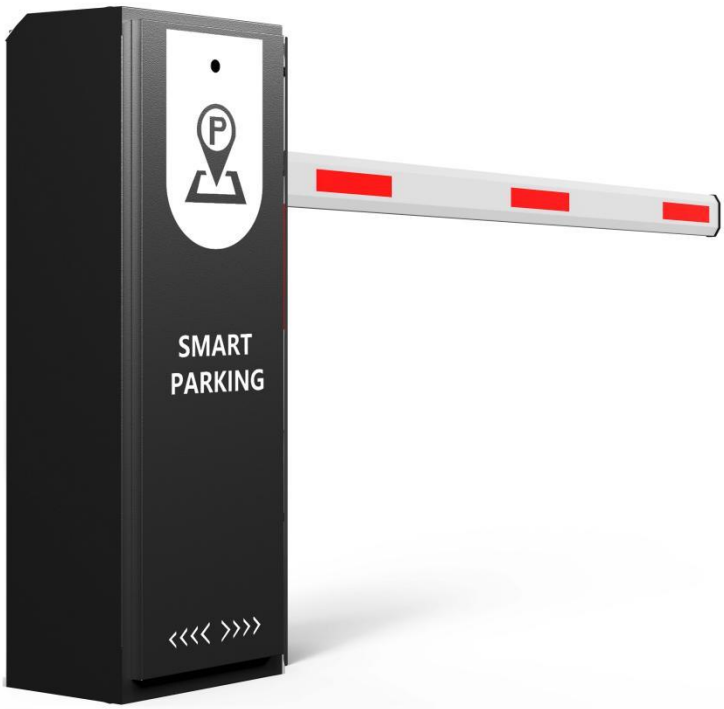
DC Brushless Boom Gate Controller Instructions



一. Main functions

1. Product overview

Equipped with a brushless DC motor + barrier movement, it supports various barrier movements such as 5 seconds, 2.5 seconds, 1.2 seconds, 0.8 seconds, and 0.6 seconds. Suitable for application scenarios such as residential areas, commercial properties, enterprises and institutions for vehicle access management.

2. Main functions

a. Supports opening, closing, stopping, ground sensing, and anti-smashing input signal interfaces

b. Supports open position, closed position, and status dry contact outputs, and can be connected to an external light strip or indicator light to control the output of the current status

c. Comes with a digital tube display and button module, which is simple and convenient to debug

d. Supports high-sensitivity anti-smashing rebound protection function.

e. Supports remote control switch operation

f. Supports emergency stop and lock of the gate rod in the middle of the road, and power-off self-locking function

g. Supports gate opening counting function and unattended automatic gate closing function

h. Supports RS232/RS485 serial port communication

Specification parameters：

input voltage	24V
Rated / peak current	8A / 30A
Adaptation motor	DC brushless motor
man-machine interface	3 bit LED, 5 bit key
communication interface	RS232/RS485
Hardware protection	Overcurrent protection, overvoltage

	protection, short-circuit protection
incoming signal	Open the gate, close the gate, stop, ground sense, prevent failure
output signal	Open in place, close in place at the dry contact point
Switch off the switch	External 12 V 1 AH battery
Operating ambient temperature	-20°~55°
Humidity of working environment	90%, with no condensation

4. Notice before use

To ensure proper installation and operation, read this manual before use. Installation, wiring and debugging operations must refer to the following instructions. Wrong wiring or arbitrary debugging parameters should not be allowed, otherwise it may lead to abnormal operation of the equipment or even equipment damage.

