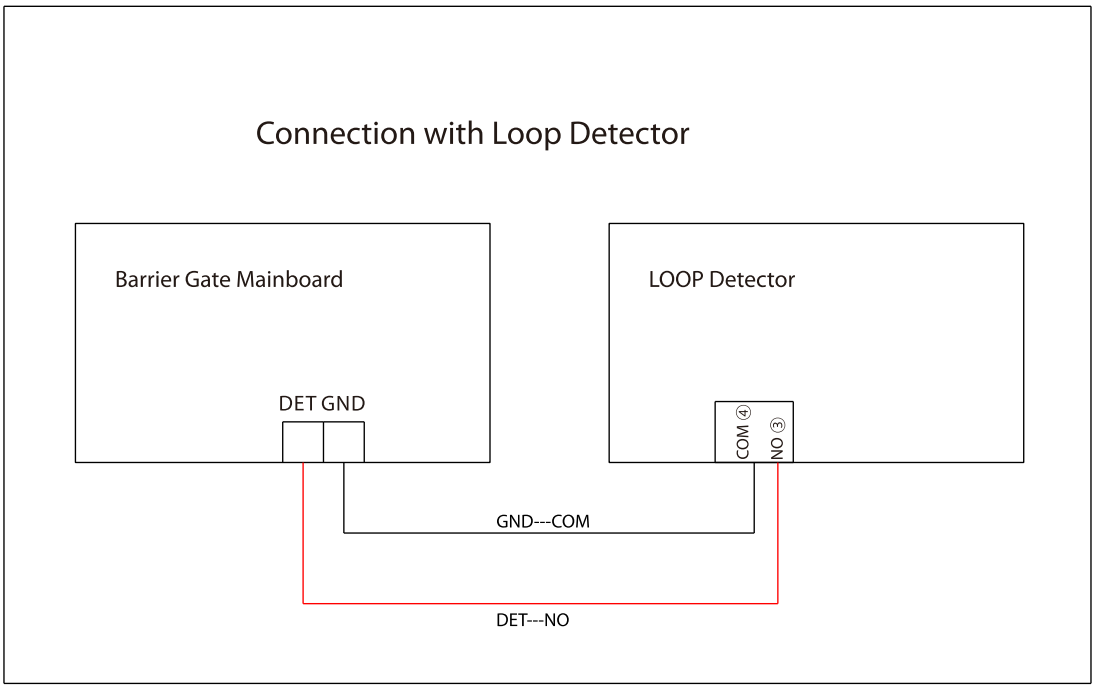
7.3 Connection with UHF Controller

(**Note:** The Reader1 and 2 of Inbio260 Controller corresponds to LOCK1, Reader3 and 4 corresponds to LOCK2)



7.4 Connection with Loop Detector

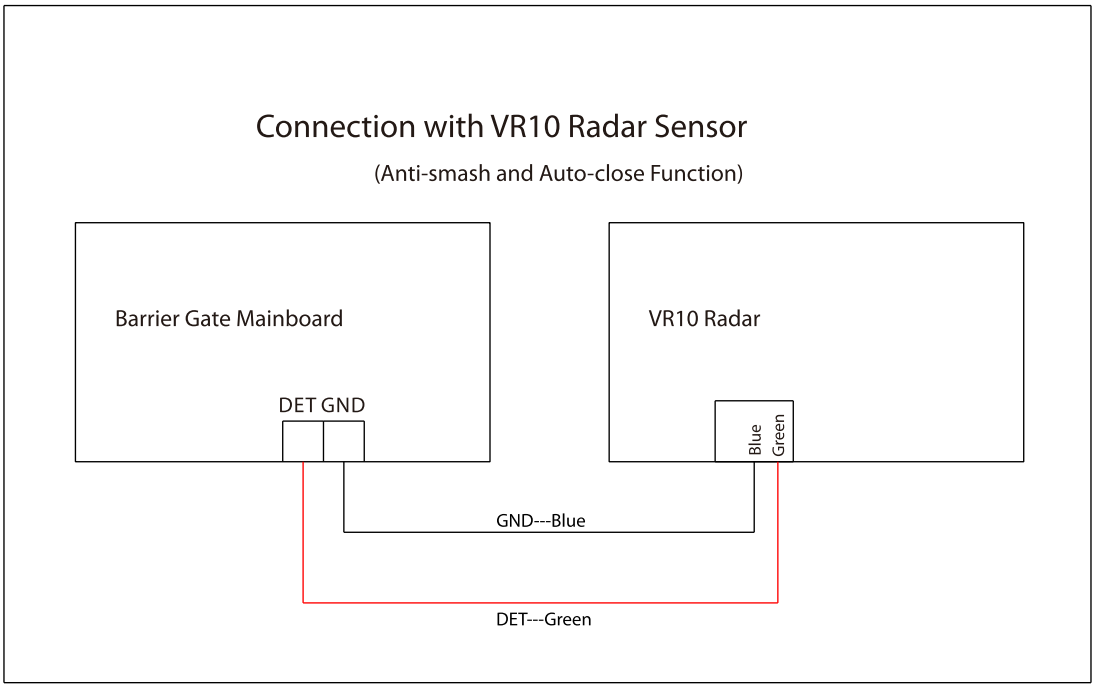
Anti-smash and Auto-close function



Coil Circumference	Coil Number
3m	Based on requirements, ensure that the inductance is between 100μH and 200μH
3m to 6m	5 to 6 turns
6m to 10m	4 to 5 turns
10m to 25m	3 turns
25m	2 turns

