Intelligent Remote Control Swing Door Opener

Instruction Manual

Model – Fero 600-M

Contents Pages

Control box

□. Summary

Dear user:

Thank you for selecting of our intelligent remote control swing gate opener! Please carefully read this Instruction Manual before installation and use.If you have any problem that you can't settle during use, please contact your local distributor of our products.

□. Structures & Classification

1. Opener structure: as Fig. 1

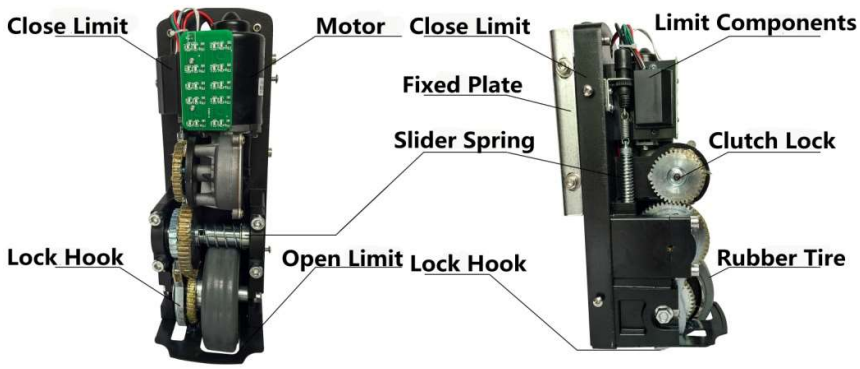


Fig.1

2.Control and power distribution structure, as shown in Fig.2

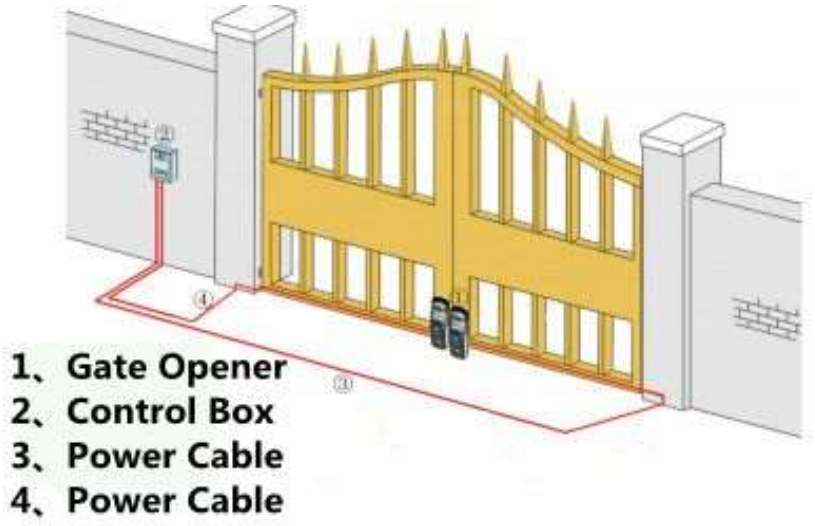


Fig.2

3.Classification of gate opener: Inward gate opener and outward gate opener.

4.Classification of Control system: 2- channel 5- line ordinary control system and 2- channel 2- line wisdom control system.

Ⅲ. Main Technical parameters

Description	Specification
Supply voltage	AC220V or DC24V
Open thrust	600N
Remote control distance	70m
Lifting range	0～300mm
Travel speed	10～15m/min
Environmental temperature	-50℃～+50℃
Rate of motor	120W×2
Size of door opener	H360mm×W130mm×D150mm
Size of control box	H250mm×W180mm×D90mm
Packing weight	21kg/ctn or 23 kg/ctn or 25kg/ctn

Ⅳ. Function Characteristics

1. Single-leaf or double-leaf opening: This function can be activated by pressing button.
2. Control box locking: To avoid unauthorized opening, this function can be activated by remote control.
3. Automatic detection and protection: The gate opener will automatically stop if any obstruction is detected during opening; it will return to the original position automatically if any obstruction is detected during closing.
4. Infrared detection and protection: The gate will automatically re-opened if any passing vehicle or person is detected during closing.
5. Automatic detection and access control: The gate opener can be connected to card reader, fingerprint scanner, anti-theft alarm, camera or any other devices for automatic access control.
6. Gate operating indication: The blue LED light on the gate opener will flash during gate opening, the red LED light on the gate opener will flash during gate closing, indicating vehicle and pedestrian that the gate opener is operating, make attention to the safety.(Optional)
7. Back up battery interface: The gate opener will be automatically switched to storage battery or solar cell mode upon external power failure.
8. Sequential operation: The gate opening angel and sequence can be set.

