

User Manual

BGM2000 Series Barrier Gate (APP Version)

Date: April 2026

Doc Version: 1.3

English

Thank you for choosing our product. Please read the instructions carefully before operation. Follow these instructions to ensure that the product is functioning properly. The images shown in this manual are for illustrative purposes only.



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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 **BGM2000 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.....	7
2	FEATURES AND FUNCTIONALITIES	7
3	SPECIFICATIONS.....	8
4	APPEARANCE AND DIMENSIONS	9
5	LEFT AND RIGHT DIRECTIONS	9
6	INSTALLATION PROCEDURE.....	10
6.1	Installation Precautions.....	10
6.2	Cable Embedding	10
6.3	Boom Arm Installation.....	10
6.3.1	Boom Arm Installation Procedure	10
7	MAINBOARD WIRING INSTRUCTIONS.....	12
7.1	Wire Connection of the New Mainboard	12
7.2	Connection with LPR Camera	12
7.3	Connection with UHF System	13
7.4	Connection with Loop Detector.....	14
7.5	Connection with VR10 Radar Sensor.....	15
7.6	Connection with Infrared/Photocell Detector	16
8	FUNCTIONAL PARAMETER SETTINGS	18
8.1	Mainboard Parameter Settings	18
8.1.1	Operating Procedure.....	18
8.2	Parameter Settings Description	19
8.3	Error Code	26
8.4	Remote Control Pairing and Unpairing	27
8.4.1	Pairing.....	27
8.4.2	Unpairing.....	27
8.5	Set Delay for Automatic Closing after Opening the Boom Arm	28
9	BOOM ARM ADJUSTMENTS	29
9.1	Dimensions	29
9.2	Horizontal and Vertical Angle Adjustment of Boom Arm (Mechanical Adjustment).....	29
9.3	Direction Interchange of the Boom Arm	31
9.4	Spring Adjustment	31

10	PRODUCT PACKING LIST	32
11	TROUBLESHOOTING	33
12	SAFETY PRECAUTIONS.....	35
13	TRANSPORTATION AND STORAGE	35
14	WARRANTY	35

1 Overview

BGM2000 series barrier gate adopts an elegant chassis design with a programmable control board and a high-efficiency brushless DC motor. The built-in LED lights which indicates the on and off mode of barrier gates, suitable for large parking lot. An aluminum foam straight barrier enhances anti-collision ability and wind resistance.

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.

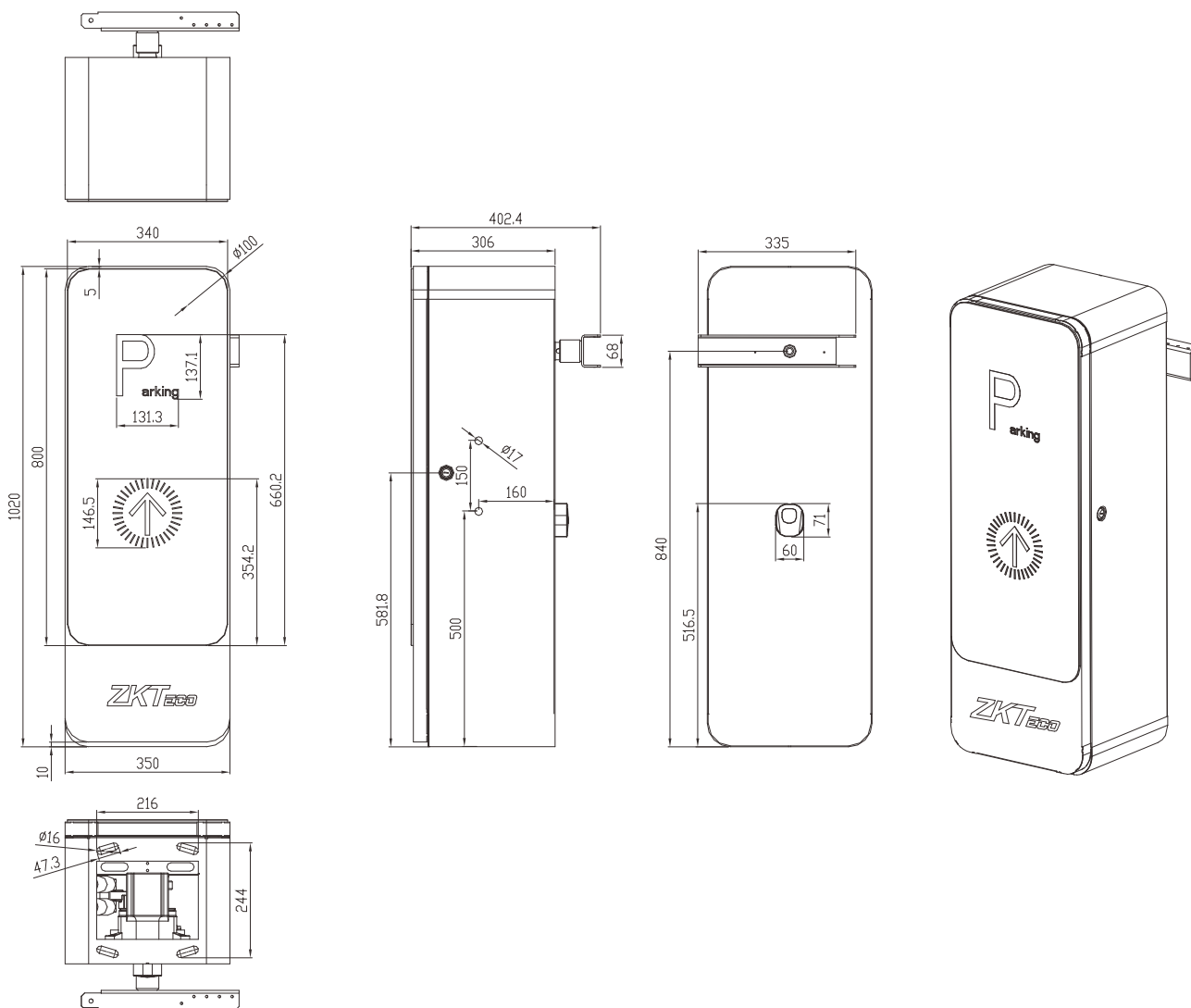
2 Features and Functionalities

- Support APP control.
- Reversible left and right directions.
- Embedded programmable controller with Wi-Fi or Bluetooth communication module.
- Interactive and stylish chassis LED design.
- DC 24V brushless motor with encoder.
- Barrier lift speed as fast as 0.6s.
- Automatic obstacle detection.
- 24V backup battery can be used to ensure the normal operation of the barrier when power is off.
- Emergency opening.
- Automatic delay closing (No signal trigger, loop detector delay trigger).
- Adjustable angle of rise and fall.
- Boom connector with anti-collision function.

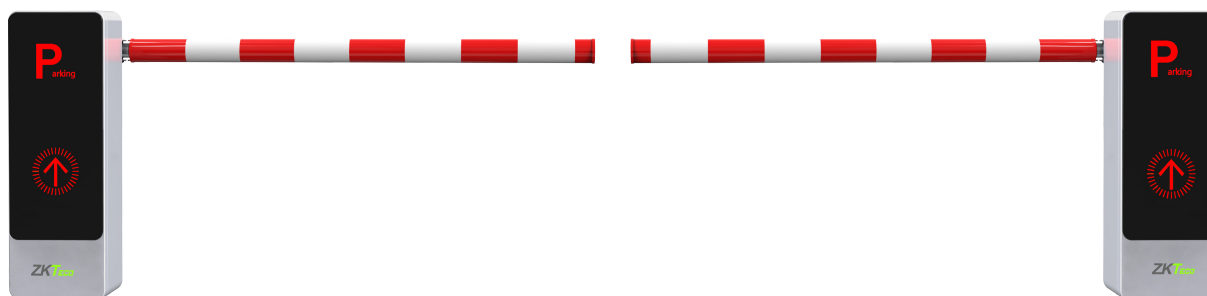
3 Specifications

Model	BGM2000L/R
Operating Speed	0.6s~3s
Boom Arm Length	L≤4m
Boom Arm Type	Round straight boom
Chassis Dimension (L*W*H)	350*306*1020mm
Chassis Weight	45kg
Motor Type	24V DC brushless motor
Motor MCBF	5 million times
Output Power	100W
Rated Current	5A
Power Supply	Input: AC110V/220V ±10% 50/60Hz, Output: DC24V 10A
Remote Control Distance	≤30m
Operating Temperature	-30°C to 75°C
Operating Humidity	<90%
Chassis Housing Material	Powder coated cold rolled sheet
Protection level	IP54
Duty Cycle	100%
Motor Rated Speed	1500r/min

