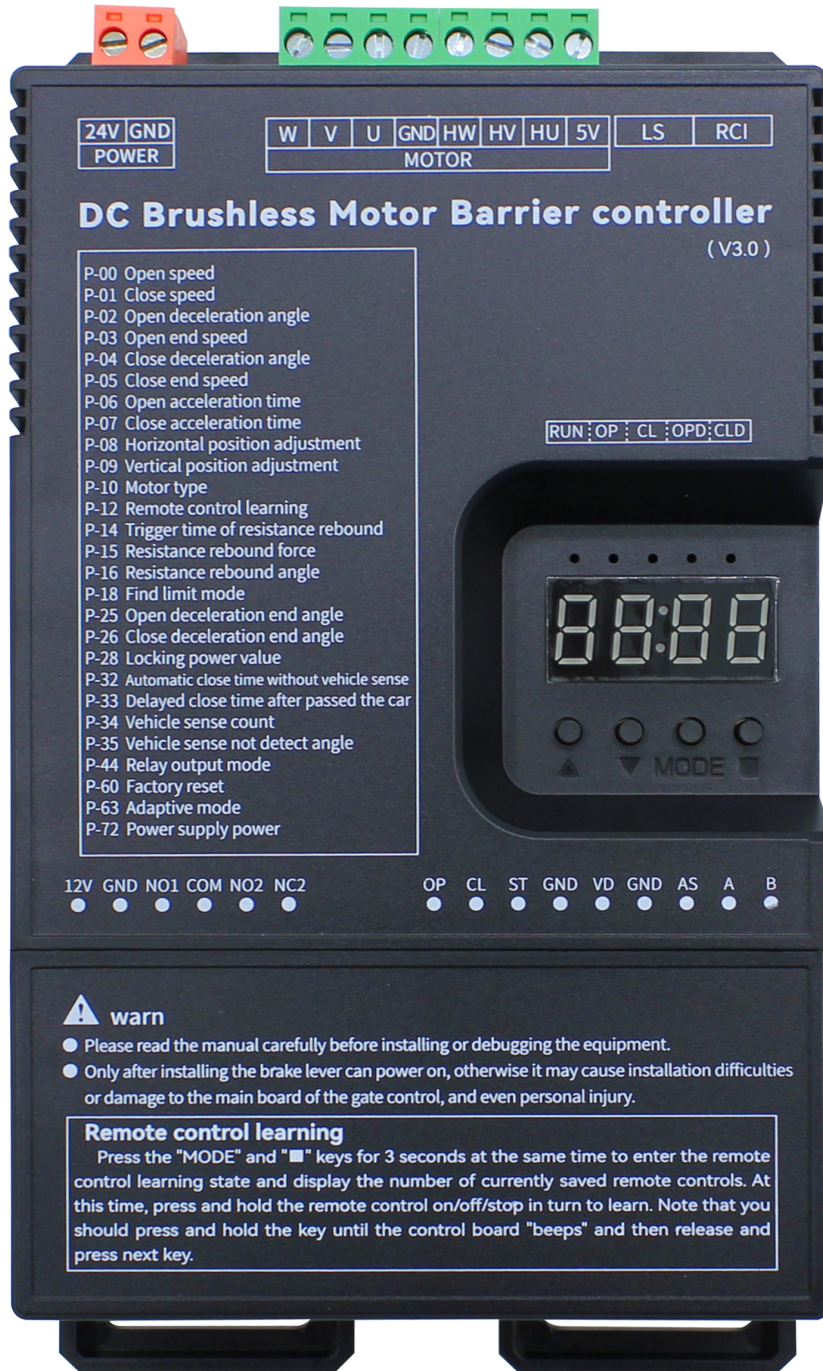


# DC Brushless Barrier Gate Controller

## User Manual D8

Version: 3.81



## Safety Instructions

The following is about the correct usage of the product, to prevent danger and property damage. Please read this manual carefully before using the equipment, and strictly follow it during use. Please keep the manual properly after reading.

## Usage Environment Requirements

- Please transport, use, and store the equipment within the allowable humidity and temperature range.
- Do not allow any liquid to flow into the equipment.
- Please install the equipment in a well-ventilated place, and do not block the ventilation openings of the equipment.
- Do not apply heavy pressure, severe vibration, or immerse the equipment.
- When transporting the equipment, please use the original factory packaging or materials of equivalent quality.
- It is recommended to ground the grounding hole on the equipment to improve equipment reliability.

## Operation and Maintenance Requirements

- Do not disassemble the equipment without authorization.
- Please use accessories or attachments specified by the manufacturer, and have professional service personnel perform installation and maintenance.
- The matching boom must not be extended or cut short, and no additional weight may be added to the boom without authorization.

## Product Features

- Safety: 24V DC power supply to ensure personal safety;
- Energy saving: Static power consumption less than 2 watts, can connect to motors with maximum power of 250W;
- Adjustable speed: Independent adjustment of boom raising and lowering speed;
- Stable operation: Multi-stage speed design for stable working performance;
- Quiet: Working noise below 50dB;
- Multiple protections: Motor overcurrent, overload, short circuit protection, motor fault protection, power reverse connection protection;
- Supports external remote control input;
- Supports various parameter settings;
- Supports light sensor to turn on advertising gate lights;
- Supports windproof, antifreeze, and antirust functions;
- Supports multiple relay output modes;

## Specifications

|                        |                           |
|------------------------|---------------------------|
| Power Supply           | DC 24V +/-10% 10A         |
| Motor Power            | Max 250W                  |
| Static Power           | <2W                       |
| Boom Raise/Lower Speed | 1%-100% adjustable        |
| Operating Temperature  | -40°C ~ 75°C              |
| Operating Humidity     | 30%~80% (no condensation) |

## Function Directory

- P-00 Boom raising speed
- P-01 Boom lowering speed
- P-02 Boom raising deceleration angle
- P-03 Boom raising end speed
- P-04 Boom lowering deceleration angle
- P-05 Boom lowering end speed
- P-06 Boom raising acceleration time
- P-07 Boom lowering acceleration time
- P-08 Horizontal position fine-tuning
- P-09 Vertical position fine-tuning
- P-10 Motor type
- P-11 Remote control learning method
- P-12 Remote control learning
- P-13 Remote control convoy mode
- P-14 Obstacle rebound trigger time
- P-15 Obstacle rebound force
- P-16 Obstacle rebound angle
- P-17 Limit position learning speed
- P-18 Limit position search mode
- P-19 Manual learn upper limit
- P-20 Manual learn lower limit
- P-21 Manual learn upper and lower limits
- P-22 Boom raising rebound buffer time
- P-23 Boom lowering rebound buffer time
- P-24 Stop buffer time
- P-25 Boom raising deceleration end angle
- P-26 Boom lowering deceleration end angle
- P-27 Anti-smash function
- P-28 Lock power
- P-29 Lock time at fully open position
- P-30 Lock time at fully closed position
- P-31 Reverse lock turns
- P-32 Auto lowering time without ground sensor
- P-33 Vehicle passing delayed lowering time
- P-34 Ground sensor count
- P-35 Ground sensor no-detection angle
- P-36 Ground sensor trigger buzzer frequency
- P-37 Ground sensor signal trigger judgment time
- P-38 Ground sensor signal valid judgment time
- P-39 /
- P-40 /
- P-41 Light sensor lamp off threshold
- P-42 Boom raising priority
- P-43 Boom raising signal judgment time
- P-44 Relay output mode
- P-45 Light sensor value
- P-46 Light sensor threshold
- P-47 Delayed open

- P-48 Delayed close
- P-49 Ambient temperature
- P-50 Antifreeze temperature threshold
- P-51 Antifreeze boom raising angle
- P-52 Antifreeze boom raising time interval
- P-53 Antirust open angle
- P-54 Antirust boom raising time interval
- P-55 Set 485 baud rate
- P-56 Set 485 address
- P-57 Controller master/slave mode
- P-58 Auto close count after manual boom raising
- P-59 Auto test
- P-60 Restore default settings
- P-61 /
- P-62 /
- P-63 Adaptive mode
- P-64 Barrier gate boom raising/lowering timeout
- P-65 Power-off auto raise/lower voltage
- P-66 Brake reverse voltage warning threshold
- P-67 LED display drive voltage and current
- P-68 Ground sensor pause during boom lowering
- P-69 Power-off auto run function
- P-70 Custom parameter settings
- P-71 Overcurrent protection value
- P-72 Power output
- P-73 Auto lowering speed without ground sensor
- P-74 /
- P-75 /
- P-76 /
- P-77 /
- P-78 Auto send barrier gate status data
- P-79 /
- P-80 /
- P-81 Adaptive mode limit learning power
- P-82 Bluetooth connection type
- P-83 Boom raising ground sensor no-detection angle
- P-84 Expansion port mode
- P-85 /
- P-86 /
- P-87 /
- P-88 Control interface disable
- P-89 Ground sensor following car auto lowering time
- P-90 Barrier gate limit verification

## 1. Button Description

The controller has 4 buttons. From left to right, they are "Open/+", "Close/-", "Menu", and "Stop/Cancel". Various parameters of the controller can be set through these 4 buttons.