Please refer to the Instructions Manual of the control box for the foregoing functions, interfaces and detailed operating and setting methods.

Ⅴ. Operating Methods

This gate opener can be controlled electrically and manually. Please remove any obstructions within the working scope of the gate body and no vehicle or person allowed access during operation.

(I) Electric control operation

1. Press the button of the control box to realize automatic gate opening, closing or stop.
2. Press the button of the remote control to realize automatic gate opening, closing or stop.

3. The gate access control system can identify and control access automatically.

(II) Manual control operation

1. Manual opening: insert the clutch key into the lock hole and rotate it clockwise to disengage the clutch (the gate opener in manual mode), then push the gate open by hand.

2. Manual closing: push the gate to near the close position when it is in manual mode, insert the clutch key into the lock hole and rotate it anticlockwise to engage the clutch(the gate opener now in electric mode),then push the gate to the lock position by hand.

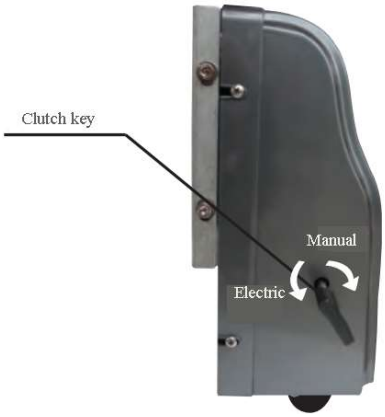


Fig. 3 Manual and electric switching

Ⅵ. Installation methods & Debugging

(I) Preparation

1. Check the flexibility of the gate during opening and closing, make sure that the gate does not bounce back when the gate reaches the open or close limit position.

When the gate is in the close position, the bottom edge of the gate frame shall be at least 25mm above the ground (slightly higher than the stop iron, as shown in fig.4).Make special adjustments if the gap is less than 25mm.

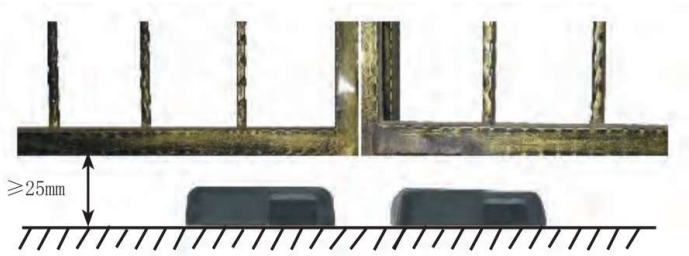


Fig.4 Heights of Gate Frame and Stop Irons

2. The unevenness of the ground within the working scope of the gate opener.

Fall h=Height of the highest point of the ground- height of the lowest point of the ground.

a) when 0＜**h**≤80mm, the fall is normal, choose the standard configuration.

b) when 80mm＜**h**≤140mm, the fall is large, choose long configuration.

c) when 140mm＜**h**≤300mm, the fall is too large, choose special configuration (dual slide)

3. Determination power of the gate opener

Measure the width, height, weight of the gate leaf and determine if ordinary or high-duty motor shall be chose according to the sealing conditions and external environments (e.g. ground conditions, wind force etc.)

Choose the model and configuration of the gate opener according to the user type and functional requirements.

4. Bury the wire pipes with reference to the wiring diagram of the power distribution system of the gate opener (Fig.2) and determine the diameter and number of cores of multi-strand flexible wires (power cables).

Two ways of system configuration are available according to the connection ways of gate opener and control box:

a) 2-channel 2-line gate opener and control box the gate opener and the control box are connected via two circuits of two-core power cables.

