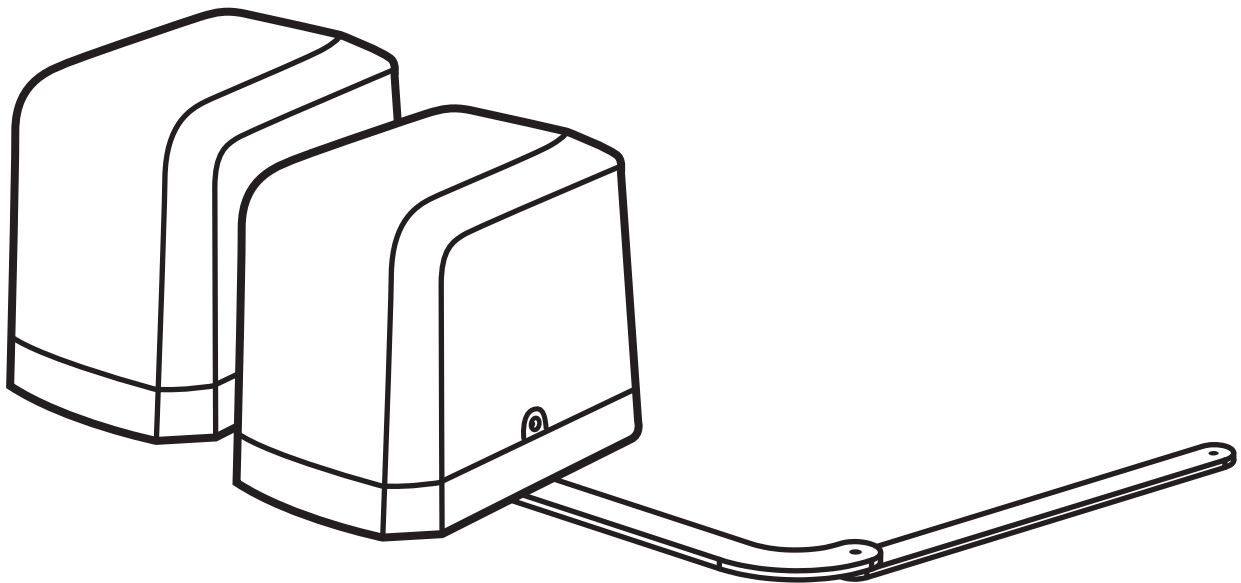


PA250 USER MANUAL

ARTICULATED ARM OPENERS

24V DC GEAR MOTOR

FOR RESIDENTIAL
USER MANUAL



INDEX

1.1	Warnings	
1.2	Installation	1
1.2.1	Standard Installation	1
1.2.2	Dimension Chart	1
1.2.3	Components of Installation	2
1.2.4	Installation of Articulated Arm Opener	2
1.2.5	Emergency Release	4
1.2.6	Photocell Installation	4
1.2.7	Green Box Installation	6
1.2.8	Power Supply Connections	6
2.1	Wiring Connection	7
2.1.1	Master Motor is installed at right side	8
2.1.2	Master Motor is installed at left side	9
2.2	LED Indication	10
2.3	Transmitter Memorizing and Erasing Process	10
2.4	System Learning Process	10
2.5	Gate Operation	12
2.6	Gate-moving Logic	12
2.7	Checking the Gate Movement	12
3.	Function Setting	12
3.1	Function of the Led Display	12
3.2	Photocell Adjustment	13
3.3	Operations for Function Settings	14
3.4	Function Settings	15
4.	Trouble Shooting	17
5.	Technical Features	17
5.1	Dimension	17
5.2	Technical Feature	18
6.	Maintenance	18

1.1 Warnings

Please read this instruction manual carefully before the installation of gate-automated system.

This manual is exclusively for qualified installation personnel. Manufacturer is not responsible for improper installation and failure to comply with local electrical and building regulations.

Keep all the components of system and this manual for further consultation.

In this manual, please pay extra attention to the contents marked by the symbol:



Be aware of the hazards that may exist in the procedures of installation and operation of the gate-automated system. Besides, the installation must be carried out in conformity with local standards and regulations.

If the system is correctly installed and used following all the standards and regulations, it will ensure a high degree of safety.

Make sure that the gates works properly before installing the gate-automated system and confirm the gates are appropriate for the application.

Do not let children operate or play with the gate-automated system.

Do not cross the path of the gate-automated system when operating.

Please keep all the control devices and any other pulse generator away from children to avoid the gate-automated system being activated accidentally.

Do not make any modifications to any components except that it is mentioned in this manual.

Do not try to manually open or close the gates before you release the gear motor.

If there is a failure that cannot be solved and is not mentioned in this manual, please contact qualified installation personnel.

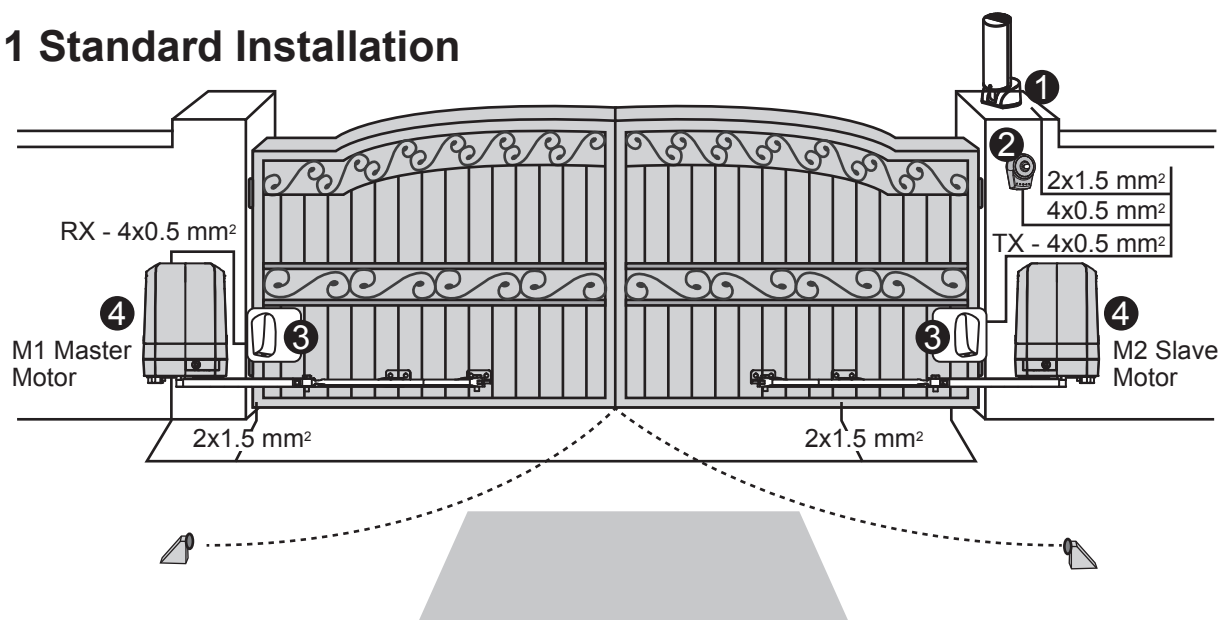
Do not use the gate-automated system before all the procedures and instructions have been carried out and thoroughly read.

Test the gate-automated system weekly and have qualified installation personnel to check and maintain the system at least every 6-month.

Install warning signs (if necessary) on the both sides of the gate to warn the people in the area of potential hazards.

1.2 Installation

1.2.1 Standard Installation






1. 24V DC blinker with integrated antenna
2. Push Button
3. Photocells
4. 24V DC articulated arm opener
5. PR-1 Transmitter



1.2.2 Dimension Chart

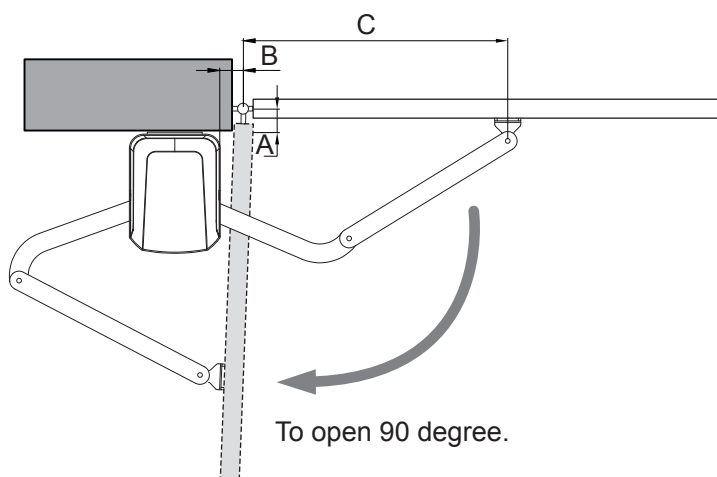
Please comply with the measures shown on the chart for proper installation. If necessary, please adjust the gate structure to the best operation.

