GROUP OF COMPANIES
“TISO-PRODUCTION” LTD

RB.390 DC Controller configurations

to setting the operation of Boom Barriers

with the BMDrive® mechanism

DEVICE SETUP GUIDE **UKRAINE**

RB.390 rev.1.0 2025

CONTENT

GENERAL WARNINGS

Every TiSO product, depending on its complexity, requires some setting, programming and proper commissioning to ensure optimal use,

Failure to comply with the requirements and instructions specified in the User Manual may result in the product malfunction or failure, which is beyond the “TiSO” Company’s responsibility.

The equipment shall be installed and maintained by professionals only.

The equipment shall be used only according to its intended purpose and in accordance with the regulations specified in technical documentation.

Apart from the warnings contained in this manual the following guidelines related to any “TiSO” Company’s product shall be observed:

- Electronic equipment moisture and high-temperature protection.
- Electronic equipment impact protection.
- Do not use corrosive chemicals, solvents or detergents
- Do not use the product under the conditions other than those specified in technical guidance.
- Access to the controller is allowed only according to the instructions specified in this manual.

USER’S GUIDELINES:

• This Manual is intended to be used along with the Installation and Operation Manual for the Road Blockers.

• If any fault or defect is found, then the supplier’s maintenance service shall be referred to.

• The control cabinet of the road and the controller RB.390 in particular, precommissioning and maintenance shall be performed only by the certified professionals having the appropriate qualification and knowing the product design and its instruction manuals (Turnstile Installation and Operation Manual).

GENERAL INFORMATION ABOUT THE CONTROLLER:

This manual describes the operation of the RB.390 controller, the configuration of the main parameters for barrier control, and how to get started. On the front side of the controller, there is a display and 4 control buttons used to show the current status of the controller and navigate the settings menu. The controller is integrated into the barrier's electrical control unit.

The devices controlled by the controller are TiSO automatic road barriers equipped with a BLDC mechanism.

Fig. 1 – RB.390 controller in electronic control units

1. Product main features

- Stable and reliable: with overvoltage, under voltage, reverse connection, short circuit, overcurrent and overload multiple protection, effectively protect the switching power supply, motor and controller, to ensure the stable and reliable operation of the gate;
- Smooth operation: multi-stage and multi-stage speed control, smooth acceleration and deceleration, effectively ensure the linear operation of the gate;
- Rich interfaces: A variety of input and output interfaces meet the requirements of most application scenarios.
- Perfect function: With perfect function, combined with the advantages of DC gate, innovative development of intelligent switch counting and timeout slow switch and other features, effectively solve users' pain points;
- Easy adjusting: easy to set, easy to understand parameters, easy to adjust, very easy to use;
- Convenient maintenance: With 485 communication function (RS485 version), can communicate with the upper computer in real time, record the gate operation events, convenient troubleshooting and analysis of the abnormal situation in the process of gate operation;
- Record of running times: the running times of the gate can be accumulated to provide reference for the reliable operation and maintenance of the gate;
- Online upgrade: Supports the online upgrade function (RS485 version) to directly upgrade the controller to the latest version onsite.

2. Controller specification parameter

Table 1

Parameter	Value
Working voltage	DC24V;
Working ambient temperature	-40℃~ +80℃
Working environment humidity: relative humidity	≤90%, no condensation
Motor power	200W
Static power consumption	≤1.2W
Running speed: related to motor power and deceleration ratio, speed is adjustable	at 100 levels

3. Menu list

In order to facilitate parameter setting, the controller menu is divided into movement parameter menu and function parameter menu two major parts, this list is only a simple list of menu functions, specific detailed function description, please refer to the eighth chapter of the menu function details.

Table 2

Menu	Movement parameters menu	Default value	Menu	Function parameter menu	Default value
P00	Learning	---	F00	Parameter saving	000
P01	Remote control learning/clearing	---	F01	Parameter loading	000
P02	Motor direction	000	F02	Turn off remote control	000
P03	Arm vertical position	---	F03	Turn off the beep	000
P04	Arm horizontal position	---	F04	Run times view	000
P05	Opening speed	060	F05	Sensing values view	000
P06	Closing speed	060	F06	Light sensing threshold setting	100
P07	Opening deceleration angle(stroke)	060	F07	Anti-freezing operation temperature	-40
P08	Closing deceleration angle(stroke)	060	F08	Anti-freezing operation time	000
P09	Speed of opening till vertical	000	F09	Windproof opening angle	000
P10	Speed of closing till horizontal	000	F10	Anti-smash port input definition	000
P11	Strength of opening till vertical	002	F11	Reserve	---
P12	Strength of opening till horizontal	002	F12	Relay 1 output definition	000
P13	Buffering angle of opening till vertical	000	F13	Relay 2 output definition	001
P14	Buffering angle of closing till horizontal	000	F14	Communication baud rate	000
P15	Response speed of opening	005	F15	Correspondence address(device number)	000
P16	Response speed of closing	005	F16	Test mode selection	000
P17	Smoothness of opening	070	F17	Power supply type selection	000
P18	Smoothness of closing	070	F18	Ground sense anti-smash mode	000
P19	Emergency stop buffer time	000	F19	Fleet mode selection	000
P20	Speed of searching zero(limit)	050	F20	Display mode selection	000
P21	Timeout closing speed	001	F21	Opening count mode	000
P22	Overcurrent protection	008	F22	No car time-out closing	000

