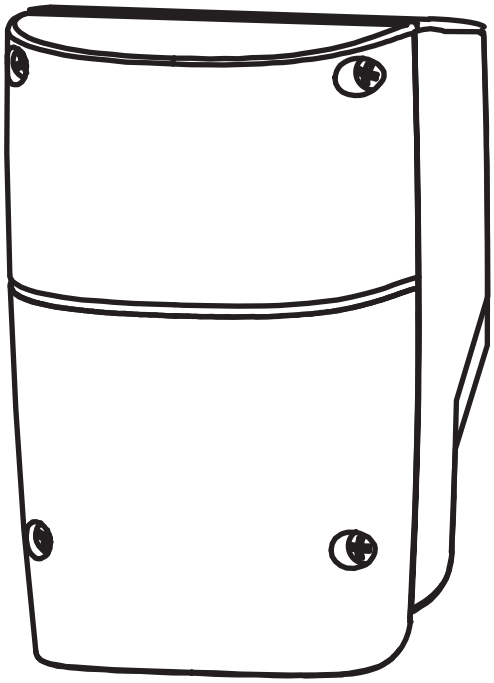
# PC190 Control Box

## 24V DC GEAR MOTOR

FOR RESIDENTIAL

## USER MANUAL



# Index

# 1). Control Box Installation

1. Decide the installation position of control box first, it is suggested to be installed near the gate and should be protected from possible damage. Be aware of the motor cable length before deciding the installation position.
2. Remove the cover by unscrewing the four screws on the cover. See ***Figure A***.
3. Use a screwdriver to puncture the holes beneath the bottom of the control box. See ***Figure B***.
4. Secure it on the wall ***Figure C***.

***Figure A***

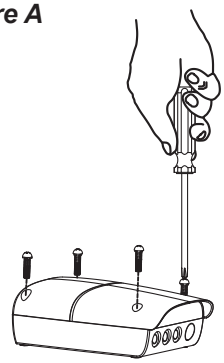


***Figure B***

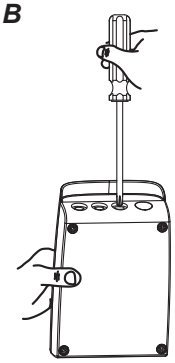
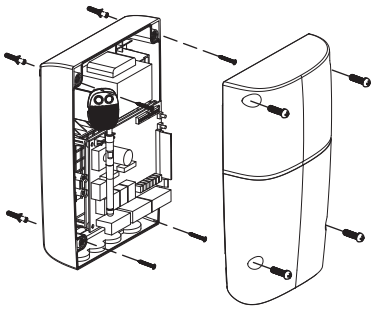
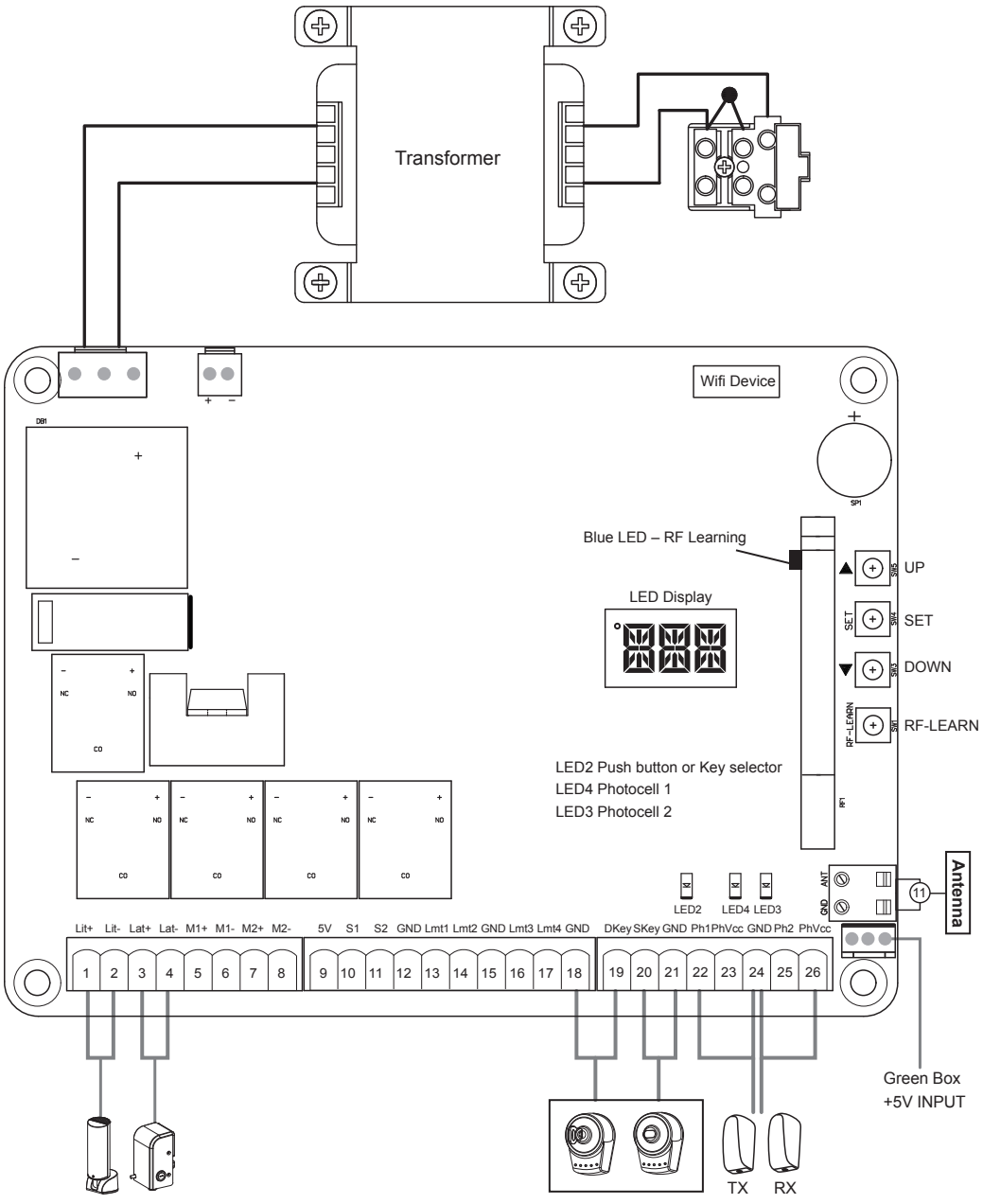