Before starting the installation, please make sure that the gate moves freely and that :

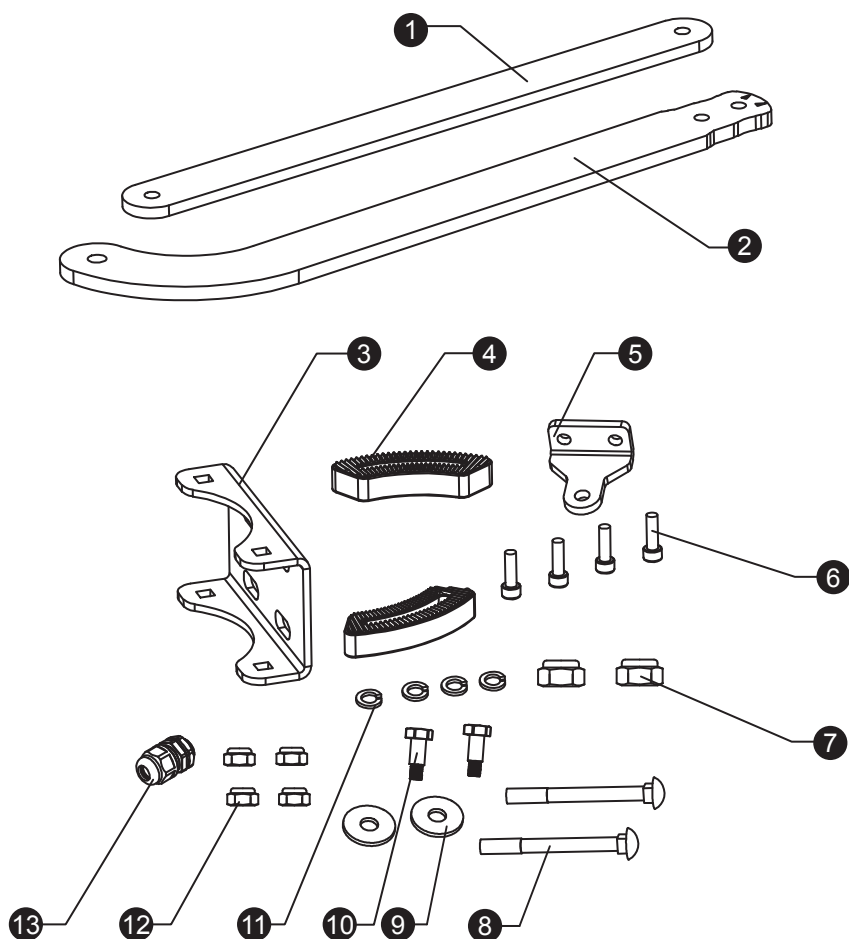
- 1) Hinges are properly positioned and greased.
- 2) No any obstacle in the moving area.
- 3) No frictions between two gate leaves or and on the ground while moving.
- 4) Installation reference: to open the gate with 90 degree, please refer the data table below:
A:  Distance between the gate hinge and the wall bracket.
B:  Distance between the gate hinge and side face of the motor.
C:  Distance between the gate hinge and the fixing point of the arm.

		B		
A	C	50	100	150
	50	625	575	545
	100	615	565	540
	150	600	550	/
	200	585	535	/
	250	565	515	/
	300	540	/	/

unit: mm



1.2.3 Components of Installation



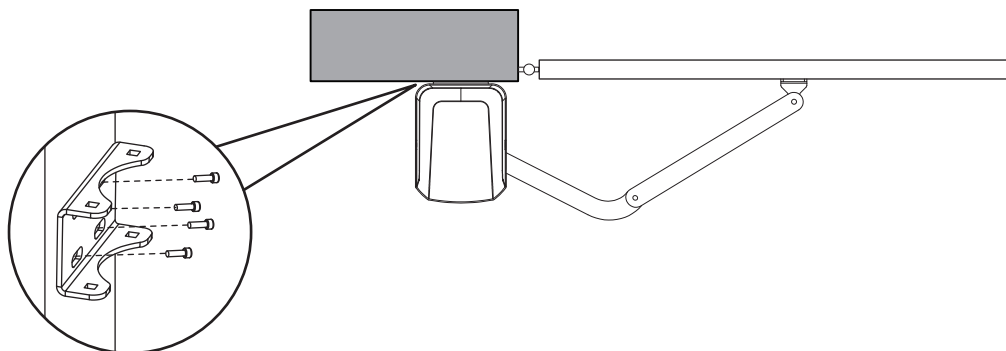
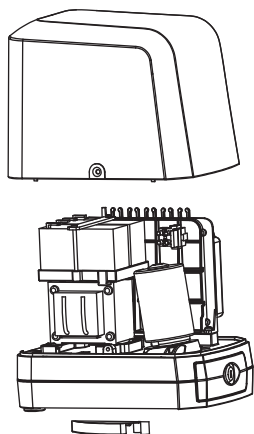
1	Straight arm	1 pce
2	Curved arm	1 pce
3	U-shaped fixing plate	1 pce
4	Mechanical stopper	2 pcs
5	Front-end fixing bracket	1 pce
6	Screw	4 pcs
7	Nut Ø10	2 pcs
8	Screw	2 pcs
9	Gasket	2 pcs
10	Screw	2 pcs
11	Spring washer	4 pcs
12	Nut Ø8	4 pcs
13	Cable gland	1 pce

1.2.4 Installation of Articulated Arm Opener

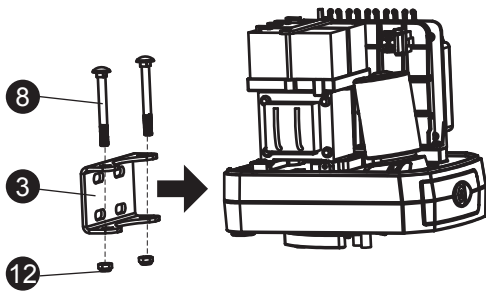
1. Refer to the Dimension Chart to choose the correct dimensions of the motors and position to be installed.
2. Check if the mounting surface of the brackets to be installed is smooth, vertical and rigid.
3. Arrange the cables for power supply cable of the motors.
4. Motor installation and setting for mechanical stopper in opened and closed position.

1) Remove the upper cover and mechanical stoppers on the bottom of motor.

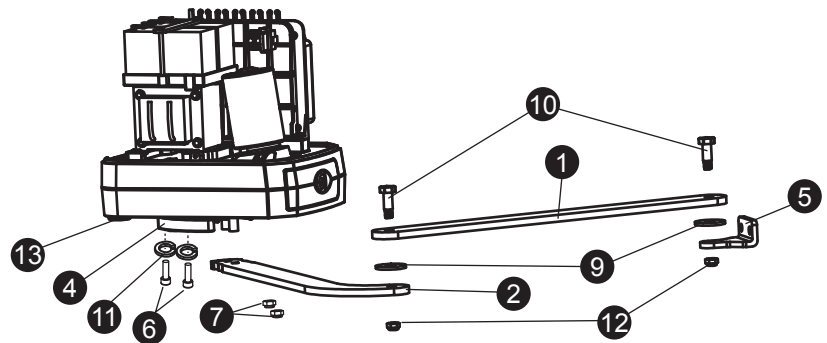
2) Place the gate in the full closed position and fix the U-shaped fixing plate on the wall.



3) Install the motor on the U-shaped fixing plate with corresponding screws and nuts.



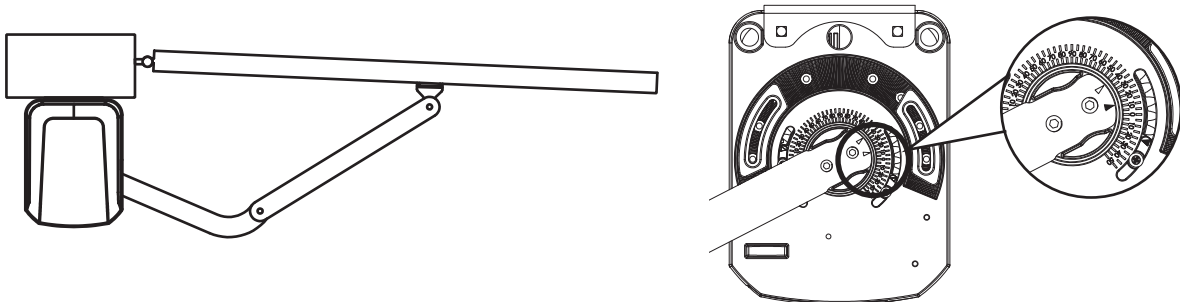
4) After positioning the front of curved arm on the bottom of motor, release the motor and position the minor arm on the end of curved arm and mounting bracket with corresponding screws and nuts.



