P190 Control Box

24V DC GEAR MOTOR

FOR RESIDENTIAL

USER MANUAL

Index

1). P190 Control Box

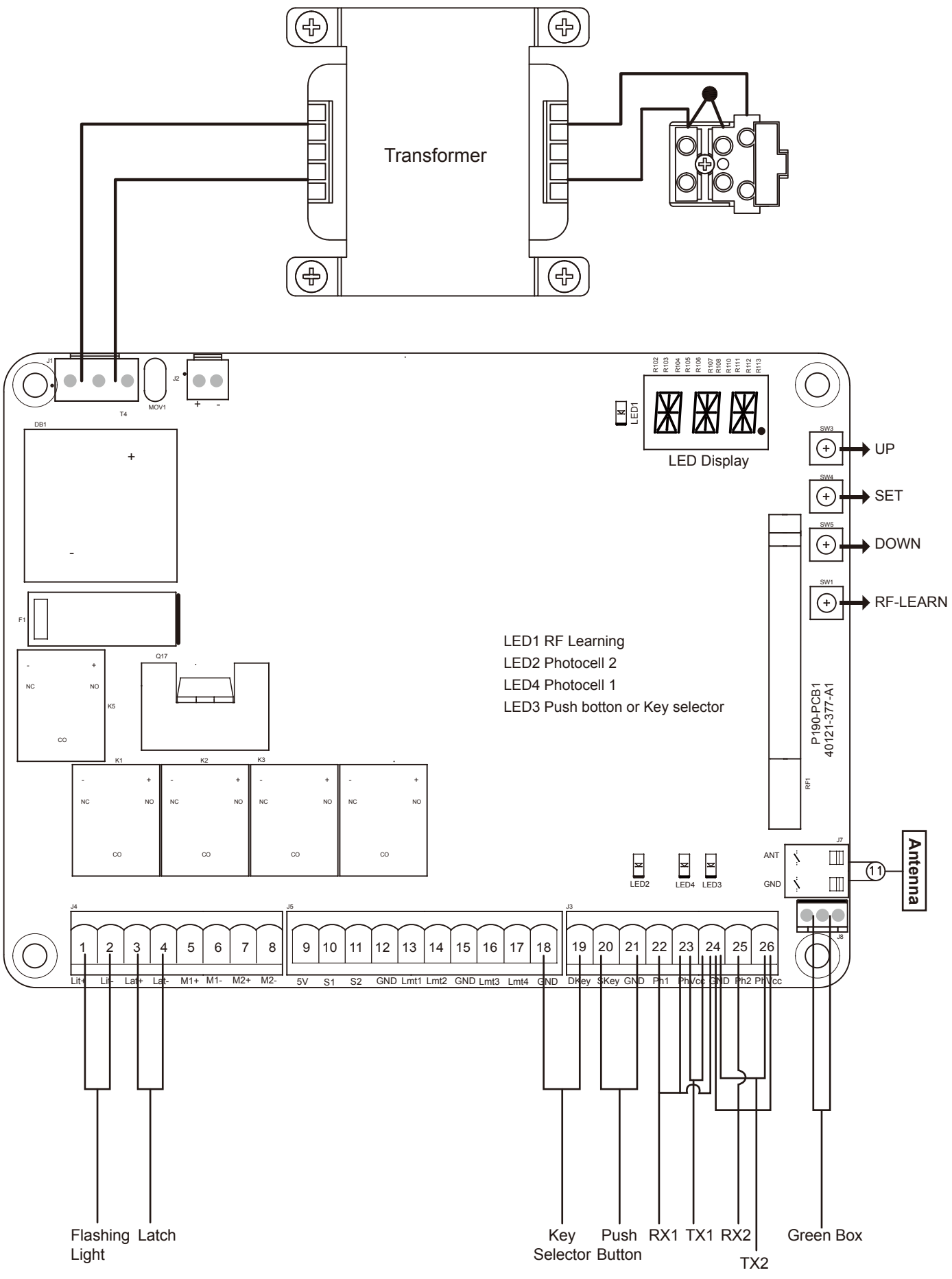
1. Decide the installation position of control box first, it is suggested to be installed near the gate and should be protected from possible damage. Be aware of the motor cable length before deciding the installation position.
2. Remove the cover by unscrewing the four screws on the cover. See ***Figure 1(1)***.
3. Use a screwdriver to puncture the holes beneath the bottom of the control box. See ***Figure 1(2)***.
4. Secure it on the wall.
5. Motor Wiring Connection:
   1).Motor Power only (M+, M-) See ***Figure 1(2)***
   Gate openers: Refer to ***Figure 1(4)*** and connect the wires separately to the terminals on the PCB.
   Motor 1: Connect the motor wire (White +) to the terminals M1+, and (Yellow -) to the M1-.
   Motor 2: Connect the motor wire (White +) to the terminals M2+, and (Yellow -) to the M2-.