***Figure C***

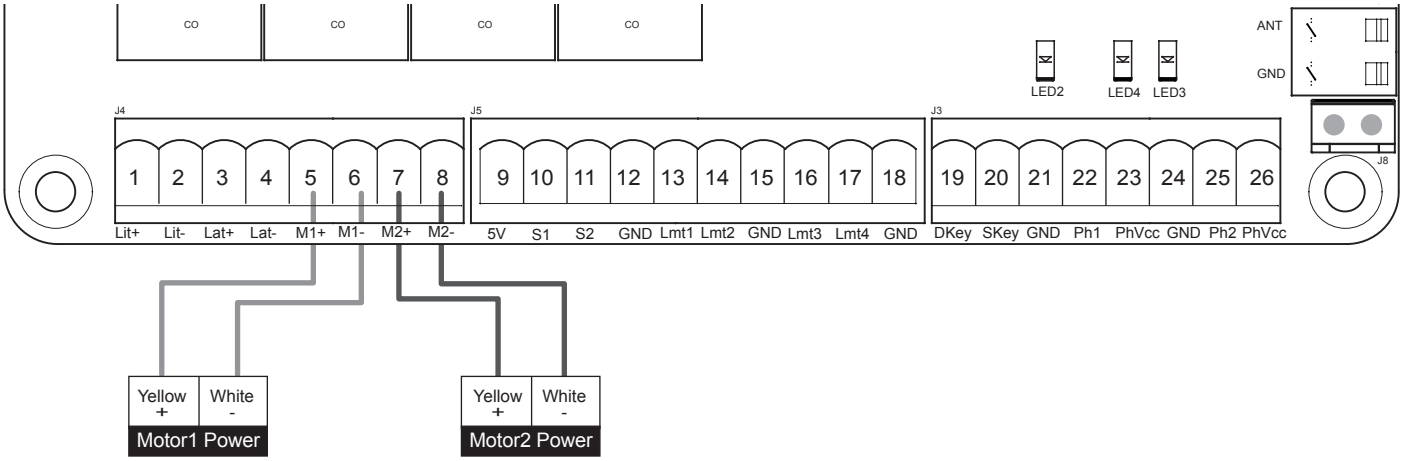


# 2). Wiring Connection

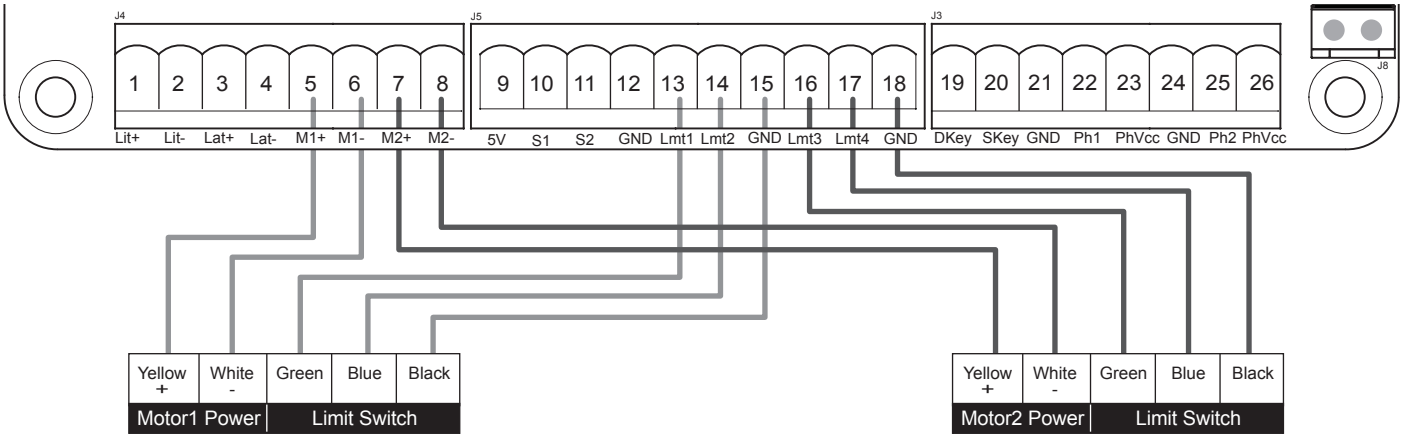


## 2.1 Motor Connection

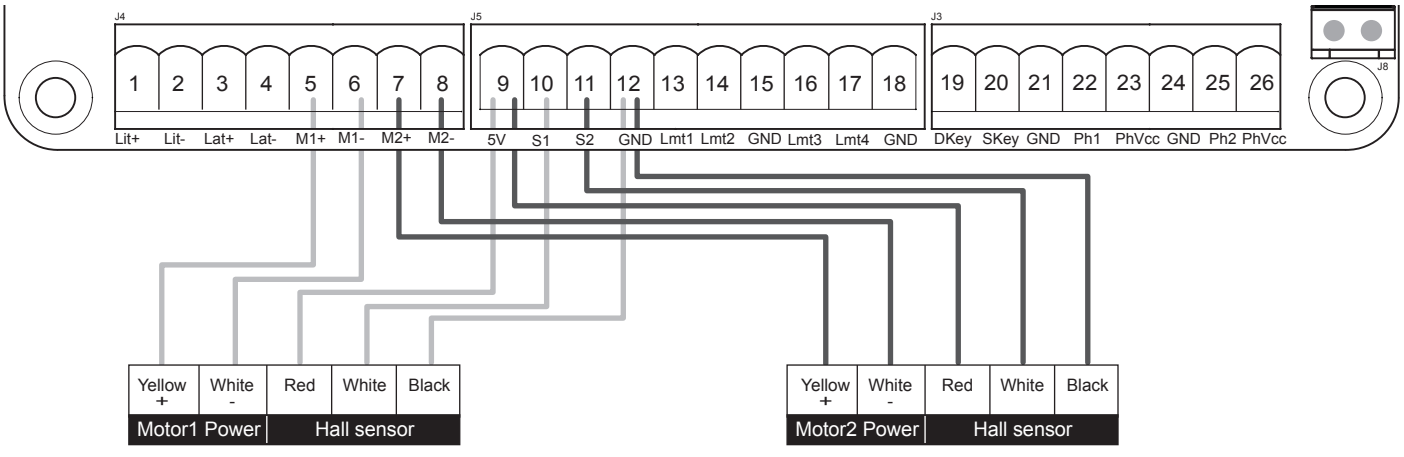
### 2.1.1 Motor Only




### 2.1.2 Motor With Limit Switch

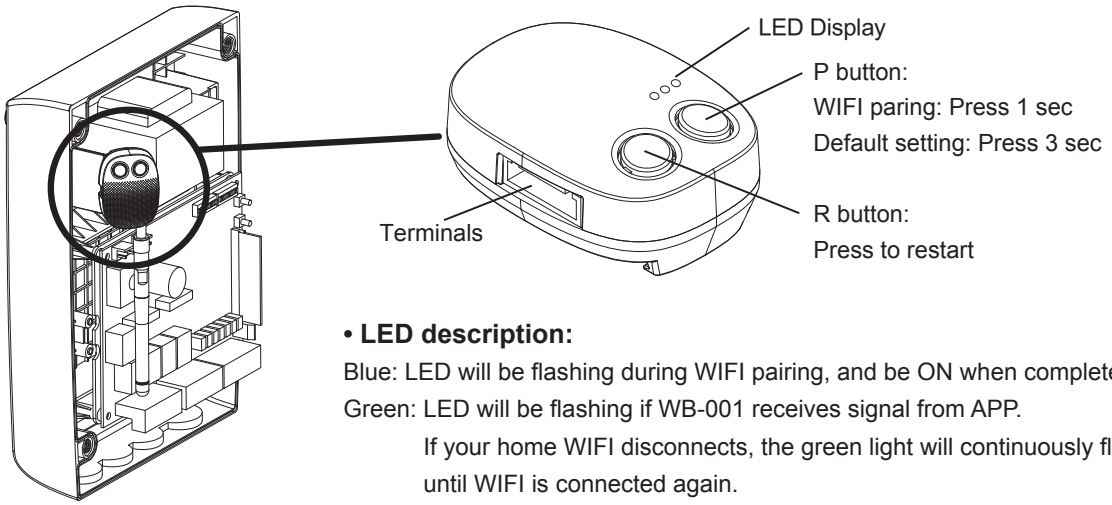



### 2.1.3 Motor With Hall Sensor



## 2.2 Wifi Device

Functions of Buttons and Terminals




**• LED description:**

Blue: LED will be flashing during WIFI pairing, and be ON when completed.

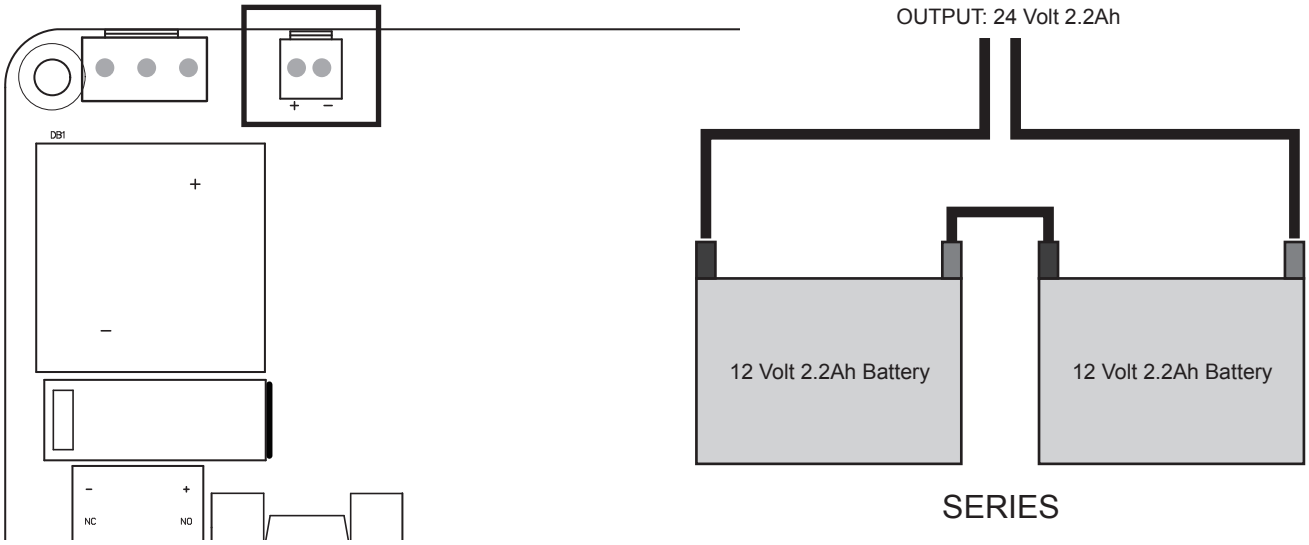
Green: LED will be flashing if WB-001 receives signal from APP.

If your home WIFI disconnects, the green light will continuously flash, and it will be off until WIFI is connected again.

Red: System failure or wrong PIN.