Continuation of the table 2

P23	Distress sensitivity	000
P24	Motor speed	015
P25	Mode of searching zero (limit)	000
P26	Closing till horizontal lock gate	000
P27	Learn the different types of remote controls	---
P28	Manual operation learning	---

F23	Delay closing when car passing	000
F24	Effective holding time of ground sense	000
F25	Temperature control threshold (relay output)	-40
F26	Turn off the ground sense angle	000
F27	Event escalation control	000
F28	Duration of opening signal	012
F29	Duration of closing signal	012

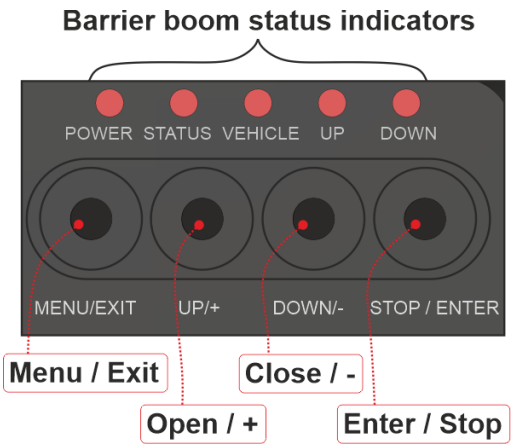
4. Displays code information description

Table 3

Display code	Cause of error	Relevant description
E01	Resistance	It indicates that the gate encounters resistance during operation. When the gate runs normally in place next time and there is no resistance, this code will be automatically cleared.
E02	Motor not connected or faulty	It indicates that the motor wire is not connected, the connection is loose, the connection is wrong, or the motor Hall sensor is faulty. This code will be cleared only after the motor is properly connected or the fault is handled.
E03	Overcurrent	Indicates that the current is too large during the operation of the gate. When the gate runs next time without overcurrent, this code will be automatically cleared.
E05	Unlearned	Indicates that the gate has not learned stroke, you need to learn stroke through the P00 menu.
E06	Remote not match	Because the remote control has two types of learning code and fixed code, the controller can only use one type of remote control at the same time. If the E06 code is displayed while learning the remote control, the new remote control and the existing remote control are not the same type.
E07	Remote control learned	Indicates that the current remote controller has learned, do not repeat the learning.
E08	Low power supply	Indicates that the current input voltage is lower than the normal operating voltage. The power supply may be faulty.
E09	Low Backup power	Indicates that the input backup voltage is lower than the normal backup voltage.
E10	Hand lifting arm	When the barrier arm is in the normal horizontal position, if someone lifts the arm manually or through the hand wheel , the gate will automatically close the gate to avoid lifting the arm manually and display this code.
NUL	Not search zero(limit)	Indicates that the gate has not been searched to zero (limit).

5. Related functions and definitions

5.1 Description of key functions



1) Menu/Exit:

- Long press for more than 2 seconds to enter the menu;
- Long press more than 2 seconds to exit the menu;
- When setting menu parameters, if you do not want to save the changed parameters of the current menu, press this key to exit the current menu without saving the changed parameters.

2) Open /+ :

- Under normal working mode, this key is the opening key;
- In menu mode, this key is scrolling up and adding key.

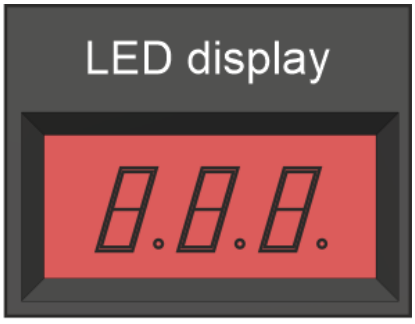
3) Close /-:

- Under normal working mode, this key is the closing key;
- In menu mode, this key is scrolling down and reducing key.

4) Enter/stop:

- In normal working mode, this key is the stop key;
- In menu mode, this key is the Enter and save key;
- Press this key in the main menu to enter the current menu;
- When setting menu parameters, press this key to save the currently changed parameters.

5.2 Extinguish screen energy-saving mode and wake up



After power-on, the LED digital tube will display normally. If there is no pressing any key within 3 minutes, the LED digital tube display will darken. If there is still no pressing key after 5 minutes, the LED digital tube will turn off and enter the energy-saving mode. In off-screen energy saving mode, all functions are normal except there is without any display on the LED digital tube. If you need to wake up the display, short press the Menu key.

5.3 About the learning stroke

Learning stroke is actually to make the brake lever run a complete back and forth between the open mechanical limit (upper limit) and the close mechanical limit (lower limit), so as to memorize the operating Angle range (stroke) of the brake lever.

The learning itinerary is as follows:

1. Long press the **Menu** key for 2 seconds to enter the main menu.
2. The display will show **"PXX"**.
3. Press **OPEN/+** or **CLOSE/-** button, turn to the **"P00"** menu.
4. Press the **Enter** button to enter the menu, **000** or **001** will be displayed.
5. Then press **OPEN/+** or **CLOSE/-** button.
6. The barrier will automatically perform a full open-close cycle.
7. After the learning process is completed, the display will show **"OFF"**, indicating that the procedure was successfully completed.