5) Closed position adjustment :

4.1 After the full closed position decided, fix the corresponding mechanical stopper at the position.

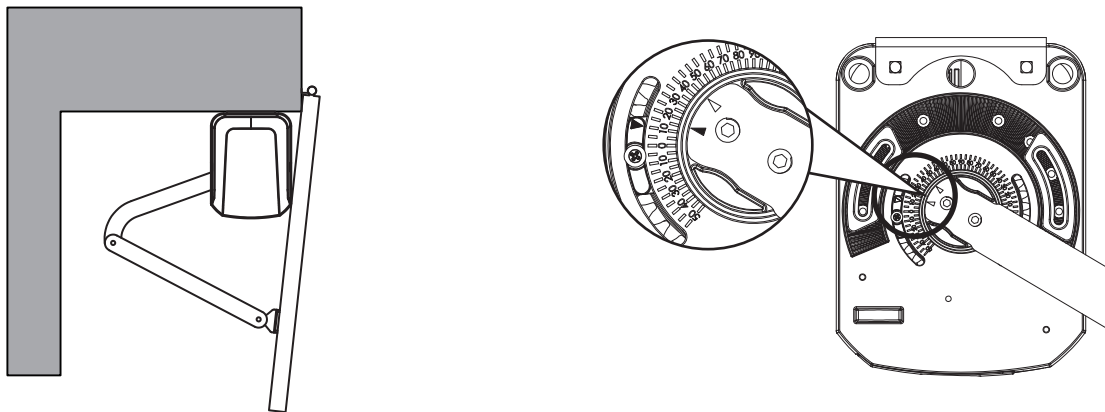
4.2 After the full closed position decided, make the pointer on limit switch aligned with the pointer on the curved arm. (Red points shown on the figure below indicate the pointers)



6) Opened position adjustment :

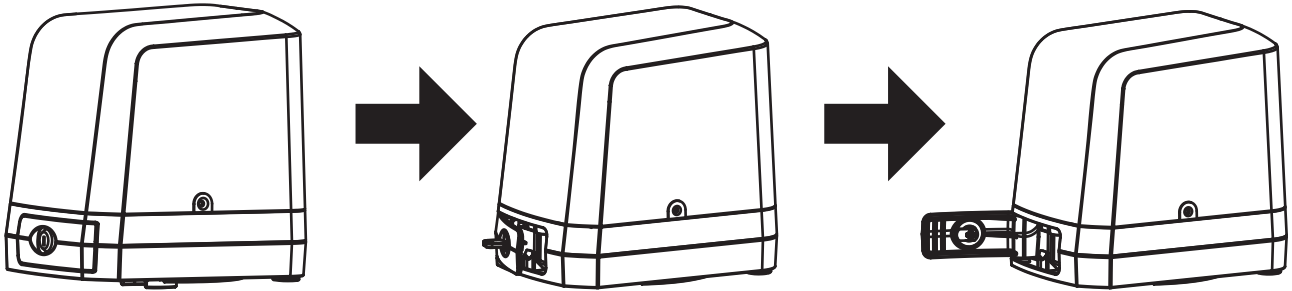
5.1 Adjust the gate to full opened position and after the position decided, fixed with corresponding mechanical stopper.

5.2 Adjust the gate to full opened position and after the position decided, make the pointer on the electromechanical limit switch aligned with the pointer on the curved arm. (Red points shown on the figure below indicate the pointers)



1.2.5 Emergency Release

- 1) Insert the release key to the release slot
- 2) Turn the release key anti-clockwise
- 3) Pull out the release bar
- 4) Turn the release key clockwise to fix the release bar, the release bar has to be in pulled out position when turning the release key clockwise



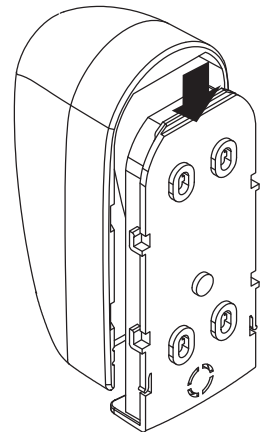
1.2.6 Photocell Installation

The safety photocells are security devices for control automatic gates. Consist of one transmitter and one receiver based in waterproof covers; it is triggered while breaking the path of the beams.

SPECIFICATION:

Detection Method	Through Beam
Sensing Range	25M
Input Voltage	AC/DC 12~24V
Response Time	100MS
Emitting Element	IR LED
Operation Indicator	Red LED(RX): ON(When Beam is Broken), Green(TX):ON
Dimensions	96*45*43mm
Output Method	Relay Output
Current Consumption Max	TX: 35MA/Rx: 38MA (When beam aligned properly); TX: 35MA/ Rx: 20MA (When beam is broken)
Water Proof	IP54

Figure 1(1)



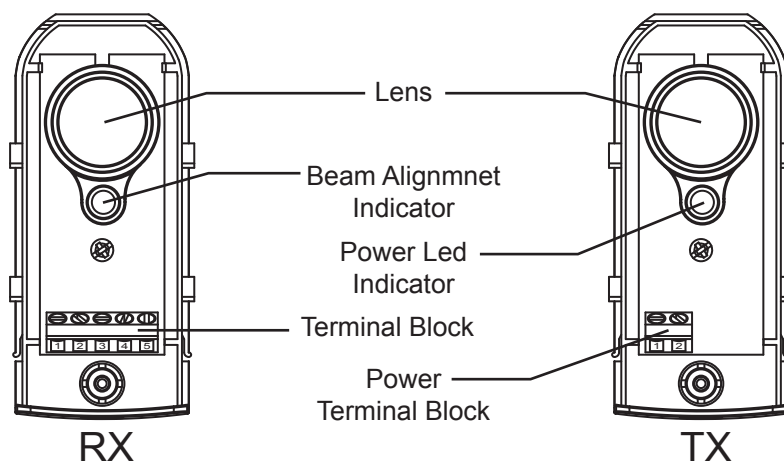
INSTALLATION:

Wire Connection of Photocells

TX: Connect terminals 1 and 2 on the transmitter with the terminals GND and PhVcc on the PC190 PCB.

RX: Connect terminals 1,2 and 4 on the receiver with the terminals GND, PhVcc, and Ph1/Ph2 on the PC190 PCB. And use an extra wire to connect terminals 2 and 5 on the receiver as a bridge.

Figure 1(2)