## 2.2.1 Back-up Batteries

**Battery Power:** The battery white connector must be fitted the correct way round (positive red to +positive) or you will short circuit the control board. There are 2 x 12v batteries fitted under the control board. They are connected together in series to make 24vDC via a black cable with a yellow fuse with positive of one battery to negative of second battery. The remaining positive and negative terminals go to the control board as per the photo above



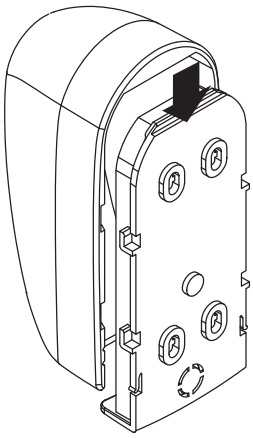
## 2.3 Accessories
## 2.3.1 Photocells

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);<br>TX: 35MA/ Rx: 20MA (When beam is broken) |
| Water Proof | IP54 |

***Figure 1(5)***



INSTALLATION:
Wire Connection of Photocells
TX: Connect terminals 1 and 2 on the transmitter with the terminals PhVcc and GND on the PC190 PCB.
RX: Connect terminals 1,2,3 and 4 on the receiver with the terminals PhVcc, GND, and Ph1/Ph2 GND on the PC190 PCB.