Generally speaking, one time of self-learning trip is enough.
If there is no E05 error code appear and the barrier arm can opens till verticality and close till horizontal, that means that the trip has been learned and been correct, there is no need to learn again.

5.4 About searching zero (limit)

The zero point is actually the reference point for calculating the operating Angle of the barrier arm. After each re-power-on, the gate needs to find the zero point (limit), so as to calculate the operating Angle (stroke) of the gate arm relative to the reference point (zero point), in order to know the position of the gate arm. In all cases (including unattended scenarios), no human intervention is required to find the zero (limit).

Operating principle:

After the gate is powered on, when it receives the opening and closing instruction for the first time (it can be license plate recognition, remote control, wire control or ground sense signal), the gate will automatically find the zero point (limit) first, and then execute the instruction. Therefore, under normal circumstances, the user is not aware of the zero change (limit).

In normal operation mode, the operating Angle of the brake lever is displayed by default:

- **"090"** is displayed in the vertical position;
- **"000"** is displayed in the horizontal position;
- **Other values** — the current position of the barrier arm in degrees relative to the zero point.

5.5 P03：Barrier arm vertical position adjustment

If the barrier arm is not vertical after it is normally opened in place, it can be adjusted through the P03 menu.

The operation method is as follows:

1. Enter the P03 menu to display the digital number of the current position of the barrier arm.
2. Press OPEN /+ or CLOSE/-key, and the position of the barrier arm will change accordingly to the key (the display number will also change accordingly).
3. When the barrier arm is vertical, press the "ENTER" key to complete the setting.

If there a hand wheel on the motor, you can also turn the hand wheel on the motor, until the barrier arm is on the vertical position, press the "OK" button to complete the setting.

5.6 P04：Barrier arm horizontal position adjustment

If the brake lever is not level after it is closed normally, it can be adjusted through the P04 menu.

The operation method is as follows:

1. Enter the P04 menu, the digital number display shows the current position of the barrier arm.
2. Press the OPEN/+ or CLOSE/-key, and the position of the barrier arm will change accordingly with the key (the number displayed will also change accordingly).
3. When the barrier arm is level, press the "ENTER" key to complete the setting.

If there is a hand wheel on the motor, you can turn the motor by the hand wheel. After turning the motor and make the barrier arm goes to the horizontal position, press the "OK" button to complete the setting.

5.7 Remote control learning/clearing

This controller can not only learn the remote control, but also can individually and batch delete the remote control.

Learn the first remote control: Learn the keys in the order like: **ON → OFF → STOP.**

From the second remote control, you only need to press any of the buttons of **ON, OFF** and **STOP** for more than 1 second.

5.7.1 Entering remote control learning mode:

- Enter the main menu (press and hold the **Menu** button for 2 seconds).
- Press the **OPEN/+** or **CLOSE/-** key to turn to the **P01** menu.
- Press the **Enter** button — the display will show **"000"**, indicating that the current controller has not learned any remote control.

5.7.2 Learning the first remote control:

Short press the **"OPEN/+"** key.

1) The first number of the digital tube will start blink:
- then press the **OPEN** button on the remote control for more than 1 second;
- the buzzer rings, indicating that the **OPEN** key has learned.
2) Then the second number of the digital tube will start blink:
- then press the **CLOSE** button on the remote control for more than 1 second;
- the buzzer rings, indicating that the **CLOSE** key has been learned.
3) Then the third number of the digital tube will start blink:
- then press the **STOP** button on the remote control for more than 1 second;
- the buzzer rings, indicating that the **STOP** key has been learned.

At the same time, the digital tube is displayed as "001", indicating that the first remote control has been learned.

5.7.3 Learning the second and subsequent remote control:

- Short press the **"OPEN/+"** key;
- The three numbers of the digital tube turn around and blink;
- Then press any key of the **"ON, OFF, STOP"** on the remote control;
- The buzzer rings, the digital tube displays "002", indicating that you have learned the second remote control.

Click this to continue learning remote controls, up to 50 remote controls can be learned.