4 Appearance and Dimensions



5 Left and Right Directions



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

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

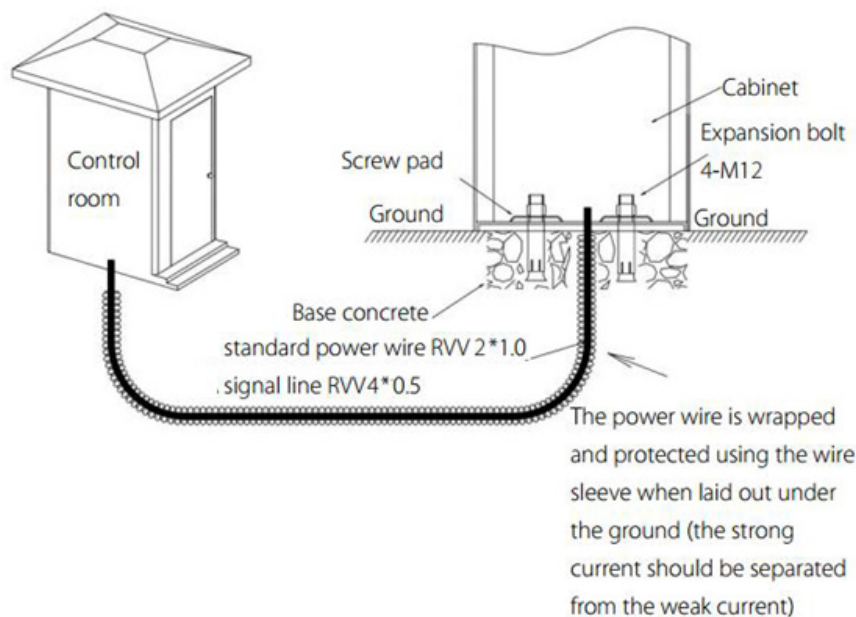
6 Installation Procedure

6.1 Installation Precautions

- Install the parking barrier on a flattened ground. A cement foundation is required before installation if the ground is not solid and flat.
- 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.
- When powered on, do not change the wire connection inside.
- Connect the GND to the cabinet for ensured protection.

6.2 Cable Embedding

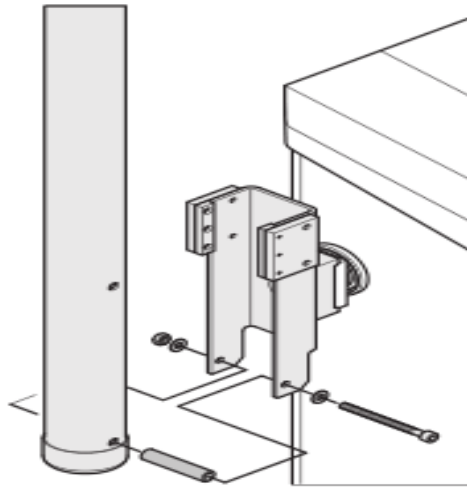
1. A $\phi 25$ protective sleeve and a cable are required.
2. The route cables must pass through the protective sleeves.
3. Use a tool to open the cable tray on the ground.



6.3 Boom Arm Installation

6.3.1 Boom Arm Installation Procedure

1. Place the boom into the boom tray head according to the hole location.
2. Use the spanner to clamp the round boom by screws, gasket, and screws nuts.

**Note:**

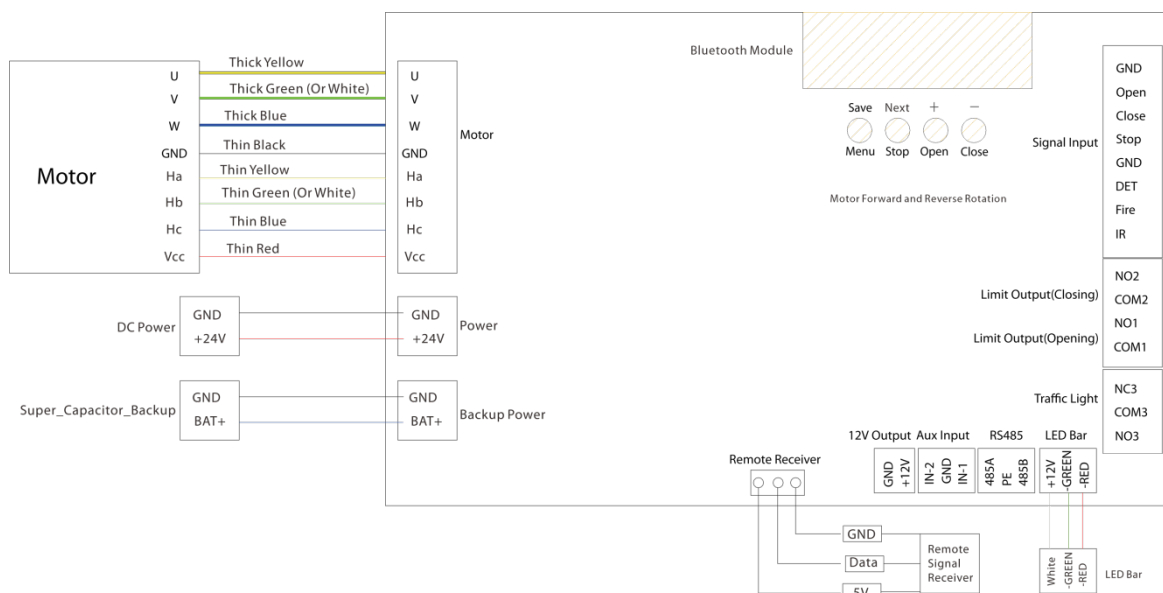
- Before the barrier is powered on to run the test process, be sure to install the barrier boom arm of the corresponding length for the test. If the barrier boom arm is not installed, please adjust and remove the spring under the guidance of a professional.
- If the length of the barrier boom arm is cut and adjusted, the tightness of the spring and the spring quantity need to be adjusted accordingly to avoid the abnormal working status that cannot drop the boom.
- During the installation of the boom, damage to the metal surface should be avoided as far as possible to avoid rusting.

7 Mainboard Wiring Instructions

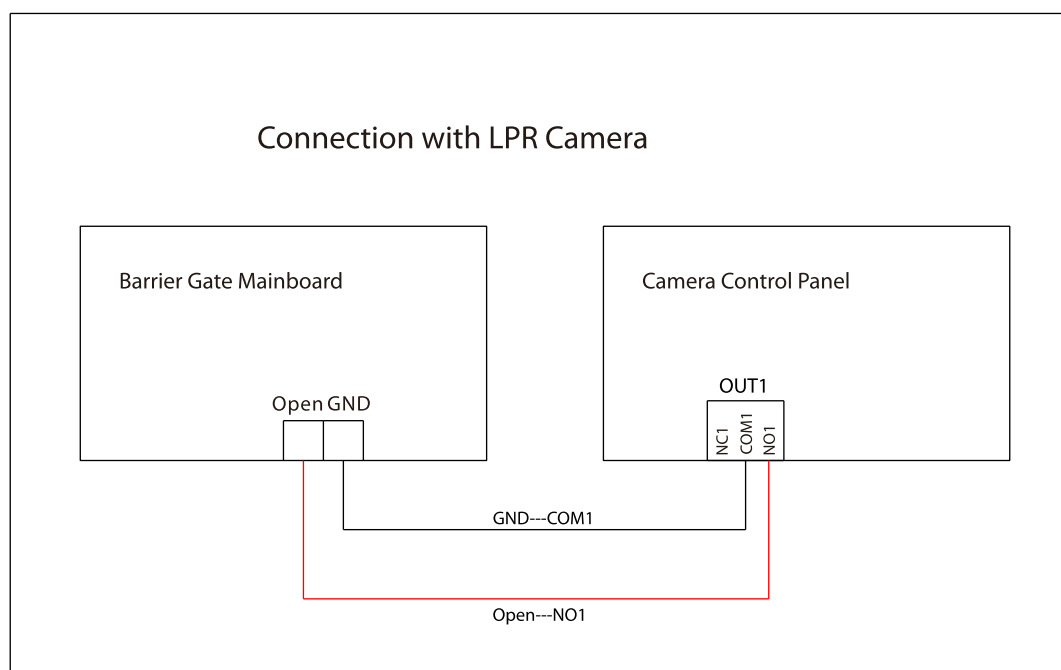
- Please disconnect the power supply before wiring.
- Check carefully whether the terminals are tightened and whether the wiring is firm.