***Figure 1(6)***

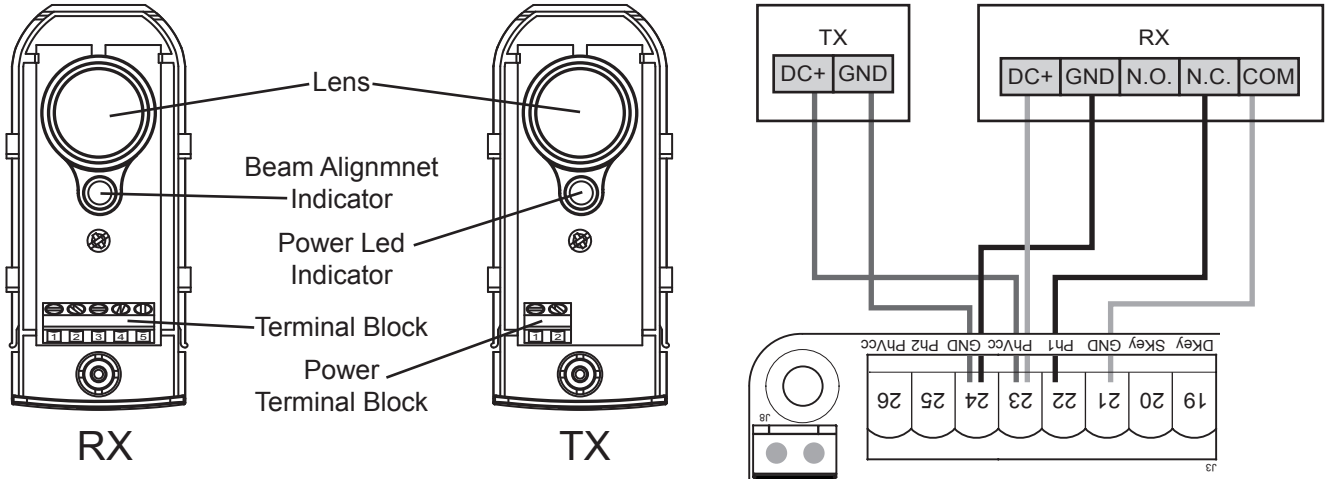
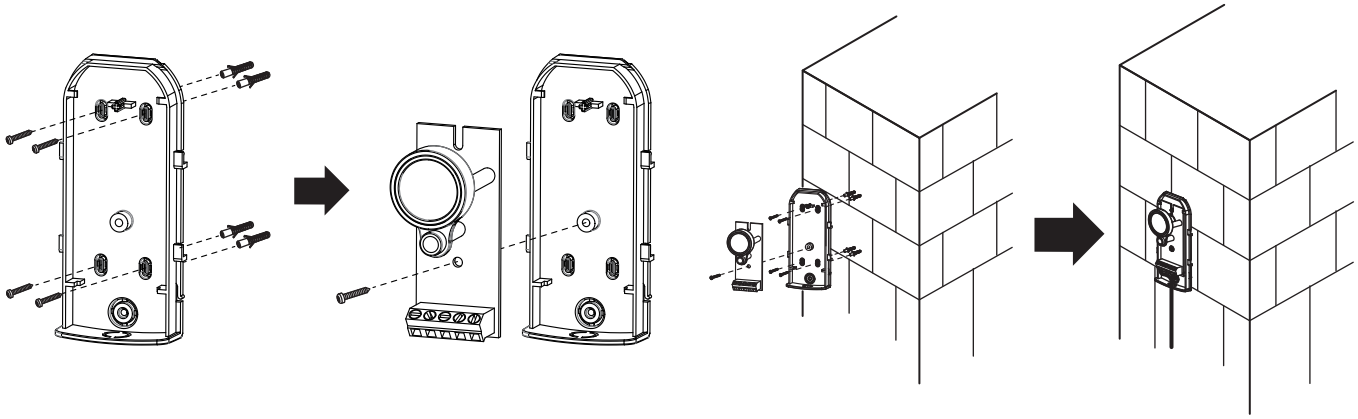



***Figure 1(7)***

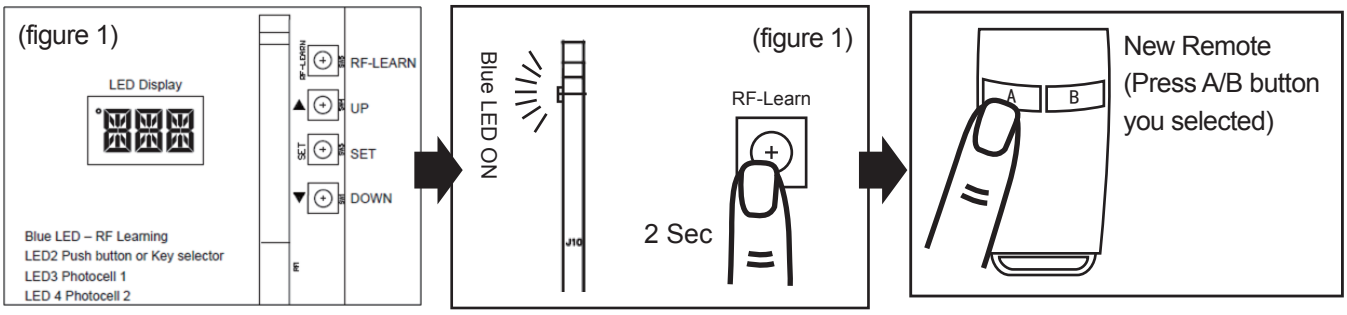


## 3). Get Started

Note:
(A) Transmitter memorizing must be done first before system learning.
(B) CHECKING THE Gate MOVEMENTS
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 touches the limit switch at least 2~3 cm before the mechanical stop.

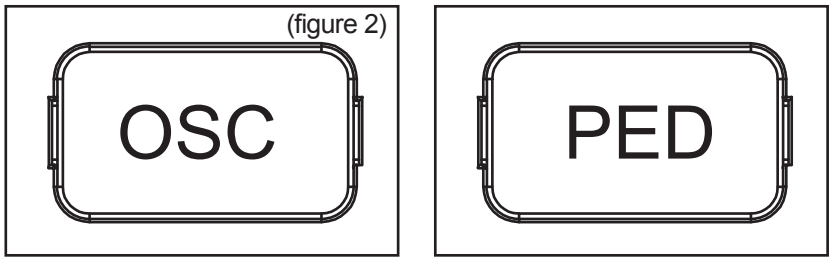
### 3.1 Step 1: Remote Memorizing
### 3.1.1 Memorizing

1. Press button RF-Learn on the control board (Figure 1) as many times as the number corresponding to the desired command, according to the following table, Within 10s, press the desired button on the remote that you want it to be memorized (figure 1)




| | Command | Message code |
|---|---|---|
| 1 times | Open-Stop-Close circle | LED display “OSC” |
| 2 times | Pedestrian mode | LED display “PED” |

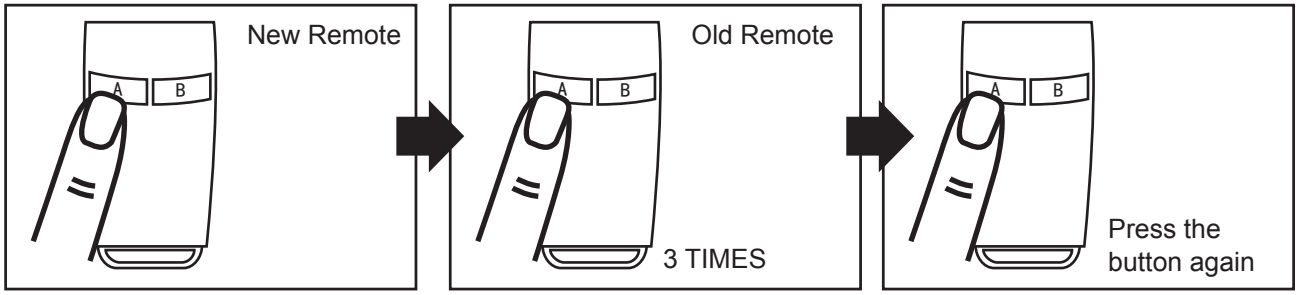
2. Make sure that the LED display shows the “OSC” or “PED” three times quickly. The code is corresponding to the selected command. (figure 2)




3. Repeat step 1 & 2 within 10s, if there are other remotes to be memorized for the same type of command. No action within 10s, the memorization stage will terminate automatically.