"Open/+": In normal working state, pressing this button raises the boom. After entering the setting state, this button can be used to increase menu items and adjust setting values upward. In the parameter setting state, short press increments by 1 each time. Long press continuously increases to the maximum value, then starts from the minimum value. If long pressed for a longer time, the continuous increment will speed up.

"Close/-": In normal working state, pressing this button lowers the boom. After entering the setting state, this button can be used to decrease menu items and adjust setting values downward. In the parameter setting state, short press decrements by 1 each time. Long press continuously decreases to the minimum value, then starts from the maximum value. If long pressed for a longer time, the continuous decrement will speed up.

"Menu": This key has 3 functions:

1. In normal working mode, long press this key for 3 seconds to enter the menu item selection state. The LED displays "P-XX", then you can press "Open/+" and "Close/-" buttons to select menu items;
2. In the menu item selection state, short press "Menu" to enter the parameter setting state;
3. After parameter setting is complete, short press to save and exit.

"Stop/Cancel": In normal working mode, this button functions as stop. In the menu item selection state, it exits the setting state. In the parameter setting state, pressing this key will exit the current state and return to the menu selection state (i.e., return to the previous menu level), and the set value will be invalid. If there is no button operation for 60 seconds in the menu selection state and parameter setting state, the buzzer will sound a long beep and the controller will return to normal working state.

## 2. Display

The control board has a four-digit LED display that can show barrier gate working status, parameters, menu items, and other information. After power-on, it runs in low-power mode, during which the LED display brightness is dim. Pressing any button will make the LED display enter normal working mode with high brightness. If there is no button press, after 60 seconds it enters low-power mode and the LED brightness dims to reduce power consumption. After 2 minutes without button operation, the LED display will turn off, entering the lowest energy consumption state.

### 3. Parameter Settings

You can enter the parameter setting state by long pressing the "Menu" button for 3 seconds. The LED will display "P-XX". Select menu items by short or long pressing the "Open/+" and "Close/-" buttons. Short press increments or decrements by 1, long press continuously increases or decreases. Press "Menu" again to enter the setting of the specified item. Press "Stop/Cancel" to return to the previous level or exit settings. After setting a specified parameter, you must press the "Menu" key to confirm for it to take effect. Pressing "Stop/Cancel" will not save the set parameters. If there is no button operation for 60 seconds, the buzzer on the control board will sound a long beep, exit the setting state, and return to normal working state.

### 4. DC Brushless Barrier Gate Controller Command List

**Note:** Some preset default values may differ from the default values listed in the table.

| Menu | Function                         | Default | Range  | Function Description                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|----------------------------------|---------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P-00 | Boom raising speed               | 80      | 10-200 | The larger the value, the faster the speed; the smaller the value, the slower the speed. When the value reaches 200 and the required speed is still not achieved, increase P-72. (When P-63 is 0 or 1, values exceeding 100 are treated as 100; when P-63 is set to 2, values exceeding 100 are effective)                                                                                                                                                    |
| P-01 | Boom lowering speed              | 80      | 10-200 | Same as boom raising speed.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| P-02 | Boom raising deceleration angle  | 45      | 10-90  | Used to set the position where deceleration begins during boom raising. Measured in degrees, 0 degrees represents the horizontal position and 90 degrees represents the vertical position. This parameter indicates the angle at which the boom starts to decelerate during raising.                                                                                                                                                                          |
| P-03 | Boom raising end speed           | 10      | 1-80   | The speed at which boom raising ends. Too small a value will result in incomplete opening; too large a value will cause shaking.                                                                                                                                                                                                                                                                                                                              |
| P-04 | Boom lowering deceleration angle | 55      | 0-80   | Used to set the position where deceleration begins during boom lowering. Measured in degrees, 0 degrees represents the horizontal position and 90 degrees represents the vertical position. This parameter indicates the angle at which the boom starts to decelerate during lowering.                                                                                                                                                                        |
| P-05 | Boom lowering end speed          | 5       | 1-80   | The speed at which boom lowering ends. Too small a value will result in incomplete closing; too large a value will cause shaking. If P-26 sets a boom lowering low-speed angle within a valid range, the boom will run at this speed in the low-speed uniform zone.                                                                                                                                                                                           |
| P-06 | Boom raising acceleration time   | 60      | 0-255  | Time required to accelerate from start of boom raising to the speed set by P-00 (larger value means longer time). (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                        |
| P-07 | Boom lowering acceleration time  | 50      | 0-255  | Time required to accelerate from start of boom lowering to the speed set by P-01 (larger value means longer time). (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                       |
| P-08 | Horizontal position fine-tuning  | 15      | 0-255  | Distance from the boom horizontal position to the horizontal mechanical limit. The larger the value, the farther the distance, and vice versa. When the barrier gate completes self-check and is in the set position state, this parameter can be modified in real time by manually turning. This parameter cannot be too small, otherwise the connecting rod will hit the mechanical limit when fully closed, risking damage to the mechanism and mainboard. |
| P-09 | Vertical position fine-tuning    | 15      | 0-255  | Distance from the boom vertical position to the vertical mechanical limit. The larger the value, the farther the distance, and vice versa. When the barrier gate completes self-check and is in the set position state, this parameter can be modified in real time by manually turning. This parameter cannot be too small, otherwise the connecting rod will hit the mechanical limit when fully open, risking damage to the mechanism and mainboard.       |
| P-10 | Motor type                       | 0       | 0-3    | Due to different motor Hall polarity, barrier gate mechanism gear reduction ratios, and left/right boom orientations, this parameter is used to be compatible with various types of motors and barrier gates. 0: Motor positive polarity, gear reducer                                                                                                                                                                                                        |