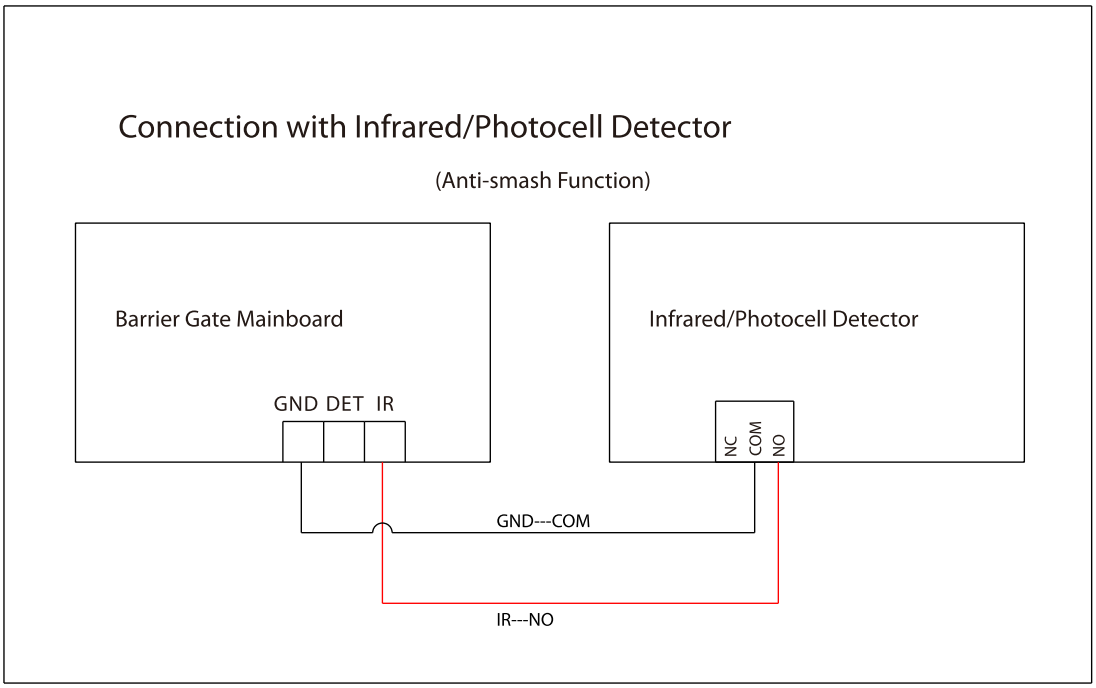
7.5 Connection with VR10 Radar Sensor

Anti-smash and Auto-close function

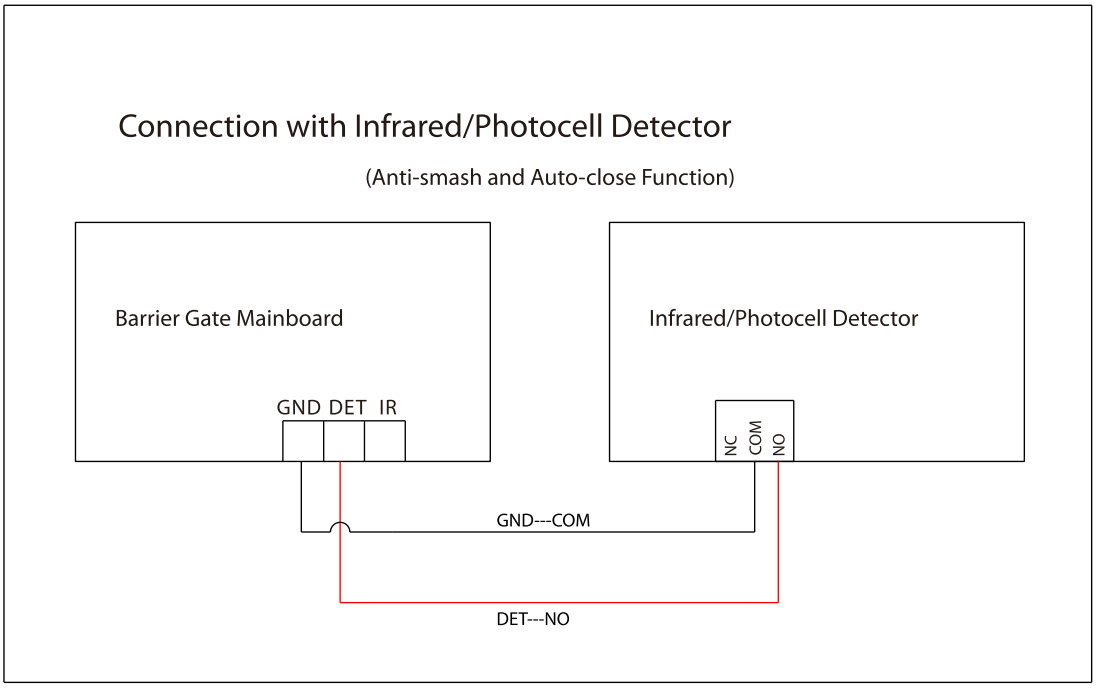


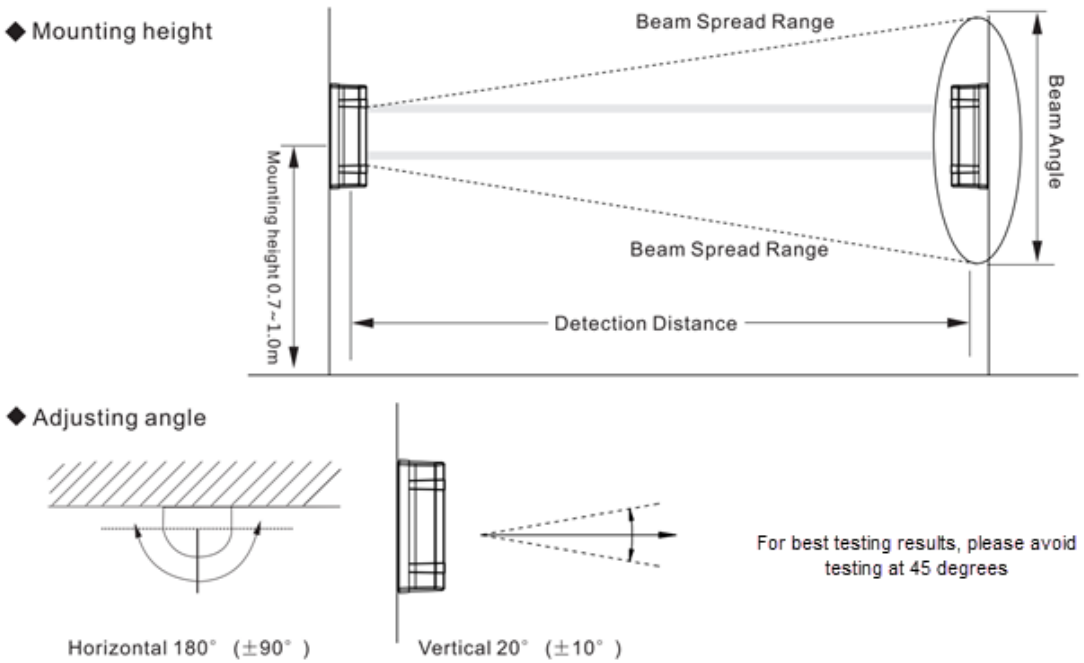
7.6 Connection with Infrared/Photocell Detector

