Barrier Gate Manual

(For DZX2.X Control Board)

SP BB 200 Fencing / Folding

(The second version)
(Pictures for reference only, the product prevails in kind)

Contents

Warning!

For safety, please do follow the instruction strictly to manage this product:

1. It is forbidden to open the barrier cabinet top cover or door when it is working.

2. There must be a grounding connection for the barrier cabinet.

3. Make sure there is no person or any obstruction under the boom when it is falling.

4. Before delivery, the barrier gate spring and the boom length are well-balanced. It is not allowed to change the boom length randomly. If needed, please check with the technician.

1. Brief Introduction

Thank you for purchasing our product. This product uses the latest mold designing technology, die-casting manufacturing technology. So the quality is reliable. And the mechanism uses gear worm and crank link structure, which make the boom operate quickly and steadily. And the maintenance will be easy and convenient.

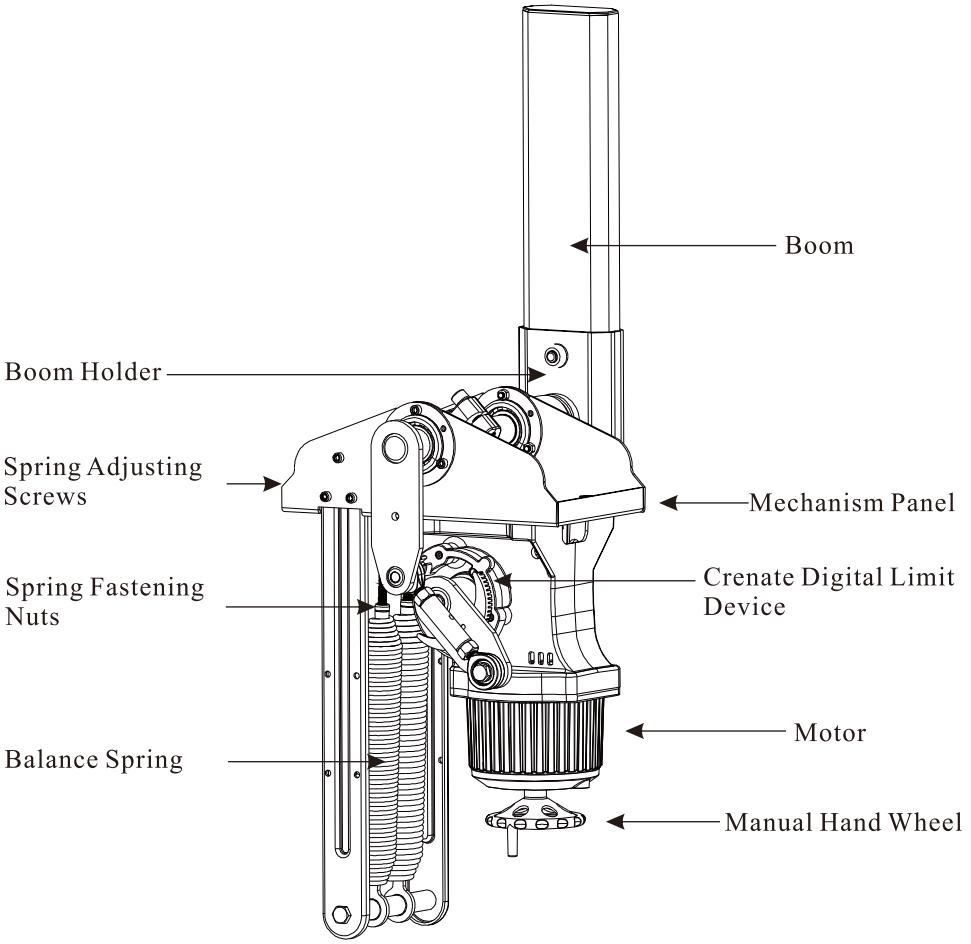
2. Functions and Features

2.1. Open the barrier gate by manual hand wheel when power off and automatic reset when power on.
2.2. Boom running smoothly with a motor transmission of cranks and shafts.
2.3. Remote control to operate the barrier gate.
2.4. Auto-reverse when the boom meets obstruction, and auto-stop mode is optional.
2.5. Infrared photocells interface is available. (need to install photocell device)
2.6. Loop detector interface is available, to avoid hitting the car, and automatic boom falling down after car passing. (need to install loop detector)
2.7. Integrated RS485 communication interface, to control the boom up, down and stop by computer.
2.8. Interface for Red & Green light.
2.9. Integrated counting function, can store the times of opening signal, deduct the times when car passing the loop, boom falling down after car passing through, well improve the traffic efficiency.
2.10. Integrated with auto-closing function, coordinated with counting function, if the numbers of car passed less than the stored numbers, the boom will auto fall down by countdown, but will be new countdown if there is up signal or loop detector signal.