7.1 Wire Connection of the New Mainboard

Wiring diagram of new control board of the app version:

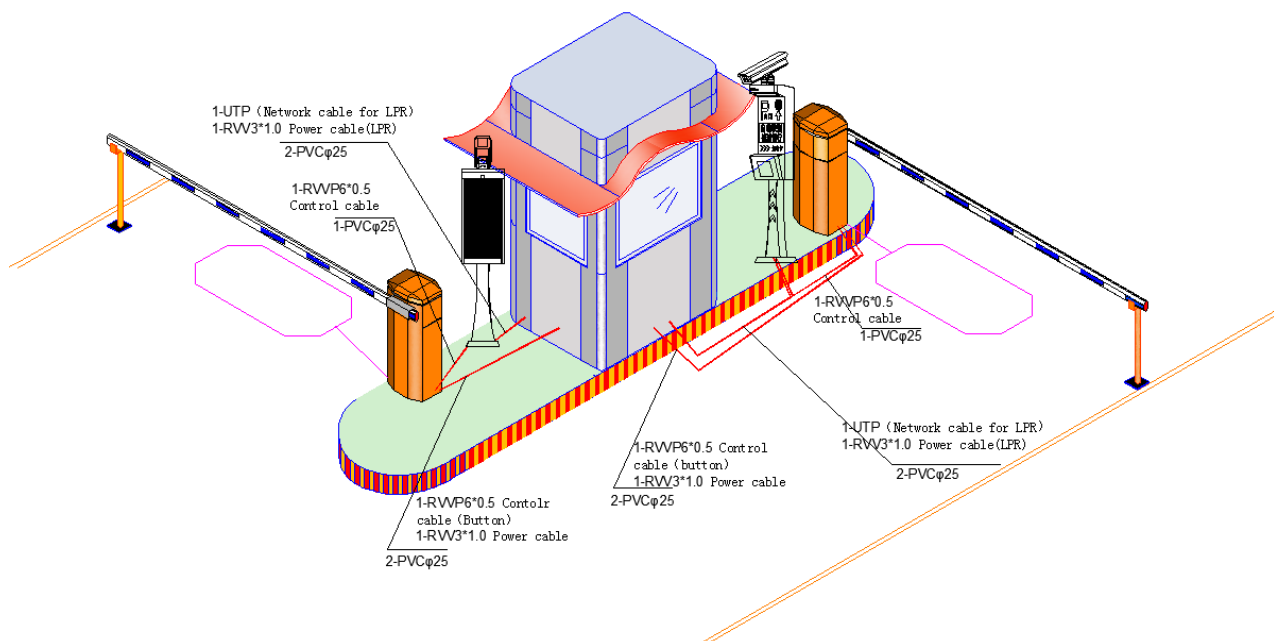


7.2 Connection with LPR Camera

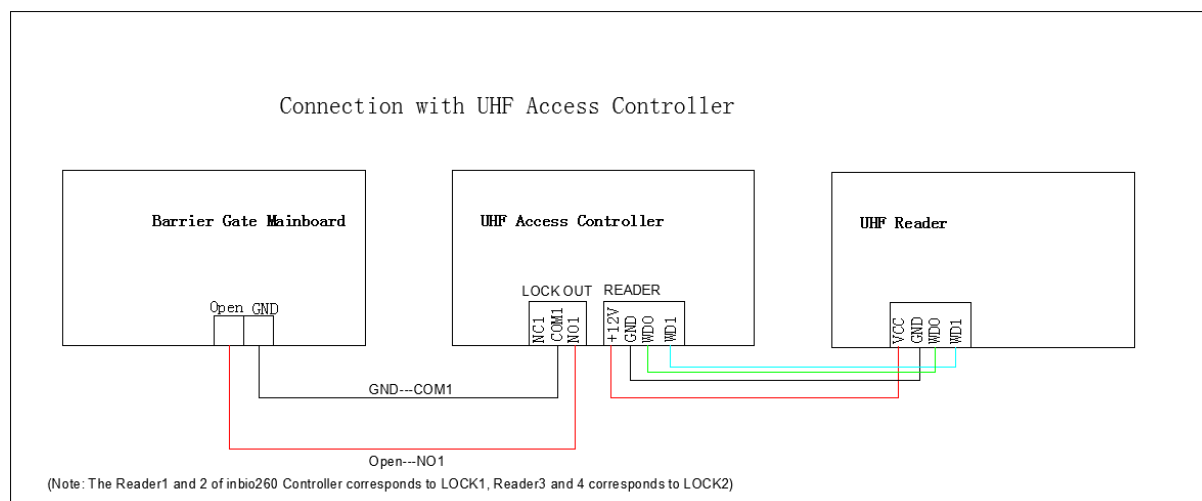


● Confirm Barrier Gate Connection with LPR Device Installation

Based on the project site planning, confirm the installation positions of exits and entrances, and then install the wiring.



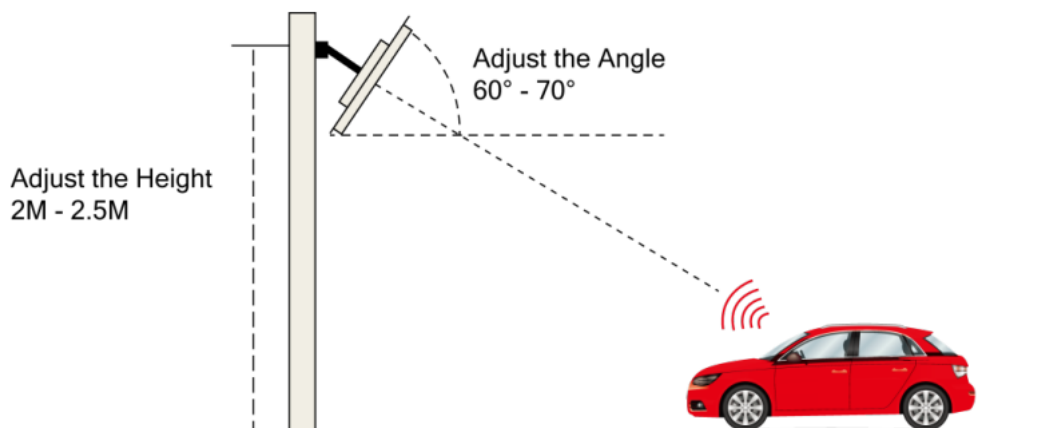
7.3 Connection with UHF System



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

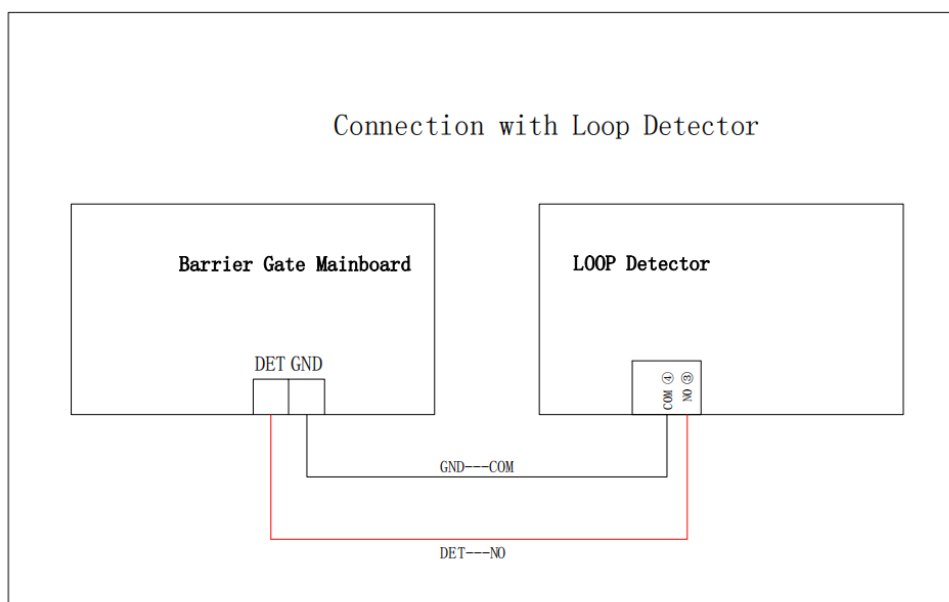
● Confirm Barrier Gate Connection with UHF Device Installtion

Based on the project site planning, confirm the installation positions of exits and entrances, and then install the wiring.