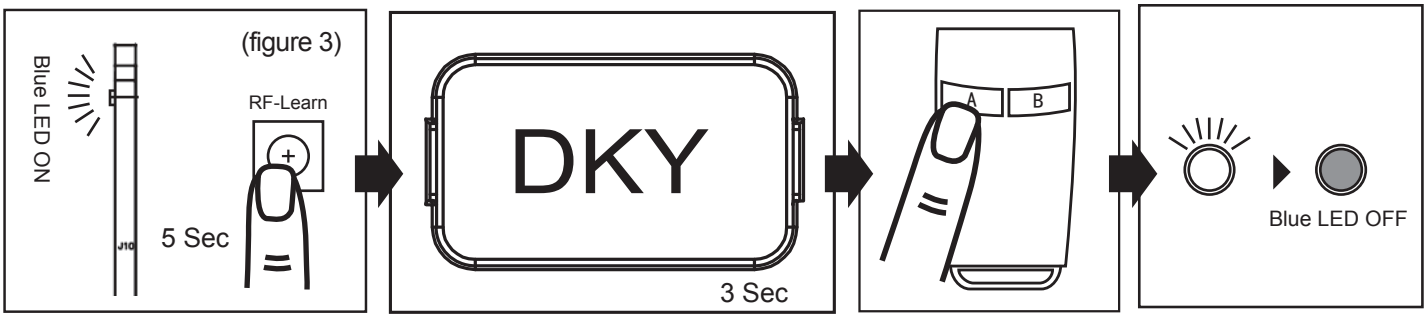
## 3.1.2 Remote learning without Control board:

1. Press the button on the NEW radio transmitter and hold it down for at least 5s, then release it.
2. Press the button on the OLD radio transmitter 3 times. (Tip: Don't press too fast; make sure you see the blue flash when pressing the button each time.)
3. Press the button on the NEW radio transmitter once.
4. Done, at this point the NEW radio transmitter will copy the same command of the OLD one.



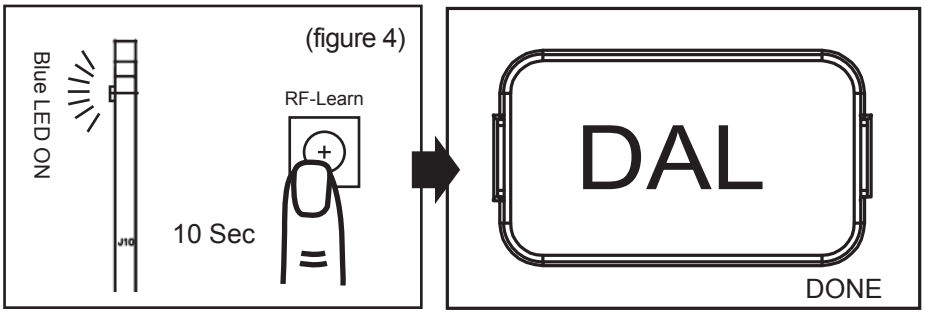

## 3.1.3 Deleting memory of single command:

Single deletion stage is needed for each memorized button.
1. Press and hold down RF-LEARN button (Figure 3) on the control board for 5 seconds.
2. Wait until the LED display shows "DKY", then, within three seconds:
3. Press the button of the remote to be deleted. If the remote has been deleted, the LED display will flash quickly five times.
4. Repeat above steps if more button to be deleted.




## 3.1.4 Deleting all memory of all remotes:

With this operation all the memorized transmitters will be deleted.
1. Press and hold down RF-LEARN button (Figure 4) on the control board for 10 seconds.
2. Wait until the LED display shows "DAL". (When you see DKY, keep holding, don't let go the button.). All memory is deleted.



## 3.2 Step 2: System Learning

**Step1:**

Press and Hold the Press SET button for 3s, When LED shows “LEA” then release SET, then the motor runs the system learning procedure automatically, once learning completed shows “D-G” or “S-G”
(No remote required)

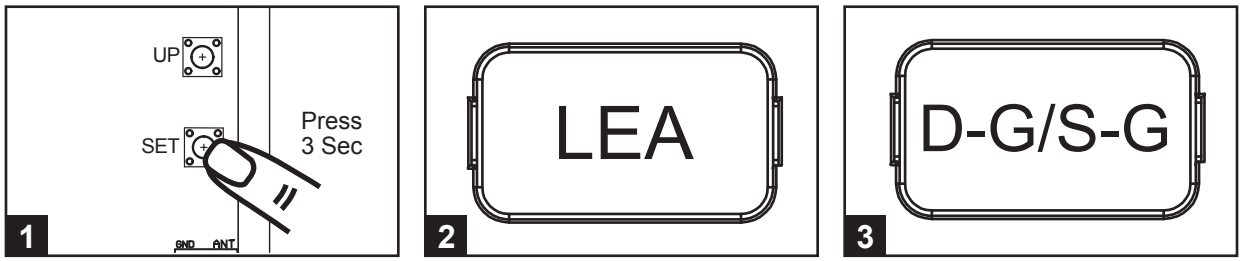
**Note:** Please check the parameter setting of “FI”(Dual/Single) before going into system learning.

**Restore system default setting**

Press and Hold the **UP + SET + DOWN** button for **5s** and panel restores back to default setting