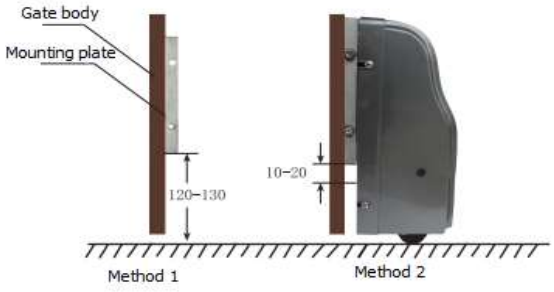
b) 2- channel 5-line gate opener and control box the gate opener and the control box are connected via two circuits of five-core power cables.

If any infrared sensor is added, please adopt three-core power cables to connect infrared sensor to the control box, and use two-core power cables to connect the infrared sensor's transmitting terminal with receiving terminal.

If any card reader is added, please adopt four-core power cables to connect the card reader to the control box.

Mark the position of the mounting plate on the gate body. Move the mounting plate further downward by 10-20mm from the mark; this is the actual installing height of the mounting plate.

In either method, the installing height of the mounting plate shall be appropriately adjusted according to the ground smoothness, gate size and weight, hinge flexibility and other factors.



Note: 1. Fasten the mounting plate with four bolts before mounting plate installation.

2.Keep the mounting plate vertical during installation and bolt or weld it onto the gate body.

3. Make one hole on either of the inner sides of the gate on the bottom fame (for entry and exit of wires) for wires. One flexible sleeve cover the wires shall be used where they go through the holes.

Fig.5 Holes on both inner sides of the gate on the bottom frame

4. Fix the gate opener and connect the wires (whose color shall be the same as label of terminal block of the control box or the color of the plug wire).

Check: Use the key to switch the gate opener to manual mode and push the gate body forward and backward.

The gate opener shall rise and fall freely with the fluctuation of the ground and no dead locking, hanging and suspending etc.

5. Installation of the stop iron (please refer to the following points):

When the gate is in the mode of manual operation, move the gate to the close position and install the stop iron into the lock hook. Use the key to switch the gate opener to electric mode and lock it there. Move the stop iron so that the centerline of the lock hole is aligned to the lock hook and mark the position of the stop iron. Drill a hole on the ground and fasten the stop iron with expansion bolts.

Fig.6
Position of stop iron and gate(overlook)

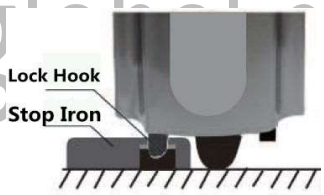


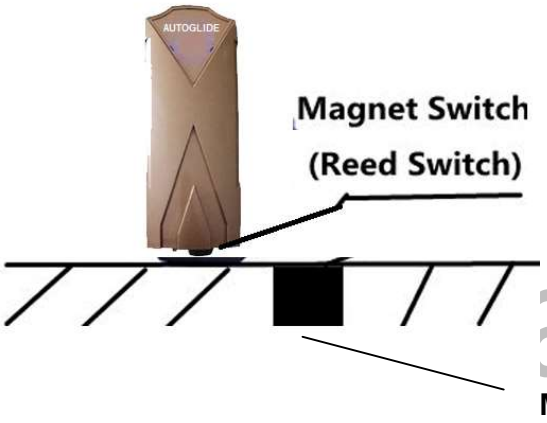
Fig.7
Position of stop iron and lock hook

Note	a) The stop iron for the gate leaf that is firstly closed shall be installed first when the gate has a floor stop. The two stop irons shall be distanced from each other by 10-15mm.
	b) The ground where the wheels of the gate opener are rested and the ground where the stop irons are rested shall be on the same level when the gate is at the close position.
	c) If any rubber buffer is to be installed between the pressure plates of the two leaves, they should be installed before the gate opener is installed. Otherwise, the reliable locking of the gate opener may be affected and the proper operation of the gate opener may even be disabled.
	d) The stop irons should be installed firmly and they shall not become loosened or displaced in operation.

Manually open and close the gate to check if the stop irons are properly installed.
a.Push the gate towards the stop iron when the gate is in manual mode, then use the key to switch it to electrical mode. Push the gate forward and the gate shall be reliably locked.
b.Use the key to switch the gate opener back to manual mode and the gate can be easily pushed open.

6. Installation of limit magnet for opening

Open the gate to maximum or designed position and retreat it by 200mm.Find the ground projection of the magnetic switch at the bottom of the gate opener, drill a hole there (Ø22mm) and bury a magnet leveled with the surface.