二. Wiring diagram


super capacitor
24V
Ground wire
power supply
W V U GND EW EV EU 5V
Motor
Hall signal
Zero Direction
P-0 Gate opening speedP-1 Gate opening position adjustment
P-2 Gate opening position adjustment
P-3 Gate closing position adjustment
P-4 Gate opening deceleration stroke
P-5 Gate closing deceleration stroke
P-6 Gate opening acceleration
P-7 Gate closing acceleration
P-8 Gate opening stability
P-9 Gate closing stability
P10 Gate opening end speed
P11 Gate closing end speed
P12 Rebound sensitivity
P13 Rebound reaction time
P14 Power supply power
P15 Automatic gate closing time
P16 Delayed gate closing time
P17 Gate opening count
P18 Emergency stop buffer time
P19 Emergency stop shaft lock force
P20 Motor rated speed
P21 Aging testP22 Remote
1. Long press the menu key to enter the menu options, press up and down to select the menu, and press the menu key again to enter the parameter setting
2. In the parameter setting interface, press the up and down keys to set the parameters, press the menu key to enter the menu selection items, and press the confirmation key to exit
3. Long press the remote control pairing key to enter the remote control pairing, and then press the remote control button to learn
4. In the remote control pairing mode, press the button again to exit, and long press the up or down key to clear the remote control
Remote control
Photosensitive
Menu
Remote control code
Confirm
Back up
12V GND OP COM CP
UP DOWN UP DOWN
GND
LOOP Detector
Anti-smash
GND
Short circuit to open gate
Short circuit to close gate
Ground sensor input
Anti-smash input
External power supply
Advertising gate light strip

2. Interface definition

interface	interface	instruction	remark
Power interface	GND	power connection GND	Recommended power is more than 300W
	24V	power connection 24V	
Quick plug interface	GND	Connect to supercapacitor GND	External ultracapacitors, without need to drop the switch can not connect
	BAT	Connect to the supercapacitor cathode	
Motor interface	U	Motor U line	Yellow thick line
	V	Motor V line	Green thick line
	W	Motor W line	Blue thick line
	GND	Hoare GND	Black fine line
	EU	Hoare EV	Yellow fine line
	EV	Hoare EV	Green fine line
	EW	Hoare EV	Blue fine line
	5V	Hall power supply	Red fine line
Enter the interface	12V	12V output	
	sense coil	The low ground sensing level is effective	Short grounding feeling and 12V can simulate the ground feeling
	Anti-smash	Prevent against low level effective	Short-catch anti-crash and 12V can simulate anti-crash
	12V	12V output	
	stop	High level is effective	Short connect public and stop over 100ms can simulate the stop bar
	leave out	High level is effective	Short connect public and fall above 100ms can simulate the falling rod
	rise	High level is effective	Short connect public and from 100ms can simulate the pole
	public	Power supply of 12V, public	
output interface	12V	Power supply 12V	It can supply power to the 12V equipment, and the power of the electrical equipment shall
	GND	source GND	

			not exceed 12W
	Open in place	Dry contact output	P34 control
	reserve		
	common port	Dry contact output	P35 control
	common port		
String communication	String communication	TTL signal	The RS232 / RS485 / Bluetooth module / network module can be extended
Remote control interface	Extended mouth	Extended external remote control	It can be remotely connected
Photosensitive resistance interface	Extended mouth	Extended interface	Photosensitivity signal can be applied externally

三. Setting operation

1. Setting operation

1. [Software version interface]: The digital tube displays the program version number, for example, 4.00, indicating that the software version is V4.00

a. After power-on, the digital tube displays the software version number for 1 second, and then displays the [value of C parameter], and then needs to receive the gate opening/closing command to start the resetting. After the resetting is completed, it enters the normal operation interface.

2. [Normal operation interface]: The digital tube displays the gate operation angle.

a. Press the "up" key to open the gate, press the "menu" key to stop the action, and press the "down" key to close the gate.

b. Long press the "menu" key to enter the [menu selection interface].

c. Long press the "remote control pairing" key to directly enter the remote

control learning mode.

3. [Menu selection interface]: The digital tube displays P-0 ~ P73 or C/A menu.

a. Press the "up" and "down" keys to select the corresponding menu.

b. Press the "menu" key to enter the [parameter setting interface].

c. Press the "confirm exit" key to return to the [normal operation interface].

4. [Parameter setting interface]: The digital tube displays H 0 ~ H99 values.

a. Press the "up" and "down" keys to set parameters, and long press to set continuously.

b. Press the "menu" key or the "confirm exit" key to save the parameters and return to the [menu selection interface]

5. [Remote control learning interface]: The digital tube dynamically displays "- - 0" on the top, middle and bottom.

a. Long press the remote control pairing button for 2-3S to enter this interface. Press any button on the remote control. If you hear a short "beep", it means the pairing is successful. If you hear a long "beep", it means it already exists. A total of 250 pairs of remote controls can be paired.

b. In this interface, long press the "up" or "down" key to clear all remote control codes.

c. Short press the "remote control pairing" key to exit remote control learning. The remote control will take effect after exiting the setting interface.

d. Peak mode: After the gate is fully opened, long press the "Stop" button of the 6S remote control, and the gate enters the peak mode (displaying "ooo"), that is, the gate does not close after detecting the ground sensing gate signal. Only after receiving the remote control "Close" signal again, the gate cancels the peak mode and closes.