3. Technical Data

3.1. Working temperature (motor): -30℃~+85℃
3.2. Working Power: 220V±10%, 50HZ, or 110V ±10%, 60HZ
3.3. Motor Power: 300W
3.4. Humidity: ≤90% RH
3.5. Distance of remote control: L≥30M
3.6. Insulation Grade: F

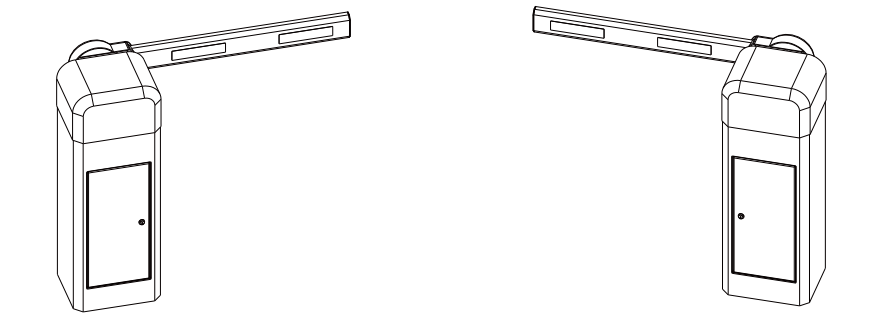
4. Mechanism Structure



(Figure 1)

5. Installation Direction Definition

When placing the order, please confirm “left-installed” or “right-installed”. Figures as below:

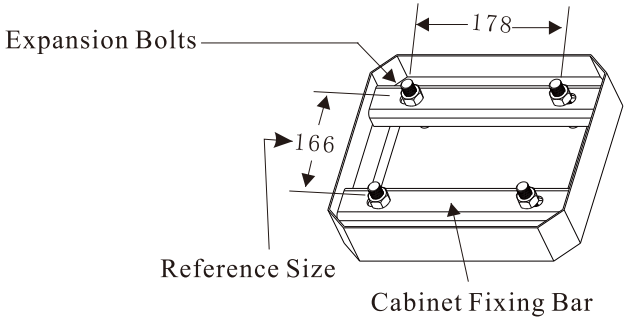


(Figure 2)

6. Mechanical Part Installation and Adjustment

6.1. Installation of cabinet

Please select the correct type of barrier gate according to the specifications of the place, and then fix the barrier cabinet with expansion bolts. (refer to Figure 3)



(Figure 3)

(According to the supplementary size)

6.2. Installation of boom

Using 2 units screws and nuts of M12*70 to fix the boom to the boom holder with the boom press board.

6.3. Spring selection, Installation and adjustment

The barrier gate is well-adjusted before delivery. For further adjustment, please follow below instructions.

Warning: please make sure the power is disconnected before this adjustment!

6.3.1. Spring selection and distinguish

The length of spring prevails in kind, designing change without notice.

Boom Type	Boom Length (M)	Spring Selection
	Boom Dimension: 100*45*1MM	Diameter Φ (MM)
Straight Boom	6≥L≥5	Φ5.5 + Φ4.5
	5>L≥4.5	Φ6.0
	4.5>L≥3.5	Φ5.5
	3.5>L≥2.5	Φ4.5
Straight Boom with Rubber	6≥L>5	Φ6.5 + Φ4.5
	5≥L≥4.5	Φ5.5 + Φ4.5
	4.5>L>4	Φ6.0
	4≥L≥3.5	Φ4.5 + Φ4.5
	3.5>L≥3	Φ5.5
Articulated Boom	6≥L>5	Φ6.5 + Φ4.5
	5≥L>4	Φ5.5 + Φ4.5
	4≥L≥3	Φ4.5 + Φ4.5
Fence Boom, Two-levels	5=L	Φ6.5 + Φ6.5
	5>L>4	Φ6.5 + Φ5.5
	4≥L≥3	Φ6.5 + Φ4.5
Fence Boom, Three-levels	4≥L>3	Φ6.5 + Φ5.5
	3≥L≥2	Φ5.5 + Φ4.5

The spring is stretchable one, and the specification and color as following:

Item	Diameter Φ (MM)	Spring Color
1	Φ4.5	Red
2	Φ5.5	Blue
3	Φ6.0	Green
4	Φ6.5	Yellow

6.3.2. Spring installation, disassembly and adjustment

Dismantlement steps: Keep the boom at vertical position, see figure 1, loosen the spring fastening nuts, unscrew the M8*140 spring adjusting screws by a hexagonal spanner, then take off the spring.