(IV) Operation and debugging of the electric gate opener
Check if the wiring is properly done and if the voltage meets the requirements before operation. Use the key to disengage or engage the clutch and check if the gate can be properly manually opened and closed. Push the gate to the mid-position and engage the clutch of the gate opener (in electric state).Switch on the mains power and the indicators are in normal condition.

1. Press the button of the remote control or the control box to open, stop and close the gate .Observe if the gate opener works in a stable and consistent manner and if it automatically stops in an accurate manner when the required position is reached. Otherwise, check it relevant parts are properly installed.
2. Check if the gate moves in the right direction as displayed by the control key. Otherwise, please correct wiring of the gate opener or motor.
3. Please see the control box's Instructions Manual for the locking method of keys.
4. Debugging of automatic stop upon obstacle and motor's loading capacity: it is necessary to appropriately adjust the potention meter (pressure or resistance) of the control box according to the gate size, hinge flexibility and ground evenness in order to increase or decrease the motor's capacity against resistances.
5. Test methods of automatic stop upon obstacle during opening , and re-open upon obstacle during closing:

a) Apply a counterforce (push or pull with hands) on one leaf during opening and the gate shall stop opening.

b) Apply a counterforce on one leaf during closing and both leaves shall retreat in the opening direction. If the motor's capacity against resistance is set to be too small the motor may easily stop operation. If it is set to be too big, the protective effects may be reduced.

6. Please read the control box's Instruction Manual for the protection time of the gate during operation. If the protection time is setting too short, the gate will stop automatically before it reaches the desired position.
7. Please read the control box's Instruction Manual for setting and time adjustment for automatic gate closing.
8. The time difference for delayed closing of the gate leaves shall be adjusted according to the different degrees of opening of both leaves.
9. Please see the Instruction Manual for details about the card reader, infrared protector and wiring.

Ⅶ. Maintenance and services

1. The turning parts of the gate opener shall be kept clean and free of any attachments.
2. Frequently clean away the debris in the grooves of the stop iron.
3. Properly lubricate various mechanical moving parts very quarter.
4. Check the power protector and the performance conditions of the backup storage battery once a month.

Ⅷ. Trouble shooting

Faults	Possible reason	Removal method
Door not move when press the remote control	1.Check if clutch is in electric state 2.Power outage 3.Fuse wire burn 4.Remote controller invalid 5.Circuit broken 6.Control box or door machine broken	Recover Recover power supply Replace Check and replace Check and maintain Maintain
Short remote control distance or remote controller invalid	1.Low battery 2..Control box locked or damage 3.Same frequency interference 4.The receive module of control box damage	Replace Unlock or replace Wait for the elimination of inference source Replace the receive module of control box
Fail to stop when travel to the limit	1.The magnetic steel missing 2.Open limit switch or components invalid	Recovery Maintain, replace
Fail to stop or re-open when travel to the limit	1.Close limit switch invalid or spring damage 2.Locating iron loose or barriers 3Sequence error of open and close 4.Circuit faults	Replace Maintain Re-travel Maintain
Door not move when press OPEN, CLOSE	1.The blocking protection of motor travel (the set value is small) 2.Limit components, limit switches or circuit board of control box faults	Check hinge or add lubricant on lifter door opener. Maintain, replace
Press OPEN , CLOSE, the indicator light flashes but the door opener can not move.	1.Circuit short or unwell connected 1.Fastening pieces loose or damage 3.Motor damage	Maintain Maintain, replace Maintain, replace

Instruction Manual for Control Panel

With soft start and soft stop low speed wisdom type

Product model: Two wires multi-function wisdom type **FERO 600-M**

System Methods: remote control and motor integrated with intelligent control

Object: Two channels two wires inward (outward) swing gate opener

Main electrical function: AC, DC type (AC 220V, DC 24V)