|      |                                |     |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|--------------------------------|-----|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                |     |       | positive polarity; 1: Motor positive polarity, gear reducer negative polarity; 2: Motor negative polarity, gear reducer positive polarity; 3: Motor negative polarity, gear reducer negative polarity                                                                                                                                                                                                                                                                                                                                                                                                                          |
| P-11 | Remote control learning method | 0   | 0-4   | 0: Learn by sequentially pressing Open/Close/Stop; 1: Learn by pressing any one key; 4: One-key learning of specified type remote control (up to 200 remote controls can be learned in this mode, not compatible with non-original remote controls). Note: When the original setting is not 4, setting this parameter to 4 will automatically clear learned remote controls; when the original setting is 4, setting other values will also automatically clear learned remote controls.                                                                                                                                       |
| P-12 | Remote control learning        | 0   | 0-50  | Remote control learning: Entering P-12 will show the current number of saved remote controls. Press the remote control's Open/Close/Stop in sequence to learn. Keep pressing until the control board beeps once, then release and press the next button. When the control board beeps a long beep or the displayed number increments by 1, learning is complete. You can continue learning the next one or press Cancel to return. Remote control deletion: In this menu, press "+" or "-" to modify the number of learned remote controls, press "Menu" to confirm, and delete the learned remote controls after that number. |
| P-13 | Remote control convoy mode     | 0   | 0-3   | 0: Normal remote control mode; (Temporary convoy mode entry: After the barrier gate is fully open, long press the remote control Open button for more than 5 seconds to temporarily enter convoy mode. The buzzer will sound for 2 seconds. Press Close to exit convoy mode and the barrier gate will close.) 1: Remote control "Open" enters convoy mode. Before manually lowering the boom, ground sensor signals will not be processed, and the boom stays raised; 2: Manual mode. All boom opening actions will enter convoy mode, and ground sensor triggers will not lower the boom. 3: Disable convoy mode.             |
| P-14 | Obstacle rebound trigger time  | 5   | 1-40  | How long an obstacle must be encountered before it is judged as an obstacle. (Unit: 0.05 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| P-15 | Obstacle rebound force         | 65  | 1-100 | How much resistance is considered an obstacle. The rebound condition is: the resistance set by P-15 is encountered and lasts for the time set by P-14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| P-16 | Obstacle rebound angle         | 10  | 0-90  | When the boom angle is below this value, obstacle rebound will not occur. 0 disables this function.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| P-17 | Limit position learning speed  | 40  | 10-80 | Set different speeds for finding upper and lower limit positions. After entering the menu, the first setting is the speed for finding the upper limit. The display shows "1-XX", where XX represents the speed for finding the upper limit. Adjust the speed by pressing "Open/+" and "Close/-". After setting the upper limit speed, press "Menu" and the display shows "2-XX", where XX represents the speed for finding the lower limit. Adjust the speed the same way. After both speeds are set, press "Menu" to save. If "Stop/Cancel" is pressed during the process, the settings will be invalid.                      |
| P-18 | Limit position search mode     | 0   | 0-2   | 0: Search for both limits. 1: Search for upper limit. 2: Search for lower limit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| P-19 | Manual learn upper limit       | N/A | N/A   | After entering this setting, the display shows L-00. The boom automatically raises to the limit and stops, showing L-01. The operation is the same as P-21, searching for vertical and horizontal limits. After learning the horizontal position, it automatically returns to the setting page, indicating success. Then set P-18 to 1 to use.                                                                                                                                                                                                                                                                                 |
| P-20 | Manual learn lower limit       | N/A | N/A   | Same as P-19 but reversed. After entering, the display shows L-00. It automatically finds the lower limit. When reached, it stops and shows L-01. The user manually finds the horizontal and vertical positions. The first confirmation is the horizontal position, showing L-02. The second is the vertical position, then it returns to the setting page. Set P-18 to 2 to use.                                                                                                                                                                                                                                              |
| P-21 | Manual learn upper and         | N/A | N/A   | After entering this setting, the display shows L-00.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|      |                                      |     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------|--------------------------------------|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | lower limits                         |     |        | The barrier gate first automatically lowers the boom. When in position, it shows L-01, then automatically raises until reaching the limit and stops, showing L-02. At this point, pressing raise or lower will raise or lower the boom, and releasing will stop. The mechanical limit will trigger an alarm. The user can adjust the position manually. Press Menu to learn one limit position. The first press of Menu sets the vertical limit, showing L-03. The second press sets the horizontal limit. After the second press, it automatically returns to the setting page, indicating successful learning. After this function is set, P-18 must also be set to 0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| P-22 | Boom raising rebound buffer time     | 80  | 10-255 | Buffer time from boom raising to lowering. Too short a time may cause excessive instantaneous current. (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| P-23 | Boom lowering rebound buffer time    | 50  | 10-255 | Buffer time from boom lowering to raising. Too short a time may cause excessive instantaneous current. (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| P-24 | Stop buffer time                     | 60  | 10-255 | Time required for the motor to stop from running when Stop is pressed during boom raising or lowering. Too large a value will result in very slow and stable stopping. Too short a time may cause excessive instantaneous current. (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| P-25 | Boom raising deceleration end angle  | 90  | 45-90  | During boom raising, the boom first accelerates to P-00, then starts decelerating at P-02. At this option, deceleration stops and uniform motion begins until boom raising is complete.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| P-26 | Boom lowering deceleration end angle | 10  | 0-45   | During boom lowering, the boom first accelerates to P-01, then starts decelerating at P-04. At this option, deceleration stops and uniform motion begins until boom lowering is complete.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| P-27 | Anti-smash function                  | 1   | 0-9    | Whether the anti-smash port signal is valid;<br>0: Invalid, triggering anti-smash signal does not raise the boom.<br>1: Valid, triggering anti-smash signal during boom lowering raises the boom.<br>2: Anti-smash interface multiplexed as "Open" interface function.<br>3: Anti-smash interface multiplexed as "Close" interface function.<br>4: Anti-smash interface multiplexed as ground sensor interface function. (After multiplexing, the original function's interface becomes invalid.)<br>5: Anti-smash terminal connected to radar for pedestrian anti-smash. (Valid during boom lowering, resumes lowering after target disappears, i.e., does not change the original raise/lower state, only for anti-smash of people/vehicles.)<br>6: Anti-smash interface multiplexed as "Open" interface function, while keeping the original "Open" interface valid.<br>7: Anti-smash interface multiplexed as "Fire interface". When triggered, raises the boom and automatically enters convoy mode.<br>8: Anti-smash interface multiplexed as Open, Stop interface multiplexed as ground sensor. (Original Open and ground sensor interfaces become invalid.)<br>9: Anti-smash interface multiplexed as ground sensor interface, original ground sensor interface remains valid. |
| P-28 | Lock power                           | 255 | 0-255  | When the motor stops in a non-mechanical lock zone, since there is no mechanical lock, the spring force will pull the boom up. This function uses controller output control for locking, which may cause the motor and board to heat up. It is recommended to set according to actual conditions and not set too high. When the value is 255, the lock power is auto-adaptive.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| P-29 | Lock time at fully open position     | 0   | 0-255  | How long to maintain locking after the boom reaches the fully open position before releasing the lock. (Unit: seconds) When set to 255, the lock is maintained at fully open position without timing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| P-30 | Lock time at fully closed position   | 0   | 0-255  | How long to maintain locking after the boom reaches the fully closed position before releasing the lock. (Unit: seconds) When set to 255, the lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|      |                                            |    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|--------------------------------------------|----|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                            |    |       | is maintained at fully closed position without timing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| P-31 | Reverse lock turns                         | 0  | 0-20  | If the motor reverses for various reasons during boom raising, how many turns before locking.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| P-32 | Auto lowering time without ground sensor   | 0  | 0-255 | Time for the boom to automatically lower without ground sensor trigger. Set to 0 means no auto lowering without ground sensor. (Unit: seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| P-33 | Vehicle passing delayed lowering time      | 2  | 0-255 | How long after the ground sensor signal disappears before lowering begins. Default 0.2 seconds. (Unit: 0.1 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| P-34 | Ground sensor count                        | 1  | 0-4   | 0: No boom raising count, vehicle passing lowers boom.<br>1: Counts boom raising signals, max count is 1. When ground sensor is triggered, the count is decremented. When ground sensor disappears and count is 0, lower the boom.<br>2: Counts boom raising signals, max count is 2. When ground sensor is triggered, the count is decremented. When ground sensor disappears and count is 0, lower the boom.<br>3: Counts boom raising signals, max count is 3. When ground sensor is triggered, the count is decremented. When ground sensor disappears and count is 0, lower the boom.<br>4: Counts boom raising signals, max count is 255. When ground sensor is triggered, the count is decremented. When ground sensor disappears and count is 0, lower the boom. |
| P-35 | Ground sensor no-detection angle           | 10 | 0-45  | When the boom angle is below this value, ground sensor signals will not be processed and the boom lowers directly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-36 | Ground sensor trigger buzzer frequency     | 4  | 0-20  | Buzzer frequency when ground sensor is triggered. 0 disables the buzzer. The larger the number, the faster the buzzer speed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| P-37 | Ground sensor signal trigger judgment time | 4  | 1-255 | How long the signal must be maintained to be considered a ground sensor trigger. (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-38 | Ground sensor signal valid judgment time   | 4  | 1-255 | When the ground sensor is triggered, how long the signal must be continuously maintained to be considered a valid ground sensor signal (i.e., a vehicle is present). (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| P-39 | /                                          | /  | /     | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| P-40 | /                                          | /  | /     | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| P-41 | Light sensor lamp off threshold            | 0  | 0-50  | 0: This parameter is invalid. The light sensor lamp is fully controlled by P-46.<br>Other: Light sensor lamp off threshold. When the ambient light intensity falls below this value, the light sensor lamp starts delayed turn-off.<br>(P-41 works with P-46. P-46 sets the turn-on threshold, P-41 sets the turn-off threshold. By setting P-41 to a value smaller than P-46, you can solve the problem where the light box illumination affects the light sensor receiver, causing unstable light box control.)                                                                                                                                                                                                                                                        |
| P-42 | Boom raising priority                      | 1  | 0-2   | 0: In all states, all control signals have the same priority.<br>1: Boom raising has the highest priority. During boom raising, other signals are invalid.<br>2: During boom raising, if the vehicle has already passed the ground sensor, boom lowering starts immediately without waiting for the barrier gate to fully open.<br>50-80: During boom raising, if the vehicle has already passed the ground sensor before the gate is fully open, the barrier gate starts lowering at the angle set by this value.                                                                                                                                                                                                                                                       |
| P-43 | Boom raising signal judgment time          | 5  | 1-255 | How long the boom raising signal must be maintained to be considered a valid boom raising signal. (Unit: 0.01 seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| P-44 | Relay output mode                          | 3  | 0-19  | Default: 3. The controller has two relays. The relay output can be set through output modes to meet different application requirements.<br>0: Traffic light mode<br>1: Advertising light mode<br>2: Ground sensor mode<br>3: Traffic light mode 1<br>4: Traffic light mode 2<br>5: Pulse mode<br>6: Traffic light mode 3                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