Anti-smash function



Anti-smash and Auto-close function





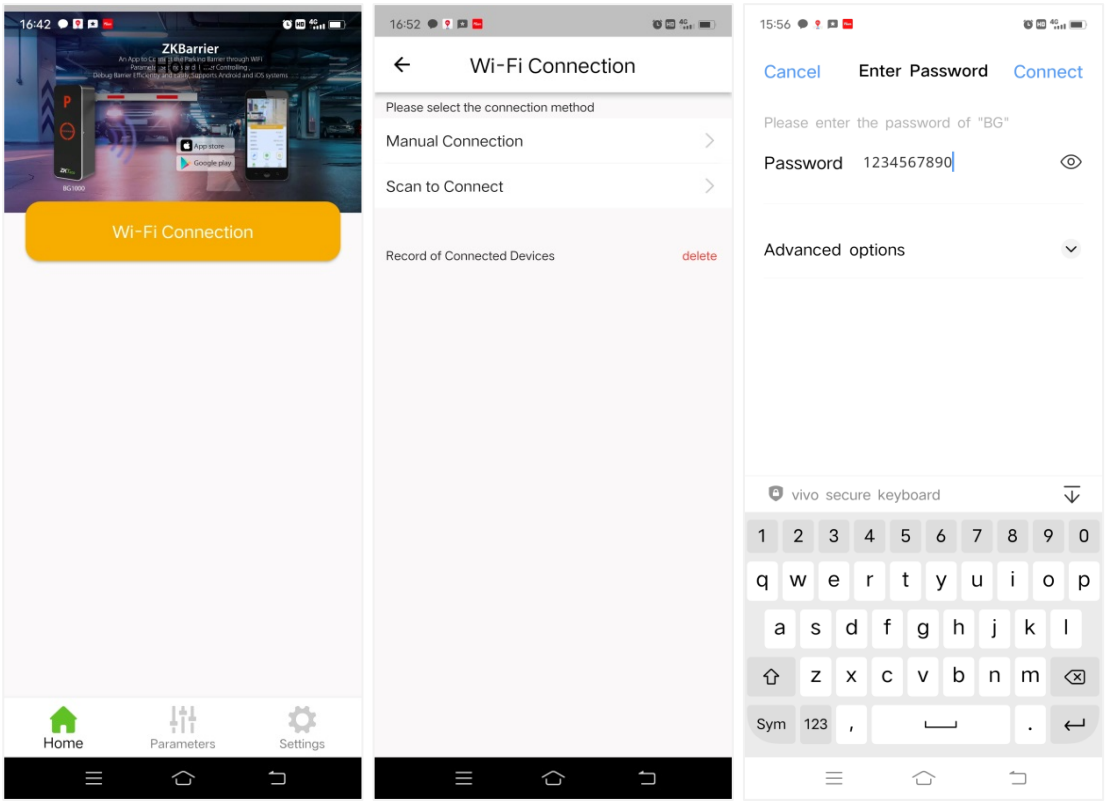
7.7 Connection with Device's Wi-FI

The Wi-Fi function is automatically turned on after the device is powered , and the phone can also be connected to the Wi-Fi hotspot of the device after setting the function and parameters of the device through the ZKbarrier APP. It Supports both Android and iOS systems. Operation details are as follows:

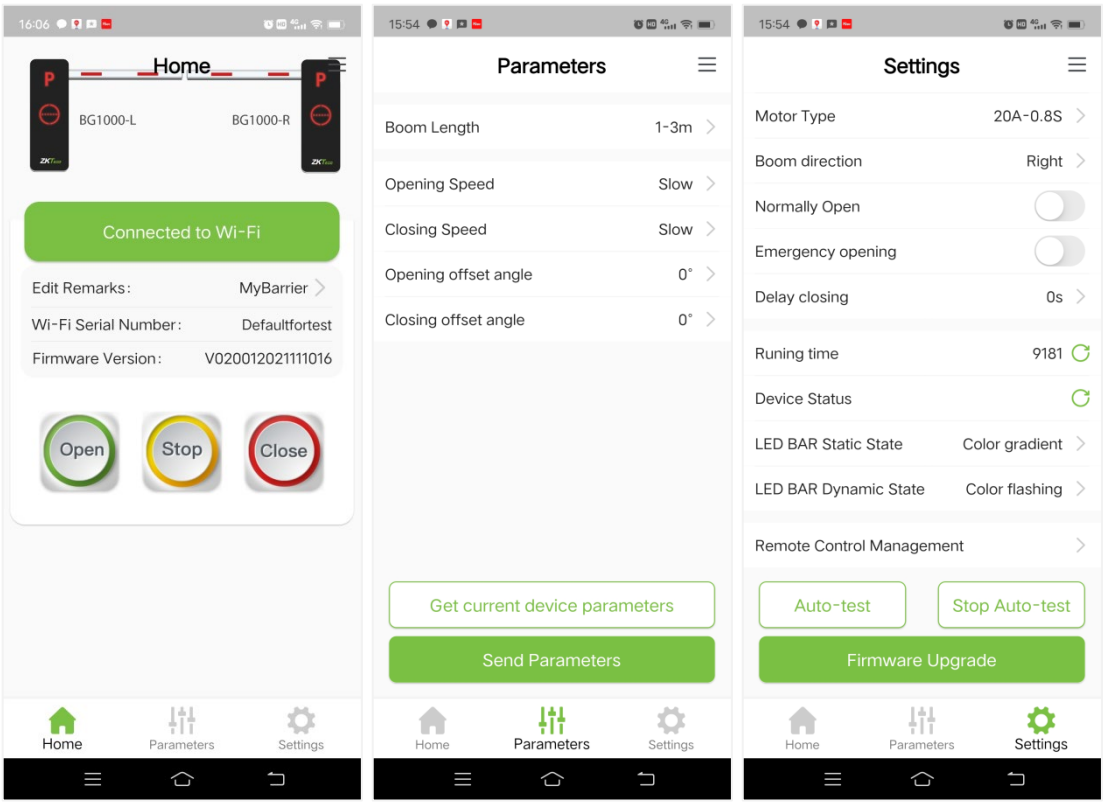
1. Open the **ZKBarrier APP**, click **Wi-Fi Connection**, and then enter the connection page.