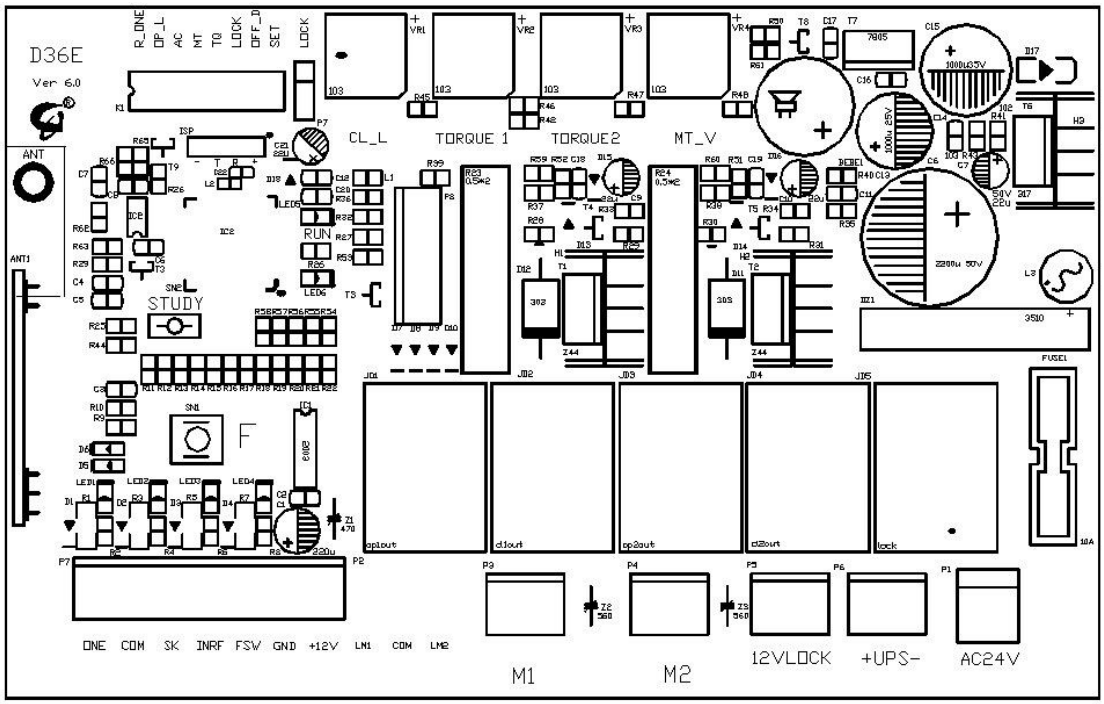
Rated power: 180W

Wiring distance: within 30 meters

Remote control distance: within 30-50 meters

Installation: Wall-mounted or desktop

Frequency: 433.92MHZ learning encrypted rolling code type



FERO 600-M Control Board

FERO 600 control board is specially designed according to 24V DC door opener, improved through D33. With soft start and soft stop low speed function, encrypted remote control ,higher confidentiality .This system can also optionally available with a back-up battery. When power off, the battery provides 24V DC power supply to continue working. The battery must be installed reversely, to avoid wall bracket hit power terminals during installation. As long as the door work

under correct procedure, the circuit board do not need maintenance normally. Install the control panel as close as possible to the place where the door motor is connected with minimum diameter of 1.5mm 2 core wires, to reduce the pressure drop and ensure system performance.

I. Function and features:

1. Anti-collision design: when the door travel is completed, only after press reverse key, the motor can be activated so that the over-travel can be avoided.

2. Motor time protection: Avoid long time running when travel failure, the time set to 2-240 seconds.

3. Auto close function: the time can be adjusted from 1~240 seconds.

4. Motor strength adjustment: motor running strength can be adjusted separately. When barrier blocks, the door stops travel in case of clamping people or object.

5.Motor opening and closing low speed function: this function make the door running more steady **.**

6. High security: remote control with high sensitivity, far remote distance and strong anti-interference. Using the most advanced jump codec technology, more safe and secretive than the traditional remote control (code number 6561 groups) in the market. Password number up to 100 million units, can not be deciphered.

7. Anti-clamping function: During door closing, when there are obstacles blocking the infrared, the door will automatically stop and run in the opposite direction, to prevent injuries or folder object.
8. LED fault display: it is easy to carry out maintenance and use through LED screen.

II. Red DIP switch setting:

RED DIP switch function of the control panel can be setting as followings

Red DIP switch 1 = Remote control with single key and three key interchange:
Turn on RED DIP switch 1 to OFF = ▲**open** ■ **stop** ▼**close** 🔒**Single** four keys control individually.
Turn on RED DIP switch 1 to ON = single key cycle, that is which key to be coded that is the key perform cycle action. For example: use ▲**open** to study , press ▲**open** = door open, press ▲**open** again=door stop, press ▲**open** once more=door close, press ▲**open** again=door open, cycle in this way.