The steps for installation and disassembly the spring are the opposite!

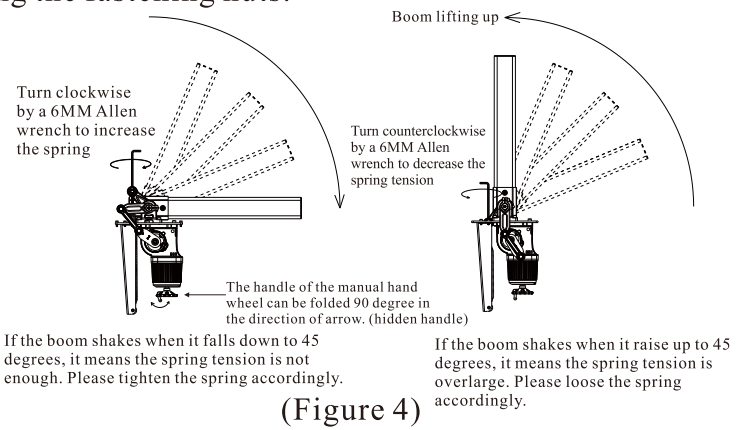
6.3.3. Boom balance adjustment

6.3.3.1. According to the boom balance status (see Figure 4), repeatedly adjust M8*140 screws, to make the boom well balanced.

6.3.3.2. For the barrier gate using double spring, please adjust the springs simultaneously to make the boom well balanced.

6.3.3.3. If boom shaking seriously when lifting up or falling down (see Figure 4). Adjustment as following: If the boom shaking seriously when lifting up, that means the spring is too tight, please loosen the spring repeatedly; if the boom shaking seriously when falling down, that means the spring is too loose, please tighten the spring repeatedly.

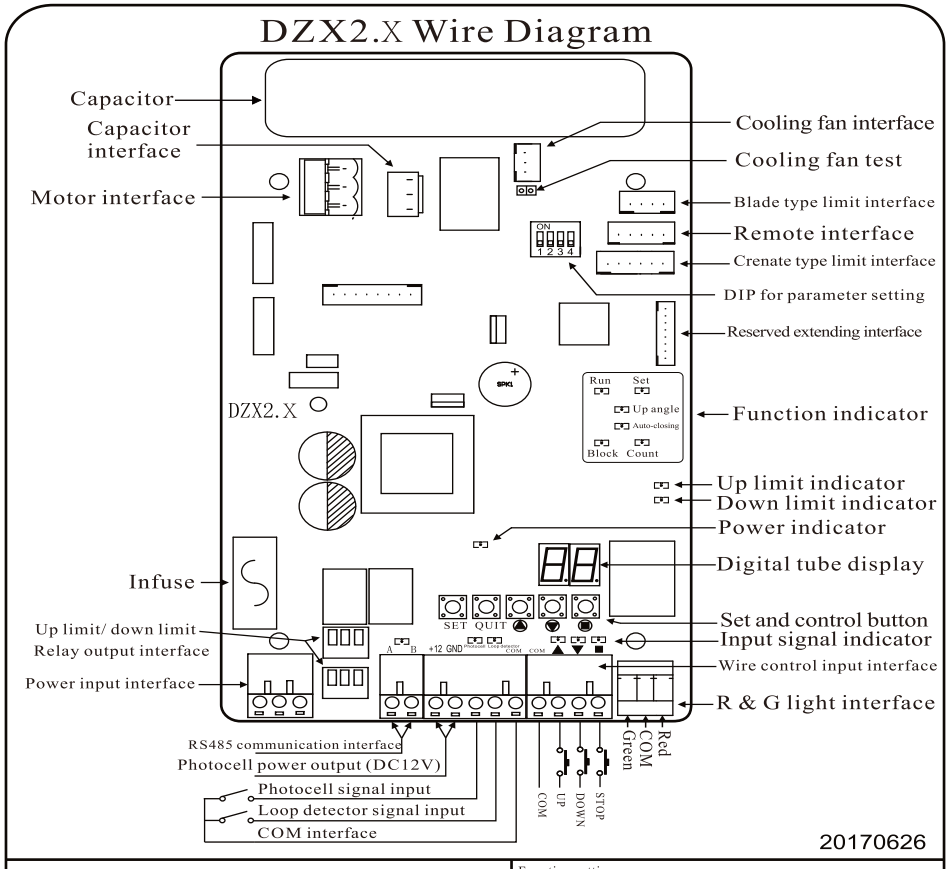
6.3.3.4. Before adjusting the balance spring adjusting screws, please loosen the spring fastening nuts firstly, after boom well balanced, tightening the fastening nuts.