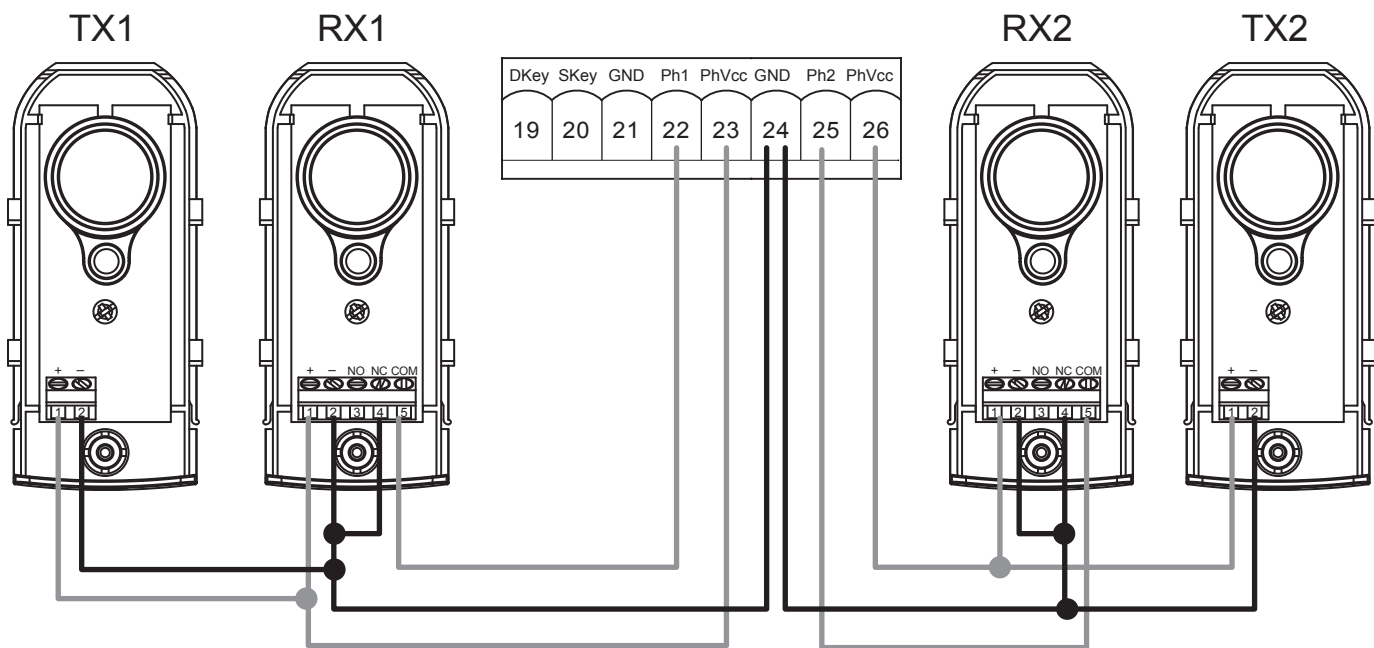
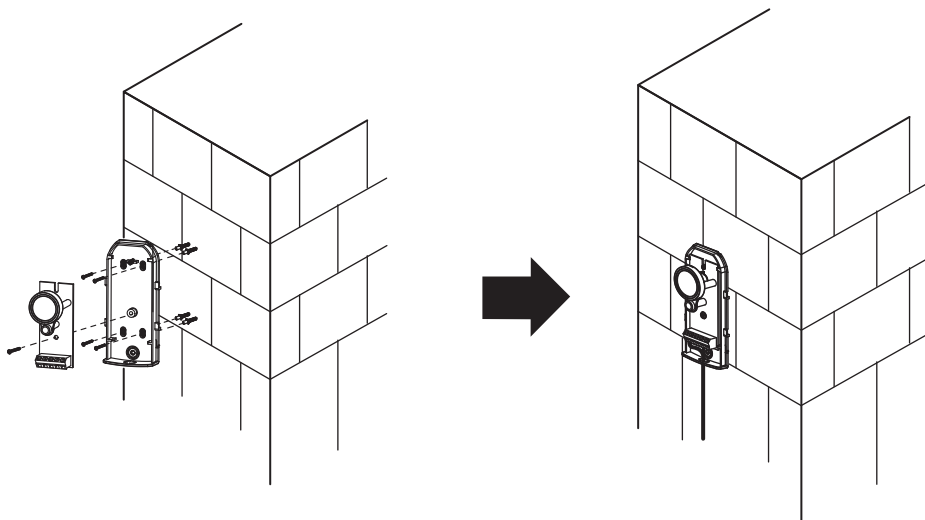
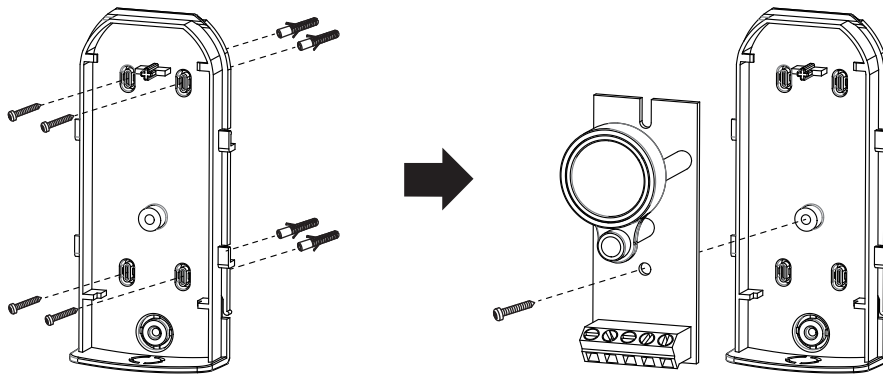
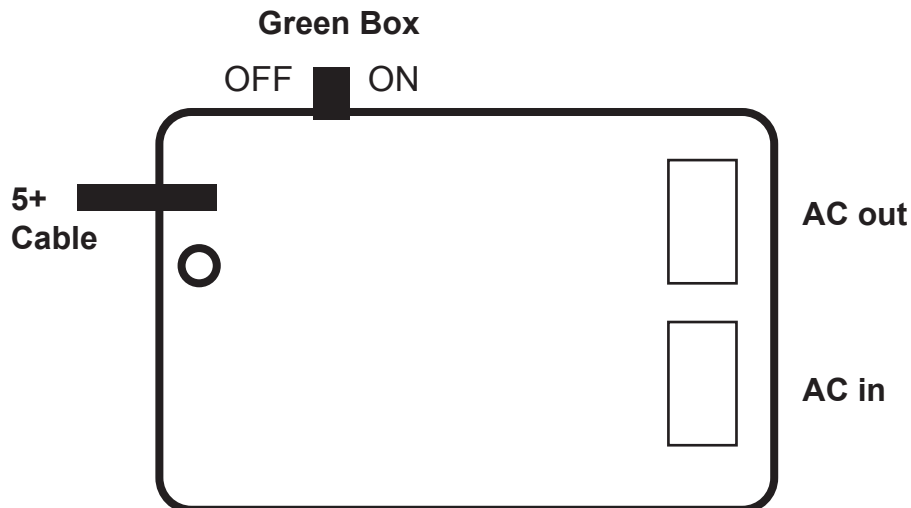


Figure 1(3)



1.2.7 GREEN BOX INSTALLATION

Green Box is for purpose when gate opener is in standby mode to allow it enter the power saving mode.



Installation manner:

AC IN: connect the electricity

AC OUT: connect the power of gate opener, and connect the transformer

5V CABLE: connect 3 pins white socket of control board

Please make sure the switch of Green Box is off before proceeding the system learning and installation of device. Wait for the system learning and installation of device to be completed, power on the Green Box

Gate opener will enter power saving mode without receiving any instruction in 1 min, and red LED light on Green Box will be activated. Gate opener start the operation, red LED light and power saving mode will turn off.

CAUTION:

In case of loop or installation of photocell which need power consumption anytime, please do not install Green Box.

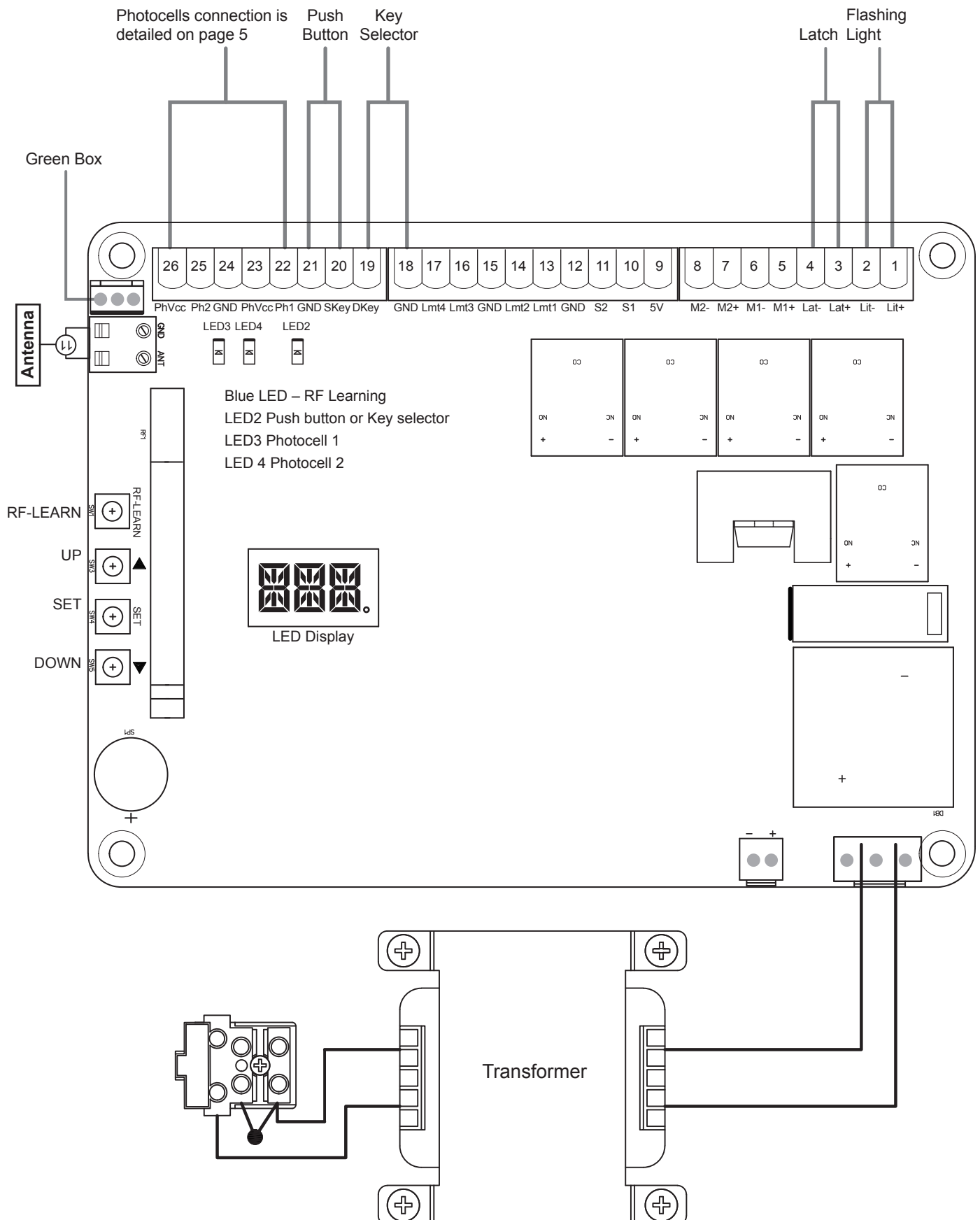
1.2.8 POWER SUPPLY CONNECTIONS

Please kindly notice that the operation of power connection should be carried out by a qualified electrician with following steps:

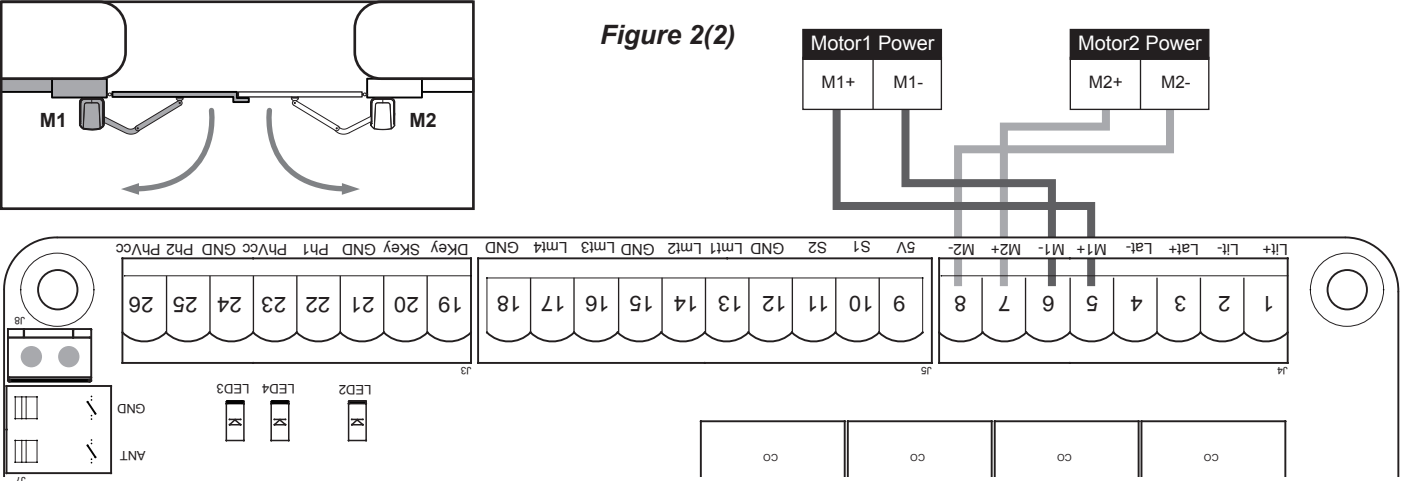
- 1). Make sure the gearmotor is not connected to the power supply before the installation is done.
- 2). Make sure all the wires are firmly connected.
- 3). Supply the gearmotor with the power.

2.1 Wiring Connection

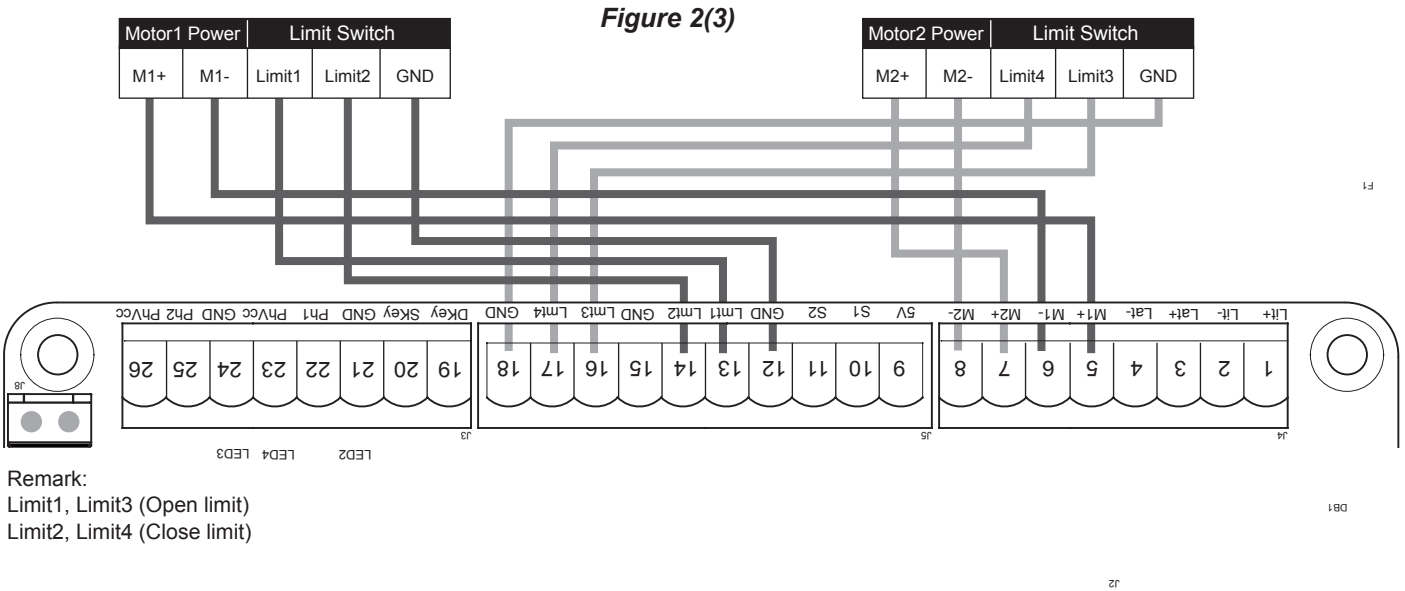
Figure 2(1)



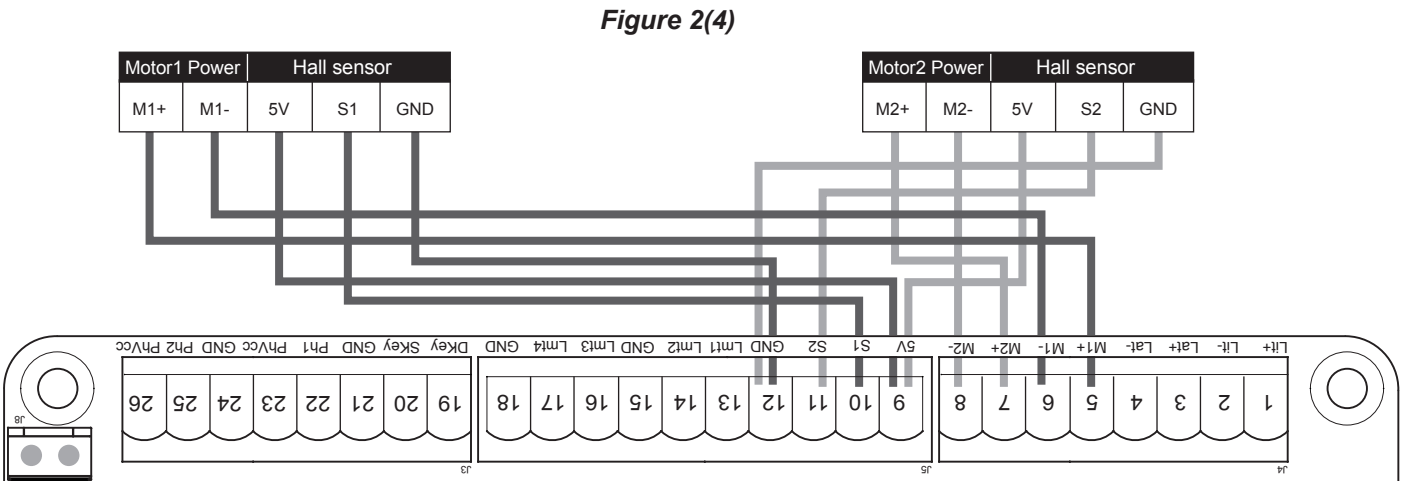
2.1.1 Master Motor is installed at left side