Red DIP switch 2 = Opening sequence function
Turn on **RED DIP** switch 2 to **OFF ,** gate 1 and gate 2 open at the same time.
Turn on **RED DIP** switch 2 to **ON**, gate 2 will open 5 seconds earlier than gate 1.

Red DIP switch 3 = Auto close function

Turn on **RED DIP** switch 3 to **OFF**, without auto function.

Turn on **RED DIP** switch 3 to **ON** with auto close function.

With auto close function, the door will open to the limit, and perform auto close delay, function light flashing in 1HZ, stop indicator light flashing indicate timing of door close. When reach the setting time, the controller will preform auto close action.

Setting of auto close time: Turn on RED DIP switch 3 and 8 to ON, press F key, each press 1 second, how much time you want for the auto close, how many times you press F. After setting, you should turn on RED DIP switch 8 to off, DIP switch 3 position do not change. When perform auto close action, the door should open to the limit and detect the signal of open to the limit.

Red DIP switch 4=Low speed function during opening and closing

Motor with low speed function. With low speed function, the motor will automatic deceleration in place about 1 meter way from door completely closed position. Turn on RED DIP switch 4 to OFF, close low speed function. Turn on DIP switch 4 to ON with low speed function.

Red DIP switch 5= Resistance bounce function

Turn on RED DIP switch **5 to OFF, t**he motor will automatically stop when meet obstructions during opening or closing. Turn on RED DIP switch 5 to ON, if meet obstructions during opening the motor will automatically stop. During closing, if meet obstructions the motor will stop first, and then open the door to open limit in case of clip person or vehicle.

Red DIP switch 6 = Lock function

Turn on RED DIP switch 6 to OFF, the electric lock do not output voltage during opening.

Turn on RED DIP switch 6 to ON, during opening, motor will close and reverse 1 second, electric lock get electric and start action 2 seconds, motor start opening. Electric lock will hold electric 3 seconds and release when the motor start opening.

Red DIP switch 7 = Lock key open single door function

Turn on RED DIP switch **7 to OFF,** 🔒lock key of the remote control can open single door that is when press 🔒lock key of the remote control door 2 (later closed door) will open solely. Turn on RED DIP switch **7** to ON , 🔒lock key cannot open door solely.

Red DIP switch 8= SET:

Turn on RED DIP switch 8 to ON, start function setting.

During normal working you should turn RED DIP switch 8 back to OFF.

P7 jumper junction: jumper inserted in two pins of LOCK side remote control with lock function, pressing "stop" + "lock" at the same time to lock and unlock.

III. System setting

1. Slow speed soft stop adjustment operation:

Low speed Opening and closing can be set in two modes: double leaves opening and closing time can be set.

First mode: auto set low speed opening and closing time

After completely install and adjust the motor,(when setting the door should be on the close position, this is very important),turn on red DIP switch 8 and 4 to ON, and press open button of the control panel (or open button of the remote control) to open to door, motor will automatically running. Open and close double leaves in sequence, after double leaves running to the close limit, turn on red DIP switch 8 to OFF, buzzer will make a sound, setting is finished. Low speed open and close time is set automatically by system, door motor will auto decelerate at the position one meter away from completely close and open.

Second mode: manually set low speed opening and closing time

After completely install and adjust the motor,(when setting the door should be on the close position, this is very important),turn on red DIP switch 8 and 4 to ON, and press open button of the control panel (or open button of the remote control) to open to door, motor will automatically running. Open the first door firstly, user can press stop button of the remote control during motor running, motor will slow down quickly. This position is motor 1 low speed position, motor 2 is the same. During closing, motor 2 close firstly, user press stop button of the remote control when motor run to proper position, this position is motor 2 low speed position, motor 1 is the same. After double leaves run to the close limit, turn on red DIP 8 switch to OFF, buzzer will make a sound, setting is finished. Motor 1 and motor 2 low speed time during opening and closing is set by user.