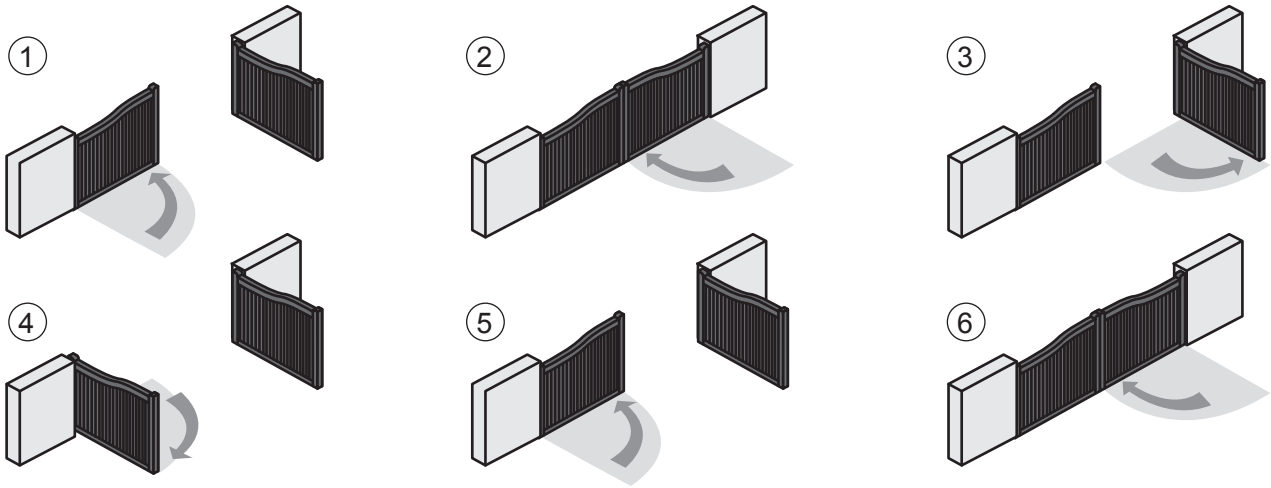
**Note:**

1. LED Shows “D-G” tells the system learning has be completed for Dual Gate installation
2. LED Shows “S-G” tells the system learning has be completed for Single Gate installation



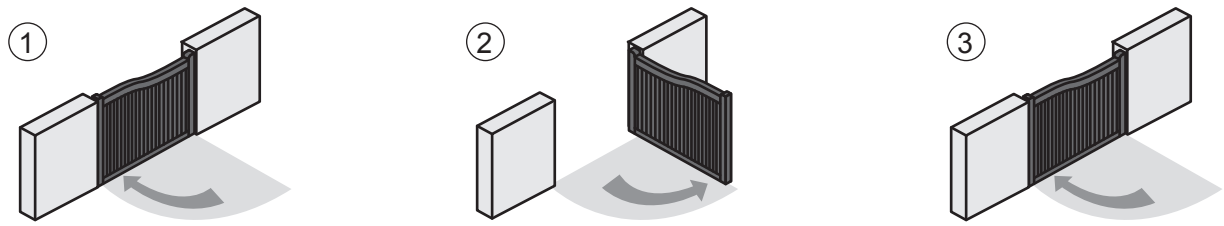

***A. Dual Gate:***

(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 Mode :***

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



## 4). Gate Operation 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.

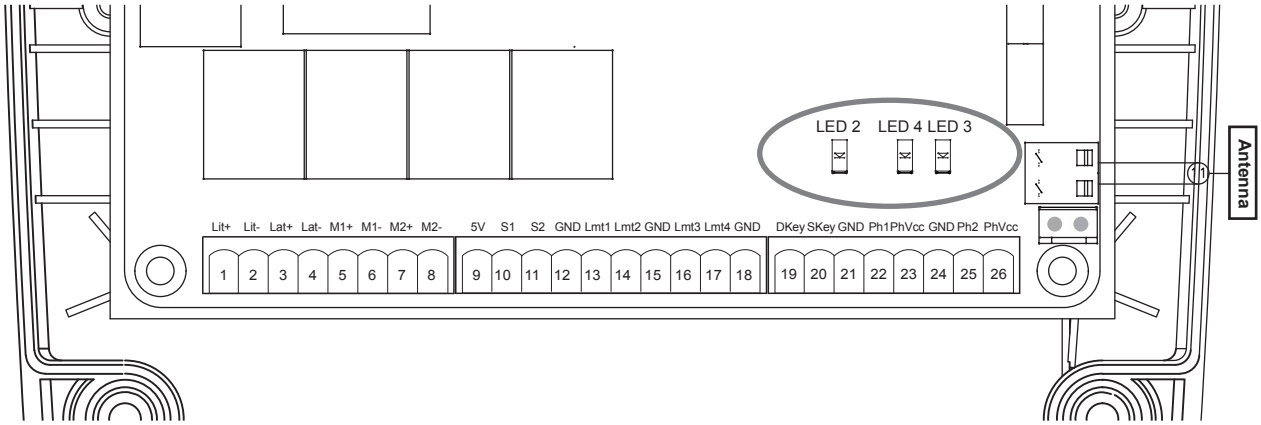
## 5). Safety For Gate Operation

In gate-opening phase: For safety purpose, the gates stop if encountering obstacles.
In gate-closing phase: For safety purpose, the gates reverse for 2 sec if encountering obstacles.

## 6). LED Indication

### 6.1 LED Lighting

**Blue LED System Learning:** Blue LED in receiver board blinks two times when learning is completed.
**LED2 RF :** Key selector, or the push button is activated, LED2 will be on.
**LED4 Ph1 :** LED4 will be on when Ph1 are triggered.
**LED3 Ph2 :** LED3 will be on when Ph2 are triggered.



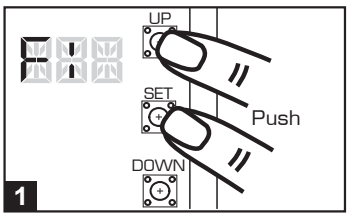

### 6.2 Function of the LED display

| LED Display | Programmable Functions |
|---|---|
| LEA | [LEA] means motor into the system learning mode, do not interrupt during this procedure |
| d-G | [D-G] means motor completed the learning procedure for dual gate installation |
| S-G | [S-G] means motor completed the learning procedure for single gate installation |
| CLR | The memory of the system is all deleted/cleaned by press and hold the UP + SET+ DOWN button together for 5s and the panel will be back to default settings |
| OPN | When the gate is opening, the LED Display show 'OPN' for 2s and then change to Amp current indication |

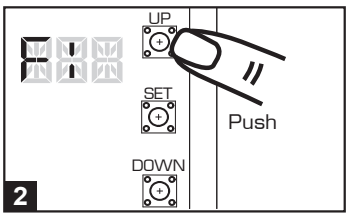
| LED Display | Programmable Functions |
|---|---|
| STP | When the gate is stopped, the LED Display show 'STP' until next commend has been made, after 10s no further movement, the LED turns to OFF |
| CLS | When the gate is closing, the LED Display show 'CLS' for 2s and then change to Amp current indication |
| S01 | LED display shows "S01" means the panel did not detected the M1+/M1 and M2+/M2 both been connected before the system learning procedure, check for 2 motors' wire connection, for dual gate system |
| S02 | LED display shows "S02" means the panel did not detected the M1+/M1 but detected M2+/M2 been connected, notice the installer to check the motor wire connection, if this is single gate system, motor wire should connect to M1+/M1 not on M2+/M2 |
| S03 | LED display show "S03" means same button on the remote has been identified for more than 2 functions |

# 7). Parameter Modification

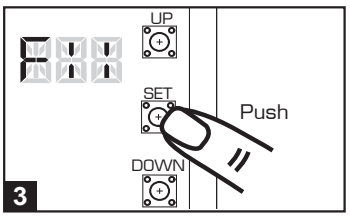
## 7.1 Parameter Learning



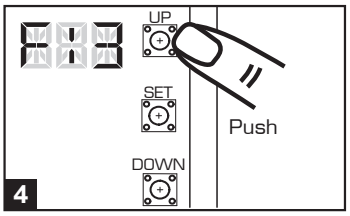

Press “UP+SET” for 3 seconds to get into the program setting display from F1.



