User

MANUAL

DC Brushless Barrier Gate Control board Instruction Manual

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CLOUD-BASED ACCESS CONTROL SYSTEM | MOBILE ACCESS

Button
There are 4 buttons on the controller, from left to right are:

1. **lift gate / +**
2. **fall gate / -**
3. **menu / confirm**
4. **stop / cancel**

Various parameters of the controller can be set through these 4 keys

1. Lift gate/+"
Press this button to lift gate under normal working status, and you can use this button to increase the menu items and increase the set value upwards after entering the setting state. In the parameter setting state, short press to add one each time Press and hold to continuously increase to the maximum value and then start to increase from the minimum value. If you press and hold for a long time, the continuous acceleration will increase the speed.

2. Fall gate/-"
Press this key to close the gate in normal working state, and you can use this key to reduce the menu items and decrease the set value downwards after entering the setting state. In the parameter setting state, short press to decrease one each time. Press and hold to continuously decrease to the minimum value and then decrease from the maximum value. If you press and hold for a long time, the continuous deceleration will speed up.

3. Menu/Confirm

- In the normal working mode, press and hold the button for 3 seconds to enter the menu item selection state, and the LED will display "F-XX". At this time, you can press the "lift gate/+" and "fall gate/- buttons to select the menu item;
- In the menu item selection state, short press "Menu/Confirm" to enter the parameter setting state;
- 3. After setting the parameters, short press to save and exit.

4. Stop/Cancel
This button is the stop function during normal operation. It is the exit setting state in the menu item selection state. Pressing this key in the parameter setting state will exit this state and return to the menu selection state, that is, return to the previous menu, and at the same time The value set is invalid. If there is no button operation within 60 seconds in the menu selection state and parameter setting state, the controller will return to the normal working state after the buzzer beeps for a long time.

DC brushless barrier gate controller command list:

Menu	Function	Defaults	Range	Remark
F-00	Open speed	60	10-100	The larger the number,the faster the lifting speed
F-01	Close speed	60	10-100	The larger the number, the faster the gate closing speed
F-02	Open deceleration position	70	45-80	The angle at which the lifting gate pole starts to decelerate, unit: degree
F-03	Close deceleration position	45	10-60	The angle at which the dropping gate pole starts to decelerate, unit: degree
F-04	Gate opening acceleration time	30	0-255	When open the gate, the time to accelerate from 0 to F-00 lifting speed ,unit: 0.01 second
F-05	Gate closing acceleration time	30	0-255	When close the gate, the time to accelerate from 0 to F-00 gate lifting speed, unit: 0.01 second
F-06	Speed at the end of pole lifting	10	1-100	Speed at the end of pole lifting
F-07	Speed at the end of pole dropping	20	1-100	Speed at the end of pole dropping
F-08	Horizontal position adjustment	6	1-255	Fine-tuning the horizontal position of the barrier arm
F-09	Vertical position adjustment	6	1-255	Fine-tune the vertical position of the barrier arm
F-10	Automatic closing gate time without vehicle sensor	0	0-255	Time for automatic gate closing when no vehicle passes by, unit:second
F-11	Anti smashing function	0	0-1	1:Enable the anti-smashing function 0:Disable the anti-smashing function
F-12	Delay time for passing vehicles	2	0-255	Delayed time from the vehicle passed to starting closing the pole, unit: 0.1 seconds
F-13	Power-on self-learning speed	40	0-80	Find the upper and lower limits at this speed
F-14	Remote control learning	0	0-60	learning remote control
F-15	Sensitivity of rebound when encountering obstacles	10	1-40	Response time in case of resistance, unit: 0.05 seconds
F-16	Strength of rebound when encountering obstacles	10	1-40	The larger the number, the greater the strength
F-17	Motor type/direction of rotation	0	0-3	Motor polarity and barrier gate rotation direction
F-18	Lock barrier gate power	6	0-15	Dangerous, use with caution! The bigger the number, the bigger the locking current
F-19	Vehicle sensor counting	0	0-10	0 or 1 turn off counting; 2:turn on counting
F-20	Automatic testing	0	0-255	Automatic test interval time, can be used for burn-in, 0 is normal working mode
F-21	Reset parameter	0	0-255	5: Clear the remote control 10: Restore factory settings