2. You can choose either **Manual Connection** or **Scan to Connect**, here take **Manual Connection** as an example, click **Manual Connection**, select the "ZKBarrier-**XXXXXX**" Wi-Fi name of the corresponding device, and then enter the default password **1234567890**.

Note: For security reasons, it is recommended that you change the Wi-Fi connection password of your device after the first successful connection.



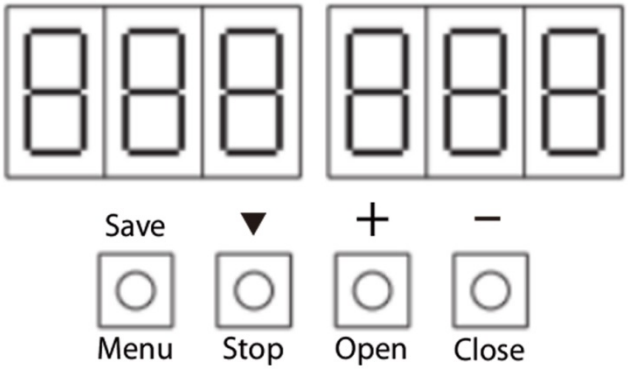
3. After successful connection, you can implement some functions and parameter settings on the APP according to the actual installation of the equipment in the field.



8 Functional Parameter Settings

After the initial installation, and first power-on, you must use the "**Open**" and "**Close**" buttons on the mainboard to complete the self-check process and learn the description of the menu.

8.1 Mainboard Parameter Settings



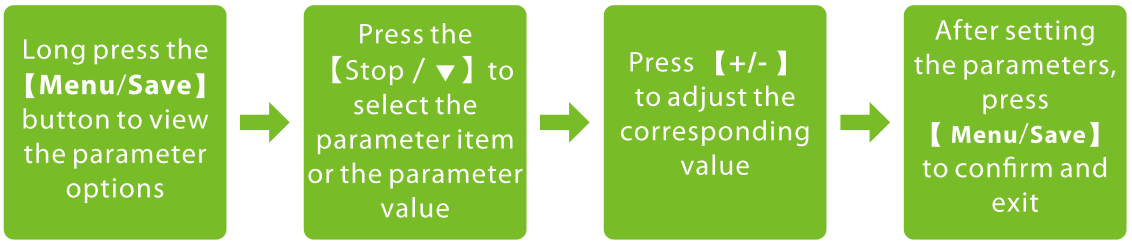
Menu/Save: Menu options/Confirm and Save

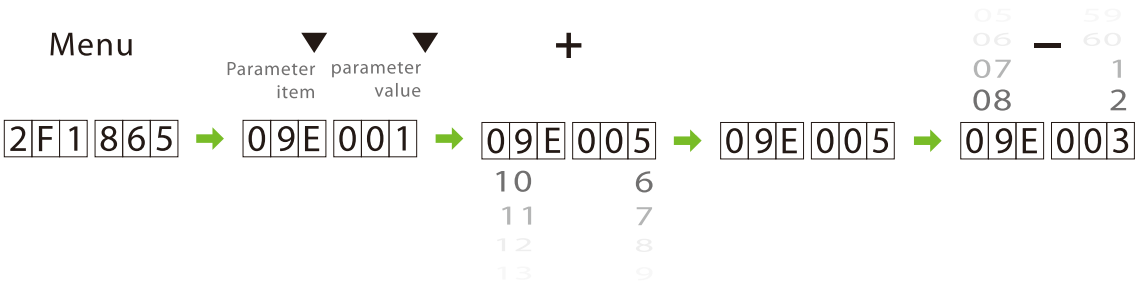
Stop/▼: Stop the boom arm /button to swich the menu item and the value item

Open/+: Increase parameter/value

Close/-: Decrease parameter/value

8.1.1 Operating Procedure





8.2 Parameter Settings Description

Ites	Description	Default
01EXXX	**Display Mode** • **01E000:** Displays current position of the swing arm • **01E001:** Controls input signal • **01E002:** Test mode (the digital LED displays "---" in the test mode) **01E102**: Opening position **01E202**: Closing position **01E502**: Opening **01E602**: Closing **01E702**: In the pause • **01E003:** Number of boom openings • **01E004:** Version Information	**01E000**
02EXXX	**Boom Arm Opening Speed** Set the Boom Arm Opening Speed to open the gate. The larger the number is set, the faster the speed. The Boom Arm Opening Speed value can be set between 10 to 32 and the default value is 24.	**02E024**
03EXXX	**Boom Arm Opening Brake Stroke** The larger the number, the longer the deceleration time and the more stable the boom arm operation. The Boom Arm Opening Brake Stroke can be set between 0 to 100 and the default value is 30.	**03E030**
04EXXX	**Boom Arm Opening Brake Speed** The smaller the number, the more pronounced the deceleration effect. The Boom Arm Opening Brake Speed can be set between 5 to 100 and the default value is 10.	**04E010**