(Figure 4)

6.4. Manual Hand Wheel Usage

The mechanism is equipped with manual hand wheel (see Figure 4). When power off, the boom can be raised up by turning the manual hand wheel.



DIP for parameter setting (New DIP setting valid only after re-powered)

DIP 1 (limit type choosing)
OFF: Blade type ON: Crenate type

DIP 2 (voltage choosing)
OFF: 220V ON: 110V

DIP 3 & 4 (speed choosing)
3 ON, 4 OFF: 1s 3 OFF, 4 OFF: 6s/3s 3 OFF, 4 ON: 3s/1.8s

Function setting:
After power on, in limit position or stop status, long press SET button for 3s, green setting indicator lighting, entering to setting status, then press SET button to choose the corresponding functions. Press ▲ and ▼ button to do the adjustment and choosing, and press QUIT button to exit the setting, coming back to working status.
1. Up angle: can be adjusted during 50~90 degree.
2. Auto-closing: 0F is closed and open is 3s~60s can be adjusted.
3. Meeting obstacle: b0 is closed; b1 is lightest force, b2 is light force, b3 is middle force, b4 is great force (default is b2). For blade type limit, b0/b3/b4 are closed.
4. Counter: 0F is closed, on is open.
5. RS485: 0F is closed, on is open (the address code is 1~99)
6. Normal Close (NC) and Normal Open (NO) setting: Press QUIT button and holding, then re-powered, after digital tube lighting, then release. Press SET button, the digital tube shows N.C. or N.O., select the required program, and then press QUIT button, set done.

Product Maintenance

1. Keep the barrier gate clean.
2. Check if the fasteners are loose or falling off every month, and fastening in time.
3. Check the spring elasticity and balance, and readjust the balance after barrier gate running 30000 times. Change a new spring after running 500,000 times.
4. Check the easily worn-out parts (like spring, limit switch) every half year by professional, and renew it.
5. Remote control distance will be short or not working in case of being shielded by metal objects, low battery, extreme weathers, or interference with frequency.

7. Electrical Diagram Explanations and Instructions

All the electrical connections are done before delivery and please don't change it randomly. The necessity is to connect the power and grounding connection. Explanations and instructions for the main functions and interfaces as following (from left to right):

7.1. Up limit/down limit relay output interface:

This interface is for up limit (or down limit) relay output (no power, switch signal), system can get the signal of boom position from this interface.

7.2. RS485 communication interface:

This interface is for connecting the PC serial port via UTP-unshielded twisted pair, RS485-RS232 convertor, or RS485-USB convertor. Realize computer control the barrier gate, and oversee the status of barrier gate according to the communication protocol. Address can be set by setting menu.

7.3. Photocell and loop detector interface:

The left 2 ports is for DC 12V power output, can provide power for photocell (currency less than 0.5A); the right 3 ports are photocell signal input, loop detector signal input and COM. The dry contact signal NO and COM of the photocell receiver, connecting to "Photocell signal input" and "COM" interfaces of the control board. The dry contact signal NO and COM of the loop detector output, connecting to "Loop detector signal input" and "COM" interfaces of the control board.

7.4. Wire control signal input interface:

This interface is dry contact input signal, UP (or DOWN, or STOP) connect with "COM", the control board will response accordingly. User can use this interface to connect IC card system or parking system, and it can also connect button switch to control the barrier.