DC brushless barrier gate controller command list:

F-22	Software version	No default value	No scope	View software version
F-23	Light sensitive threshold	150	0-200	If the current light sensitivity value is greater than the threshold, turn on the pole light
F-24	Delay time for turnning on the pole light	10	0-255	Delay time for turnning on the pole light, unit: second
F-25	Delay time for turnning off the pole light	250	0-255	Delay time for turnning on the pole light, unit: second
F-26	Light sensitivity value	No default value	No scope	The light sensitivity value of the current illumination
F-27	Open gate priority	2	0-3	In open gate priority mode, open at frist
F-28	Low speed operation angle when closing gate	30	0-45	Start Angle of the last low speed zone
F-29	Relay output mode	0	0-5	For different relay applications
F-30	Windproof opening angle	0	0-45	Windproof treatment for advertising gate
F-31	Rust-proof time interval	0	0-255	Rust-proof time interval, unit: hour
F-32	Rust-proof opening angle	0	0-45	Reserved
F-33	Antifreezing temperature threshold	0	-40	Temperature of starting antifreeze, unit: Celsius
F-34	Antifreezing opening angle	0	0-45	Reserved
F-35	Antifreezingtime interval	0	0-255	Reserved,unit:minutes
F-36	Current ambient temperature	No default value	No scope	Temperature of the controller
F-37	Rebound Angle	0	0-90	Burn-in testing,test the Angle of mechanical properties
F-38	The angle of opening the gate in low speed	90	45-100	The starting angle of low speed operation during the lifting process
F-39	Set RS485 communication baud rate	1	0-1	0:9600 1:19200
F-40	Set RS485 address	0	0-255	Set the RS485 communication address
F-41	Open gate reversal time	80	10-255	Buffer time from opening gate to closing gate
F-42	Close gate reversal time	50	10-255	Buffer time from closing gate to opening gate
F-43	Locking time	0	0-255	Lock the gate for a period of time after opening in place,unit: second
F-44	Locking time	0	0-255	Lock the gate for a period of time after closing in place,unit: second
F-45	Stop buffering time	50	10-255	The time between receiving the stop command and coming to a complete stop,unit: 0.01 seconds

DC brushless barrier gate controller command list:

F-46	The angle of turn off the vehicle sensor	10	0-45	The angle for turnning off vehicle sensor detection， unit: degree
F-47	Remote drive into convoy mode	0	0-1	The remote control opens the gate and enters the convoy mode directly
F-48	Number of retries after manually lifting the gate	20	0-255	The number of attempts to close the gate after being artificially lifted
F-49	Check the upper and lower limit mode	0	0-2	0：check both upper and lower limits 1:check upper limits only 2：check lower limits only
F-50	Learn the upper and lower limits manually	No default value	No scope	Learn the upper and lower limits manually
F-51	Learn the lower limits manually	No default value	No scope	Only the upper limit is learned in manual mode
F-52	Save/load parameters	No default value	0-255	5：load parameters 10：Save parameters
F-53	Buzzer frequency when the vehicle sensor is valid	5	0-20	0：The buzzer does not sound，1-20:The frequency of the buzzer。
F-54	Vehicle sensor signal stabilization time	15	1-255	The time elapsed from the detection of the vehicle sensing signal to the controller's confirmation that the vehicle sensing signal is valid,unit：0.01 seconds
F-55	Vehicle sensor signal effective time	4	1-20	The controller starts timing after confirming that the vehicle sensing signal is valid.Stop timing after the vehicle sensor signal is invalid, and the time interval between them must be greater than the "vehicle sensor signal effective time" before the controller considers it to be an effective vehicle sensor signal.unit：0.1seconds
F-56	Opening signal stabilization time	15	1-255	The time elapsed from the detection of the opening signal to the controller's confirmation that the opening signal is valid. unit: 0.01 seconds
F-57	Manual learning lower limit	No default value	No scope	Manual learning lower limit
F-58	Reverse lock	2	0-20	During the opening process, abnormal reversal of the gate is detected, resulting in locking，0：Do not detect,1-20：The controller detects that the motor has reversed the specified number of turns ,the gate will be locked
F-59	Failure Angle of resistance rebound	10	0-90	When the gate falls to the set Angle, the resistance rebound function fails.
F-60	Close signal stabilization time	15	0-255	The time elapsed from the detection of the close signal to the controller's confirmation that the close signal is valid,unit：0.01seconds