05EXXX	**Boom Arm Closing Speed** Set the Boom Arm Closing Speed to close the gate. The larger the number is set, the faster the speed. The Boom Arm Closing Speed value can be set between 10 to 32 and the default value is 20.	**05E020**
06EXXX	**Boom Arm Closing Brake Stroke** The larger the number, the longer the deceleration time and the more stable the boom arm operation. The Boom Arm Closing Brake Stroke can be set between 0 to 100 and the default value is 40.	**06E040**
07EXXX	**Boom Arm Closing Brake Speed** The smaller the number, the more pronounced the deceleration effect. The Boom Arm Closing Brake Speed can be set between 5 to 100 and the default value is 10.	**07E010**
08EXXX	**Sensitivity of the Boom Arm Bouncing** Sets the bounce sensitivity of the boom arm when it encounters an obstacle. The higher the value, the lower the sensitivity, the longer it will take to bounce. When set to 100, this function will be turned off and the boom arm will not bounce when it encounters an obstacle. It can be set between 20 and 100, the default value is 40.	**08E040**
09EXXX	**Close Limit Adjustment** It can be set between 0 to 60, the default value is 4.	**09E004**
10EXXX	**Open Limit Adjustment** It can be set between 0 to 60, the default value is 15.	**10E015**
11EXXX	**Automatic Closing Time for Unmanned Passage** Set the time to automatically close the boom arm after successful verification but no one passes, the larger the number, the longer it takes to close the boom arm. If the "Boom Arm Opening Memory" function is turned on, the gate will not be closed even after the unmanned time when the button "Open" is pressed. The Boom Arm Opening Memory function takes priority. It can be set between 5s and 60s, the default value is 0. When set to "0", this function is turned off.	**11E000**

12EXXX	**Boom Arm Opening Memory** • **12E000:** Close • **12E001:** Open When more than two legal access signals are given at the same time (including the same direction and the opposite direction), the system will remember all pass requests and complete each pass in turn.	**12E000**
13EXXX	**Core Component Position** • **13E000:** Right • **13E001:** Left	**13E001**
14EXXX	**Reset** • **14E000:** -Normal • **14E001:** Reset Select **[14E001]** will restore the default factory setting. (**Note:** The function does not clear Core Component Position and Core Component Polarity.)	**14E000**
15EXXX	**Remote Control Pairing** • **15E000:** Normal • **15E100:** Add • **15E200:** Clear **Note**: The fourth digit is adjusted by pressing **[+/-]** to add or clear wireless remotes, and the sixth digit shows the number of remotes that have been paired with the current device.	**15E000**
16EXXX	**RS485 Address**	**16E000**

17EXXX	**Ground Sense Delay Time Setting** Set the ground sense delay time by press **[+/-]** button, the larger the number set, the longer the delay time, the valid value is 0 to 251.	**17E000**
18EXXX	**Core Component Type** • **18E000:** 20A to 0.6S • **18E001:** 18B to 1.2S • **18E002:** 18B to 2.5S Please set the parameters according to the core component.	**18E002**
19EXXX	**Boom Arm Type** • **19E000:** 1 to 3m • **19E001:** 3.5 to 4.5m • **19E002:** 5 to 6m Please set the parameters according to the boom arm length.	**19E002**
20EXXX	**Core Component Polarity** • **20E000:** Forward • **20E001:** Reverse	**20E000**
21EXXX	**Power-off Open Mode** • **21E000:** Disable • **21E001:** Enable	**21E001**

22EXXX	**Open/Close Limit LED State** • **22E000:** Open limit green light breathing, Close limit red light breathing • **22E001:** Open limit green light always on, Close limit red light always on • **22E002:** Open limit green light flashes, Close limit red light breathing	**22E000**
23EXXX	**Open/Close LED State** • **23E000:** The red light flashes during the whole process of opening and closing the boom arm. • **23E001:** The red light is always on during the whole process of opening and closing the boom arm.	**23E000**
24EXXX	**Remote Control Type** • **24E000:** 433MHz frequency • **24E001:** 430MHz frequency	**24E000**

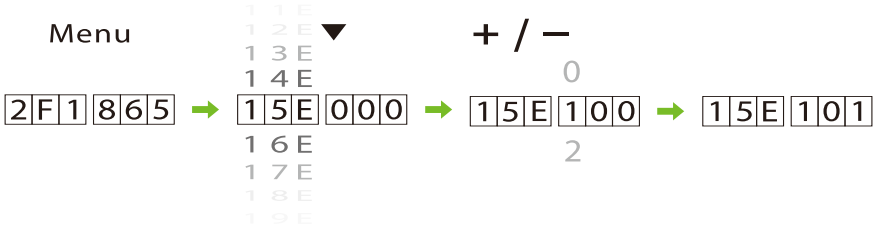
8.3 Error Code

Erro Code	Description
EL0002	Power-on Self-test failure, Hall limit detection error.
EL0004	Run Timeout.
EL0008	Clutch Locked.
EL016	The code disk detection failed.
EL032	Electric Motor Shaft Lock Protection failure.

8.4 Remote Control Pairing and Unpairing

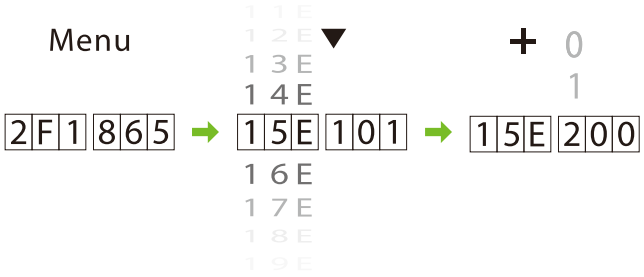
8.4.1 Pairing

Long press **[Menu/save]**, then press **[Stop/▼]** flip down to **[15EXXX]**. Press **[+/-]** to set the parameter value. At this time, the LED display value is "**15EX0X**", and then press any button on the remote control until you hear a beep sound from the Mainboard, it means the pairing is successful, and then press **[Menu/save]** exit the menu.