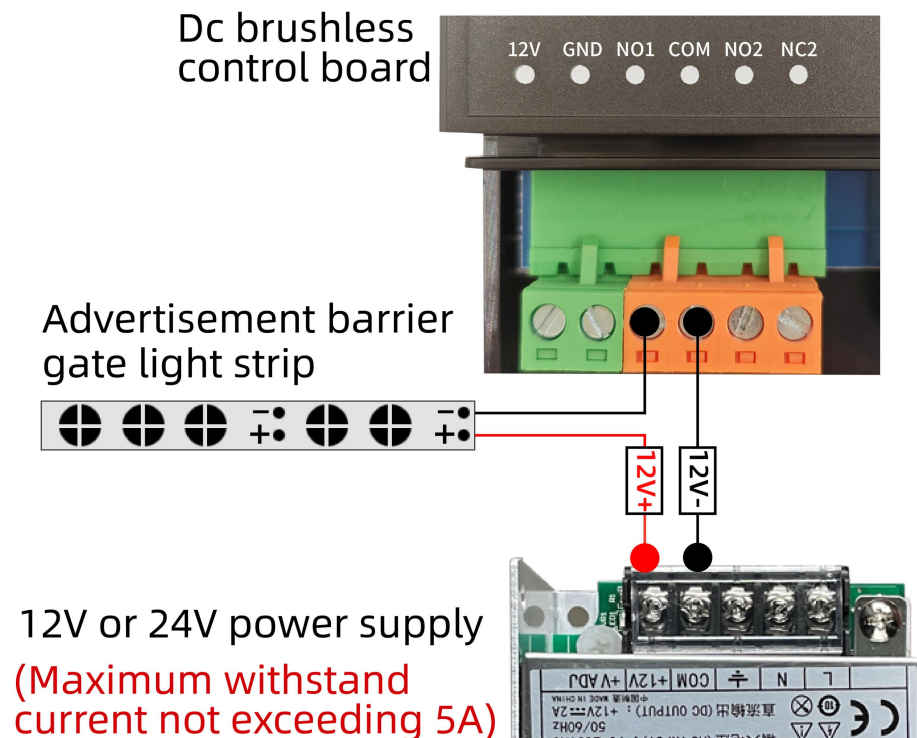
|  |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--|--|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |  | 7: Traffic light mode 4<br>8: Barrier gate working status mode<br>9: Traffic light mode 5<br>10: /<br>11: /<br>12: Barrier gate working status 2<br>13: Ground sensor, Open signal passthrough<br>14: Open signal passthrough + Traffic light<br>15: Open-in-position pulse + Traffic light<br>16: Barrier gate working status 3<br>17: Barrier gate position pulse output<br>18: Large vehicle gate opening ground sensor signal sync + Traffic light<br>19: Advertising light + Large vehicle gate opening ground sensor signal sync<br><b>See the "Relay Mode Output and Relay Switch Closure Self-Check Relationship Table" below for details.</b> |
|--|--|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Relay Mode Output and Relay Switch Closure Self-Check Relationship Table

| Mode/Port                                   | Relay 1                                                                                                                                                                                | Relay 2                                                                                                                                                                                                                                                  |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0: Traffic light mode                       | Opens at fully open, closes at fully closed                                                                                                                                            | Closes at fully open, opens at fully closed                                                                                                                                                                                                              |
| 1: Advertising light mode                   | Used for advertising barrier gates. Opens/closes advertising gate lights based on external light sensor                                                                                | Closes after boom reaches fully closed position and manually raised beyond 5 degrees Can be used to connect an alarm                                                                                                                                     |
| 2: Ground sensor mode                       | Closes when boom raising starts Opens at fully closed position                                                                                                                         | Not used                                                                                                                                                                                                                                                 |
| 3: Traffic light mode 1                     | Same as the advertising light mode, used for advertising barrier gates. The light of the advertising barrier gate is turned on/off according to the externally connected light sensor. | Normally closed contact connects to the red light, normally open contact connects to the green light. When the barrier gate is fully opened, the relay closes and the green light turns on; otherwise, the relay disconnects and the red light turns on. |
| 4: Traffic light mode 2                     | Connected to the red light: the relay closes when the barrier gate starts closing, and disconnects after the barrier gate is fully opened.                                             | Connected to the green light: the relay closes after the barrier gate is fully opened, and disconnects when the barrier gate starts closing.                                                                                                             |
| 5: Pulse mode                               | When the barrier gate is fully closed, the relay closes for 1 second and then disconnects.                                                                                             | The relay closes after the barrier gate is fully closed, and the relay disconnects after the barrier gate is fully opened.                                                                                                                               |
| 6: Traffic light mode 3                     | Same as advertising light mode. Used for advertising barrier gates. Opens/closes advertising gate lights based on external light sensor.                                               | Normally closed connects red light, normally open connects green light. Relay closes and green light turns on when barrier gate angle is greater than 60 degrees. Otherwise relay opens and red light turns on.                                          |
| 7: Traffic light mode 4                     | Opens during boom raising. Closes during boom lowering.                                                                                                                                | Closes during boom raising. Opens during boom lowering.                                                                                                                                                                                                  |
| 8: Barrier gate working status mode         | The relay closes when the barrier gate is fully closed, and disconnects while the barrier gate is running or in a paused state at an intermediate position.                            | The relay closes when the barrier gate is fully opened, and disconnects while the barrier gate is running or in a paused state at an intermediate position.                                                                                              |
| 9: Traffic light mode 5                     | Turn on/off the light of the advertising barrier gate according to the externally connected light sensor.                                                                              | The relay closes when the barrier gate is fully closed, and disconnects in all other states.                                                                                                                                                             |
| 10: /                                       | /                                                                                                                                                                                      | /                                                                                                                                                                                                                                                        |
| 11: /                                       | /                                                                                                                                                                                      | /                                                                                                                                                                                                                                                        |
| 12: Barrier gate working status 2           | The relay closes while the boom is rising and while the boom is falling, and disconnects in all other states.                                                                          | The relay closes when the barrier gate is fully opened, and disconnects in all other states.                                                                                                                                                             |
| 13: Ground sensor, Open signal passthrough  | Consistent with the "loop detector" signal input status.                                                                                                                               | Consistent with the "open" signal input status.                                                                                                                                                                                                          |
| 14: Open signal passthrough + Traffic light | Consistent with the "open" signal input status.                                                                                                                                        | Normally closed contact connects to the red light, normally open contact connects to the green light. The relay closes when the barrier gate is fully opened and the green light turns on; in all other states, the red light turns on.                  |

|                                                                              |                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15: Open-in-position pulse + Traffic light                                   | When the barrier gate is fully opened, the relay closes for 1 second and then disconnects.                                                                                                           | Normally closed contact connects to the red light, normally open contact connects to the green light. The relay closes when the barrier gate is fully opened and the green light turns on; in all other states, the red light turns on.                            |
| 16: Barrier gate working status 3                                            | The relay closes while the boom is falling, and disconnects in all other states.                                                                                                                     | The relay closes while the boom is rising, and disconnects in all other states.                                                                                                                                                                                    |
| 17: Barrier gate position pulse output                                       | When the barrier gate is fully opened, the relay closes for 1 second and then disconnects.                                                                                                           | When the barrier gate is fully closed, the relay closes for 1 second and then disconnects.                                                                                                                                                                         |
| 18: Large vehicle gate opening ground sensor signal sync + Traffic light     | When a large vehicle triggers the gate opening, the loop detector output is synchronized (an open port trigger duration exceeding 1.5 seconds is identified as a large vehicle gate-opening signal). | Normally closed contact connects to the red light, normally open contact connects to the green light. The relay closes when the barrier gate is fully opened and the green light turns on; in all other states, the red light turns on.                            |
| 19: Advertising light + Large vehicle gate opening ground sensor signal sync | Same as the advertising light mode.                                                                                                                                                                  | When a large vehicle triggers the gate opening, the normally open contact synchronizes the loop detector output (an open port trigger duration exceeding 1.5 seconds is identified as a large vehicle gate-opening signal; a setting of 2 seconds is recommended). |

## P-44 Advertising Light Wiring Diagram



## P-44 Red/Green Light Wiring Diagram

### DC brushless motherboard



#### Kind Reminder:

The voltage of the traffic light strip cannot exceed 500mA

#### Traffic light wiring diagram:

Red light connected to normally closed contact 2 (NC2)

Green light connected to normally open contact 2 (NO2)