7.5. Red & Green light interface:

This interface is no power, same as switch, "COM" need to connect with corresponding power of the R&G light. When boom falling down to horizontal position, red light will keep lighting; when boom lifting up to vertical position, green light will keep lighting. During the boom falling down or lifting up, the red light will keep lighting (factory default), and can also set the red and green light be flashing alternately. Setting method: Pressing "SET" and "QUIT" button (no loose), then power on, the digital tube displays 0F (means the red light will keep lighting during boom falling down or lifting up), or 0n (means the red and green light be flashing alternately). Loose these two button, you can choose 0F or 0n, then press "QUIT", set well.

7.6. Function setting

7.6.1. Boom up angle setting:

After power on, in limit position or stop status, long press "SET" button for 2 seconds, when "Run" indicator off and "Set" indicator (at Function indicator area) lighting, entering to setting status (the same below). When "Up angle" indicator lighting, the number displayed is the current boom up angle (factory default is 90 degree). Press ▲ and ▼ button to set the angle (degree) by every 5 degree, the angle can be set as 50~90 degree. After setting well, press "QUIT" button to exit the setting, coming back to working status ("Run" indicator lighting), when the boom open to up the up limit position, the "Up angle" will be lighting, and the digital tube displays the boom up angle.

7.6.2. Auto-Closing function setting:

When the boom opens to the up limit position, start to being countdown according to the set time, after countdown completed, the boom will be auto-closing.

Setting method as following: entering to setting status (same as above), press "SET" button until "Auto-closing" indicator lighting, digital tube displays the current setting status. "0F" means the auto-closing function is off. Press ▲ and ▼ button to set the time (seconds), the time can be set as 3~60s. After setting well, press "QUIT" button to exit the setting, coming back to working status.

If the boom is at up limit position, the boom need to fall down and lift up by remote or wire control, then the auto-closing function will be effective. When the boom open to up limit position, "Auto-closing" indicator lighting, at the same time, the digital tube displays countdown time, after countdown completed, the boom will be auto-closing.

In the countdown process, if there is up or loop detector signal, main control board will wait for the signal to disappear, then will be countdown again. If there is stop signal, this auto-closing will end; next time, when the boom opens to up limit position, the auto-closing will restart. If there is down signal, boom will fall down directly.

7.6.3. Auto-Reversing function setting:

When the boom meets obstacle during falling down, it will auto-reverse (lift up), at the same time, "Block" indicator lighting and the buzzer sounding "di-di", user can adjust the force of meeting obstacle or close auto-reversing function.

Setting method as following: entering to setting status (same as above), press "SET" button until "Block" indicator lighting, digital tube will display the force of meeting obstacle, as following:

b0 is closing auto-reversing function;
b1 is lightest force;
b2 is light force;
b3 is middle force;
b4 is great force (factory default is b4)

Press ▲ and ▼ button to set the force. After setting well, press "QUIT" button to exit the setting, coming back to working status.

7.6.4. Counting function setting:

When the motorcade pass the barrier, there will be many up signal input, the main control board will record and show the numbers. And when the car passes the loop one by one, it will minus one by one, when it become zero, the boom will be auto-closing.

Setting method as following: entering to setting status (same as above), press "SET" button until "Count" indicator lighting, the digital tube will display on (means open the counting function) or 0F (means close the counting function), and you can choose open or close by pressing ▲ or ▼ button. After setting well, press "QUIT" button to exit the setting, coming back to working status.

When counting function is on, and the up signal of wire control is over 2 times, the "Count" indicator lighting, at the same time, the digital tube will display the number of signal input. When the boom opens to up limit position, the number will be cleared up by pressing "STOP" button; and the number will be cleared up and boom will fall down by pressing "DOWN" button. It couldn't count if press "UP" button of the remote controller.

In order to improve the traffic passing efficiency, it is better to open auto-closing and counting functions at the same time for license plate recognition system and the large traffic flow entrance and exit.

7.6.5. RS485 communication function setting:

Setting method of the address code as following: entering to setting status (same as above), press "SET" button until the indicator of RS485 interface lighting, the digital tube will display 0F, means RS485 is off, you can press ▲ or ▼ button to open RS485 and choose the address code from 1 to 99 (in the command table, "Open" command supports counting function).