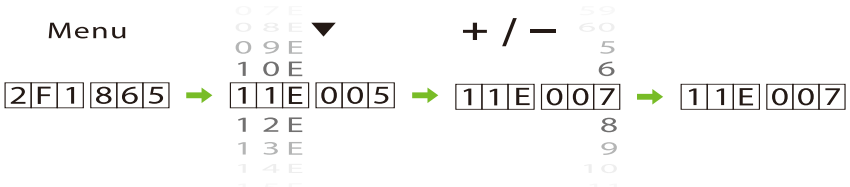
8.4.2 Unpairing

Long press **[Menu/save]**, then press **[Stop/▼]** flip down to **[15EXXX]**. Press **[+/-]** to set the parameter value, and then set the parameter value to "**15E200**". Press **[Menu/save]** to save the setting and that all the remote controls have been deleted.



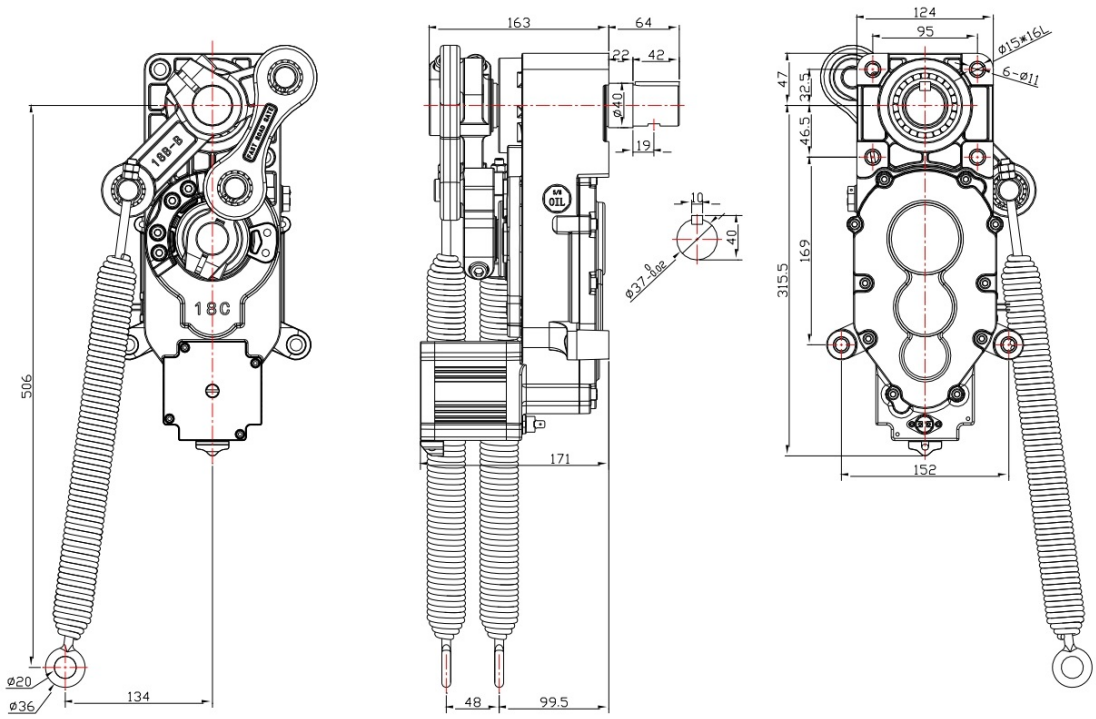
8.5 Set Delay for Automatic Closing after Opening the Boom Arm

Long press the **[Menu/save]** button, then press **[Stop/▼]** flip down to **[11EXXX]** parameter, and then press the **[+/-]** to set the parameter value after selection. Set the delay value as per the requirements. Finally, press **[Menu/save]** to exit the menu. For example, if it is set to "**11E007**", the device will automatically close after 7 seconds after opening the barrier gate.



9 Boom Arm Adjustments

9.1 Dimensions

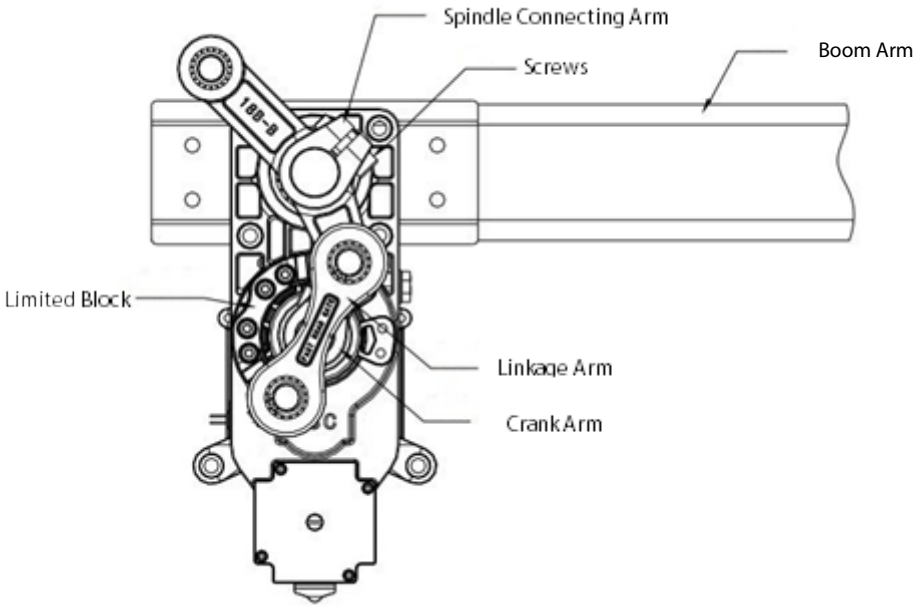


9.2 Horizontal and Vertical Angle Adjustment of Boom Arm (Mechanical Adjustment)

Note: The horizontal and vertical angles of the boom arm have been adjusted before leaving the factory. Please do not adjust them without the guidance of professionals to avoid mechanical damage.