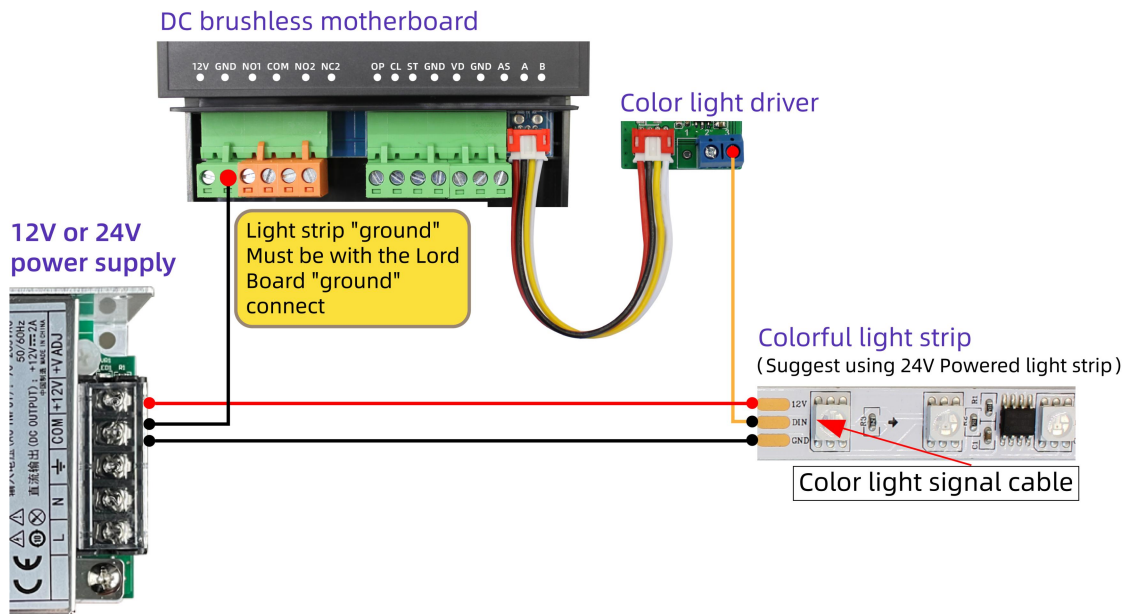
Connect the 12V light board to the 12V motherboard

|      |                                       |     |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------|---------------------------------------|-----|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P-45 | Light sensor value                    | N/A | N/A   | Current ambient light intensity. The smaller the value, the brighter the environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| P-46 | Light sensor threshold                | 30  | 0-200 | When the current ambient light intensity exceeds this value and P-44 related settings are configured, a relay signal will be output.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-47 | Delayed open                          | 10  | 0-255 | How long to delay outputting relay signal when current light exceeds P-46. (Unit: seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| P-48 | Delayed close                         | 250 | 0-255 | How long to delay turning off relay output when current ambient light is below P-46. (Unit: seconds)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-49 | Ambient temperature                   | N/A | N/A   | This option displays the current ambient temperature on the LED display.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| P-50 | Antifreeze temperature threshold      | 0   | -40-0 | At low temperatures, to prevent the machine from freezing, when this function is enabled and the temperature falls below the set value, if the barrier gate has not moved within the P-52 time interval, it will automatically run to the P-51 angle and then close.                                                                                                                                                                                                                                                                                                                                                                                       |
| P-51 | Antifreeze boom raising angle         | 0   | 0-45  | Range: 0-45, default: 0. Antifreeze activation angle. When the ambient temperature drops to the P-50 setting, after the P-52 time interval expires, the barrier gate will open to the angle set by this parameter, then automatically close. If this parameter is 0, the antifreeze function is disabled. Only when both P-51 and P-52 are non-zero is the antifreeze function enabled. When the ambient temperature falls below the set value, timing begins. If the barrier gate does not move during the timing period, when the time interval set by this command is reached, the barrier gate opens to the P-51 set angle, then automatically closes. |
| P-52 | Antifreeze boom raising time interval | 0   | 0-255 | When the ambient temperature drops below the set value, timing begins. If the barrier gate has no movement during the timing period, after the time interval set by this command, the barrier gate opens to the angle set by P-51, then automatically closes. If this parameter is set to 0, the antifreeze function is disabled. (Unit: minutes)                                                                                                                                                                                                                                                                                                          |
| P-53 | Antirust open angle                   | 0   | 0-45  | Antirust boom raising angle. If this parameter is not 0, after the time interval specified by P-54, the controller will open to the angle specified by this parameter, then automatically close. During normal operation, boom raising and lowering will reset the time interval and restart timing. If this parameter is 0, the antirust function is disabled.                                                                                                                                                                                                                                                                                            |

|      |                                            |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|--------------------------------------------|----|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P-54 | Antirust boom raising time interval        | 0  | 0-255  | If the barrier gate is installed at a site and not used for a long time, it may rust. You can enable this parameter to make the barrier gate open once after a certain time interval. The opening angle is set by P-53. If this parameter is 0, the antirust function is disabled. Both P-53 and P-54 must be non-zero to enable the antirust function. (Unit: hours)                                                                   |
| P-55 | Set 485 baud rate                          | 4  | 0-4    | Set the control board baud rate. 0: 9600; 1: 19200; 2: 38400; 3: 57600; 4: 115200                                                                                                                                                                                                                                                                                                                                                       |
| P-56 | Set 485 address                            | 0  | 0-255  | The address of this control board on the 485 bus.                                                                                                                                                                                                                                                                                                                                                                                       |
| P-57 | Controller master/slave mode               | 0  | 0-1    | Set the control board master/slave mode. 0: Slave mode. 1: Master mode.                                                                                                                                                                                                                                                                                                                                                                 |
| P-58 | Auto close count after manual boom raising | 0  | 0-255  | When the boom is at fully closed position and manually raised beyond 10 degrees, the machine will automatically lower the boom. This parameter sets how many times to lower. When the manual boom raising and lowering count exceeds this value, it will not trigger lowering again. Each normal raise/lower cycle resets the auto lowering count to zero. If set to 255, counting is not performed and this function is always active. |
| P-59 | Auto test                                  | 0  | 0-255  | Auto test time interval. 0 means auto test is disabled. Used for auto testing and aging tests. Set this parameter to 0 after testing to cancel auto test. Short press "Open" to start open/close position auto test. Long press "Open" to start simulated boom lowering to middle position then raising auto test.                                                                                                                      |
| P-60 | Restore default settings                   | 0  | 0-255  | This option has three functions: clear remote controls, partial factory reset, full factory reset. To prevent misoperation, a specific value must be set before pressing "Menu" to complete the operation.<br>5: Clear remote controls<br>10: Factory reset (remote controls and motor type are not restored)<br>15: Full factory reset                                                                                                 |
| P-61 | /                                          | /  | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-62 | /                                          | /  | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-63 | Adaptive mode                              | 2  | 0-3    | 0: Normal mode;<br>1: Use adaptive mode for limit initialization;<br>2: Use adaptive mode for both limit initialization and boom raising/lowering;<br>3: Fast gate mode.                                                                                                                                                                                                                                                                |
| P-64 | Barrier gate boom raising/lowering timeout | 30 | 6-40   | Set the barrier gate boom raising/lowering timeout. If the barrier gate boom raising/lowering exceeds the set time without reaching position, the barrier gate will automatically pause and report a boom raising timeout warning (Err5) or boom lowering timeout warning (Err6). (Unit: seconds)                                                                                                                                       |
| P-65 | Power-off auto raise/lower voltage         | 0  | 0-21   | 0: Disabled; 1-21: Trigger auto raise/lower voltage. This function requires a backup power supply and must be configured with P-69. Recommended setting: 20.                                                                                                                                                                                                                                                                            |
| P-66 | Brake reverse voltage warning threshold    | 55 | 30-100 | For situations where the barrier gate spring is poorly matched, warns when the motor deceleration produces excessive reverse voltage. The warning sound is 5 fast buzzer beeps, and the display shows ERR2. This warning does not interrupt barrier gate operation. It can be mitigated by reducing the barrier gate running speed or matching the spring and boom balance. (Unit: V). Setting to 0 disables this warning.              |
| P-67 | LED display drive voltage and current      | 1  | 0-1    | 0: Do not display voltage and current data.<br>1: During boom raising and lowering, the LED displays drive voltage (Unit: V) or drive current (Unit: A). In working mode, short press "Menu" to toggle between current and voltage display.                                                                                                                                                                                             |
| P-68 | Ground sensor pause during boom lowering   | 0  | 0-1    | 0: When ground sensor is triggered during boom lowering, the barrier gate automatically raises the boom;<br>1: When ground sensor is triggered during boom lowering, the barrier gate stops at the current position (can partially serve as an anti-toll-evasion function).                                                                                                                                                             |
| P-69 | Power-off auto run function                | 1  | 0-4    | Set the power-off auto run option. When P-65 is not 0 and the supply voltage is detected to be below the P-65 set value, the barrier gate's handling method:                                                                                                                                                                                                                                                                            |