DC brushless barrier gate controller command list:

F-61	Stop signal stabilization time	15	0-255	The time elapsed from the detection of the stop signal to the controller's confirmation that the stop signal is valid,unit：0.01seconds
F-62	Custom parameter	/	/	Customized parameters for different applications
F-63	Stop port remapping	0	0-2	The port function is redefined
F-64	Reserved	/	/	Reserved
F-65	Reserved	/	/	Reserved
F-66	Bluetooth on duration	30	1-255	Bluetooth on time,Unit: minute
F-67	Sensitivity of loop sensors	2	0-10	0:turn off the loop sensors，1-10：Sensitivity of loop sensors,The smaller the value, the higher the sensitivity.
F-68	Reserved	0	0-255	Reserved

Command details:

F-00 Open speed
All the places related to the speed are based on the percentage of the motor power. For example, if the maximum power of the motor is 200 watts, if the setting value is 80, it will run at a maximum of 160 watts. The larger the number, the faster the gate will be lifted.

F-01 Close speed
The larger the number, the faster the gate will fall.

F-02 Open arm deceleration position
It is used to set the start deceleration position during the gate lifting process. Taking the angle as the unit, when the gate lever is in the horizontal position, it is 0 degrees, and when it is in the vertical position, it is 90 degrees. This parameter indicates that when the barrier lever is opened to this angle, it starts to decelerate. If the barrier lever shakes when the gate is fully lifted, this parameter can be reduced.

F-03 Close arm deceleration position
It is used to set the position where the deceleration starts during the closing process. Taking the angle as the unit, when the gate lever is in the horizontal position, it is 0 degrees, and when it is in the vertical position, it is 90 degrees. This parameter indicates that when the barrier lever falls to this angle, it starts to decelerate. If the barrier lever shakes when the gate is in place, this parameter can be increased.

F-04 Open arm acceleration time
Unit: 0.01 second, the time for the open speed to accelerate from 0 to the speed set by open speed F-00. This parameter determines the acceleration of open arm. The smaller the number, the faster the acceleration.

F-05 Close arm acceleration time
Unit: 0.01 second, the time for the closing speed to accelerate from 0 to the speed set by the closing speed F-01. This parameter determines the acceleration of the gate. The smaller the number, the faster the acceleration.

F-06 Open end speed
That is,Speed of open arm into place. When the gate is lifted, the gate will be lifted at this speed. If it is too small, it will not open properly, and if it is too high, it will cause shaking. If F-38 is set to be less than 90 degrees and greater than the speed set by F-02, after the open arm to the angle set by F-38, it will run at the speed set byF-06 until it is fully opened.

F-07 Close end speed
That is,Speed of the close arm into place,When the gate is closed, the gate will be closed at this speed. If it is too small, it will not close properly, and if it is too high, it will cause shaking. If the F-28 command setting is greater than 0, which sets the low-speed angle of the gate, and F-28 is within the valid range (F-28 is greater than 0, less than F-03), then run at this speed in the low-speed constant speed zone until Close in place.

F-08 Horizontal position adjustment
If the horizontal position of the barricade is not level, fine-tuning can be performed through this parameter. For barriers that use a rubber ring as a buffer for the limit, the value needs to be increased to avoid squeezing the rubber ring every time the gate is closed. The set value is valid only when F-49 is 0 (that is, it is set to find the limit mode in both directions), otherwise it is only saved, and it will take effect after F-49 is set to 0 again.

F-09 Vertical position adjustment.
If the vertical position of the gate bar is not right, fine adjustment can be made through this parameter. For barriers that use a rubber ring as a buffer for the limit, the value needs to be increased to avoid squeezing the rubber ring every time the gate is opened. The set value is valid only when F-49 is 0 (that is, it is set to find the limit mode in both directions), otherwise it is only saved, and it will take effect after F-49 is set to 0 again.

F-10 Automatic closing time without loop detector.
Range: 0-255, default: 0, unit: second. After the gate is opened, if the time set by this parameter passes and the loop detector does not detect the passing of the vehicle, it will automatically close the gate. If set to 0, the gate will remain open until a car passes by or the close button is pressed.