7.4 Connection with Loop Detector

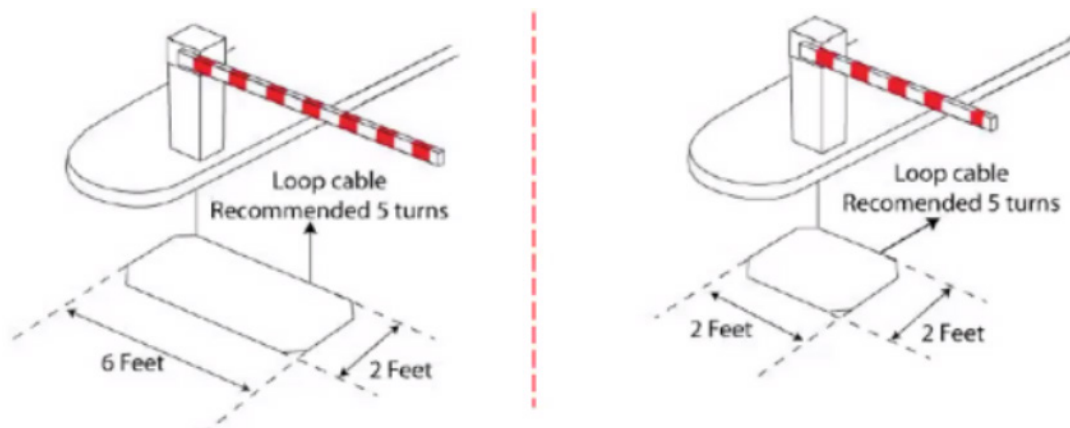
● Anti-smash and Auto-close Function



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

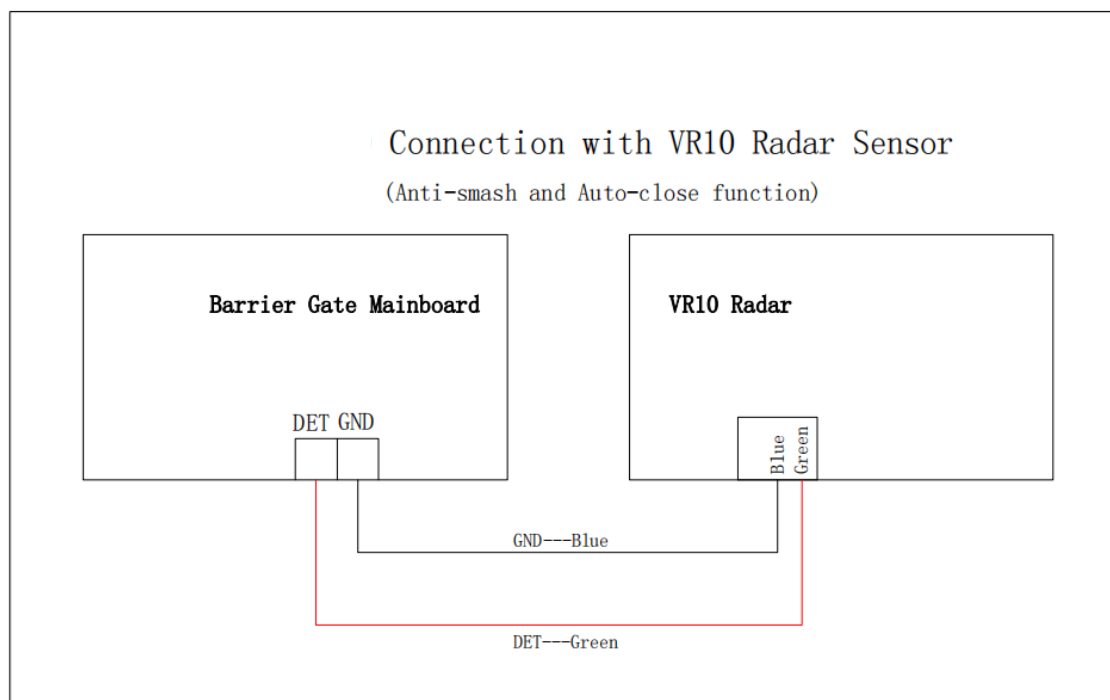
● Confirm Loop Coil Install Position

Base on the type of lane, such as car lane type or motorcycle lane type to onfirm the length and width of the loop coil installation.



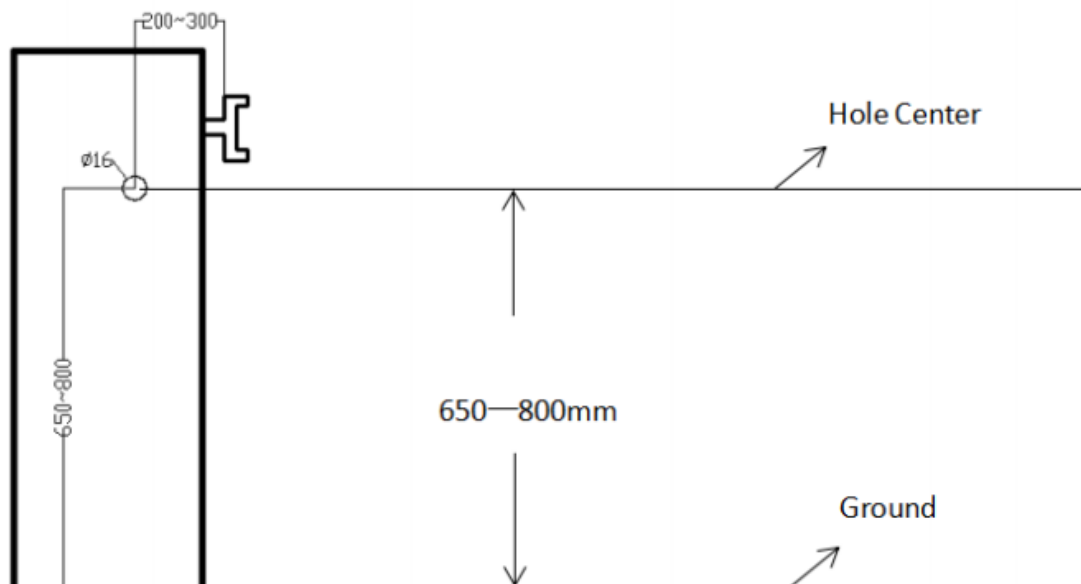
7.5 Connection with VR10 Radar Sensor

● Anti-smash and Auto-close Function



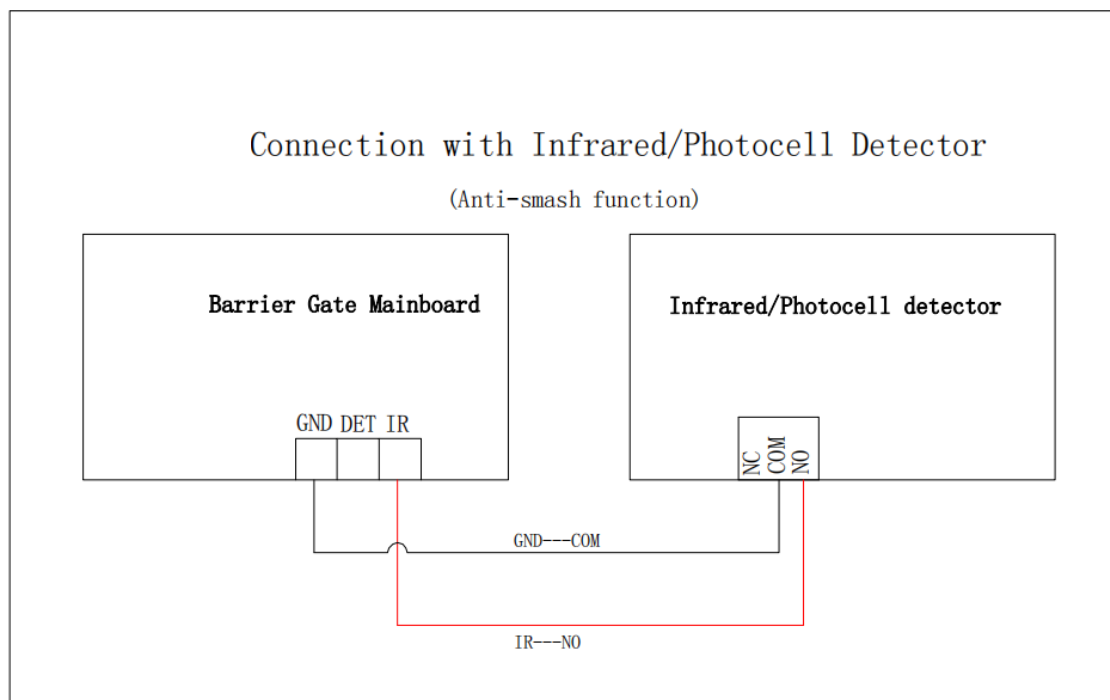
● Confirm Radar Mounting Holes

The installation hole of the radar is between 200 to 300mm from the inside of the straight boom and 650 to 800mm from the driveway ground (non-cement pier); the installation position is shown in the figure.