6. After entering the parameter setting interface, if there is no key action for 30 seconds, the interface will directly return to the normal interface and save the parameters.

7. [Fault code interface]: The digital tube displays E-0 ~ E-9.

The meaning of the fault code is as follows：

E-1: Hardware overcurrent protection. E-2: Hall line is not connected, or the contact is poor. E-3: Long-term stall or motor stuck. E-4: Enter peak mode. E-5: The gate does not respond, ground sensing protection. E-6: The gate does not respond, anti-smashing protection. E-7: Low voltage protection.

8. **Restore factory settings:** long press the OK button, after the beeping sound is heard, press up, down, up, down, up, down three or more times, then press the OK button, turn off the power and then turn it on to restore

四、Setting parameter table

Operation steps for the first power-on of the controller:

1. After checking that the motor UVW line sequence is OK, power on and press the "up" or "down" key on the main board. The main board will automatically find zero. If the gate rod is not running in the direction of lifting the rod, turn the "zero direction" dial on the main board to the other side, then re-power on and find zero again.

2. After finding zero, the digital tube will display about 90°. At this time, you need to set the vertical and horizontal positions of the gate rod.

Press and hold the "menu" key to adjust to P-2, then short-press the menu key, the digital tube will display "value", then adjust the key "up" and the key "down" to adjust the gate rod to the appropriate vertical position, and then press the confirmation key to exit. The same operation enters menu P-3 and adjusts the gate rod to the appropriate horizontal position.

The green ones in the table below are commonly used parameters.

The red ones are mandatory parameters for the first time use

function	menu	scope	default	
Opening speed	P-0	5-500	50	Higher values, faster speed, smaller values, and smaller speed
Switching speed	P-1	5-500	40	Higher values, faster speed, smaller values, and smaller speed
Switching position adjustment	P-2	上 -.-.-	x	rod vertical position adjustment, through short press or long press "up and down key", can automatically adjust the rod to the vertical direction position,
Switching position adjustment	P-3	下 -.-.-	x	The rod horizontal position adjustment, by short press or long press "up and down key", can automatically adjust the rod to the horizontal direction position
Open the low speed running Angle	P-4	0-60	0	When the low speed running area is opened, the end speed of P10 is the running speed in the low speed area, and the deceleration strength is too large and P10 is reduced
Turn off the gate at a	P-5	0-60	0	In the low-speed operation area, the end speed of P11 is the running speed

low-speed operation Angle				in the low-speed area. If the deceleration strength is too large and P11 is reduced
Opening speed reduction time	P-6	0.1-10.0	1.0	The larger the value, the smaller the acceleration area, the larger the deceleration angle, the smaller the value, the larger the acceleration area, the smaller the deceleration angle
Turn off the brake and slow down	P-7	0.1-10.0	1.0	The larger the value, the smaller the acceleration area, the larger the deceleration angle, the smaller the value, the larger the acceleration area, the smaller the deceleration angle
Response time of the opening gate into the deceleration zone	P-8	1-100	8	In the response time of entering the deceleration area during the opening process, the smaller the value, the less obvious the deceleration effect when entering the deceleration area
Response time of the deceleration	P-9	1-100	8	In the response time of entering the deceleration area during the closing process, the smaller the value, the

zone				less obvious the deceleration effect when entering the deceleration area
Opening speed	P10	1-50	5	The speed of the delay is adjusted slowly, and the value is reduced.
Closing speed	P11	1-50	5	The speed of the delay is adjusted slowly, and the value is reduced.
Rbounding sensitivity	P12	1.0-20.0	12.0	The smaller the value, the more sensitive the rebound, the larger the value, the less sensitive the rebound
Reaction time of rebound	P13	10-500	50	Rebound reaction time, as measured in the unit of ms
Motor maximum strength	P14	10-100	80	Maximum output strength (PWM duty ratio) during gate operation
No sense automatic closing time	P15	0-300	0	After opening the gate, if no car is passed, the gate is automatically closed. For example, 10 means waiting for 10 seconds to automatically close the gate, and if 0 means the function is cancelled
Ground-sensing delay	P16	0-200	0	Unit seconds, after the ground sense detects the car through, the delay X