|      |                                               |     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|-----------------------------------------------|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                               |     |        | 0: No action;<br>1: Auto raise boom;<br>2: Auto lower boom;<br>3: No action when at open/close position; auto raise boom when in middle position;<br>4: No action when at open/close position; auto lower boom at low speed when in middle position.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| P-70 | Custom parameter settings                     | /   | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-71 | Overcurrent protection value                  | 140 | 20-160 | Overcurrent protection value. When the barrier gate running current exceeds this value, the barrier gate automatically stops. If overcurrent protection occurs during boom lowering, the barrier gate treats it as obstacle rebound. (Unit: 0.1A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-72 | Power output                                  | 90  | 20-100 | Maximum output power percentage during barrier gate operation. (Non-professionals should operate with caution)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-73 | Auto lowering speed without ground sensor     | 40  | 0-80   | Auto lowering speed without ground sensor. When set to 0, it is invalid. Auto lowering without ground sensor uses P-01 (boom lowering speed) as the lowering speed. When set to a non-zero value, this parameter replaces P-01 (boom lowering speed) as the lowering speed. This function addresses the issue where auto lowering without ground sensor may be too fast and hit pedestrians. A relatively small auto lowering speed parameter can be set to prevent auto lowering from hitting pedestrians.                                                                                                                                                                                                                                                                                                          |
| P-74 | /                                             | /   | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-75 | /                                             | /   | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-76 | /                                             | /   | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-77 | /                                             | /   | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-78 | Auto send barrier gate status data            | 0   | 0-1    | When set to 1, the barrier gate automatically sends status commands when triggering raise/lower actions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| P-79 | /                                             | /   | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-80 | /                                             | /   | /      | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| P-81 | Adaptive mode limit learning power            | 50  | 10-80  | In adaptive mode, the maximum power for learning limit positions. For some power supplies with lower power, if overcurrent protection occurs during limit learning, this parameter can be reduced. For poorly matched spring counterweights where the motor torque is insufficient during limit learning boom raising/lowering, increase this parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| P-82 | Bluetooth connection type                     | 1   | 0-3    | Bluetooth verification permission: When the mini program first connects to the mainboard via Bluetooth, in normal working state, long press "Pause" for 3 seconds. The buzzer will sound a long beep and display -LY-, opening Bluetooth verification permission for 30 minutes. Then perform the Bluetooth connection operation. Once the mini program has the mainboard connection data, subsequent connections to this mainboard can be verified directly.<br>0: Allow verified phones to connect directly;<br>1: Do not allow verified phones to connect directly. Each connection requires long pressing "Pause" to open Bluetooth verification permission;<br>2: Automatically start 30-minute Bluetooth connection verification permission on each power-on;<br>3: Disable Bluetooth mini program connection. |
| P-83 | Boom raising ground sensor no-detection angle | 20  | 0-80   | During boom raising, when the boom angle is below the set value, ground sensor triggers are invalid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| P-84 | Expansion port mode                           | 0   | 0-5    | 0: 485 mode<br>1-3: TX pin multiplexed as colored light strip flash mode 1. The larger the value, the higher the light strip brightness.<br>4: Colored light strip flash mode 2<br>5: Colored light strip flash mode 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Wiring diagram of external module for colored lights



|      |                                                |   |       |                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|------------------------------------------------|---|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P-85 | /                                              | / | /     | /                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-86 | /                                              | / | /     | /                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-87 | /                                              | / | /     | /                                                                                                                                                                                                                                                                                                                                                                                                       |
| P-88 | Control interface disable                      | 0 | 0-3   | 0: All enabled; 0x01: Disable Open/Close/Stop port; 0x02: Disable remote control interface; 0x03: Disable both Open/Close/Stop and remote control.                                                                                                                                                                                                                                                      |
| P-89 | Ground sensor following car auto lowering time | 0 | 0-255 | Used to solve the problem where the front car has not left the ground sensor when the rear car gives an open signal and follows too closely, causing the front car to leave the ground sensor but the signal does not disappear and the boom does not lower. The set value is the lowering time for this situation, in units of 10 seconds. Setting to 0 disables this function. (30 means 300 seconds) |
| P-90 | Barrier gate limit verification                | 0 | 0-1   | 0: Off; 1: On. Enabling this function can optimize the issue where some barrier gate parameters are poorly matched, and during self-check, limit positions are easily misjudged, causing incorrect self-check angles and the switch not being in position.                                                                                                                                              |

## 5. Error Codes

When the controller detects an abnormality, it will indicate the error type through error codes. Details are as follows:

| Error Code | Error Cause                                                                                                                                                                                                                                                                               |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Err0       | When clearing remote controls and restoring factory settings, the correct confirmation value must be set. An incorrect confirmation value will prompt the Err0 error.                                                                                                                     |
| Err1       | Reserved.                                                                                                                                                                                                                                                                                 |
| Err2       | Brake reverse voltage too high warning. Generally caused by poor spring matching and excessive speed. Can be resolved by matching the spring and boom balance and reducing running speed. You can also increase the P-66 setting value to raise the trigger threshold.                    |
| Err3       | Boom raising stall. Possible causes: barrier gate spring is broken, boom raising speed is too low, boom raising end speed is too low. Increase the boom raising speed and boom raising end speed.                                                                                         |
| Err4       | Boom lowering stall. Possible causes: barrier gate spring is too tight, boom is not attached, boom lowering speed or boom lowering end speed is too low. Check if the spring is too tight, whether the boom is attached, and increase the boom lowering speed or boom lowering end speed. |
| Err5       | Boom raising timeout. Cause: boom raising time exceeds 15 seconds. Increase the boom raising speed and boom raising end speed.                                                                                                                                                            |
| Err6       | Boom lowering timeout. Cause: boom lowering time exceeds 15 seconds. Increase the boom lowering speed and boom lowering end speed.                                                                                                                                                        |
| Err7       | Motor type selection error. Change to the correct type through P-10.                                                                                                                                                                                                                      |
| Err8       | Reserved.                                                                                                                                                                                                                                                                                 |
| Err9       | During boom raising, motor reversal occurs due to broken spring or similar conditions.                                                                                                                                                                                                    |

## 6. LED Display Information Meaning

| Content | Meaning                                                                                                                                                                                                                                                                                                |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IDLE    | Motor not connected, or motor Hall fault. Possible cause: loose wiring. Through button entry into menu settings, find P-59, then enter the value setting interface. The 3 LED status indicators on the right will become 3 Hall sensor level indicators to assist in diagnosing Hall detection issues. |

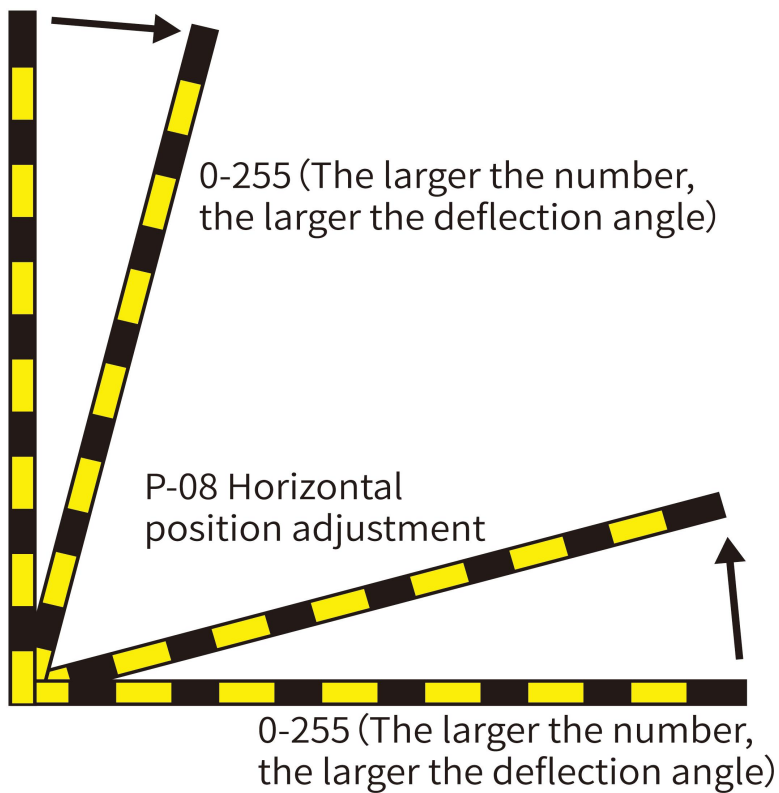


|      |                           |
|------|---------------------------|
| STOP | Barrier gate fully closed |
| CLOS | Barrier gate is closing   |
| OPEN | Barrier gate is opening   |
| HOLD | Barrier gate fully open   |
| LOCK | Barrier gate locked       |
| FLET | Convoy mode               |