CL_L (close sequence):motor close sequence adjustment, can be adjust between 0-10 seconds.
TORQUE 1 and TORQUE 2 (motor strength adjustment): clockwise to increase the strength, anti-clockwise to decrease the strength.
MT-V (low speed strength): adjust motor strength during low speed close. Clockwise to increase the strength, anti-clockwise

2. Add Remote controls operation:

Remote control adopt the latest encrypted rolling code, cannot be copied, with better confidentiality and safety. Press white **SN2 study** button (noted it is the white rectangle button)of the control board, LED 6 indicator light off, release your hand and press lock of the remote control twice as soon as possible, you will hear one sound “DI” and the study is finished. To add more remote controls, just repeat the above steps. Key points for learning of remote control: 1.the remote control not too close to the control panel, it is better to press at your back. 2. Press lock within one second after pressing the **STUDY** key of the control panel. 3. don’t press the **STUDY** key again after finishing study. The controller can be equipped up to 298 remote controls, with the 298 remote control, the first one will be invalid (that is cannot used).

3. Delete all the remote controls operation:

Long press white SN2 STUDY button (noted it is the white rectangle button) of the control board, 8s later, you will hear “DI”, indicator light change from off to on, release set key and remote controls deleted.

4. Door close sequence: motor close sequence adjustment

When the door have floor, closing angle can be adjusted from 0-30s.

5. Strength adjustment 1: (Torque 1)

Motor 1 running strength adjustment: the running strength can be adjusted by TORQUE 1, motor will stop when meet big resistance, in case clip person or object.

Strength adjustment 2: (Torque 2)

Motor 1 running strength adjustment: the running strength can be adjusted by TORQUE 1, motor will stop when meet big resistance, in case clip person or object.

6. Auto close function setting: User's can set the auto function self.

Turn on RED DIP switch 3 to ON, it is with auto close function.

Turn on RED DIP switch 3 to OFF, it is without auto close function.

When setting auto close function, door open to the open limit, perform auto close delay, function light flashing in 1HZ.When reach the setting time, controller perform auto close operation. Auto close time can be adjust by auto close potentiometer.

Auto close time setting: Turn on RED DIP switch 8 and switch 3 to ON, press F key, one press one second, after setting, turn on RED DIP switch 8 back to OFF, and position of switch 3 do not changed.

Note: Check the rotate direction of the motor

Make sure that the door work in correct direction after the control board connected to power. Press ▲**open** of the remote control, the door should open. Press ▼**close** of the remote control, the door should close. Close and open state is very important. If the direction is not correct, door will operate in opposition way. If find motor direction is wrong, only need to reverse red wire and black wire of motor 1 or reverse red wire and black wire of motor 2.That is if motor 1 direction is wrong, reverse red wire and black wire of motor 1. If motor 2 direction is wrong, reverse red wire and black wire of motor 2.If both of the motors direction are wrong, reverse red wire and black wire of motor 1, reverse red wire and black wire of motor2.

IV. Components for swing gate opener：

1. DC power supply (optional component like power reserve UPS): UPS do not need maintenance, automatically charging and supply power. During installation, connect UPS plug to UPS interface of the control panel. Install fuse of the UPS, pay attention to the direction of the plug, if it is reversely, UPS may burn.
2. Access code lock use outlet button or inter phone to open the door (card reader optional accessories, if added):Connect +12v power interface of the card reader to +12V power interface of the control board, connect -12V power interface of the card reader to GND power interface of the control board, connect PUSH/ON of the card reader to OPEN interface of the control board (Noted: Access card reader should be compatible with control board of our company, that is PUSH / ON output is a low voltage signal negative output).
3. Button switch (Far distance button single key cycle function): This control board with far distance button control function, when you need to add external button ,connect button switch to single key interface and public interface of the control board, button switch perform in this way:

   When the door close:---------- Open, during opening:----------Stop

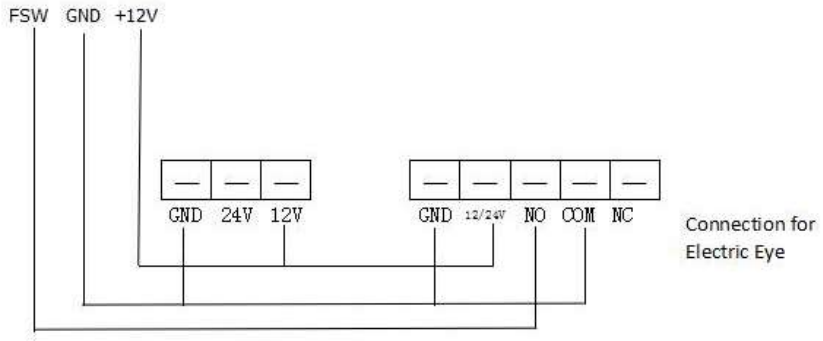
   When the door open:---------- Close, during closing:----------Stop