closing time				seconds off
Open the gate count	P17	0-3	0	0: Not Enable 1: Enabled. It means that after recording N times of open gate, the gate is closed after detecting N times; 2: anti-following mode; 3: open, ground pressure sense count.
Urgent stop buffer time	P18	0.1~4.0	0.5	Unit seconds, the smaller the time, the faster the stop, the greater the time, the slower the stop
Urgent stop lock shaft strength	P19	1~40	20	After the emergency stop, the maximum lock shaft strength, the greater the value, the greater the lock shaft strength
Motor rated speed	P20	0.1-6.0	1.8	Motor rated speed, default 1800rpm / min.
burn-in test	P21	0-20	0	0: Close the aging test 1.0-20.0 means to wait for X seconds after opening and closing before automatic test <0 Represents half aging and the cycle aging at different angles
Remote	P22	0-4	0	0:433 code (2,4,8); 1:430 code

address coding mode (20-bit or 16-bit)				(30,03,0C); 2:430 code (0C, 30, C0); 3:433 code (4,1,2); 3:433 code (8,4,2);
Find zero speed	P23	1-100	40	Maxmaximum output limit (PWM duty cycle)
Opening time	P24	1-900	5	Unit of ms, the smaller the time, the faster the start
Closing startup time	P25	1-900	5	Unit of ms, the smaller the time, the faster the start
Open the gate in place	P26	0-100	2	Open the gate in place strength, the greater the value, the faster the speed in place
Close the gate in place	P27	0-100	2	Close the gate in place strength, the greater the value, the faster the arrival speed
Photosensitivity	P28	1-33	25	The larger the value, the earlier the light is on, the smaller the value, the later the light is on
Photosensitivity delay time	P29	1-300	20	Photosensitivity detects that the light meets the delay of X seconds when the light switch conditions

Find zero strength	P30	1-100	30	Zero strength, the greater the value, the faster the speed
The motor finds zero mode	P31	0-2	0	0: Up up 1: Down down 2: up and down
Open the gate to rebound dead zone	P32	0-100	90	Unit Angle, how much is the opening gate away from the boundary
Close the gate rebound dead zone	P33	0-100	10	Unit Angle, how much to close the gate from the boundary
Open on relay mode	P34	0-9	3	See Annex 1
Close the relay mode	P35	0-9	0	See Annex 1
Maximum protection time of the motor	P36	1-100	20	Unit seconds, the maximum time of the motor opening or closing
Agreement selection	P37	0-900	0	0:485 Agreement.1-900: the upload time interval of the mqtt protocol
485	P38	1-255	1	485 Communication ID

Communication ID				
485 Communications Baud rate	P39	0-3	2	0：115200 1：9600 2：19200 3：38400
In place lock shaft strength	P40	0-50	0	Default to place lock shaft strength 0
Ground sense signal sensitivity	P41	0.1-10.0	0.2	Land feeling is effective in the shortest possible time
Anti-lifting rod Angle	P42	0-50	10	When the gate lever leaves the switch in position X, continue to execute the switch in position command
Maximum duration of the emergency stop lock shaft	P43	0-300	30	After the emergency stop, after the lock shaft exceeds the maximum time of X seconds, the door opening action will be performed. If it is 0, lock the shaft all the time
Wait time after the rebound	P44	0-50	0	After the rebound signal disappears, the delay continues to close the gate. If it is 0, it means that the rod does

				not fall after opening in place, and the command is required to drop the bar
Stop the port signal mapping	P45	0-1	0	0: No mapping 1 is mapped to the opening signal
Ground sense does not detect the angle	P46	0-100	20	The ground signal is not detected after the switch lever is below the X angle
Overfeeling allows the drop Angle	P47	0-100	87	In the process of opening the gate, over the ground feeling, the gate to lift the pole above the X Angle will fall pole
Remote control allows the drop lever angle	P48	0-100	87	In the process of opening the gate, the remote control closes the door, and the gate will lift the bar to the Angle above X
Slow down mode	P49	0-1	0	0 Standard mode, 1, in pressure sensing mode
obligate	P50	-50-50	3	obligate
obligate	P51	-50-5	3	obligate