5.7.4 To delete the remote control separately:

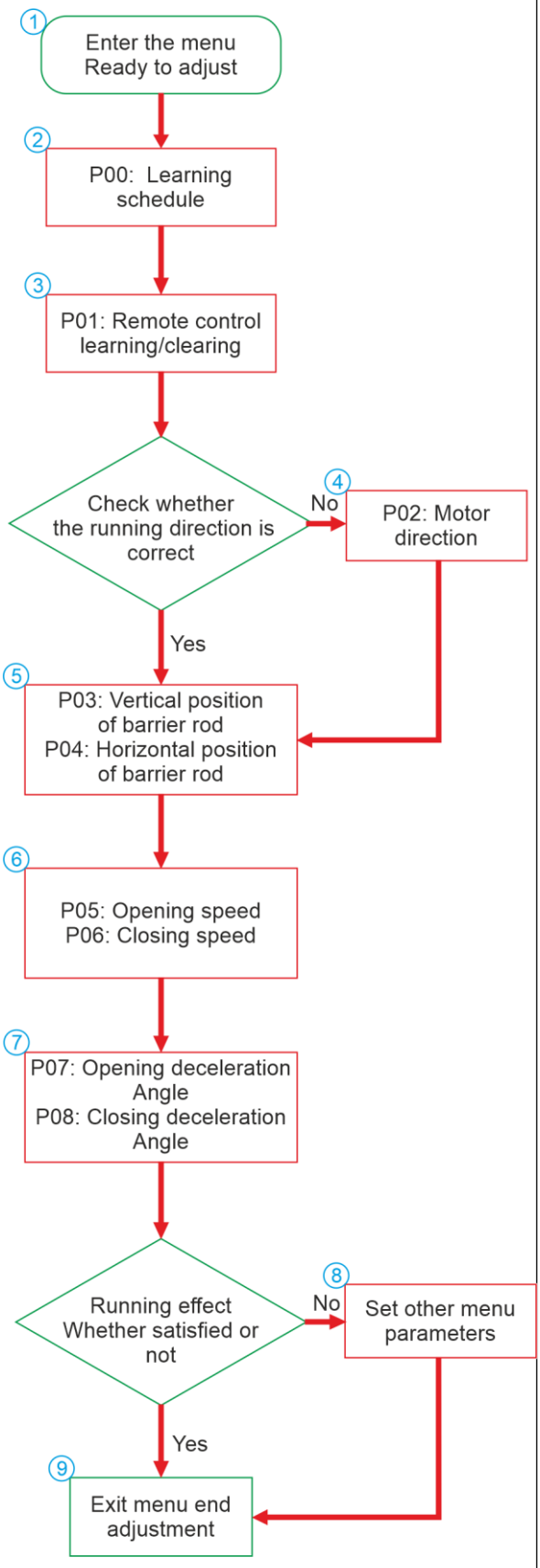
- Press the **"CLOSE/-"** button;
- The three numbers of the digital tube turn around and blink;
- At this time, press any of the buttons of **"ON, OFF** and **STOP"** on the remote control;
- The buzzer rings;
- The number of the digital tube decreases by 1;
- Indicating that the current remote control has been deleted.

5.7.5 Delete remote controls in batches:

- Long press the **"CLOSE/-"** key for more than 5 seconds;
- The three digits of the digital tube turn around and blink;
- The buzzer is ringing;
- And the digital tube displays "000";
- Indicating that all remote controls have been deleted.

6. Fast adjusting guidelines

Fast adjusting process



Brief description of the adjusting process

1. Long press the menu key for more than 2 seconds to enter the main menu and the digital tube displays "Pxx"

2. Press OPEN /+ or CLOSE /- button, turn to the "P00" menu, press the Enter button to enter the menu, 000 will be displayed press OPEN /+ or CLOSE /- button. After the barrier rod automatically runs a round trip between the open limit bar and close limit bar, there is" OFF" display and indicate that the learning trip has been completed.

3. Turn to the P01 menu and learn the remote control: Alter learning the remote control, in the menu mode you can directly remote control the gate, check whether the remote control learning and whether the running direction is correct:

4. If the running direction of the gate is correct the next step can be set directly. If the running direction is incorrect, turn to the P03 menu, change the parameter value to 000 or 001, and change the motor direction;

5. Sot the menu parameters of P03 and P04 (you can first open and close the gate with the remote control to see whether the lever is vertical or horizontal, if no problem, you can skip this step directly):

a) Turn to the P03 menu, press the "Enter" button to enter the parameter setting. Shake the motor handle to make the brake lever vertical press the ENTER button to save.

b) Turn to the P04 menu, press the "Enter" button to enter the parameter setting, press the “on” or “off” button of the controller or shake the motor hand wheel to make the barrier rod level, then press the ENTER button to save.

6. First, use the remote control to open and close the gate to see whether the speed of the gate is appropriate. If it needs to be set, turn to the P05 or P06 menu, press the "Enter" button to enter the parameter setting, and change the corresponding parameters (the larger the value the faster the speed). press the Enter button to save, and then press the remote control to see whether the changed speed is appropriate.

7. If you feel that the speed of the gate is too slow, slow down too early or too fast, slow down too late, then turn to the P07 or P08 menu, press the ENTER button to enter the parameter setting, and change the corresponding parameter

- the larger the value, the larger the deceleration angle,
- the earlier the deceleration, the slower the speed;
- the smaller the value, the smaller the deceleration angle,
- the later the deceleration, the faster the speed),

press the "Enter" button to save, and then press the remote control to see the changed reduction Whether the speed Angle is appropriate. In general, the deceleration angle can be set larger than that of the small movement (the default value is 60) and the deceleration Angle can be set smaller than that of the large movement.

8. In general, only need to set P05, P06, P07. P08 menu parameters, you can meet the running speed requirements of most users: for higher speed requirements. you can adjust other speed related parameters, which will not be described in detail here.

9. After Adjusting, long press the menu button for 2 seconds.

7. Controller wiring diagram and related instructions

NOTE

1) The relay output signal of this controller is passive contact and the maximum current allowed through the contact is 10A. Do not control high-power or high-voltage electrical equipment beyond the control ability of the contact.

2) Infrared sensor, induction loop controller, opening, stopping, closing and other input control signals are low level effective.