F-11 Anti-smash
Range 0-1,
Default: 1: anti-smashing function is valid
0: anti-smashing function is invalid.

If it is set to 1, the controller will lift the gate when it detects a valid signal at the "anti-smashing" input terminal during the gate opening process. If the "anti-smashing" signal continues to be effective after the barrier gate is fully opened, the barrier gate will remain open. If the "ground sense" signal is detected during the effective period of the "anti-smashing" signal, the controller will start closing the gate when the "anti-smashing" signal disappears. If the "ground sense" signal does not appear during the effective period of the "anti-smashing" signal, the controller will keep the gate open after the "anti-smashing" signal disappears until the "ground sense" detects a valid vehicle passing signal.

F-12 Delayed closing time for passing vehicles.
Range: 0-255, Default: 2, unit: 0. 1 second.
"loop detector" detects a valid vehicle passing by, and after the "loop detector" signal disappears, delay the time set by this parameter, and then start the barriers.

F-13 Power-on self-learning speed.
Range: 0-80, Default: 40.
This command can set different speeds for finding the upper limit and finding the lower limit. After entering the menu, first set the speed for finding the upper limit. The LED displays " 1-XX", and XX indicates the speed for finding the upper limit. You can press " The speed is adjusted by the two buttons "lift gate/+" and "fall gate/-". After the upper limit speed setting is completed, press the "menu/confirm" button, and the LED will display "2-XX", at this time XX represents the speed for finding the lower limit. You can also adjust the speed by pressing the two buttons "lift gate/+" and "fall gate/-". Finally, after setting the upper and lower limit speeds, press the "Menu/Enter" button to save the parameters. If you press the "Stop/Cancel" key during the setting process, the set parameters will be invalid.

F-14 Remote control learning.
After entering the remote control learning menu item, the number of the currently learned remote controls is displayed. Learn in the order of on->off->stop. In order to ensure the reliability of learning, each button needs to be pressed and held for one second, and the buzzer will beep every time a button is learned. After the learning of the three buttons is completed, the buzzer beeps for a long time, indicating that a remote control has been learned correctly. At the same time, the LED display will increase the number of learned remote controllers by one. After learning a remote control, you can continue to learn the next one. If it is a learned remote control, the buzzer will beep three times in a row, indicating that the remote control has been learned. The remote controller that has been successfully learned will have a buzzer when it is pressed in the normal working state.

Learning the remote control can be simply summarized as the following steps:
1. Enter the F-14 menu, and the LED will display the number of remote controllers currently learned;

2. Press and hold the button of the remote control for 1 second in the order of "on", "off" and "stop", and press and hold each button for 1 second until the buzzer sounds;

3. Repeat step 2 to continuously learn multiple remote controls.

4. Press the "Menu/Confirm" or "Stop/Cancel" key to exit the study after the study is completed.

F-15 Resistance rebound sensitivity.
Range 1-40, default: 10, unit: 0.05 seconds.
When the strength of the resistance exceeds the set number of the rebound strength of the F-16, the timing will start, and the barrier will rebound if the set time is exceeded.

F-16 Resistance rebound strength.
Range 1-40, default 10.
The higher the number, the greater the force. This parameter and the F-15's rebound sensitivity when encountering obstacles determine whether to rebound or not. If there is a rebound during the normal gate closing process, the two parameters F-15 and F-16 need to be increased.

F-17 Motor type/direction of rotation.
Number range: 0-3, default: 1.
Due to the Hall polarity of the motor and the deceleration series of the barrier gate motor, the barrier gate has a left lever and a right lever. So this parameter is used to be compatible with various types of motors and barriers.
0: The motor is positive, and the reducer is running forward.
1: Motor positive polarity, reducer reverse.
2: Negative polarity of the motor, forward rotation of the reducer.
3: Negative polarity of the motor, reverse rotation of the reducer.

0 and 1 represent the left and right arm of one motor type, 2 and 3 represent the left and right arm of another motor type, press the "lift gate/+" button to open arm, press "fall gate/-" is the close arm direction, which means that the selection of motor type and rotation direction is correct. Choose between 0 and 1 for Chengbang Motor, and choose between 2 and 3 for Taibang Motor. If the selected motor type does not match the actual motor used, the controller will display an error code of E-07 when starting the barrier.