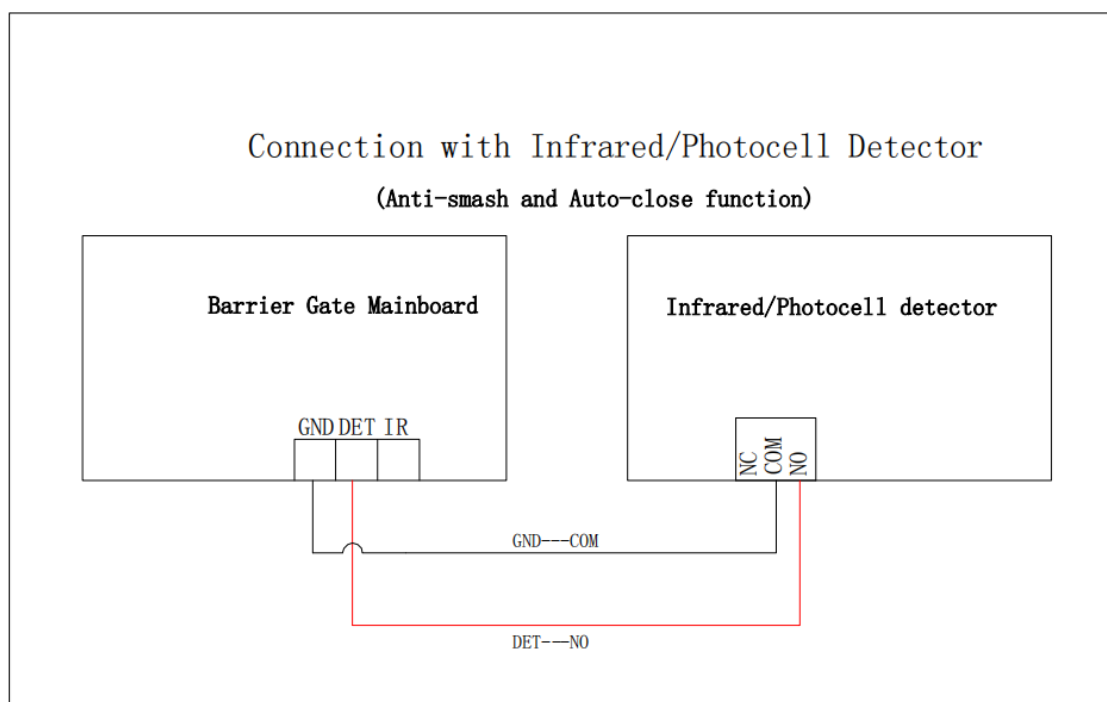


7.6 Connection with Infrared/Photocell Detector

● Anti-smash Function



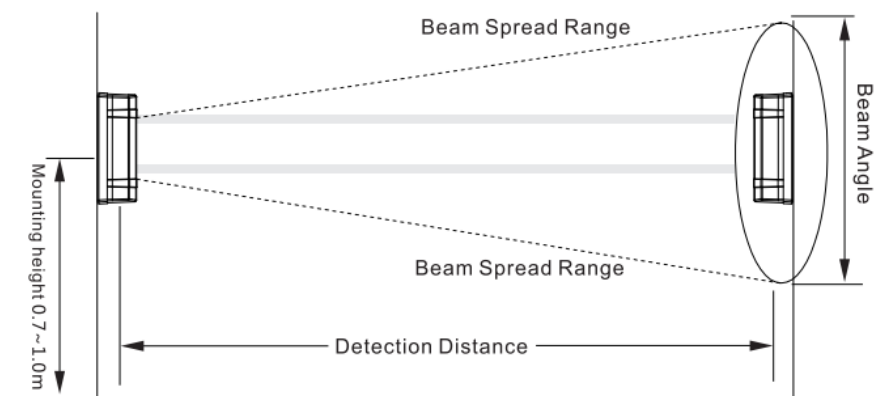
● Anti-smash and Auto-close Function



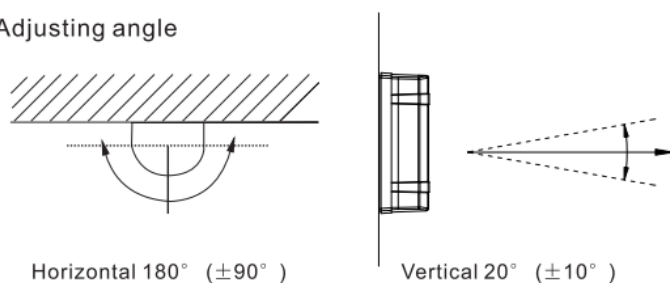
● Confirm Photocell Detector Installtion

Note that the transmitter and receiver are install at the same parallel angles.

◆ Mounting height



◆ Adjusting angle

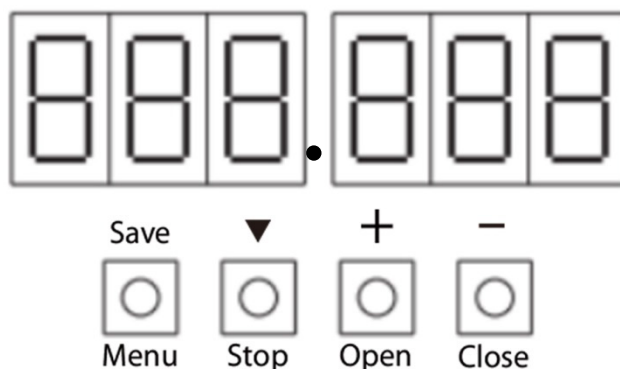


Notice: For best testing results, please avoid testing in 45°

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



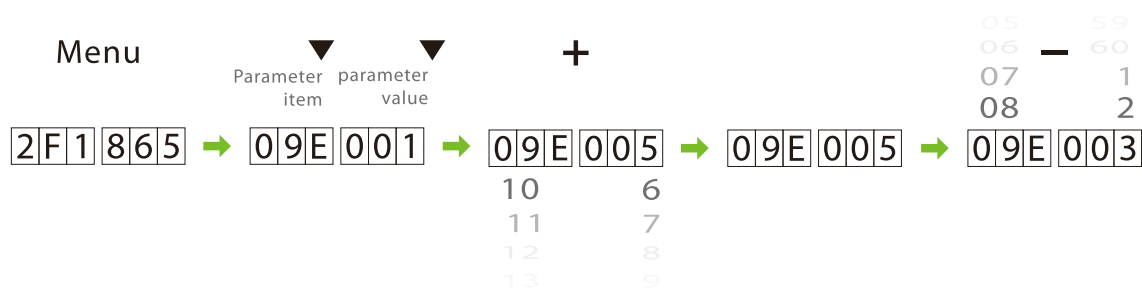
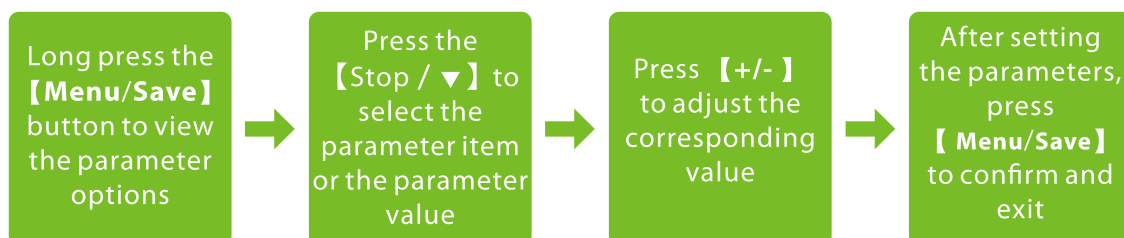
Menu/Save: Menu options/Confirm and Save