3) The 12V power output is used only as A signal power supply and can withstand 12V/0.15A load. To ensure the normal operation of the controller, do not connect external electrical devices beyond the power supply capacity of the power supply.

8. Description of menu functions

The controller menu is divided into two parts: movement parameter menu and function parameter menu. The movement parameter menu begins with P, and the function parameter menu begins with F. Movement parameters are mainly related to movement operation and speed regulation. The function parameter menu is mainly related to the logic control functions such as the input and output of the gate. The menu functions are described in detail below. If there is any explanation in the previous section, itis unnecessary to go into details.

8.1 Movement parameter menu:

P00 – Learning (The value ranges from --to --. Default value: --).

This parameter is used to learn the operating Angle range (stroke) between the two mechanical limit points of the opening limit and the closing limit.

Unless the E05 error code is displayed or the barrier arm does not open and close properly in place, there is no need to relearn. For details, see Section 5.3.

P01 - Remote control learning/clearing.

Used to add and remove remote controls. Compatible with fixed code and learning code (the same controller can use only one type of remote control at the same time, cannot use both fixed code and learning code), can learn a maximum of 50 remote controls. For details, see Section 5.7.

P02 - Motor direction (The value ranges from 000-001. Default value: 000).

Used to set the running direction of the motor. There are only two parameter values of 000 and 001. When the gate running direction is opposite to the direction defined by the key, the motor running direction can be changed by changing this parameter value.

P03 - Arm vertical position (The value ranges from --to --. Default value: --).

It is used to set the verticality of the arm open till vertical normally. For details, see Section 5.

P04 - Arm horizontal position (The value ranges from --to --. Default value: --).

Used to set the levelness of the arm close till horizontal normally. For details, see Section 5.

P05 - Opening speed (The value ranges from: 000-100. Default value: 060).

It is used to set the opening speed of the gate, which is divided into 100 grades. The higher the value, the faster the speed.

P06 - Closing speed(The value ranges from: 000-100. Default value: 060).

It is used to set the closing speed of the gate. It is divided into 100 grades. The higher the value, the faster the speed.

P07 - Opening deceleration angle (stroke) (The value ranges from 000-075. Default value: 060).

Used to set the opening deceleration Angle. The larger the value, the larger the deceleration Angle and the more obvious the deceleration effect.

P08 - Closing deceleration angle (stroke)(The value ranges from 000-075. Default value: 060).

Used to set the speed reduction Angle. The larger the value, the larger the deceleration Angle and the more obvious the deceleration effect.

P09 - Speed of opening till vertical (The value ranges from: 000-100. Default value: 000).

Used to set the speed of opening till vertical. The higher the value, the faster the place speed.

P10 - Speed of closing till horizontal (The value ranges from: 000-100. Default value: 000).

Used to set the speed of closing till horizontal. The higher the value, the faster the place speed.

P11 - Strength of opening till vertical(The value ranges from: 000-100. Default value: 002).

It is used to set the strength of opening till vertical. The greater the value, the greater the force in place.

P12 - Strength of closing till horizontal (The value ranges from : 000-100. Default value: 002).
It is used to set the strength of closing till horizontal. The greater the value, the greater the force in place.

P13 - Buffering angle of opening till vertical (The value ranges from 000-075. Default value: 000).
000：disable;
001-075:Set the buffering angle of opening till vertical.

P14 - Buffering angle of closing till horizontal (The value ranges from 000-075. Default value: 000).
000：disable
001-075：Set the buffering angle of closing till horizontal.

P15 - Response speed of opening (The value ranges from 000-010. Default value: 005).
Set the response speed of opening. The larger the value, the faster the opening response speed.

P16 - Response speed of closing(The value ranges from 000-010. Default value: 005).
Set the response speed of closing. The larger the value, the faster the shutdown response.

P17 - Smoothness of opening (The value ranges from: 000-100. Default value: 070).
Used to set the smoothness of opening. You are advised to adjust other parameters first. You are advised to keep the default values.
From V109/V209 later versions, in order to adapt to different movement characteristics, the following adjustments have been made to the smoothness:
Common all-gear movement and light worm gear movement: parameter value set to 000;
Heavy worm gear advertising gate and drop gate movement: parameter value set to 001;
Worm movement with twisted spring and without four-link mechanism: Parameter value set to 002.

P18 - Smoothness of closing (The value ranges from: 000-100. Default value: 070).
Used to set the smoothness of closing. You are advised to adjust other parameters first. You are advised to keep the default values.
From V109/V209 later versions, in order to adapt to different movement characteristics, the following adjustments have been made to the smoothness:
Common all-gear movement and light worm gear movement: parameter value set to 000.
Heavy worm gear advertising gate and drop gate movement: parameter value set to 001.
Worm movement with twisted spring and without four-link mechanism: Parameter value set to 002.

P19 - Emergency stop buffer time(The value ranges from 000-030. Default value: 000).
It is used to set the emergency stop time of halfway up the arm. The larger the value, the more stable the halfway up the arm will be and the longer the response time will be.

P20 - Speed of searching zero (limit) (The value ranges from 000-050. Default value: 050).
It is used to set the speed of searching zero(limit) for the first time after powered on. The smaller the number, the slower the speed.