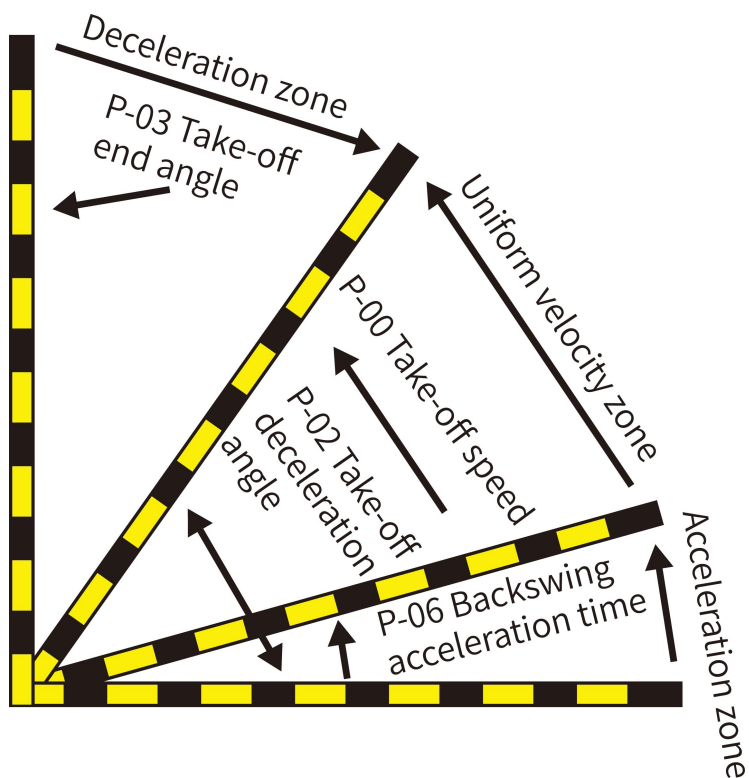
## 7. Function Diagrams

1. Horizontal position and vertical position adjustment diagram via P-08/P-09

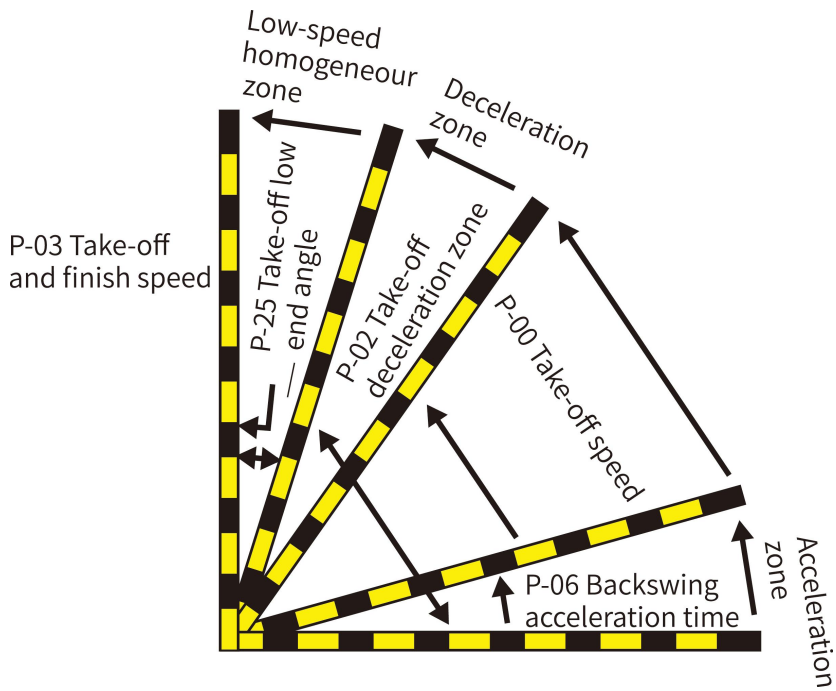
P-09 Vertical position adjustment



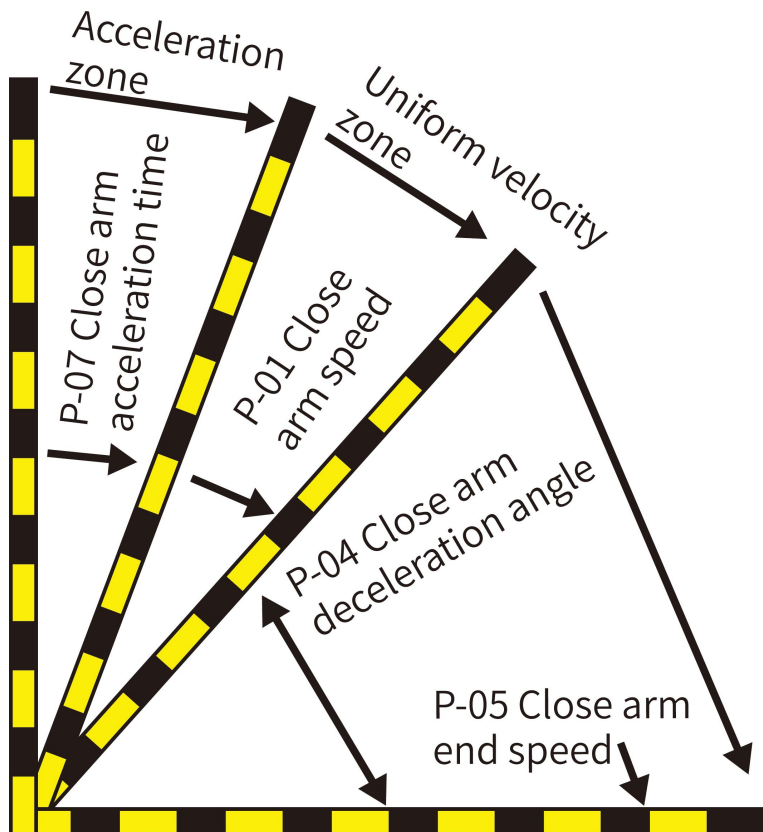
2. Boom raising diagram without low-speed running zone ( $P-25 \geq 90$ )



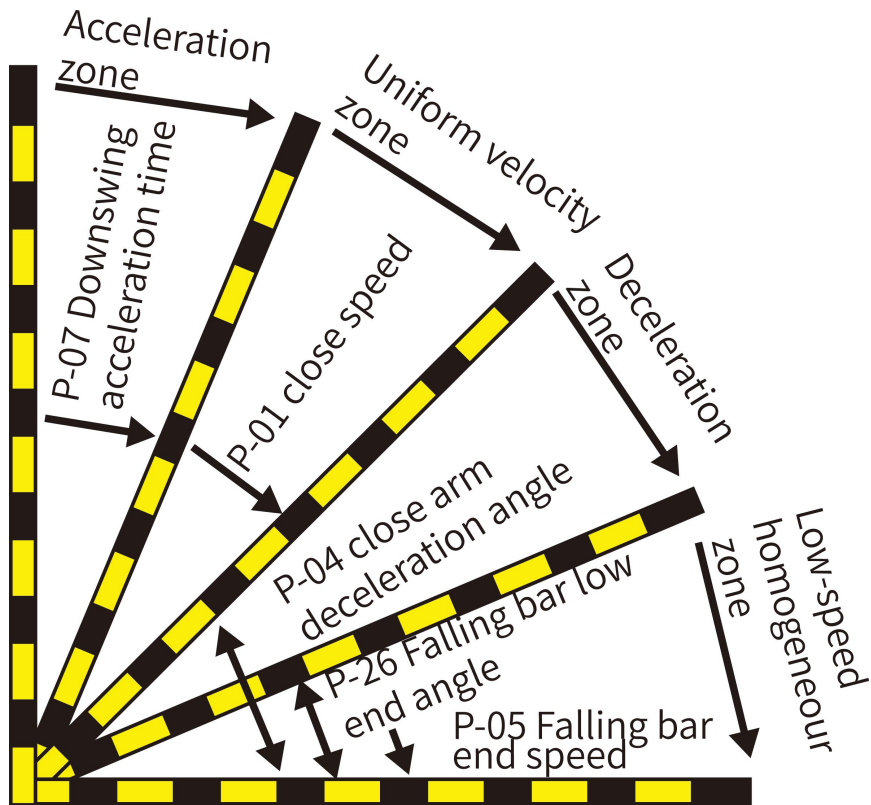
3. Boom raising diagram with low-speed running zone ( $P-25 < 90$  and  $P-25 > P-02$ )