Stop/▼: Stop the boom arm /button to switch 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

Items	Description	Default
01E.***	<u>Display Mode</u> 01E.000: Displays the status of the boom arm and the encoder value 1F0.***: Opening position 2F0.***: Closing position 5F0.***: Opening 6F0.***: Closing 4F0.***: In the pause 0F0.***: Not self-tested 7F0.***: Not stop at the open/close limit 01E.001: Displays the status of the boom arm and the current input signal (displays the status as "*F*.***") 01E.002: Test mode 01E.003: Number of boom openings 01E.004: Version Information 01E.005: Displays the hidden menus (The menus after item 13 are hidden)	01E.001
02E.***	<u>Boom Arm Opening Speed</u> 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 30 and the default value is 16.	02E.016
03E.***	<u>Boom Arm Closing Speed</u> 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 30 and the default value is 16.	03E.016

04E.***	<u>Open Limit Adjustment</u> Long press (1 to open the gate, 2 to close the gate) Excessive rotation beyond the limit position can cause the boom arm to fail to lock and become easily movable.	04E.004
05E.***	<u>Close Limit Adjustment</u> Long press (1 to open the gate, 2 to close the gate) Excessive rotation beyond the limit position can cause the boom arm to fail to lock and become easily movable.	05E.004
06E.***	<u>No-vehicle Automatic Closing Time</u> Set the time to automatically close the boom arm after successful verification but no vehicle 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 no-vehicle automatic closing time. 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.	06E.000
07E.***	<u>Boom Arm Opening Memory</u> ● 07E.000: Close ● 07E.001: 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. Memory opening is only available for use with gate opening signal port and ground-sensing radar.	07E.000
08E.***	<u>Motor Rotation Direction</u> ● 08E.000: Forward ● 08E.001: Reverse Set the rotation direction of the left and right mechanism boom arm. When restoring the factory settings, this parameter will not be restored to the default value. Modifying this parameter will trigger a restart.	08E.000

09E.***	<u>Reset</u> ● 09E.000: -Normal ● 09E.001: Reset ● 09E.002: Restore Bluetooth initial password: 12345678 Select [09E.001] will restore the default factory setting.	09E.000
10*.***	<u>Remote Control Pairing</u> ● 100.***: Normal ● 101.***: Add (pair by pressing any remote control button) ● 102.***: Clear Currently, it supports a maximum of 500 remote controls. Note: The third digit is adjusted by pressing [+/-] to add or clear remote control. In normal mode, the last three digits shows the number of remotes that have been paired with the current device. When restoring the factory settings, the remote control will not be cleared if remote control type has not changed.	100.000
11E.***	<u>Sensitivity of the Boom Arm Bouncing</u> Sets the bounce sensitivity of the boom arm when it encounters an obstacle. The higher the value, the lower the sensitivity, and 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 50.	11E.050

12E.***	<u>Boom Arm Type</u> ● 12E.001: Foam boom ● 12E.002: Straight boom ● 12E.003: Telescopic boom ● 12E.004: Grille boom ● 12E.005: Folding boom ● 12E.006: Advertising boom ● 12E.007: Test boom/No boom	12E.000
13E.***	<u>Boom Arm Length</u> 1~6m	13E.000
14E.***	<u>Boom Arm Opening Brake Stroke</u> The larger the number, the greater the deceleration stroke. The deceleration stroke is too large, which may cause the boom arm to not open up to the limit. The Boom Arm Opening Brake Stroke can be set between 0 to 100 and the default value is 40.	14E.040
15E.***	<u>Boom Arm Opening Brake Speed</u> The smaller the number, the more pronounced the deceleration effect. If the deceleration speed is too small, it may cause the boom arm to not open up to limit, and the digital display will show: E*0.032. The Boom Arm Opening Brake Speed can be set between 0 to 100 and the default value is 20.	15E.020
16E.***	<u>Boom Arm Closing Brake Stroke</u> The larger the number, the greater the deceleration stroke. The deceleration stroke is too large, which may cause the boom arm to not close down to limit. The Boom Arm Closing Brake Stroke can be set between 0 to 100 and the default value is 40.	16E.040

17E.***	<u>Boom Arm Closing Brake Speed</u> The smaller the number, the more pronounced the deceleration effect. If the deceleration speed is too small, it may cause the boom arm to not close down to limit. If the boom doesn't close to limit, it will automatically bounce back to the open state (similar to rebounding when encountering resistance). If the radar ground-sensing signal is triggered at this time, the barrier gate will continuously open and close. The Boom Arm Closing Brake Speed can be set between 0 to 100 and the default value is 20.	17E.020
18E.***	<u>Power-off Open Mode</u> ● 18E.000: Disable ● 18E.001: Enable A dedicated power storage capacitor module needs to be installed, which triggers the opening of the gate when the power supply is below 21V.	18E.000
19E.***	<u>Open/Close Limit LED State</u> ● 19E.000: Open limit green light breathing, Close limit red light breathing ● 19E.001: Open limit green light always on, Close limit red light always on ● 19E.002: Open limit green light flashes, Close limit red light breathing	19E.000
20E.***	<u>Open/Close LED State</u> ● 20E.000: The red light flashes during the whole process of opening and closing the boom arm. ● 20E.001: The red light is always on during the whole process of opening and closing the boom arm.	20E.000

21E.***	<u>RS485 Address</u> The valid value is 0 to 250. The baud rate is 115200, used for reading status, sending parameters, and upgrading.	21E.000
22E.***	<u>Ground Sense/Radar Delay Time Setting</u> Set the delay time after triggering the radar ground sensor before lowering the boom arm, the larger the number set, the longer the delay time, the valid value is 0 to 251.	22E.000
23E.***	<u>Self-test Mode</u> ● 23E.000: Automatic self-test (After power on, the device automatically performs self-test.) Note: It is necessary to install a radar ground sensor to prevent vehicle damage. During automatic self-checking, if a vehicle passes, the boom will automatically be raised for protection. ● 23E.001: Manual self-test (It requires manual opening and closing of the barrier gate for self check.)	23E.000
24E.***	<u>Buzzer Mode</u> ● 24E.000: Old mainboard ● 24E.001: New mainboard When the buzzer mode setting does not match the mainboard, the device will beep continuously under normal circumstances. When restoring the factory settings, this parameter will not be restored to the default value.	24E.001
25E.***	<u>Motor Type</u> ● 25E.000: Forward ● 25E.001: Reverse When the motor type is incorrect, the buzzer makes an sound alarm, and the digital display will show: E*0.001. Modifying this parameter will trigger a restart.	25E.000

26E.***	<u>Remote Control Frequency</u> ● 26E.000: 433MHz ● 26E.001: 430MHz When the remote control type changes, the remote control will be cleared. When restoring the factory settings, this parameter will not be restored to the default value. Modifying this parameter will trigger a restart.	26E.000
27E.***	<u>Gate Opening and Ground Sensing Interface Switch</u> ● 27E.000: Normal interface status ● 27E.001: Switch gate opening and ground sensing signal interfaces When this is set to "27E.001", the "IR / FIRE / DET / STOP / CLOSE / OPEN" interface is disabled, and the gate opening and ground sensing signal interfaces need to be connected to "IN2" and "IN1". When the old mainboard experiences signal interference and automatically opens or cannot close after opening, change this item to "27E.001".	27E.000
28E.***	<u>Bluetooth/Wi-Fi Mode</u> ● 28E.000: Bluetooth Mode (Enable) ● 28E.001: Bluetooth Mode (Disable) ● 28E.002: Wi-Fi Mode Switching Bluetooth mode and Wi-Fi mode will automatically restart the device. When restoring the factory settings, this parameter will not be restored to the default value.	28E.000

29E.***	<u>Remote Control Button Function Switching</u> • 29E.000: Remote control center button (pause) • 29E.001: Remote control center button (normally open)	29E.000
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8.3 Error Code