P21 - Timeout closing speed (The value ranges from 000-050. Default value: 001).
When the F22-No car timeout closing function is enabled, it is used to set the timeout closing speed. The smaller the number, the slower the speed.

P22 - Overcurrent protection (The value ranges from: 005-010. Default value: 010).
Set the overload protection current, unit: ampere. The default value is 10A.

P23 - Distress sensitivity (The value ranges from 000-010. Default value: 000).
This parameter is used to set the response speed of the gate when it encounters resistance in the process of closing. The higher the value, the higher the sensitivity.

P24 - Motor speed (The value ranges from 005-035. Default value: 015).
Set this parameter based on the rated speed of the motor. Unit: 100 RPM. The default value is 015 (1500 RPM). If the motor is rated at 2500 RPM, set this parameter to 025, and so on.

P25 - Mode of searching zero(limit) (The value ranges from 000-001. Default value: 000).
Used to set reference zero. After the gate is powered on, when instruction is received for the first time, find the limit first, and then execute the instruction.
000: the limit of the opening machine is zero, the factory default is this mode.
001: The limit of the closing machine is zero, this method is suitable for the scene where the space above the gate is limited and the vertical arm cannot be lifted normally.

P26 - Closingtill horizontal lock gate (The value ranges from 000-001. Default value: 000).
This function is applicable to the movement without four-link mechanism of the gate, closing till horizontal after the gate without mechanical dead point limit, resulting in the barrier arm is easy to be pulled up by the spring. This function is not recommended in common cases.
000: disables this function.
001: Enables the closing till horizontal lock gate function.

P27 - Learn the different types of remote controls.
This function is suitable for adding different types of remote control or wireless station control in the field. To solve the problem of compatible use of the remote control when the frequency is the same, but the remote control type is different or the key sequence is different.
To learn the remote control under this menu item, please refer to the learning method of the first remote control in P18-Remote Control learning/removal, each remote control must learn each button in the on-off-off sequence.

P28 - Manual operation learning.
This function is suitable for trip learning in a gate with only one mechanical limit or a scene with limited space on one side.
When using this function, first determine the change method, then determine the motor direction, and then learn.
When learning, first make the barrier arm run to the zero position through the upper and lower buttons of the controller, and then make the barrier arm run to the opening or closing stop position in the other direction, press the Enter button to save.

8.2 Menu of function parameters:

F00 - Parameter saving (The value ranges from 000-001. Default value: 000).
Used to save all parameters set.

- 000：No operation.
- 001：Save all parameters set.

F01 - Parameter loading (The value ranges from 000-010. Default value: 000).
Used to load default or saved parameters.

- 000：No operation.
- 001：Load saved parameters. If no parameters are saved, the program default movement parameters except stroke, motor direction and remote control are restored.
- 002：Restore program default function parameters.
- 010：Restore all program default parameters except the remote control.

F02 - Turn off remote control (The value ranges from 000-001. Default value: 000).

- 000：Enable remote control.

- 001：Disable the remote control function. All remote controls can not control the gate, but not delete the remote control, can be enabled again.

F03 - Turn off the beep (The value ranges from 000-001. Default value: 000).

- 000：All long and short announcements and buzzers sound normally.
- 001：No long buzzer, such as the sense of the car, search the limit and so on does not send a long buzzer.

F04 - Run times view (The value ranges from 000-001. Default value: --).

Select the corresponding value and press "Enter" to view it.

- 000：Display the current program version.
- 001：Displays the current cumulative running times of the gate. The opening and closing of the gate are counted one time. When the times of gate operation, no decimal point is displayed, the unit of measurement is: times; If there is a decimal point display, the unit of measurement is: ten thousand times. For example, 123 indicates 123 times. "1.23" indicates 12,300 times; If 123. Is displayed, it indicates 1.23 million times.

F05 - Sensing values view (The value ranges from 001-004. Default value: --).

Select the corresponding value and press "Enter" to view it.

- 001：Display the current light sensing value; A higher value indicates stronger ambient light.
- 002：Displays the current ambient temperature (unit: ° C).
- 003：Displays the current power input voltage, unit V.
- 004：Display the current backup power input voltage, unit V.

F06 - Light sensing threshold setting (The value ranges from 000-300. Default value: 100).

For details, see F05-001 to set the current ambient light sensing value. When the light sensing value is lower than this threshold, turn on the light, otherwise turn off the light. This parameter is also set with the "F12" or "F13" menu to define the lighting control interface.

F07 - Anti-freezing operation temperature (The value ranges from -40~065. Default value: -40)

Temperature range: -40 ° C to 65 ° C. When the ambient temperature is lower than the preset temperature, the anti-freezing function is enabled. This parameter also needs to be set together with "F08".

F08 - Anti-freezing operation time (The value ranges from 000-120. Default value: 000)/

Indicates how many minutes to start an antifreeze treatment when the temperature is lower than "F07" after the antifreeze is enabled. If the value is set to 000, antifreeze is not enabled.

F09 - Windproof opening angle (The value ranges from 000-040. Default value: 000).

The opening Angle ranges from 0 to 40 degrees. Windproof opening Angle of barrier arm. If the value is set to 000, the windproof function is disabled. This parameter needs to be set together with F10.