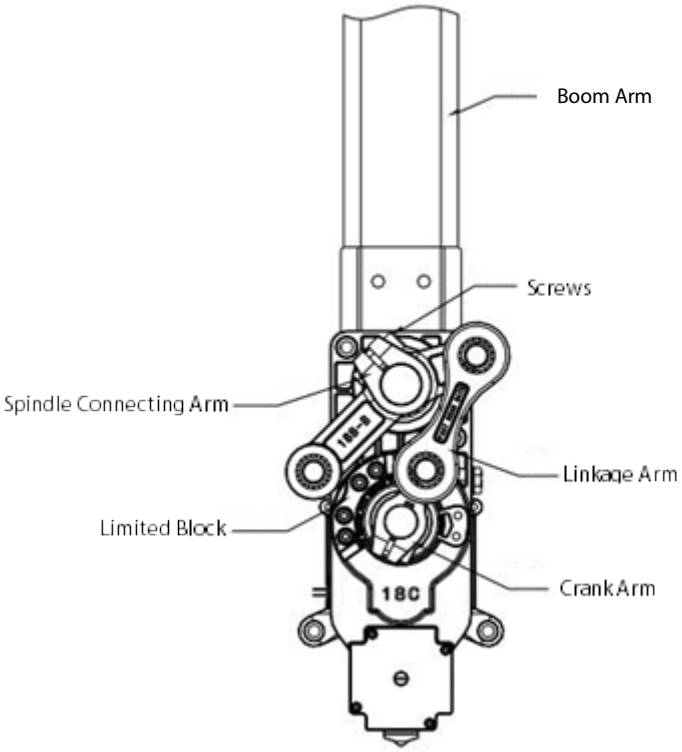
1. **Adjust the horizontal position of the boom arm**

   The connecting boom crank will be an overlapping structure, with the connecting boom arm's two rotation points coincident with the reducer's output shaft at three points and a line. The boom arm is in this position horizontally. If the boom arm is not level or inclined at this time, unscrew the two rocker (rocker-arm) screws, turn the boom arm to the level, and tighten the screws.



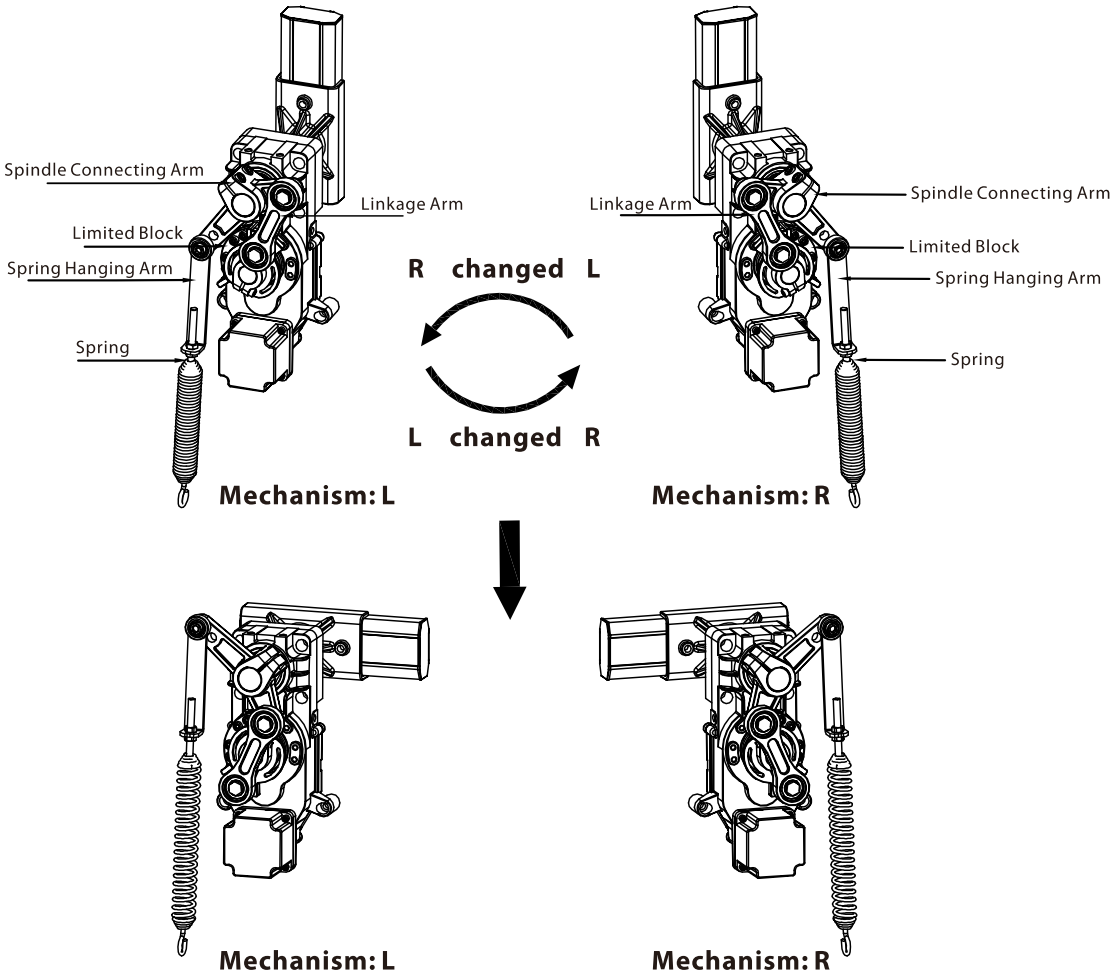
2. Adjust the vertical position of the boom arm (adjusted by mechanical structure)

The connecting boom arm crank is in an unfolded shape, and the connecting boom arm's two rotation points and the reducer's output shaft are in an unfolded 3-point line. This is the boom arm's vertical position. If the boom arm is not in the vertical position and is inclined, unscrew the two screws on the rocker (rocker-arm), rotate the boom arm to the vertical, and tighten the screws..