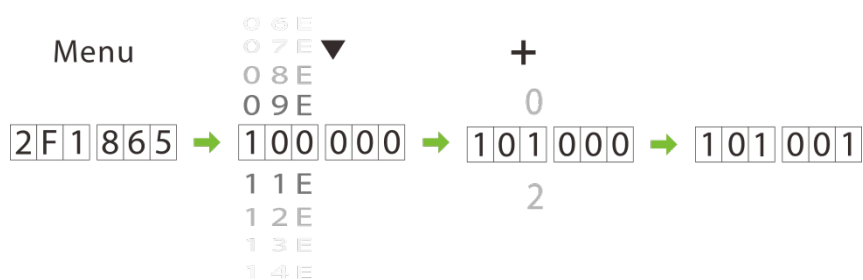
Error Code	Description	Solve
ER0.001	Hall limit detection error	Check the motor wiring or replace the mainboard. This error will also be reported if there is no motor connected when power is applied.
ER0.002	Power-on Self-test failure	1) Check if the boom is in a balanced state at 30 to 60 degrees; 2) Check the 25E parameter. Check whether the motor type is set incorrectly, whether the motor wiring has poor contact, and whether the motor is functioning properly.
ER0.003	Timeout - unable to reach limit position	The operation has timed out and the motor is turning very slowly. First, check whether the open/close limit positions are set appropriately. Then, increase the Boom Arm Opening/Closing Brake Speed. If the issue persists, replace the power supply, or adjust the switching power supply to 24V (the error may be caused by unstable 24V output voltage).
ER0.004	Electric Motor Shaft Lock Protection failure	1) Check if there are any objects blocking the opening and closing of the barrier gate; 2) Check if the boom is in a balanced state at 30 to 60 degrees; 3) Adjust the open/close limit position settings: In the APP, the value should be set above 4. When adjusting via the menu, make sure the limit position does not hit the mechanical stop — leave a sufficient distance away from it; 4) If error ERR04 occurs: Appropriately increase the Boom Arm Opening Brake Speed to 25. Recommended range:

		15–35; 5) If error ERR04 occurs and the boom opens again just as it is about to reach the close limit: Appropriately increase the Boom Arm Closing Brake Speed to 25. Recommended range: 15–35; 6) Check and adjust the 11E parameter.
ER0.005	After closing to the limit, the boom was illegally lifted for a long time by human intervention	Release the boom lifting action and restart to open and close the barrier gate again until the device is in a normal state.
ER0.006	Tamper alarm	Release alarm signal.
ER0.007	NO	Reserved
ER0.008	Boom detachment detection	Release alarm signal.

8.4 Remote Control Pairing and Unpairing

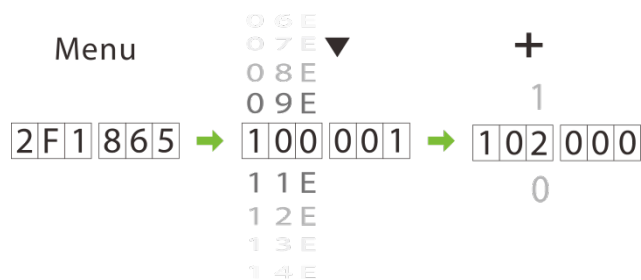
8.4.1 Pairing

Long press **[Menu/save]**, then press **[Stop/▼]** flip down to **[10*.***]**. Press **[+/-]** to set the parameter value to **"101.***"**, 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.



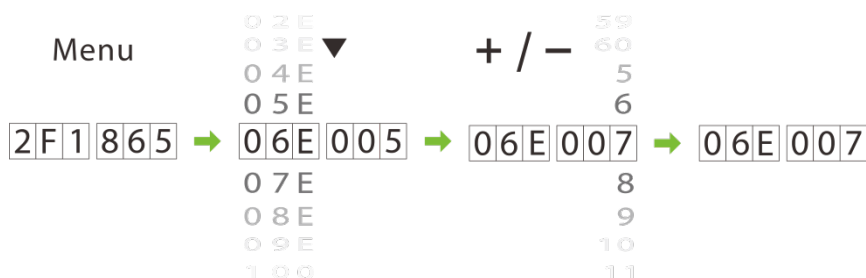
8.4.2 Unpairing

Long press **[Menu/save]**, then press **[Stop/▼]** flip down to **[10*.***]**. Press **[+/-]** to set the parameter value to **"102.***"**. Press **[Menu/save]** to save the setting and that all the remote controls have been deleted.



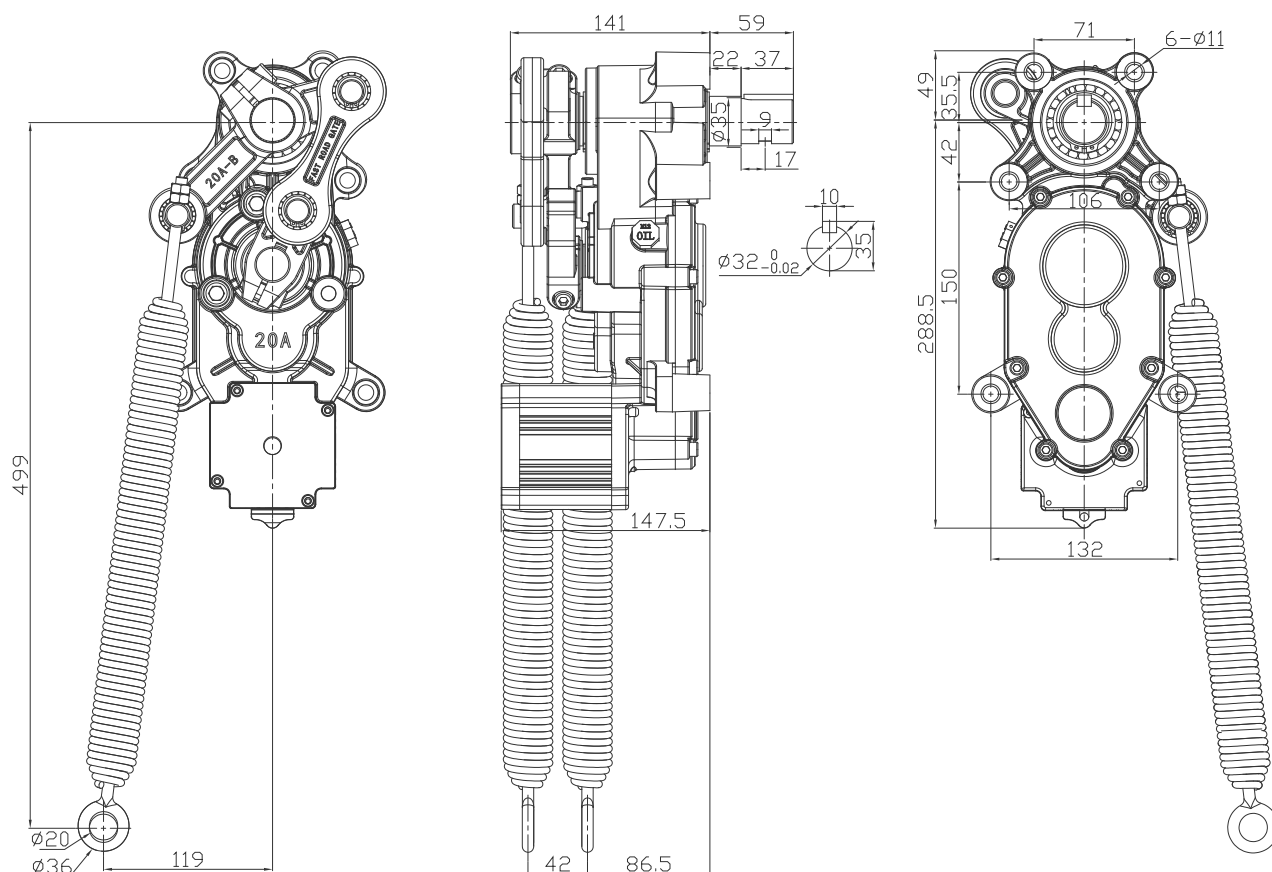
8.5 Set Delay for Automatic Closing after Opening the Boom Arm

Long press the **[Menu/save]** button, then press **[Stop/▼]** flip down to **[06E.***]** parameter, and then press the **[+/-]** to set the delay value as per the requirements. Finally, press **[Menu/save]** to exit the menu. For example, if it is set to **"06E.007"**, the device will automatically close after 7 seconds after opening the barrier gate.