F10 - Anti-smash port input definition (The value ranges from 000-002. Default value: 000).

- 000：Anti-smash signal input.
- 001：Ground sensing signal input.
- 002：Wind speed sensor signal input.

F11 - Reserved parameter.

F12 - Relay 1 output definition and F13-relay 2 output definition.

F12 is the output definition of relay 1 and F13 is the output definition of relay 2. The outputs of the two relays are independent of each other and do not need to be combined and matched, that is, the two relays can be set to different outputs or the same outputs. Relay output is defined as follows:

Table 4

Parameter value	Relay output definition	Description
000	Open till vertical output	Barrier arm open till vertical after continuous output signal.
001	Close till horizontal output	Barrier arm close till horizontal after continuous output signal.
002	Traffic indication output	Can be used for traffic lights, open till vertical after the green light, otherwise red light.
003	Light box control output	Can be used for advertising light box control, refer to the menu item "F06" set together.
004	Ground sense synchronous output	Keep consistent and synchronous output with ground sensing input signal.
005	Open synchronous output	Keep consistent and synchronous output with the opening signal.
006	Close synchronous output	Keep consistent and synchronous output with the closing signal.
007	Pulse output open till vertical	After open till vertical, the pulse signal with pulse width of about 1 second is output.
008	Pulse output close till horizontal	After close till horizontal, the pulse signal with pulse width of about 1 second will be output.
009	Lock gate indication output	After entering the convoy mode, the lock indicator signal will be output, indicating that the current convoy mode is set by referring to the menu item "F19".
010	Temperature control output	For temperature control output, refer to the menu item "F25" to set together.
011	Warning light control output	When the motor is running, the continuous output signal prompts pedestrians or vehicles to pay attention to safety

F14 - Communication baud rate (This parameter is special for version 485. The value ranges from 000-001. Default value: 000).
Set the communication baud rate for controller 485.

- 000:9600
- 001:19200

F15 - Correspondence address (Special parameter for version 485, set range of machine number: 0-255; Default: No. 0 machine).
Set the correspondence address the controller 485.

F16 - Test mode selection (The value ranges from 000-090. Default value: 000).
This parameter is used to set various running test modes of the gate.

- 000 – Disable test mode.
- 001-005 (Normal in place test mode) : Set the normal in place test mode and interval.
- 006-010 (Multi-angle test mode) : Set multi-angle test mode and interval time.
- 011-020 (Reserved parameter).
- 021-090 (Fixed Angle test mode) : Set the Angle and interval of the fixed Angle test mode.

F17 - Power supply type selection (The value ranges from 000-002. Default value: 000).

- 000 : Normal power supply mode; When the normal power supply is low, the E08 error will be reported. After opened by any command, the switch will not respond before the normal power supply is restored.
- 001 : Power off mode (need to be equipped with backup power); In the case of backup power supply, E08 error will be reported when the normal power supply is low or power off. At the same time, the gate will automatically open immediately. After opening, the gate will not respond before the normal power supply is restored.
- 002 : Backup power supply mode; In this mode, the backup power supply acts as the supplement and backup of the normal power supply. When the normal power supply is low, it will also report an E08 error, but as long as the backup power supply is sufficient, it can still open and close normally, and it will not respond to the switch because of the low power supply.

F18 - Ground sense anti-smash mode (The value ranges from 000-001. Default value: 000).

Set the operation mode of the gate when the ground sense vehicle signal is detected in the process of closing the gate.

- 000 : In the process of closing, if a car is detected, it will immediately stop and return to the position, and then closing after the car passed (the current general mode).
- 001 : If a car is detected during the closing process, it will stop immediately but not return, and then closing after the car passed.

F19 - Fleet mode selection (The value ranges from 000-002. Default value: 000).

- 000 : Disable this function.
- 001 : Press the remote control open button for 3 seconds, the buzzer will sound, enter the fleet mode, it will not automatically close when the car pass; Exit fleet mode after any command shuts off.
- 002 : Press the remote control close button for 3 seconds, the buzzer will sound, enter the fleet mode, it will not automatically close when the car pas; Exit fleet mode after any command shuts off.

If you need to prompt the gate to enter the fleet mode, you can set the relay output through the "F12" or "F13" menu to control the external indicator light or horn to send out the prompt message.

F20 - Display mode selection (The value ranges from 000-001. Default value: 000).

Set the display mode when the controller is running normally.

- 000 : Display running Angle, unit: degree.
- 001 : Displays the elapsed time, in seconds.

F21 - Opening count mode (The value ranges from 000-002. Default value: 000).

This parameter is used to set the counting mode of gate opening.

- 000 : Don't count, closing when the car passes.
- 001 : Intelligent counting mode, recommended mode.
- 002 : Opening count mode. When the number of the opening and the number of the car passing is the same, it will automatically closing.

F22 - No car time-out closing (The value ranges from000-180. Default value: 000).

- 000 : disable.
- 001-180 : Set the timeout closing time of no car, unit: second. When open till vertical, the gate will close slowly at the set speed if it is not closed beyond the set time and there is no car. Example: If it is set to 100, it means that the gate will close slowly at the set speed when there is no car, and so on, for a maximum of 180 seconds.