F-18 Lock barrier gate power.(dangerous, use with caution)
Range 0-15, default: 6.
Setting it to 0 will disable the gate lock function. When the barrier gate is in operation, the stop button is pressed before the gate is lifted or fully closed. In order to ensure that the gate lever does not fall, the control board will lock the motor at this time. At this time, the current is relatively large. Prolonged locking will cause the motor and control board to heat up. In severe cases, excessive power setting will lead to damage. So you need to be careful during setup. It is recommended not to open the
advertising gate, that is, set it to 0. During the setting process, it is recommended to adjust a number up and then test whether the lever can be locked, whichever can be locked just right. Do not increment multiple values at once. If it is set to 0, the barrier lever may be pulled up after pressing the stop button when the spring tension of the barrier is large.

F-19 Loop detector counting.
Range 0-10, default: 0.
In some application scenarios, the barrier gate needs to be closed only after the number of times the gate is opened is the same as the number of times the loop detector relay is closed. This feature can be enabled at this time. 0 is not enabled.

F-20 Automatic testing.
Range: 0-255, default: 0, unit: second.
The time interval of automatic test, if it is 0, it means to turn off automatic test, which is used for automatic test and burn-in test. After the test is completed, set this parameter to 0 to cancel the automatic test.

F-21 Reset

This option has two functions, clear the remote control and restore factory settings. In order to prevent misoperation, it is necessary to set a specific number and then press the "menu" button to complete the operation.

5: Clear the remote

10: Restore the factory settings, restore the set value to the default value, and clear the remote control at the same time. After the operation is completed, the buzzer will beep once to indicate success, if it fails, the buzzer will beep three times, and the LED will display "E-00" to indicate that the setting has failed. The reason is that the setting value is not 5 or 10.
The default parameters of the control panel can satisfy most scenarios, if there is an improper setting during the setting process. You can use the factory reset function.

Error code

When the controller detects an abnormality, it will display the error code to indicate the type of error. details as follows:

Error code	Error cause
E-00	When clearing the remote control and restoring factory settings, it is necessary to set the correct confirmation number. If the confirmation value is incorrect, it will prompt E-00 error.
E-01	reserve
E-02	reserve
E-03	The possible reasons are: the spring of the barrier gate is broken, the speed of open speed is too small, and the end speed of open speed is too small. It is possible to increase the open speed and the open arm end speed.
E-04	Possible reasons: the spring is too tight, the arm is not attached, the closing speed or the close arm end speed is too small. Check whether the spring is too tight, whether the arm is hung, increase the closing speed or the close arm end speed.

E-05	The open arm timed out,because the open arm time exceeded 15 seconds. Can increase the open speed and the open arm end speed.
E-06	The close arm timed out,because the close arm time exceeded 15 seconds. Can increase the close speed and the close arm end speed.
E-07	Motor type selection error, can be changed to the correct type through F-17
E-08	In the process of open arm, the spring is broken, etc., causing the motor to reverse

The meaning of LED display information:

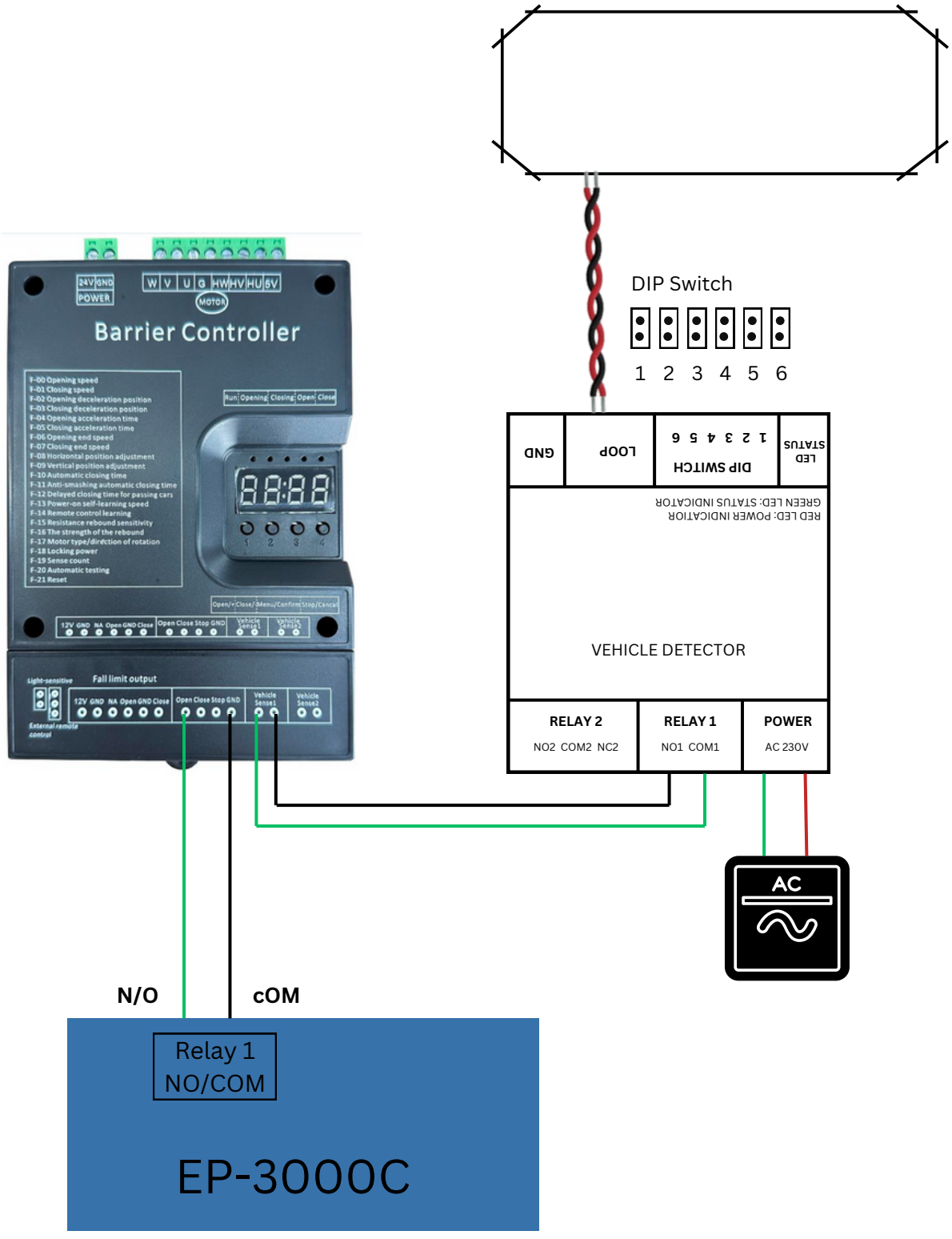
Content	Implication
IDLE	The motor is not connected, or the Hall of the motor is faulty, the possible reason is that the wiring is loose
STOP	Barrier gate closed in place
CLOS	The gate is closing
OPEN	The gate is opening
HOLD	Barrier gate opened in place
LOCK	Barrier is locked

7. Shortcuts

In normal working mode, press and hold the "lift gate+" button to quickly enter the learning menu command of the remote control.

Wiring diagram of barrier gate controller.

Wiring diagram of ANPR to barrier gate controller.



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Common faults and solutions

Fault phenomenon	Possible cause	Processing mode
Press the key switch to run in the opposite direction to the actual direction	The barrier gate direction is set incorrectly	Use the F-17 parameters to set the correct direction
Display E-03/E-04	open speed/close speed is too small	Increase the F-00/F-01
	Structure lag	Check the structure for foreign objects stuck
	Spring too tight	Adjust the spring tightness
The E-05/E-06 is displayed	Open/close timeout	Increase the F-00/F-01
There is an E-07 error code in the gate	Motor type error	Use the F-17 to set the correct motor type
	Motor lack of phase, the possible reason for the motor line loose	Tighten the wire again
	The Hall cable connection sequence is incorrect	Rewire the cables in the correct wiring sequence
The controller shows IDLE.	Motor wiring is loose	Re-tighten the motor wires
	The hall sensor of the motor is faulty	replace the motor
The controller resets when the barrier is running	motor short circuit	replace the motor
	Insufficient power supply	Replace the high-power power supply