9 Boom Arm Adjustments

9.1 Dimensions

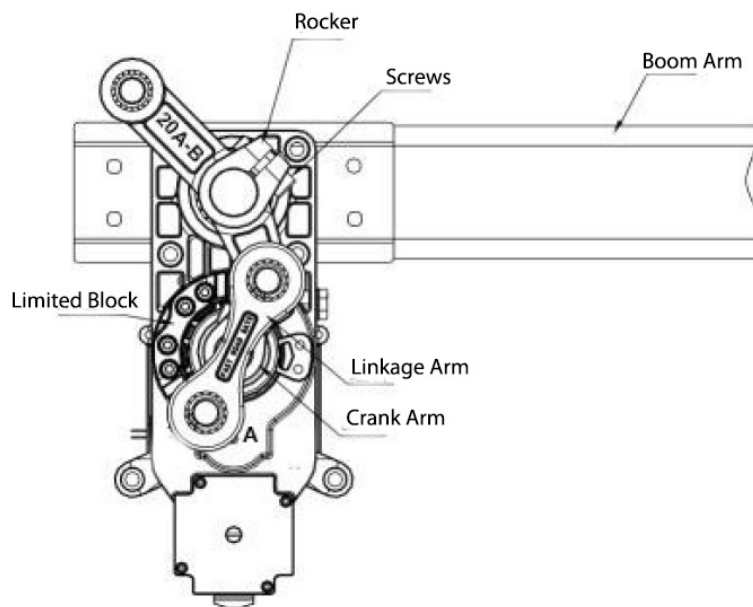


9.2 Horizontal and Vertical Angle Adjustment of Boom Arm (Mechanical Adjustment)

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.

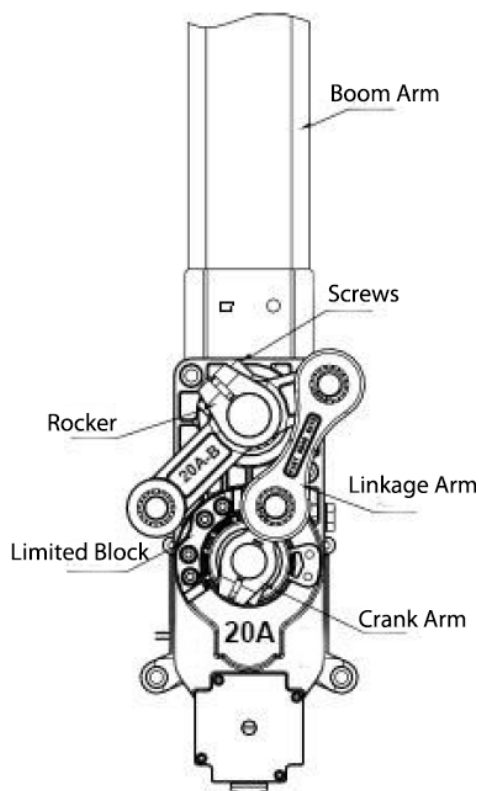
● Adjust the Horizontal Position of the Boom Arm

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 (spindle connecting arm) screws, turn the boom arm to the level, and tighten the screws.



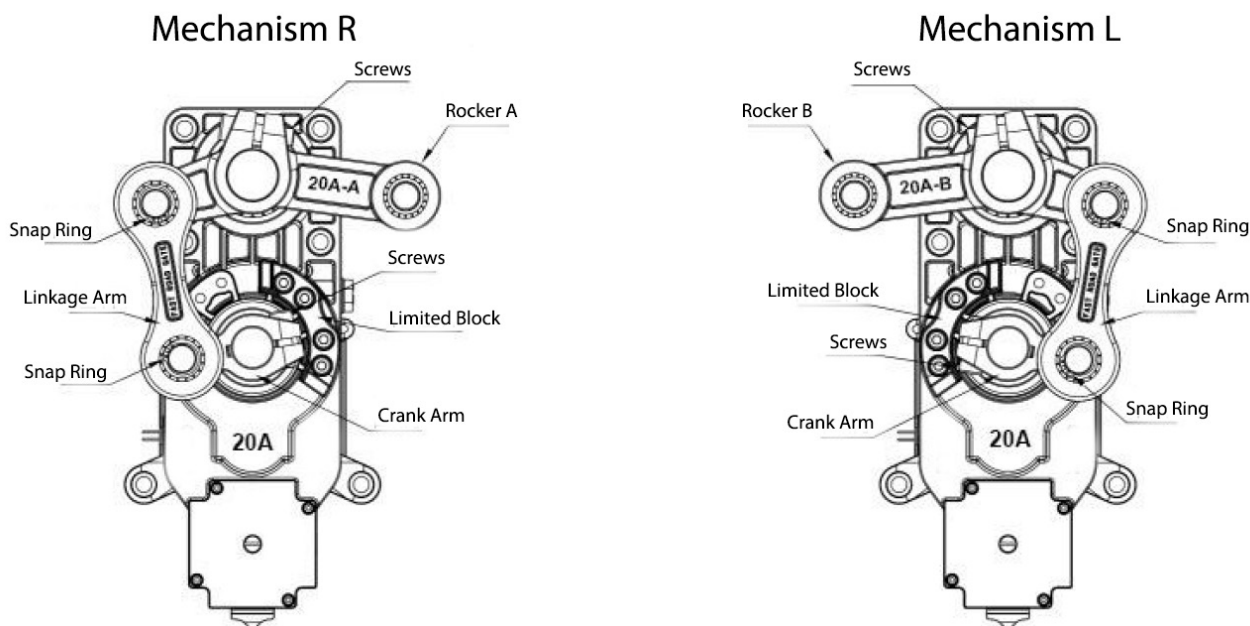
● Adjust the Vertical Position of the Boom Arm (Adjusted by Mechanical Structure)

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 (spindle connecting arm), rotate the boom arm to the vertical, and tighten the screws..



9.3 Direction Interchange of the Boom Arm

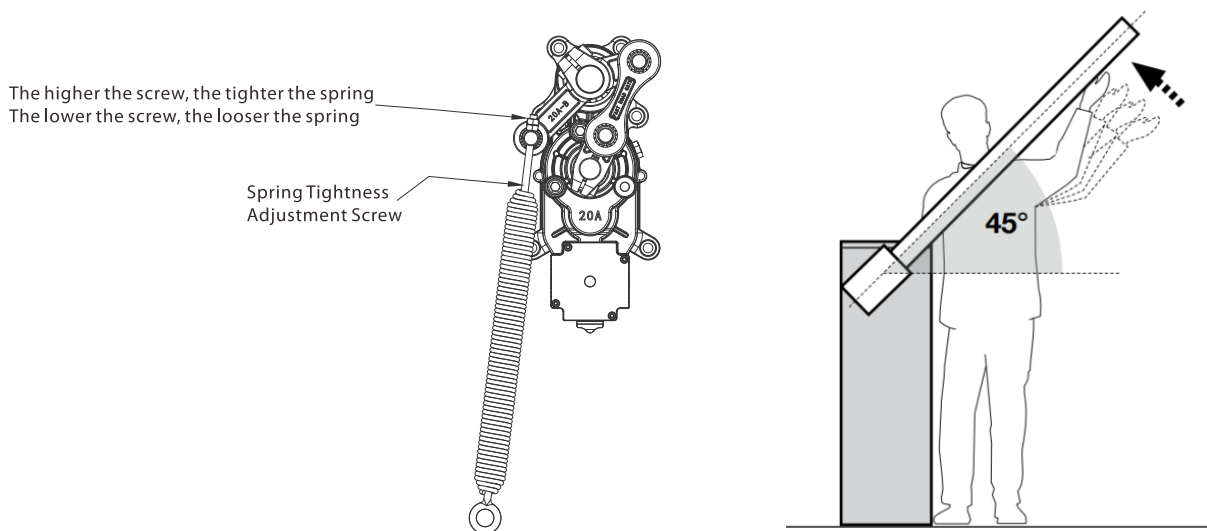
The operation steps are as follows:



1. Before operation, please turn off the power. Remove the spring, spring hanging arm and boom.
2. L to R: replace rocker B; R to L: replace rocker A.
3. Change the Linkage Arm.
4. Turn the Limited Block to the other direction.
5. 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.

Boom length	Spring size and quantity	Spring Color logo
1.5m	No need	/
2m	3.5mm *1	Blue(3.5mm)
3m	3.5mm *1 + 4.0mm*1	Blue(3.5mm); Green(4.0mm)
4m	4.0mm *1 + 4.5mm*1	Green(4.0mm); Yellow(4.5mm)

10 Product Packing List

Material	Quantity
Chassis Explosion Screw	4
Keys	2
Barrier Boom	1
Chassis Pressure Plate	4
Wireless Remote	2
Barrier Boom Hexagon Bolt	1
Machine	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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