F23 - Delay closing when car passing (The value ranges from: 000-100. Default value: 000).
This parameter is used to set the delay closing time of the gate after the vehicle leaves ground sense.

- 000 : disable.
- 001-100 : Set the closing time of vehicle passing delay, unit: 0.1 seconds. Example: When it is set to 010, it means that after the car leaves the ground sense, the arm will be automatically closed with a delay of 1 second. And so on, up to 100 (i.e., 10 seconds).

F24 - Effective holding time of ground sense (The value ranges from:000-100. Default value: 000).
This parameter is used to set the effective holding time of ground sense signal. Only the signal whose holding time reaches is the effective sensing signal.

- 000 : Disable this function.
- 001-100 : Valid time setting, unit: 0.1 second. For example, 010 indicates that the ground sensing signal is valid only if it is held for more than 1 second, and so on.

When the holding time is effective, the gate will close at the normal speed after the vehicle leaves the ground sense. When the ground sense holding time is lower than the set time, the gate will close slowly at the set speed after the vehicle leaves the ground sense, so as to avoid the situation of smashing the car.

F25 - Temperature control threshold (relay output) (The value ranges from -40-065. Default value: -40).
Temperature range: -40 ° C to 65 ° C. When the ambient temperature is lower than the set temperature, the temperature control relay operates; When the ambient temperature is higher than the set temperature, the temperature control relay is disconnected. To enable this function, you need to set F12 or F13 temperature output.

F26 - Turn off the ground sense angle (The value ranges from 000-040. Default value: 000).
To solve the problem that the gate, such as advertising gate and fence pole, can not close the gate normally or smash the car when the barrier arm is detected by ground sense or radar in the process of opening and closing the gate.
When the opening and closing angles of the barrier arm are smaller than the set parameter values, it does not respond to the detected ground-sensing signal.

F27 - Event escalation control (The value ranges from 000-004. Default value: 000).
This function is applicable to the controller with the RS485 communication function. The function is used to enable event reporting and set the event type.

- 000 : disables event reporting.
- 001 : Reportbarrier arm status.
- 002 : The ground sensing status is reported.
- 003 : Report barrier arm status and ground sense status.
- 004 : All events are reported.

F28 - Duration of opening signal (The value ranges from 002-030. Default value: 012).
Set the effective duration of the opening signal (unit: 10ms). When the opening signal is held for less than the set duration, it is an invalid opening signal and the controller will not respond. The default duration is 120ms.

F29 - Duration of closing signal (The value ranges from 002-030. Default value: 012).
Set the effective duration of the closing signal (unit: 10ms). When the closing signal is held for less than the set duration, it is an invalid shutdown signal and the controller will not respond. The default duration is 120ms.

Appendix 1: Common Problems and Solutions

Table 5

Q&A	Related cause	Treatment method
Show the E05 code	Unlearned	Learn the stroke through the P00 menu
Cannot open till vertical normally or the trip is exceeded when the gate is closed	Incorrect learning	Relearn the stroke through the P00 menu
NUL is displayed on the controller after power-on	Controller zero search (limit)	No human intervention is required. After power-on, the first time to receive the switch on and off instruction, the gate will automatically change the zero, and then execute the instruction.
The controller displays NUL and gives the opening signal. The motor does not move or micro-move. The LED nixie is off and on, and still displays NUL	Switching power overload protection	Power on the switching power supply
	Switching power supply failure	Replace switching power supply
E02 is displayed after it is powered on	The motor wire is not connected or connected incorrectly	To connect, tighten, or reconnect a wire
	Motor Hall sensor is faulty	Replace the motor Hall sensor or motor
The direction of gate operation is opposite to the key definition direction	The motor direction is set incorrectly	Change the direction of the motor through the P02 menu
Each time the barrier arm reaches the vertical position, it goes back a little	The value set for the vertical position of the barrier arm is too small	Adjust the verticality of barrier arm through the P03 menu
Each time the barrier arm reaches the horizontal position, it goes back a little	The setting value of the barrier arm horizontal position is too small	Adjust the level of barrier arm through the P04 menu
The buzzer is ringing all the time, and the gate cannot be operated by pressing the open and close buttons	There is a short circuit or short circuit of the external on, off or ground sensing signal input	Disconnect all external input signals (wiring), and check short-circuit and short-circuit faults one by one
The remote control is close or insensitive	There's interference with the remote signal	Change high power remote control
	The battery power of the remote control is low	Replace the battery
After the barrier arm is in place, it will shake greatly	Speed setting too fast	In the P05\P06 menu set the speed to low
	The deceleration Angle is set too small	Set the deceleration Angle to large in the P07\P08 menu

Continuation of the table 5

	The place speed setting is too large	In the P09\P10 menu will place the speed down
	The position force is set too high	P11\P12 menu will be put in place with reduced strength

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Our equipment complies with the requirements of the European Standards:
EN ISO 12100:2010, EN ISO 14118:2018, EN 60204-1:2018, EN ISO 13857:2019,
EN 61000-6-1:2007, EN 61000-6-3:2007/A1:2011/AC:2012
and meets the requirements of the CE Directives:
2014/30/EC; 2014/35/EC; 2006/42/ EC

The manufacturer's quality control system is certified according to the International Standard
ISO 9001:2015 - Certificate No. UA 18 / 819942484