Common faults and solutions

	Barrier gate controller failure	Replace the controller
Automatic rebound during close the arm	Bounce Strength and Bounce Sensitivity are set too small	Increase the F-15 and F-16
	The loop detector detects the arm	Reduce loop detector sensitivity
		F-46 enlarged
The vibration is relatively large when it is fully opened	Higher speed in place	Reduced F-06
	Open arm deceleration Angle is large	Reduce F-02 Can reduce both F-06 and F-02
There's a lot of shaking when it's closed	The closing speed is higher	Reduced F-07
	The Angle of close arm deceleration is small	Increase the F-03 Can reduce F-07 and increase F-03 at the same time
Remote control distance proximity	The remote receiving antenna is placed inside the case	The remote receiving antenna must be placed outside the case
	The battery voltage of the remote control is too low	Replace the battery
	Remote control damaged	Change the remote control
	The remote control receiving antenna does	Replace the frequency matching remote control

Common faults and solutions

	not match the frequency of the remote control	or remote receiving antenna
	Electromagnetic interference near the barrier gate is serious	Replace the high-power remote control or replace the remote control and receiving antenna of other frequency bands
Remote control learning failed	The frequency of the remote control does not match the frequency of the receiving antenna	Replace the remote with the correct frequency
	Remote control or receiving antenna failure	Replace the faulty remote control or receiving antenna
	The remote control has been learned	No need to deal with
	The sequence of learning the remote control is wrong	Re-learn after clearing the remote
The arm is not level after it is fully closed	The axis offset of the barrier rail is too large	Adjust the mechanical structure so that the shaft is in a reasonable position
	Improper setting of horizontal position value of barrier gate controller	Adjust the number of F-08 of the barrier gate controller

Common faults and solutions

The arm is not vertical after it is in place	The axis offset of the barrier rail is too large	Adjust the mechanical structure so that the shaft is in a reasonable position
	The vertical position value of the barrier gate controller is not set properly	Adjust the value of F-09 of the barrier gate controller

Vehicle detector instructions Manual

Usage and working status indication

When the power is turned on, the detector automatically calibrates, and the calibration process takes about 2 seconds. There should be no vehicle on the coil during calibration.

The indication function of LED lights is as follows:

Red light on, green light flashing slowly - detector self-test

Red light on, green light off - the vehicle has not entered the working state of the coil

Red light on, green light on - the vehicle enters the working state of the coil

Red light on, green light flashing - coil not detected

DIP1 and DIP2 dip switches are used to set sensitivity, with a total of four levels. The higher the sensitivity, the better the induction effect on high chassis vehicles, and the higher the requirements for coil location and construction high.

Factory default low sensitivity

1. low sensitivity	**1-ON / 2-ON**
2. medium low sensitivity	**1-ON / 2-OFF**
3. medium high sensitivity	**1-OFF / 2ON**
4. high sensitivity	**1-OFF / 2OFF**

Vehicle detector instructions Manual

Relay 1 is a multifunctional output.

DIP3 - **OFF position**, it outputs a signal indicating the presence of the vehicle.
ON position, it outputs a pulse signal

DIP3 is in the OFF position
The vehicle enters the coil, and the COM1 and NO1 of the relay close to output a+delay signal for the vehicle, which is beneficial for high chassis. Wait for the anti smashing and falling bars of irregular vehicles.

Relay 2 outputs a signal indicating the presence of the vehicle, which means that when the vehicle enters the coil and is induced, the relay always starts to engage and conduct with the common terminal until it disconnects after the vehicle leaves the coil COM2 is the common end, NO2 is the normally open end, NC2 is the normally closed end, and the railing machine is connected to both ends of COM2 and NO2.

DIP4 switch has an output delay for relay 1.
DIP4 - OFF position, without delay
- ON position with a delay of 0.5 seconds.
Note that the delay only applies to relay 1 effective.

DIP5 - **OFF position**, turn off safety reset
- ON position, turn on safety reset

DIP6 - OFF Position, it is high frequency
- ON Positiont, it is low frequency.
Changing the operating frequency of the coil can avoid or reduce interference between adjacent coils and the electromagnetic environment.