8. Common Malfunctions and Solutions

8.1. The boom moves a little and then stops, when rising and falling .

8.1.1. Check up if DIP 1 sets correctly.

8.2. The boom falls down normally, and need to press "Up" button for many times, then can lift up to limit position.

8.2.1. Readjust the balance spring.

8.3. For 3s barrier gate, sometimes the boom lifts up with slow response.

8.3.1. DIP 3 down, and DIP 4 up for 3s/1.8s barrier.

8.4. There is block on 1s barrier gate, or shaking seriously on 3s or 6s barrier gate.

8.4.1. Check up if DIP 3 and DIP 4 set correctly.

8.5. There is big noise on 1s barrier gate.

8.5.1. Check up if DIP 2 sets correctly. DIP 2 down is for 220V motor, DIP 2 up is for 110V motor.

8.6. When power son, Press "Up" or "Down" button, there is no reaction on the boom.

8.6.1. Check up the power supply and the fuse.

8.6.2. Check up if the remote controller matches radio receiver; or check up if the battery inside lack of power.

8.6.3. Check up if there is co-channel interference, and press the buttons on the control board to check if can work.

8.6.4. Check up if the external protection circuit was in failure or in the protection status. Check up if the indicator of photocell and loop detector are lighting. Re-power, check up if the digital tube has the instructions as below, if has means the control board detects the corresponding signal is at work, need to exclude the signal, and then can work normally.

L1: Boom stop signal of wire control; L2: Boom down signal of wire control;

L3: Boom up signal of wire control; L4: Loop detector signal;

L5: Photocell signal; L6: Boom stop signal from remote control;

L7: Boom down signal of remote control; L8: Boom up signal of remote control.

8.7. Fault code description of digital tube on control board:

E1: Main control board hardware failure (influences 1s barrier with crenate type limit switch).

E2: Current is abnormal (may influence auto-reversing function).

E3: Not detected the current of motor.

E4: DCT board voltage is abnormal, when connect with DCT board.

E5: Crenate type limit switch connect wrong.

E6: Running time timeout protection.

9. Warranty and Service Items

9.1. Free service is offered for component parts in one year warranty time (not includes the barrier boom).

9.2. Lifetime service with charge accordingly.

9.3. Technical questions are supported.

9.4. The below items and situations are not included in the range of free service:

9.4.1. The user does not follow the instruction and cause any damage of the product.

9.4.2. The power supply is not stable, over the range of permitted voltage or not accordant to safety electric using standard.

9.4.3. The user installs or uses the product in wrong methods, cause damage to the control system.

9.4.4. Natural disaster causes damage to the product.

9.4.5. Warranty time is over.

9.4.6. Service items are out of our promises.

10. Maintenance

10.1. Keep the barrier gate clean.

10.2. Check the joints ever month in case of any loose parts.

10.3. Check the spring elasticity after the barrier gate running 30000 times.

10.4. Check the easily worn-out parts (like spring, limit switch) every half year and renew it.

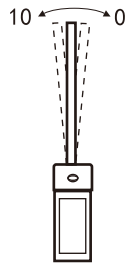
10.5. Remote control distance will be shortened or not work in cases like big object screening, battery exhausting, extreme weathers.

11. Packing List

Name	Specification	Quantity	Unit	Application
Screws, Nuts, Flat Pad	M12*70	2	sets	Fixing the boom
Boom Fixing Bar		1	pcs	
Boom Holder Plastic Cover		1	sets	Optional
Cabinet Fixing Bar		2	pcs	Fixing the cabinet
Expansion Screws	M16*150	4	sets	Fixing the cabinet
Support Post		1	pc	Optional
Radio Emitter		1	pcs	Optional
Keys		2	pcs	For cabinet door
Remote Controller		2	pcs	
Manual		1	pcs	

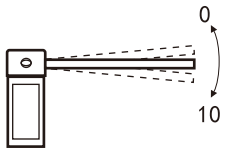
Appendix

I. Vertical and Horizontal Fine Adjustment of Boom (only for the barrier gate uses crenate digital limit)



If the boom couldn't open vertically or close horizontally, you can adjust it as following:

Vertical adjustment (the up angle should be set as 90 degree): In up limit status, keep pressing "SET" button, the digital tube displays the vertical calibration value (0~10), the value is big, the boom goes backward; the value is small, the boom goes forward, you can adjust by pressing ▲ or ▼ button. Release "QUIT" button to exit after setting well. And the adjustment effect when the boom open to up limit. (see right photo)



Horizontal adjustment: In down limit status, keep pressing "SET" button, the digital tube displays the horizontal calibration value (0~20), the value is big, the boom goes downward; the value is small, the boom goes upward, you can adjust by pressing▲or ▼ button. Release "QUIT" button to exit after setting well. And the adjustment effect when the boom open to down limit. (see right photo)

II. Remote Control Coding

Two types of remote control, multi frequencies for choice. If need to add or change remote control, methods as following:

1. Learning type

Learning method 1: Before connect power to the barrier gate, keep pressing button "STOP", then connect to power, after about 6 seconds, indicator of the receiver from lighting to flashing 4 times then off. That means learning well. (Note: during learning, please don't loose the button, or you need to relearn).