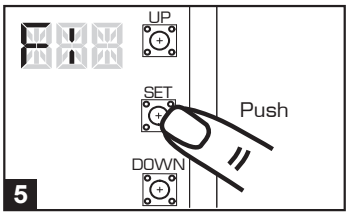

Press “UP” or “DOWN” to change setting item from F1 to FJ .




Press “SET” button again to get into the sub-settings




Press “UP” or “DOWN” to change Push from F1-1 to F1-3.




Press “SET” button again to confirm.

## 7.2 Parameter

| LED Display | Definition | Parameter | Table | Description |
|---|---|---|---|---|
| F1 | Motor Type | F1-1 | Overcurrent | 1. The factory setting is "F1-1" |
| | | F1-2 | Limit Switch | |
| | | F1-3 | Hall Sensor | |
| F2 | Overcurrent for Gate Opening | F2-1 | 2A | 1. The factory setting is "F2-2". |
| | | F2-2 | 3A | |
| | | F2-3 | 4A | |
| | | F2-4 | 5A | |
| F3 | Overcurrent for Gate Closing | F3-1 | 2A | 1. The factory setting is "F3-2". |
| | | F3-2 | 3A | |
| | | F3-3 | 4A | |
| | | F3-4 | 5A | |
| F4 | Motor Speed for Opening | F4-1 | 40% | 1. The factory setting is "F4-3". |
| | | F4-2 | 50% | |
| | | F4-3 | 75% | |
| | | F4-4 | 100% | |
| F5 | Motor Speed for Closing | F5-1 | 40% | 1. The factory setting is "F5-3". |
| | | F5-2 | 50% | |
| | | F5-3 | 75% | |
| | | F5-4 | 100% | |
| F6 | Deceleration Speed | F6-1 | 40% | 1. The factory setting is "F6-2". |
| | | F6-2 | 50% | |
| | | F6-3 | 60% | |
| | | F6-4 | 70% | |
| F7 | Time Gap b/w Two Gates (Opening) | F7-0 | 0 sec | 1. The factory setting is "F7-1". |
| | | F7-1 | 2 sec | |
| | | F7-2 | 5 sec | |
| | | F7-3 | 10 sec | |
| | | F7-4 | 15 sec | |
| | | F7-5 | 20 sec | |
| | | F7-6 | 25 sec | |
| | | F7-7 | 35 sec | |
| | | F7-8 | 45 sec | |
| | | F7-9 | 55 sec | |

| LED Display | Definition | Parameter | Table | Description |
|---|---|---|---|---|
| F8 | Time Gap b/w Two Gates (Closing) | F8-0 | 0 sec | 1. The factory setting is "F8-1". |
| | | F8-1 | 2 sec | |
| | | F8-2 | 5 sec | |
| | | F8-3 | 10 sec | |
| | | F8-4 | 15 sec | |
| | | F8-5 | 20 sec | |
| | | F8-6 | 25 sec | |
| | | F8-7 | 35 sec | |
| | | F8-8 | 45 sec | |
| | | F8-9 | 55 sec | |
| F9 | Auto-closing | F9-0 | 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.<br>2. The factory setting is "F9-0". |
| | | F9-1 | 3 sec | |
| | | F9-2 | 10 sec | |
| | | F9-3 | 20 sec | |
| | | F9-4 | 40 sec | |
| | | F9-5 | 60 sec | |
| | | F9-6 | 120 sec | |
| | | F9-7 | 180 sec | |
| | | F9-8 | 300 sec | |
| FA | Safety Device Function Mode | FA-1 | Mode 1 | 1. Please see 7.3 photocell adjustment for photocell logic<br>2. The factory setting is "FA-1". |
| | | FA-2 | Mode 2 | |
| | | FA-3 | Mode 3 | |
| | | FA-4 | Mode 4 | |
| FB | Pedestrian Mode | FB-0 | Function OFF | 1. The factory setting is "FB-1". |
| | | FB-1 | Function ON | |
| FC | Flashing Light | FC-0 | Function OFF | 1. When function FC-1, the light will flash for 3 seconds before the gate operates. If set OFF, the flash light will operate with motor at the same time.<br>2. The factory setting is "FC-0". |
| | | FC-1 | Function ON | |
| FD | Photocell Activation | FD-0 | Function OFF | 1. The factory setting is "FD-0". |
| | | FD-1 | Function ON | |
| FE | Photocell 2 Activation | FE-0 | Function OFF | 1. The factory setting is "FE-0". |
| | | FE-1 | Function ON | |
| FF | Alarm Buzzer | FF-0 | Function OFF | 1. The factory setting is "FF-0". |
| | | FF-1 | Function ON | |
| FG | Electric Latch Mode | FG-0 | Standard Gate Opening | 1. If the function is FG-1, the motor will be reversed for 0.25 sec. to release the tension.<br>2.The factory setting is "FG-1". |
| | | FG-1 | Release Gate Tension before Opening (Gate Reversing for 0.25s) | |
| FH | LED Direction | FH-0 | When Terminal Block is at Bottom | 1. The factory setting is "FH-0". |
| | | FH-1 | When Terminal Block is at Top | |
| FI | Dual / Single Gate | FI-1 | Single Gate | 1. The factory setting is "FI-2". |
| | | FI-2 | Dual Gate | |
| FJ | Over Current Reverses Time when Close | FJ-0 | Function OFF | 1. The factory setting is "FJ-0" |
| | | FJ-1 | 0.1 sec | |
| | | FJ-2 | 0.2 sec | |
| | | FJ-3 | 0.3 sec | |
| | | FJ-4 | 0.4 sec | |
| | | FJ-5 | 0.5 sec | |
| | | FJ-6 | 0.6 sec | |

**Note(F1-3 over-current setting in Hall sensor mode):**
Only in "F1-3"Hall sensor mode, the PCB will record all the current value in learning mode. Please adjust over current value by setting F3 function after learning mode.
The recorded current values will increase according to the value shown on LED display as over current value.