Motor with Limit switch



Motor with Hall sensor



2.1.2 Master Motor is installed at right side

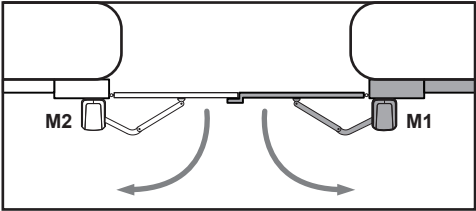
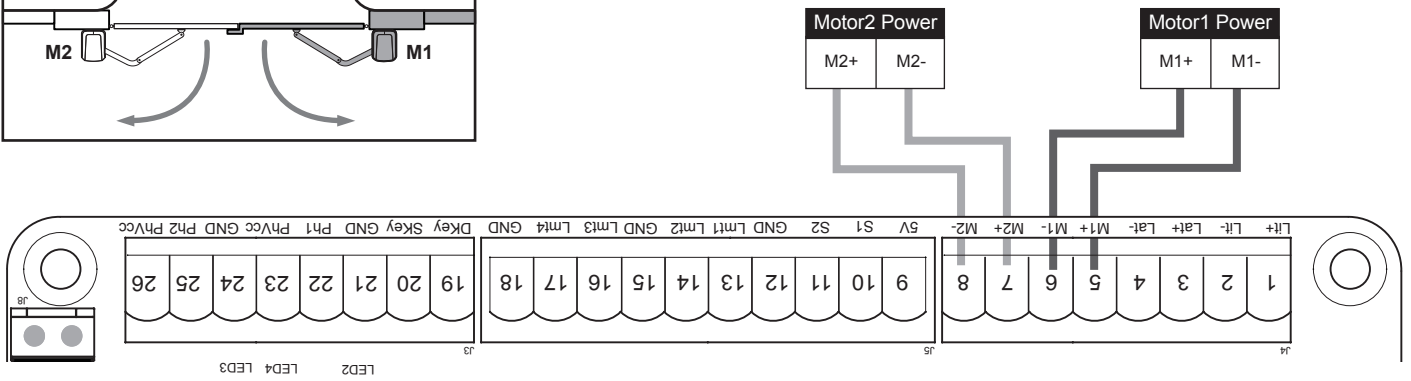
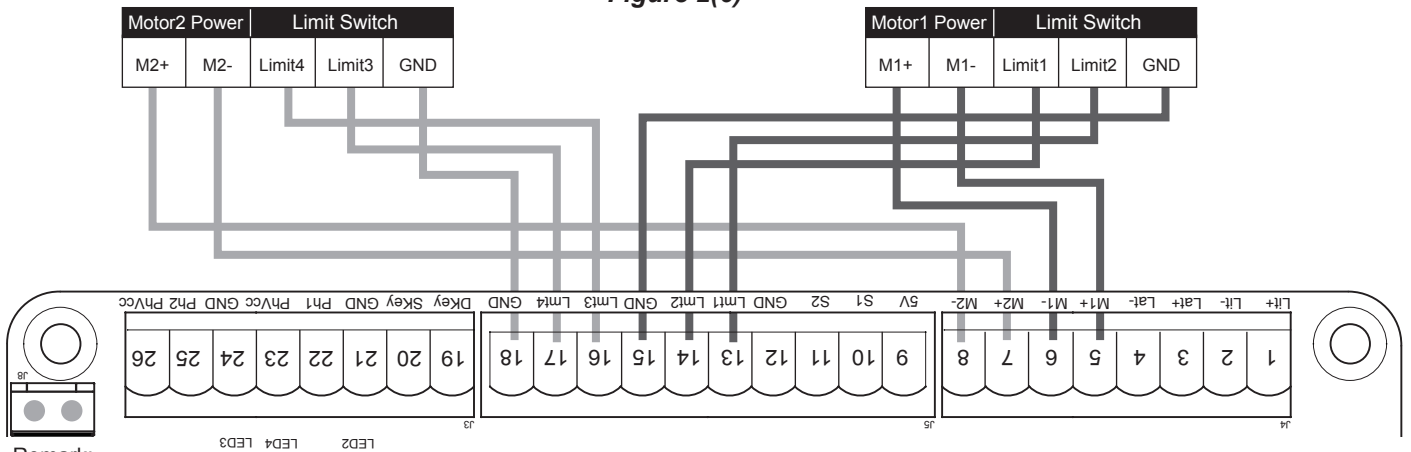


Figure 2(5)



Motor with Limit switch

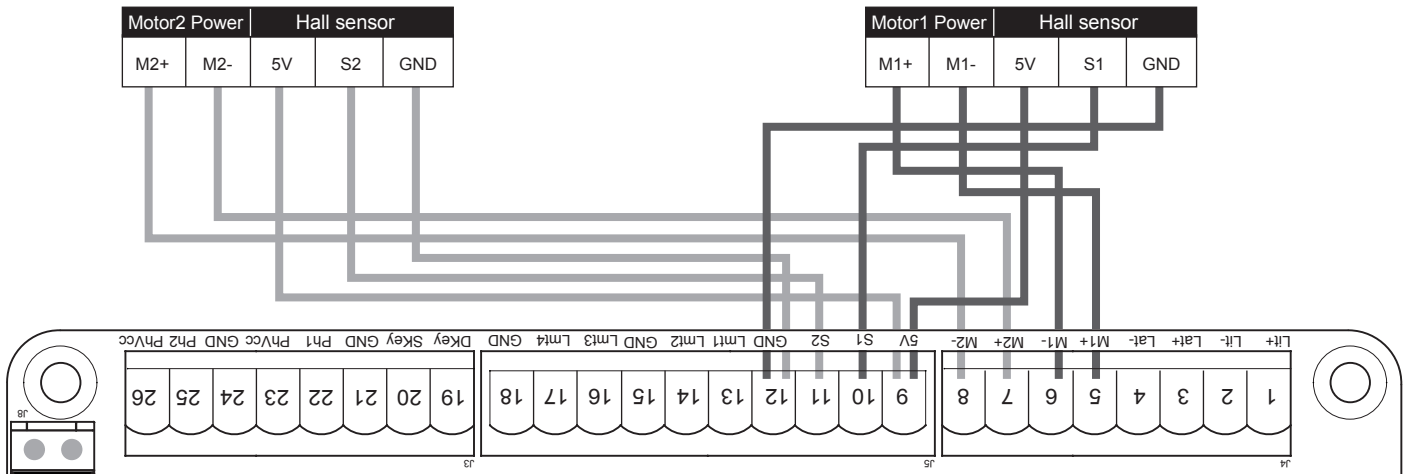
Figure 2(6)



Remark:
Limit1, Limit3 (Close limit)
Limit2, Limit4 (Open limit)

Motor with Hall sensor

Figure 2(7)



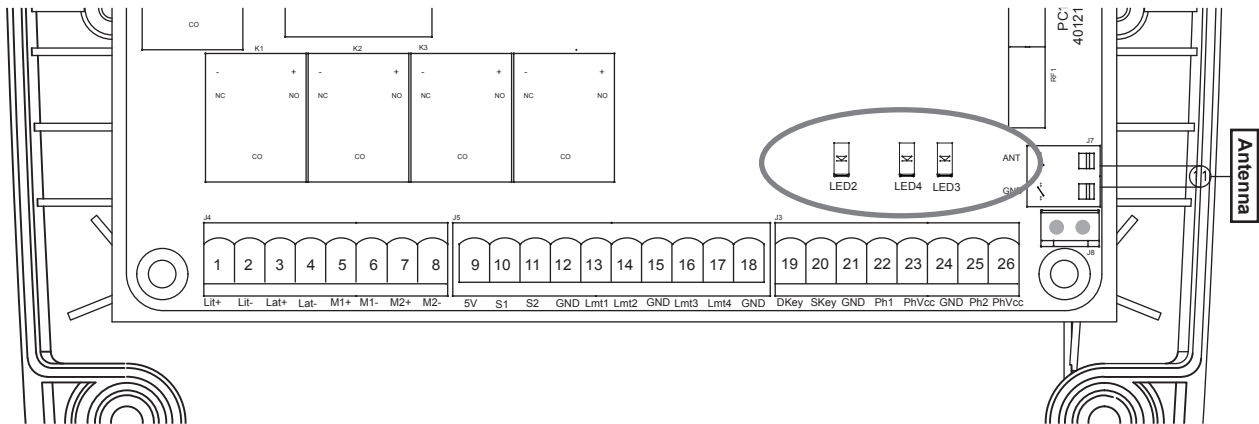
2.2 LED Indication

Blue LED on receiver board: Blinks three times when remote learning is completed.

LED2 External device : If the switch of the key selector, or the push button is activated, LED2 will be on.

LED3 Photocells 1 : LED3 will be on when the first pair of the photocells are activated.

LED4 Photocells 2 : LED4 will be on when the second pair of the photocells are activated.



2.3 Transmitter Memorizing and Erasing Process

(A) Transmitter Memorizing: Press and hold the “RF-LEARN” button on the PCB for 1 second and then the blue LED indicator on the RF board will be “ON”. Press A button for dual-gate installation ; press B button for single-gate installation on the transmitter within 5 seconds. The transmitter learning is completed when the blue indicator is “OFF”.

(B) Transmitter Memory Erasing: Press and hold the “RF-LEARN” button on the PCB for 10 seconds until blue LED off.

(C) One radio receiver can be memorized with 200pcs of transmitters.

2.4 System Learning Process

Step1: Connect the master motor wires to M1 terminals and the slave motor wires to M2 terminals correctly.