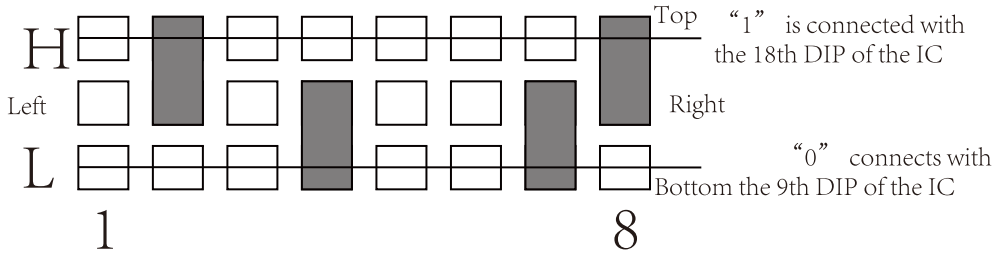
Learning method 2: Press button "UP" and "STOP" of the well learning remote controller at the same time for 4 seconds, indictor of the receiver keep lighting means entering to learning status; during 3 seconds, press button "STOP" of the not learning remote controller for 2 seconds (or press 2 times continuously), indicator of receiver flashes 4 times. That means learning well. If the remote controller doesn't receive any effective signal, it will quit learning status.

Clear the code of remote controller: take out the cover of the radio receiver, and power on, then make short circuit of the left 2 dial plate on the receiver mould, until the indicator goes out. Then the code of remote controller is cleared.

2. Fixing type:

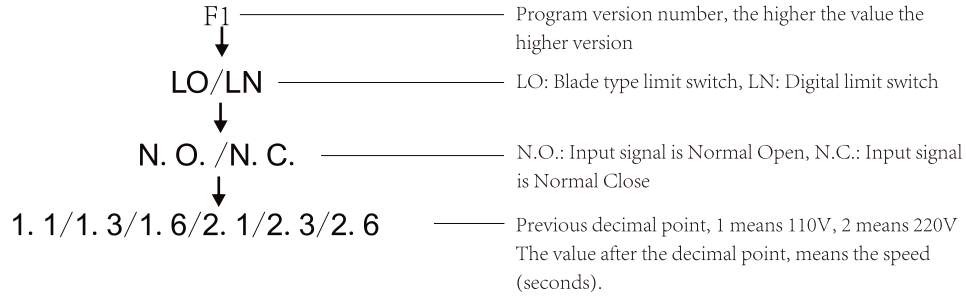
The code of remote controller and receiver should be the same.

Coding method: open the remote controller, take out the battery, there is dial plate, the direction is from right to left. The solder between middle port and top port is state "1". The solder between middle port and bottom port is state "0". Empty is state "X". The code as below is 10XX0X1X (Warning: please take out the battery before coding!).