The value can be adjusted by pressing button UP and DOWN. The maximum value is 50(5.0A) and the minimum value is 05(0.5A).
LED display example:

**Indicate 1.0 ampere: all of the recorded values will increase 1 ampere as over current value.**

**Indicate 2.8 ampere: all of the recorded values will increase 2.8 ampere as over current value.**

**Indicate 0.6 ampere: all of the recorded values will increase 0.6 ampere as over current value.**

## 7.3 Photocell Logic

**FA-1 Photocell OPEN/CLOSE (Standard set up)**

| Position of Gate | When safety devices are activated | |
|---|---|---|
| Type of Safety Device | PH1<br>Photocell-CLOSE | PH2<br>Photocell-OPEN |
| FULLY CLOSED | No effect | Open not allowed |
| FULLY OPENED | Reload automatic closing time | No effect |
| STOP DURING MOVING | Reload automatic closing time | Open not allowed |
| CLOSING | Open | No effect |
| OPENING | No effect | Close |

**FA-2 Safety Edge**

| Position of Gate | When safety devices are activated | |
|---|---|---|
| Type of Safety Device | PH1<br>Photocell-CLOSE | PH2<br>Safety Edge |
| FULLY CLOSED | No effect | Open not allowed |
| FULLY OPENED | Reload automatic closing time | |
| STOP DURING MOVING | Reload automatic closing time | OPEN/CLOSE not allowed |
| CLOSING | Open | Reverse to open for 2 seconds |
| OPENING | No effect | Reverse to close for 2 seconds |

**FA-3 Open Only Device (Vehicle detector)**

| Position of Gate | When safety devices are activated | |
|---|---|---|
| Type of Safety Device | PH1<br>Photocell-CLOSE | PH2<br>Opening Device |
| FULLY CLOSED | No effect | Open |
| FULLY OPENED | Reload automatic closing time | |
| STOP DURING MOVING | Reload automatic closing time | Open |
| CLOSING | Open | Open |
| OPENING | No effect | No effect |

**FA-4 Double photocell set up**

| Position of Gate | When safety devices are activated | |
|---|---|---|
| Type of Safety Device | PH1<br>Photocell-CLOSE | PH2<br>Photocell-OPEN/CLOSE |
| FULLY CLOSED | No effect | Open not allowed |
| FULLY OPENED | Open for 2 seconds, when auto closing is ON | Close not allowed |
| STOP DURING MOVING | Close not allowed | Open not allowed |
| CLOSING | Open | No effect |
| OPENING | No effect | Stop |

# 8) .Trouble Shooting

| Issue: | Solution: | Parts to look at: |
|---|---|---|
| No power on the board. | - Power to the transformer is on and the connector block from the AC power lead to the transformer and to the control board is wired correctly.<br>- At the control board check the transformer white connector blocks are correctly plugged into board and the battery connector if equipped.<br>- Check fuses are both working. * 15amp for stand-alone transformer.<br>- Check there is 24vac into and out of the Control box fuse.<br>- The batteries are connected to the control board and read higher than 24vdc if equipped.<br>- Try removing optional extras such as beams and probes to see if they are draining the power. And reset the control panel to default and testing the motor operation | - Fuse<br>- Transformer power<br>- Loose wires<br>- Incorrect wire contact at connector blocks<br>- Short circuit in wiring between transformer and board<br>- Battery |
| A single arm activation isn't working. | - Check function setting are set correctly for single arm. FK-1 single gate mode. FB-1 Pedestrian mode to be ON. Using button B on the remote to operate the single gate.<br>- Make sure the arm is connected to motor 1 and not motor 2.<br>- Your remote is programmed in.<br>- You have done a systems learn.<br>- There is adequate power going to the board. | - Motor connection<br>- Function setting for single mode |
| Remotes or wireless keypad not working. | - Re-program remotes by pressing the RF learn button until a blue light next to it comes on. Press the remote ONCE and it should flicker. Now wait until the light goes off and try again.<br>- You can program in several remotes or devices at a time however all signals need to be sent before the blue light goes off again.<br>- Push the button fairly solid and hold it in for a whole second. The blue light should flicker.<br>- When programming remotes press the top left button ONLY. The rest of the buttons will program themselves in with it. Use the function FH & FI to command the remote.<br>- If the blue light is on continuously without pressing the RF learn button it means the receiver is faulty and needs to be replaced.<br>- The blue light will still flash when a remote that has not been programmed in is used. It will however not activate.<br>- Reset the keypad. Do this by flicking off the front cover with a small screw driver. Undo the 2 nuts, turn over and repeat until left with the control board on the casing. Undo the 3 screws in the corner. Turn over the circuit board and there is a button there. Hold it until you hear a beep. Try keypad again and reassemble. | - RF Learn button on control board |
| Lights on the board but arm(s) not moving. | - Check that the battery is 24V+.<br>- Make sure your connections aren't loose.<br>- The power input is feeding in 24V+.<br>- The gate is free from any obstructions.<br>- The arm is locked into place (A good way to test this is if you can move the gate freely, then it won't work via the motors).<br>- Ensure a systems learn has been done from start to finish.<br>- You have correctly wired the wires from the rams to the control box. | - The gate<br>- Power sources<br>- Arm wires. |
| Blue light stays on permanently | - Ensure you have waited the full 10 seconds.<br>- Try depowering and repowering the board.<br>- If it still keeps glowing please call or email us. Receiver may need replacement. | |
| Gates remain open after systems learn/one arm stays open and the other one closed. | - Ensure you have matched the + and - of each ram to the equivalent + and – motor symbols on the board.<br>- Change the polarity connection of the positive(+) with the negative(-) of the motor if the gate both stay open instead of close after the system learning<br>- Clear any obstructions to the gates.<br>- Make sure that the arms are going no further than 100 degrees.<br>- The function setting should be set for a double swing and not a single.<br>- Check the LED display during the system learning showing the motor current, once the reading is too high check the installation or the gate condition .<br>- Ensure the motors are locked in.<br>- Increase the power amp settings by function setting F2 for open and F3 for close direction (mentioned above). | |
| Gates not fully opening or closing | - Ensure there is nothing obstructing the gate or the arms.<br>- If the gate is a bigger or heavier gate change the power settings using the F2 for open and F3 for close direction. You should not have to use the maximum power setting. This is intended for a 500kg double swing gate (or 250kg single).<br>- Re-do the systems learn. | |
| One gate opens part of the way/not at all. | - Make sure you are pressing the top left hand button. The other buttons do have their individual functions.<br>- Check the FB function for pedestrian mode, set to FB-0 if you require the single gate to be fully open instead of partial open<br>- Both arms are wired onto the control board correctly. They should identical. I.E. black, red. Black, red. | |
| Remote/ keypad range is less than 20M | - Make sure the antenna is attached and screwed in on the control board.<br>- Make sure there is nothing obstructing the antenna such as the power cable or motor cables. | |

## 9). Technical Specification

| | |
|---|---|
| Main power supply | 230Vac/110Vac, 50Hz/60Hz |
| Back-up battery | 2pcs of batteries for emergency operation, 2.2A each |
| Receiver board | 433.92MHz; 200 transmitters memory |
| Installation | Wall mounted vertically |
| Operating Temperature | -20℃~+50℃ |
| Dimension | 275mm * 195mm * 102mm |