If only one gate is installed, the motor wires have to be connected to M1 terminals.

Step2: Set the function F2-1 for dual gate learning; or set the function F2-2 for single gate learning.

Step3: To start dual gate system learning.

To start dual gate system learning.

Press and hold the “UP+SET+DOWN” button on the PCB for 3 seconds. The LED display will show “LEA” and “D-G”. Press the button (A) on the transmitter within 10 seconds to activate the system learning automatically.

LED display will show “ARN”, do not interrupt this procedure by pressing the transmitter or stop the gate. In system learning mode, the gates will proceed with the following procedures **figure 2(8)**. LED display will show “RUN” once system learning completed.

To start single gate system learning.

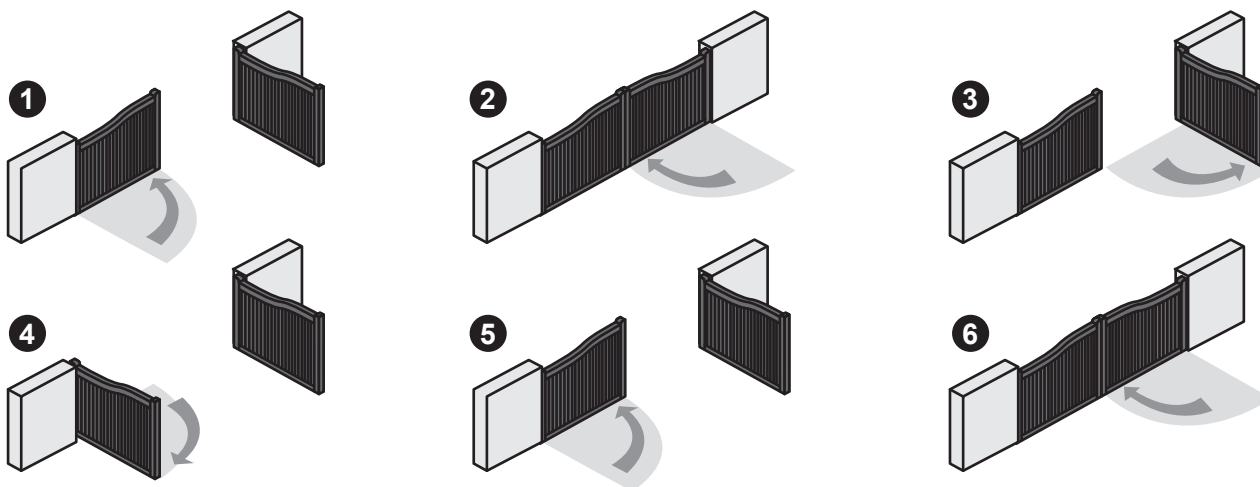
Press and hold the “UP+SET+DOWN” button on the PCB for 3 seconds. The LED display will show “LEA” and “S-G”. Press the button (B) on the transmitter within 10 seconds to activate the system learning automatically.

LED display will show “ARN”, do not interrupt this procedure by pressing the transmitter or stop the gate. In system learning mode, the gates will proceed with the following procedures **figure 2(8)**. LED display will show “RUN” once system learning completed.

figure 2(8)

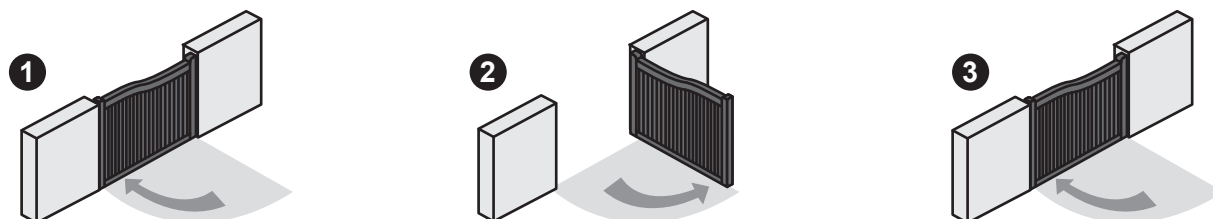
A. Dual Gate:

① Slave Gate Close → ② Master Gate Close → ③ Master Gate Open → ④ Slave Gate Open →
⑤ Slave Gate Close → ⑥ Master Gate Close



B. Single Gate :

① Master Gate Close → ② Master Gate Open → ③ Master Gate Close



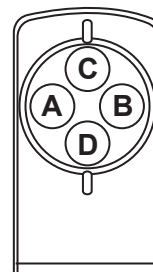
Notes:

- (A) System learning fails and needs to be learned again when an unpredictable interruption occurs.
- (B) Once the system learning is completed, there is no need to proceed with the learning process again when there is a power failure.
- (C) The slave gate opens 3 seconds after the master gate opens and the master gate closes 3 seconds after the slave gate closes.
- (D) While using limit switch mode, please make sure the motor hits limit switch when it's in deceleration speed.

2.5 Gate Operation

Press the button “A” on the transmitter for dual-gate operation.

Press the button “B” on the transmitter for single-gate operation in either single-gate or dual-gate installation.



2.6 Gate-moving Logic

- (A) In gate-opening phase: The gates stop if the transmitter/push button/key selector is activated, and close when the transmitter/push button/key selector is reactivated.
- (B) In gate-closing phase: The gates stop if the transmitter/push button/key selector is activated, and open when the transmitter/push button/key selector is reactivated.
- (C) In gate-opening or gate-closing phase: For safety purpose, the gates stop if encountering obstacles.

2.7 Checking the Gate Movement

- 1). Release the gearmotor with the release key and move the gate to the middle so that it is free to move in both opening and closing directions; then lock the gearmotor.
- 2). Perform the gate opening and closing several times and make sure the gates reaches the limit switch at least 2~3 centimeters before the mechanical stop.

3. Function Setting

3.1 Function Of The Led Display

LED Display	Programmable Functions
	“N-L”: The system learning is not done.
	“RUN”: The system is in normal performing.
	“LEA”: Enter learning mode and then wait for learning instructions. The operation of gate learning: (1). Press “SET” + “DOWN” + “UP” for 3seconds, and the LED display shows “LEA” +”DG”; and then press the transmitter (A) button one time. After 1~3seconds, the LED display shows the current value during learning mode, it shows 10 for 1A.
	“CLN” The memory of the system is all cleaned/deleted. Press and hold “UP+DOWN” for 5 seconds.
	“ME”: Motor operation error
	“STP”: The motor stop in the middle of the operating process.

3.2 Photocell Adjustment

The actions of the photocells safety edge loop detector when they detecting obstacles.

1. F9-1

Position of Gate		When safety devices are activated
Type of Safety Device	Safety Device2 : Photocell-OPEN	Safety Device1 : Photocell-CLOSE
FULLY CLOSED	Open not allowed	No effect
FULLY OPENED	No effect	Reload automatic closing time
STOP DURING MOVING	Open not allowed	Reload automatic closing time
CLOSING	No effect	Open
OPENING	Close	No effect

2. F9-2

Position of Gate		When safety devices are activated
Type of Safety Device	Safety Device2 : Safety Edge	Safety Device1 : Photocell-CLOSE
FULLY CLOSED	Open not allowed	No effect
FULLY OPENED	Reload automatic closing time	
STOP DURING MOVING	Locks	Reload automatic closing time
CLOSING	Reverse to open for 2 seconds	Open
OPENING	Reverse to close for 2 seconds	No effect

3. F9-3







Position of Gate		When safety devices are activated
Type of Safety Device	Safety Device2 : Opening Device	Safety Device1 : Photocell-CLOSE
FULLY CLOSED	Open	No effect
FULLY OPENED	Reload automatic closing time	
STOP DURING MOVING	Open	Reload automatic closing time
CLOSING	Open	Open
OPENING	No effect	No effect

4. F9-4

Position of Gate		When safety devices are activated
Type of Safety Device	Safety Device2 : Photocell-OPEN/CLOSE	Safety Device1 : Photocell-CLOSE
FULLY CLOSED	Open not allowed	No effect
FULLY OPENED	Close not allowed, Open for 2 seconds when auto closing is ON	
STOP DURING MOVING	Locks	Close not allowed
CLOSING	Stop	Open
OPENING	Stop	No effect

3.3 Operations for Function Settings

For example: How to set the function “F1-0”; the steps are following:

Step	Operations	LED Display after the Step
1.	<p>(1) Press the “SET” button for 3seconds then releases it, and the system enters the first option. The LED will display “F1” (*) as the right hand-side picture.</p> <p>(*) If you would like to enter “F2” function or others as the first option, please press the “UP” button to adjust F2~F8 until you get “F2”.</p>	
2.	<p>(2) After completing the operation (1), then press the “SET” button again, you will enter the second option as the right hand-side picture. And you will see the third number for the second option.</p> <p>(3) Continually press the “Down” button until you search the function “0” (**) of F1 as the right hand-side picture. “F1-0” is set completely.</p> <p>(**) If you would like to set one of functions “0 ~ 8” as the second option, please press the “UP” or “Down” button to adjust it.</p> <p>(4) If you would continue setting up the next functions, please press “SET” to return the first option, like F1 or F2 or F3...or F8.</p> <p>For example, after complete “F1-0” setting. You would continue setting “F2-5”, please press “SET” to return the formal option. The LED display shows the first two numbers as as the first option as the right hand-side picture, “F1”. And then follow the operation (*) and (2) ~ (3) until you get “F2-5” as the right hand-side picture. “F2-5” is set completely.</p>	   
3.	<p>After setting all functions you need, then wait for 10seconds, the LED will display “RUN”. And you can use transmitter to operate the gate.</p>	

3.4 Function Settings

LED Display	Definition	Parameter	Table	Description
F1	Motor Type	F1-1	Motor only	1. The factory setting is "F1-1".
		F1-2	Motor with Limit Switch	
		F1-3	Motor with Hall sensor	
F2	Dual or Single Gate	F2-1	Dual Gate	1. The factory setting is "F2-1".
		F2-2	Single Gate	
F3	Over Current Setting	F3-1	2A	1. The factory setting is "F3-1", 2. F3 setting is for F1-1 Motor only and F1-2 Motor with Limit Switch
		F3-2	3A	
		F3-3	4A	
		F3-4	5A	
F3	Over Current Setting	Note(F3 Setting is for F1-3 Motor with Hall sensor): Only in "F1-3"Hall sensor mode, the PCB will record all the current value while learning mode. Please set F3 function after learning mode. The LED display 10 to indicate all of the recorded values will increase 1 ampere as the over current value. In other words, the LED shows 20 to indicate all the recorded values will increase 2 ampere as the over current value. The value can be adjusted by pressing button UP and DOWN. The maximum value is 40(4.0A) and the minimum value is 05(0.5A).		
F4	Operation Speed	F4-1	100% Full speed	1. The factory setting is "F4-1".
		F4-2	80% Full speed	
F5	Deceleration function	F5-1	Function ON	1. The factory setting is "F5-1".
		F5-2	Function OFF	
F6	Deceleration Speed	F6-1	70% Full speed	1. The factory setting is "F6-2".
		F6-2	50% Full speed	
F7	Open/Close delay of dual gate operation adjustment	F7-1	2 sec	1. The factory setting is "F7-1".
		F7-2	3 sec	
		F7-3	4 sec	
		F7-4	5 sec	
		F7-5	6 sec	
		F7-6	7 sec	
		F7-7	8 sec	
		F7-8	9 sec	
		F7-9	10 sec	
F8	Auto-Close adjustment	F8-0	Function OFF	1. Auto-close mode activates when the gates move to the end position or stopped manually. If the transmitter, push button, or the key selector is activated before the auto-close counting, the gate will close immediately. 2. The factory setting is "F8-2".
		F8-1	3 sec	
		F8-2	10 sec	
		F8-3	20 sec	
		F8-4	40 sec	
		F8-5	60 sec	
		F8-6	120 sec	
		F8-7	180 sec	
F9	Photocell function mode	F9-1	Mode 1	1. The factory setting is "F9-1".
		F9-2	Mode 2	
		F9-3	Mode 3	
		F9-4	Mode 4	
FA	Pedestrian Mode function	FA-0	Function OFF	1. When functon on and push B key in the transmitter, one gate will open partially. 2. The factory setting is "FA-1".
		FA-1	Function ON	
FB	Pre-Flashing function	FB-0	Function OFF	1. When function ON, the light will flash before the gate operate 3 seconds. If set OFF, the flash light will operate with motor in the same time. 2. The factory setting is "FB-0".
		FB-1	Function ON	

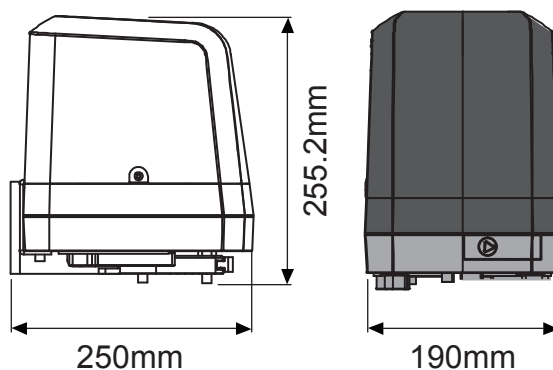
LED Display	Definition	Function	Table	Description
FC	Photocell 1 function	FC-0	Function OFF	1. The factory setting is "FC-0".
		FC-1	Function ON	
FD	Photocell 2 function	FD-0	Function OFF	1. The factory setting is "FD-0".
		FD-1	Function ON	
FE	Buzzer function	FE-0	Function OFF	1. The factory setting is "FE-1".
		FE-1	Function ON	
FF	Latch release function	FF-0	Function OFF	1. If the function on, the gate will move forward a little before the gate operate for releasing the latch. 2. The factory setting is "FF-1".
		FF-1	Function ON	
FG	Open/Stop/Close/Stop function key	FG-1	A Key	1. The factory setting is "FG-1".
		FG-2	B Key	
		FG-3	C Key	
		FG-4	D Key	
FH	Pedestrian Mode function key	FH-0	Function OFF	1. The factory setting is "FH-2".
		FH-1	A Key	
		FH-2	B Key	
		FH-3	C Key	
	Auto-Close function Key	FH-4	D Key	
FI		FI-0	No key to control	1. The key is to turn on or off the Auto-Close function.
		FI-1	A Key	2. The factory setting is "FI-3".
		FI-2	B Key	3. When the flasher and buzzer is running, the auto closed button has no function till flasher and buzzer finish running.
		FI-3	C Key	
		FI-4	D Key	

4. Trouble Shooting

Overheated Back-up Batteries	Check the wiring connection of the batteries.
The gate doesn't move when pressing the button of the transmitter	<ol style="list-style-type: none"> 1. Check if LED3 or 4 is "OFF". 2. Check if the voltage of the batteries is upon 22V. 3. Make sure all the wiring connections are firmly connected to the terminals on the PCB. 4. Make sure the fuse is workable.
The gate only moves a little distance when pressing the button of the transmitter.	Make sure the wiring connection of the hall sensor is firm.
The transmitting distance is too short	Make sure the connecting terminals of the Antenna is firm.
The gear motors run very slowly	Check the dip switch setting of the speed adjustment.
The Flashing light does not work	Check if the wiring connection of the flashing light is correct.
The leaves shall be closed instead of opening	Change the polarity connection of the positive (+) with the negative (-) of the gear motors.
The leaves suddenly stop during moving	<ol style="list-style-type: none"> 1. Check if the "RESET" socket is activated. 2. Make sure the wiring connection of the gear motors is firm. 3. Make sure the hall sensor wiring connection is firm. 4. The GND terminal of the photocells on the PCB must be short-circuited if no photocells installed. 5. Make sure the fuse is workable.
The leaves does not move or only move toward one direction	<ol style="list-style-type: none"> 1. Check if the "RESET" socket is activated. 2. Make sure the wiring connection of the gear motors is firm. 3. Make sure the hall sensor wiring connection is firm. 4. The GND terminal of the photocells on the PCB must be short-circuited if no photocells installed.
The master gate closes to the end first and the slave gate stops, the flashing light blinks fast for five seconds.	Cut off the AC input power and the output of the batteries. Release the master gate and slave gate manually, then open the master to the end and close the slave gate to the end by hand, then power the whole unit by connecting the AC and battery terminals.
The gear motors does not run and the relay is noisy when operating the gate opening and closing	Check if the fuse is burned.

5. Technical Features

5.1 Dimension



5.2 Technical Feature:

Model	PA250
Motor	24Vdc motor
Gear type	Electromechanical worm gear
Nominal thrust	2500N
Maximum Gate Weight	250 kg per leaf
Maximum Gate Length	2.5 meters per leaf
Operating Temperature	-20°C~+50°C
Dimension	256 x 187 x 267mm
Weight	6 kg

Model	PC190
Main power supply	230Vac/110Vac, 50Hz/60Hz
Back-up battery	2pcs of batteries for emergency operation, 1.2A each
Receiver board	433.92MHz; 200 transmitters memory
Installation	Built - in PCBA
Operating Temperature	-20°C~+50°C
Dimension	275mm x 195mm x 102mm

6. Maintenance

Conduct the following operations at least every 6 months. If in high intensity of use, shorten the period in between.

Disconnect the power supply:

- (1) Clean and lubricate the screws, the pins, and the hinge with grease.
- (2) Check the fastening points are properly tightened.
- (3) Make the wire connection are in good condition.

Connect the power supply:

- (1) Check the power adjustments.
- (2) Check the function of the manual release.
- (3) Check the function of photocells or other safety devise.