9.3 Direction Interchange of the Boom Arm

The operation steps are as follows:



1. Before operation, please turn off the power. Remove the spring, spring hanging arm and boom.

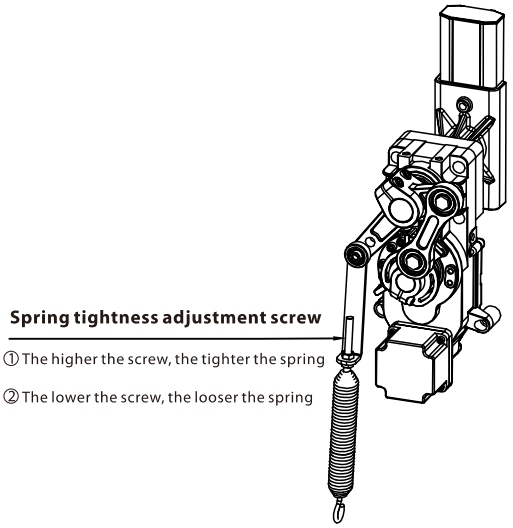
2. Change the direction of the Spindle Connecting Arm and linkage Arm.

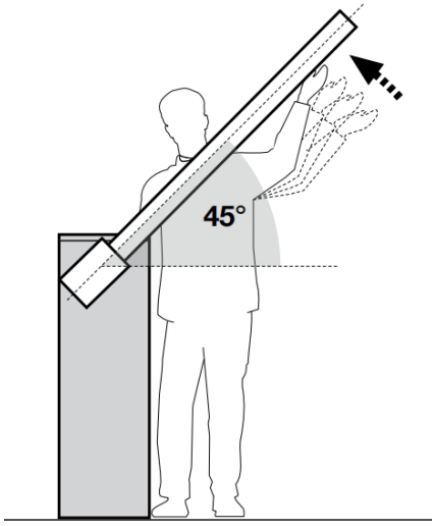
3. Turn the Limited Block to the other direction.

4. After the mechanical operation, you need to set the movement parameter 13E Core Component Position on the motherboard, such as changing from L to R, the value of this parameter should be set from 1 to 0, or set the direction of the movement on the app.

9.4 Spring Adjustment

If the boom arm shakes when it rises, you can adjust the spring loosely, and if the boom arm shakes when it falls, you can adjust the spring tightly.





Note:

1) When the barrier boom is at 45°, it is the best balance.

2) The spring wire diameter is adapted to different boom lengths: 3m boom with φ4.5mm; 4.5m boom with φ5.5mm; 6m boom with φ6.5mm. (If the boom is too short i.e., less than 2m, do not install the spring).

10 Product Packing List

Material	Quantity
Chassis Explosion Screw M12X140	4
Keys	2
Barrier Boom	1
Boom Pressure Plate	1
Chassis Pressure Plate	2
Wireless Remote	2
Barrier Boom hexagon bolt M10X70	2
Machine	1
User manual	1

11 Troubleshooting

❖ **Description: The Power Supply has a 24V output, but the mainboard power indicator does not light up.**

Cause

1. 24V output wiring might be reversed
2. The mainboard might work abnormally
3. Loose wiring

Solution

1. Swap the DC output wiring
2. Replace the Mainboard
3. Tighten the wiring

❖ **Description: The AC input is normal, but the power indicator is off.**

Cause

1. The power fuse might be blown
2. Abnormal power supply
3. Loose wiring

Solution

1. Replace the fuse
2. Replace the power supply
3. Tighten the wiring

❖ **Description: The power indicator is on, the landing boom indicator is normal, and the motor is not running.**

Cause

1. The motor wiring might be wrongly connected, or the wiring is loose
2. The internal encoder of the motor may work abnormally
3. The motor stroke limit exceeds the position

Solution

1. Check the wiring according to the wiring diagram, and tighten the wiring if required
2. Replace the motor
3. Re-adjust the motor limit parameters

❖ **Description: The remote-control buttons do not respond.**

Cause:

1. The remote-control battery is completely discharged
2. There must be a signal interference with the same frequency and there might be some obstacles too nearby
3. The remote-control frequency is not matched, or the receiver is damaged

Solution:

1. Replace the battery
2. Use manual button control

3. Use in open areas
4. Replace the remote control to re-match or replace the receiver

❖ **Description: When the boom is closed halfway, it bounces back to the open state.**

Cause:

1. The barrier boom might not be installed
2. The spring is too tight, or the length of the barrier boom is changed, and the spring is not properly adjusted

Solution:

1. Install the barrier boom
2. Adjust the spring according to the length of the barrier boom

12 Safety Precautions

- It is strictly forbidden to hit the product with hard objects.
- When using, please handle with care to avoid strong collision with hard objects.
- Do not spill water or corrosive liquids on the surface of the product.
- If smoke or a peculiar smell comes from the product, disconnect the power immediately.

Note: If the product works abnormally, please contact the dealer in time. Please do not try to repair it by yourself. If you handle it without authorization, the company is not responsible for any damage.

13 Transportation and Storage

- When loading and unloading the product, handle it with care.
- During transportation and storage, place it in a dry and corrosive-free environment. The product should be protected from moisture, rain, sun, and corrosion.

14 Warranty

This product promises a warranty period of 2 years. Upon normal use of the product, damages are covered by the warranty. However, damages caused by the following conditions are not covered by the warranty.

- Damages caused by incorrect operation and violation of operating procedures.
- Damages caused by repairing the product without authorization.
- Abnormalities and damages caused by extremely harsh operating conditions and operating environment beyond the machine's ability to withstand.
- Damages caused by irresistible factors (such as earthquake, tsunami, typhoon).

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