III. Digital Tube Display Character of Control Board Explanations

1. Power on, digital tube display character explanations:



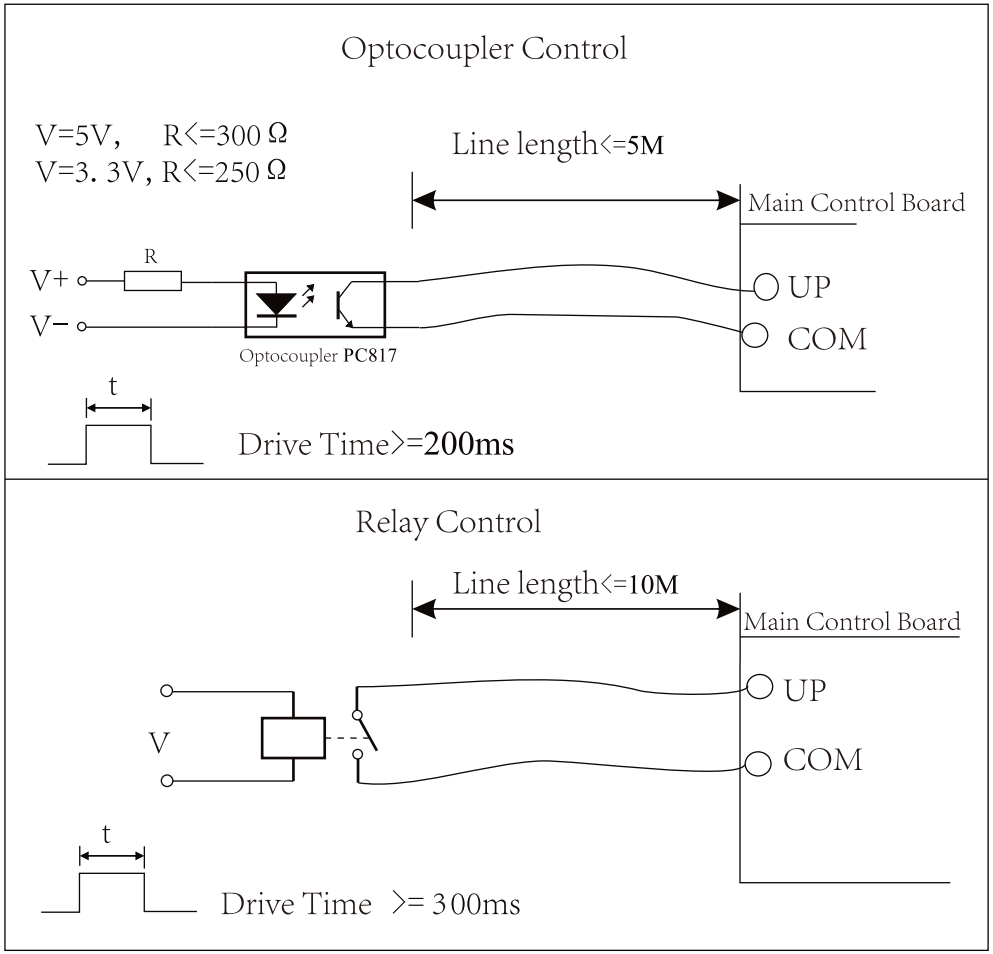
2. Running, digital tube display character explanations:

During running, or at stop status, disply: ——

When the boom falling down to down limit, display:

1.1/1.3/1.6/2.1/2.3/2.6

IV. Main Control Board Wire Control Drive Requirements



V. RS485 Communication Protocol

PC issued format, baud rate: 9600bps

Address	Command	Fixed Data 00H	Odd and Even verify (the first 3 bytes XOR)
1 Byte	1 Byte	1 Byte	1 Byte

Command Table

Address	Meaning	PC Command	Equipment Response	Example
Byte 0: adress		01H-63H: Device address 00H: Broadcast address, all connected devices respond	No response from the barrier/ broadcast	
Byte 1: PC command / barrier response	checking the barrier status	00H (No broadcast)	00H: Unknown 09H: Up limit OCH: Down limit	PC: 03-00-00-03(query NO.3 barrier) Barrier: 03-00-00-03 (unknown) Or barrier: 03-09-00-0A (Up) Or barrier: 03-0C-00-0F (Down) Or barrier: no response (mistake or no this barrier)
	Stop	01H	01H: Stop command received	PC: 05-01-00-04 (query NO.5 barrier) Barrier: 05-01-00-04 (received) Or barrier: no response (mistake or no this barrier)
	Up	03H	03H: Up command received	PC:05-03-00-06 (query NO.5 barrier) Barrier: 05-03-00-06 (received)
				Or barrier: no response (mistake or no this barrier) PC: 00-03-00-03 (broadcast) Barrier: no response (broadcast is not allowed to response)
	Down	05H	05H: Down command received	PC:09-05-00-0C (query NO.9 barrier) Barrier: 09-05-00-0C (received) Or barrier: no response (mistake or no this barrier) PC: 00-05-00-05 (broadcast) Barrier: no response (broadcast is not allowed to response)
	Return remote Stop signal		02H: Remote stop command received	Set address to be 01H, return 01-02-00-03
	Return remote Up signal		02H: Remote up command received	Set address to be 01H, return 01-04-00-05
	Return remote Down signal		02H: Remote down command received	Set address to be 01H, return 01-06-00-07