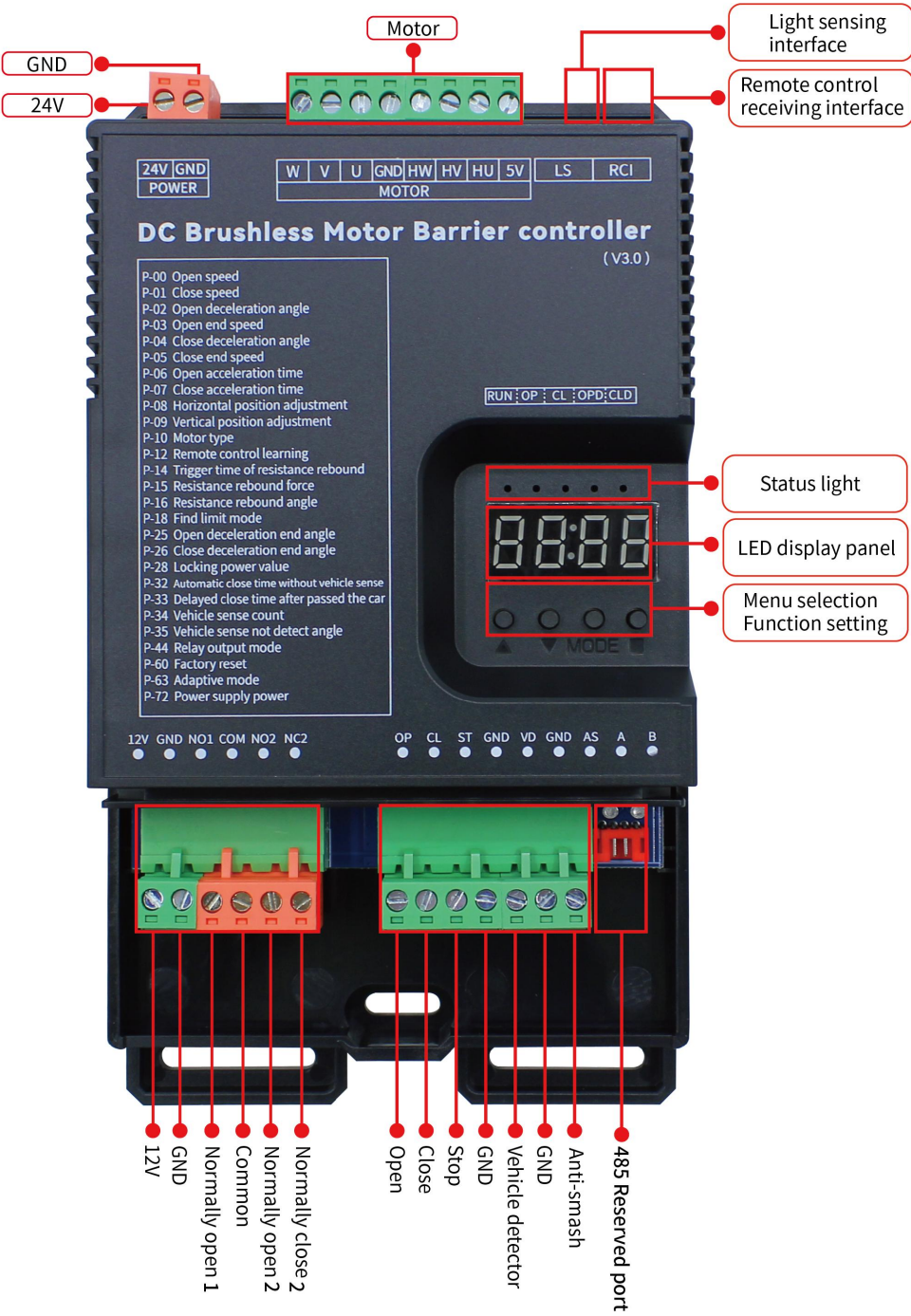
4. Boom lowering diagram without low-speed running zone ( $P-26 = 0$ )



5. Boom lowering diagram with low-speed running zone ( $P-26 \neq 0$  and  $P-26 < P-04$ )

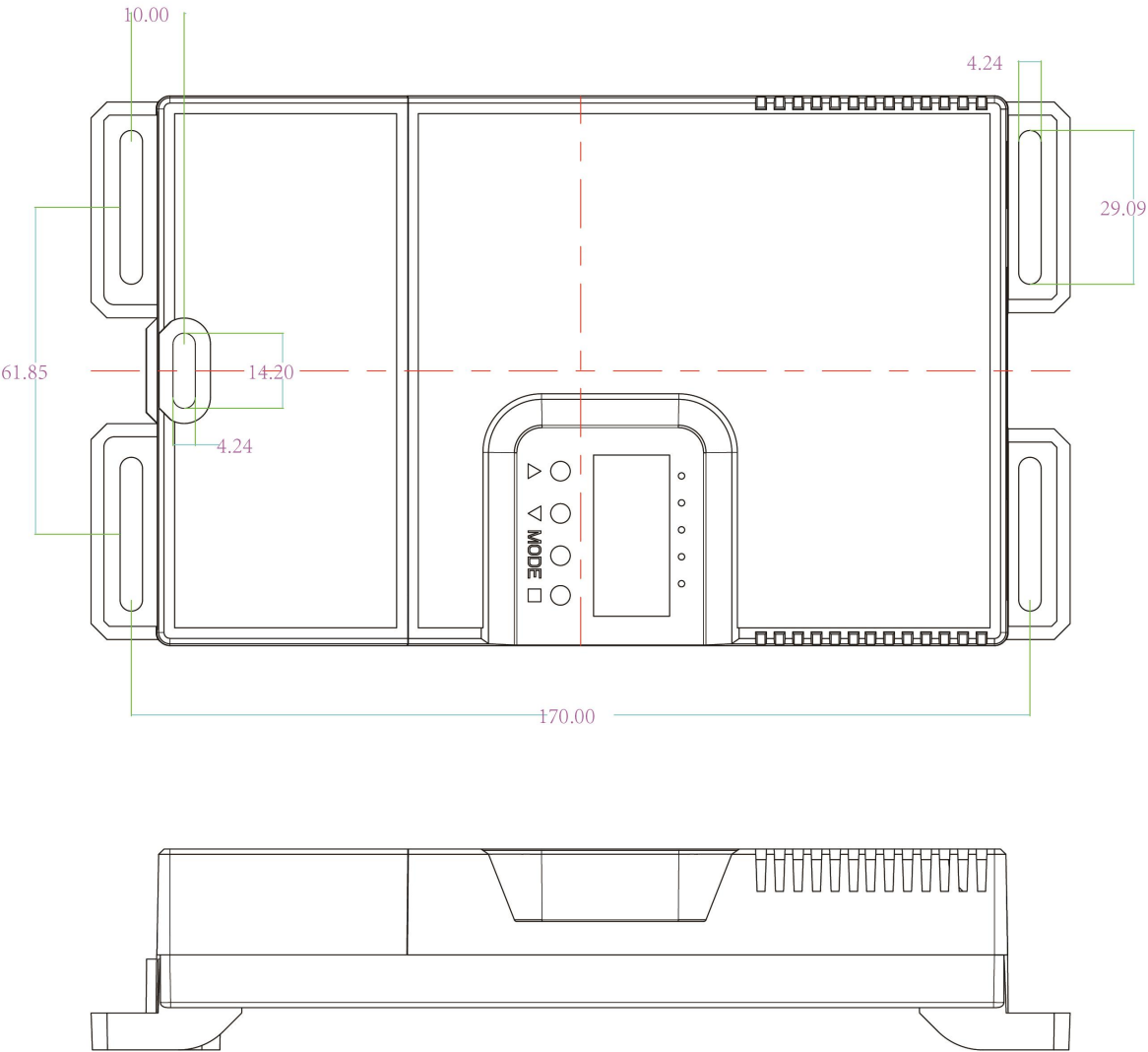


# 8. DC Brushless Barrier Gate Controller Wiring Diagram



# 9. Barrier Gate Controller Hole Spacing Dimensions

Dimension diagram (unit: mm):



## Version Revision History

| Date       | Version | Notes                                                                                                                                                                                               |
|------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2023-04-24 | V1.0    | Initial draft                                                                                                                                                                                       |
| 2023-09-26 | V2.0    | Menu function P-27 added item 5: Anti-smash terminal connected to radar to distinguish people and vehicles                                                                                          |
| 2024-05-07 | /       | Menu function P-27 added item 6: Anti-smash interface multiplexed as "Open" interface function                                                                                                      |
| 2024-06-24 | /       | Menu function P-13 added item 2: Manual mode                                                                                                                                                        |
| 2024-07-15 | /       | Menu function P-13 added item 3: Disable convoy mode                                                                                                                                                |
| 2024-12-02 | V3.0    | Menu function P-11 added item 4: One-key learning of specified type remote control; Menu functions P-88, P-89 added                                                                                 |
| 2025-01-07 | V3.1    | Menu function P-44 added items 12, 13, 14, 15, 16                                                                                                                                                   |
| 2025-03-25 | V3.2    | Menu function P-27 added item 7: Anti-smash interface multiplexed as "Fire interface", raises boom and automatically enters convoy mode when triggered; New menu function P-84: Expansion port mode |
| 2025-04-17 | V3.3    | Menu function P-84 added items 4, 5; Menu function P-44 added item 17                                                                                                                               |
| 2025-05-30 | V3.4    | New menu function P-41: Light sensor lamp off threshold                                                                                                                                             |
| 2025-08-21 | V3.5    | Menu function P-27 added item 8; New menu function P-90: Barrier gate limit verification                                                                                                            |
| 2025-09-10 | V3.6    | Menu function P-27 added item 9; Menu function P-44 added items 18, 19                                                                                                                              |
| 2025-11-21 | V3.7    | Menu function P-63 added item 3                                                                                                                                                                     |
| 2026-01-16 | V3.8    | Menu function P-82 added Bluetooth connection type                                                                                                                                                  |
| 2026-05-26 | V3.81   | Menu function P-27 modified item 5                                                                                                                                                                  |