4. 12V electric lock interface: when the door is completely closed, 12V DC lock is used to avoid opened by force. If want to install electric lock, you must turn on RED DIP switch 6 to ON,

during opening, motor will close and reverse 1 second, electric lock get electric and start action 2 seconds, motor start opening.
Electric lock will hold electric 3 seconds and release when the motor start opening.

5. Ground sensor or infrared auto close interface: After the car (recommend to add ground sensor) or person (recommend to add Infrared) passing, motor automatically close, using this interface. Connect NO (Normal open) of the ground sensor or NO(Normal open) of the infrared to ground sensor interface of the control board, connect COM of ground sensor or COM of infrared to COM of the control board..When the door open to the limit, detecting gate opener to the limit, if ground sensor interface input terminal has normal close signal input, ground sensor will be function. When car or person leave ground sensor position or infrared position, ground sensor function, after ground sensor or infrared signal remove 3s , motor star working, performing auto close. When signal terminal of the ground sensor detect signal input, door will automatically stop and perform open action, open to the limit. Detect ground sensor signal again, after ground sensor signal remove, perform auto close.

6. The control board can connected with infrared (connection as following).
Jump the infrared to normal open, or connect to NO.
During closing of the motor, when photocell has action, the motor will stop 2s and then perform opening.



V. Attentions:

1. The working voltage of the controller is ~ 220V± 10%, don't connect to 380V.

2. The wire buried underground should use thick, double conductor. The three-core shielding layer of travel switch should be well grounded and not a adapter between. The conducting wire should be set into PVC tube or pipe and do waterproof processing.

3.The default value is 90 seconds. Use battery of DC12V, 27A for remote control, working life is one year. Remote control cannot be moisture, crashed. If want to reset password, please refer to password setting.

4. If the remote distance is short, please check if the mainframe is installed in the position that is shielded by metal objects or nearby.

5. Non-professional personal is forbidden to install the controller and circuit. We are out of responsibility for any personal safeties caused.

6. If the controller has any quality problem, please send it to agent. If repaired by self, we are out of responsibility for any loss caused by self-repair.

Safeties & Cautions:

（1）All the operations must be implemented according to the instructions, this is very important to personal safety.

（2）Please read instructions carefully before installation.

（3）Please keep the instructions properly for future use.

（4）Our product is in strict accordance with the instructions for the design and manufacture. Any violation of the instructions may damage the product or cause dangers.

（5）Our company is out of responsibility for any operation or use violating the instructions.

（6）Installation must comply with relevant safety standard.

（7）All the machine fittings must comply with national standard related.

（8）Our company is out of responsibility for the consequences caused by user's ignoring the process requirements of precision components during operation.

（9）Safety devices (like photoelectric switch, sensor etc.)should be installed to avoid damage.

（10）Any attempts to change the structure of the components is forbidden.

（11）The installation personnel should give detailed operation methods to the users as well as the regulations under emergency, also the "instructions "should offered.

（12）Only the operations indicated in INSTRUCTIONS are allowed.

（13）During installation, keep the children and other unrelated person away from the installation site.

（14）No unsafe factors around the installation site.

（15）Power supply should in accordance with the demand.

（16）Both the door opener and the door body must be well grounded.
Electric leakage as well as short protection device should be equipped.

（17）Before electric control system operate, remove all the barriers within the door covering area and any vehicles or person are forbidden to pass.

（18）Both the installation position and height of main control box should be proper, do not be exposed to sunlight and rain, forbidden to let children to operate the remote controller as well as control panel switch.

（19）If it is necessary to install a outer shield, consider that if it may shield signal of the remote control.

（20）Keep the remote control away from children in case of accident.

（21）Any attempts to dismantle this machine privately is forbidden, only the professional technician is allowed to make the maintenance.

（22） Before system maintenance, cut off the power supply, and check if the grounding system is correct.