		0		
Open the gate acceleration area strength	P52	1-100	30	Open the gate acceleration force, the greater the value, the faster the acceleration
Close acceleration area	P53	1-100	30	Close the gate speed strength, the greater the value, the faster the acceleration
Opening speed response	P54	1-200	30	Opening speed response
Switching speed response	P55	1-200	30	Switching speed response
Open the foundation speed	P56	1-100	90	Open the foundation speed
Switching foundation speed	P57	1-100	90	Switching foundation speed
The buzzer switch	P58	0-1	1	0: Close; 1: Open
Anti-freezing	P59	0-90	0	Open the Angle after the antifreeze

Angle				time reaches
Anti-freezing time interval	P60	0-100	0	The unit minute detection did not perform the door opening operation to open and close once at this time
Ground sense effective Angle	P61	0-90	90	When falling off the rod, the ground sense is effective, and 90 is effective for the whole process. This Angle must be greater than the ground sense not detection Angle to form the ground sense detection area.
Long time opening the gate alarm output time	P62	0-60	0	When the opening signal lasts for X seconds, the long opening alarm signal is transmitted to the background server through the serial port.
Advertising light control mode	P63	0-3	0	0: light sensation; 1: time control; 2: light sensation + time control; 3: light sensor light on, delay off the light
Real-time clock-time calibration	P64	0-23	12	Real-Time Clock (RTC) at-time calibration (hardware support required)
Real-time	P65	0-59	0	Real Time Clock (RTC) Permission

clock branch school quasi				(Hardware support required)
The moment when the advertising light is turned on	P66	0-235	185	18:30 Light on (hardware support required)
Advertising lights turn off the lights moment	P67	0-235	60	6:00 lights off (hardware support required)
Power off and switch	P68	0-2	0	0: close; 1: power off opening; 2: power off closing
Power supply maximum current	P69	0-500	100	Power supply output maximum current (in 0.1A)
In place lock shaft current	P70	0-50	10	Maxmaximum current (0.1A) with P40
Low-voltage protection time	P71	0-100	30	Low-voltage protection time (in 0.1 seconds)
Low voltage	P72	0-30	14	Low voltage protection trigger

protection trigger voltage				voltage (unit: 1V), below which voltage into the low voltage protection state.
Low voltage protection recovery voltage	P73	0-30	16	Low voltage protection recovery voltage (unit: 1V), above which the voltage enters the low voltage recovery state, and the protection time is restored to the normal working state.
The parameter is quickly set	C	1-8	1	This parameter is used to quickly select the model

Annex 1

	reserve Often closed end	Open in place (P34) Often start	com	Close in place (P35) Often start
Advertising light mode: 0	It's dark Relay suction daybreak			It's dark Relay suction daybreak Relay

	Relay disconnected			disconnected
Alarm mode: 1		After the illegal lifting of the rod Disconnect after 500ms short connection		After the illegal lifting of the rod Disconnect after 500ms short connection
Power supply mode: 2		After the start Relay suction After closing in place Relay disconnected		After the start Relay suction After closing in place Relay disconnected
Traffic light 1:3	After closing in place Relay	After opening in place Relay		After closing in place Relay suction After opening in

	suction	suction After closing in place Relay disconnected		place Relay disconnected
Traffic light 2:4	After the start of the Relay suction	After the start Relay suction After the start of the Relay disconnected		After the start of the Relay suction After the start Relay disconnected
Linkage mode: 5		Receive a command Disconnect after 500ms short connection		Receive the order Disconnect after 500ms short connection
Three-state mode: 6		After opening in		After closing in place

		place The relay is closed and disconnected in any other state		The relay is closed and disconnected in any other state
Pulse mode: 7		After opening in place Disconnect after 500ms short connection		After closing in place Disconnect after 500ms short connection
Motor status: 8		The relay is engaged during the switch and disconnected in other conditions		The relay is engaged during the switch and disconnected in other conditions
Traffic light 3:9		Open the relay in		Open the relay in place and

		place and disengage in other conditions		disengage in other conditions