   2) Motor with Limit Switch (M+, M-, Limit1, Limit2, GND) See ***Figure 1(3)***
   Gate openers: Refer to ***Figure 1(4)*** and connect the wires separately to the terminals on the PCB.
   Motor 1: Connect the motor wire (White +) to the terminals M1+, and (Yellow -) to the M1-.
   Connect the Limit switch wires red, white, and black to the terminal Limit1, Limit2, and GND.
   Motor 2: Connect the motor wire (White +) to the terminals M2+, and (Yellow -) to the M2-.
   Connect the Limit switch wires red, white, and black to the terminal Limit3, Limit4, and GND.

   3) Motor with Hall sensor (M+, M-, 5V, Signal, GND) See ***Figure 1(4)***
   Gate openers: Refer to ***Figure 1(4)*** and connect the wires separately to the terminals on the PCB.
   Motor 1: Connect the motor wire (White +) to the terminals M1+, and (Yellow -) to the M1-.
   Connect the Limit switch wires red, green, and black to the terminal 5V, S1, and GND.
   Motor 2: Connect the motor wire (White +) to the terminals M2+, and (Yellow -) to the M2-.
   Connect the Limit switch wires red, green, and black to the terminal 5V, S2, and GND.

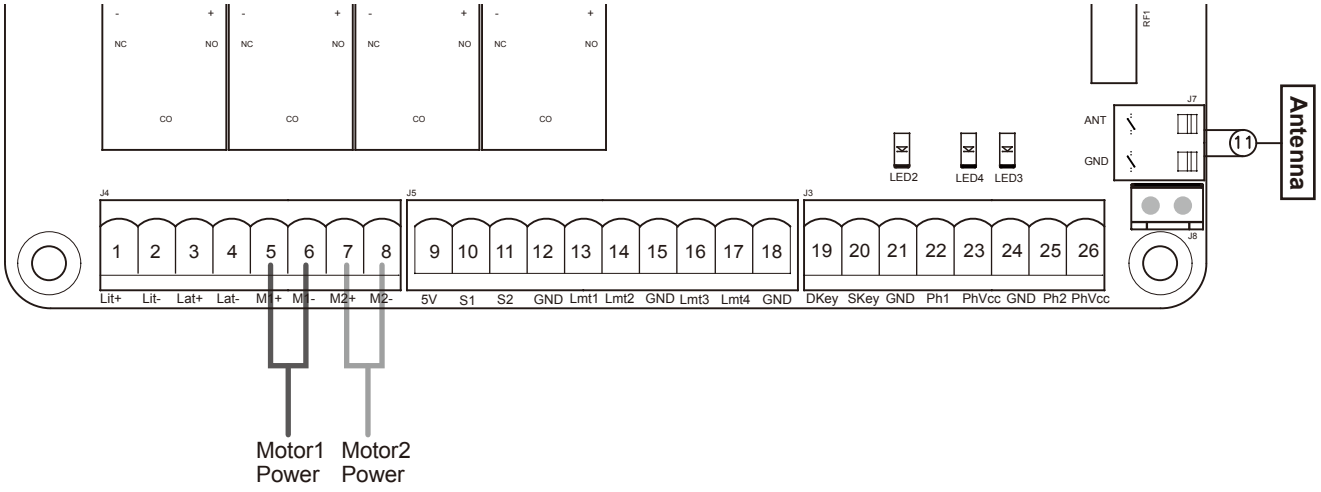
6. Accessories Wiring Connection
   Prepare all the wires of the accessories beforehand and connect the wires to the gear motors and accessories on the PCB as shown in ***Figure 1(4)***. All of the wiring connections of the accessories are not requested to distinguish the positive (+) and the negative (-) polarity.
   1). Flashing Light: Connect the two wires from the flashing light to the terminal L+ and L- on the PCB.
   2). Electric Latch: Connect the two wires from the electric latch to the terminal Lo + and Lo- on the PCB.
   3). Photocells: See ***Figure 1(4)***
   (A) If installed one set Photocell to Ph1, please choice 1 in FC.
   (B) If installed one set Photocell to Ph2,.please choice 1 in FD.
   (C) If installed two sets Photocell, please choice 1 for FC and FD.
   (D) If No Photocell has been installed,please choice 0 in FC and FD.

Figure 1(1)


Transformer
LED Display
UP
SET
DOWN
RF-LEARN
LED1 RF Learning
LED2 Photocell 2
LED4 Photocell 1
LED3 Push botton or Key selector
P190-PCB1
40121-377-A1
Antenna
Flashing Light
Latch
Key Selector
Push Button
RX1
TX1
RX2
TX2
Green Box

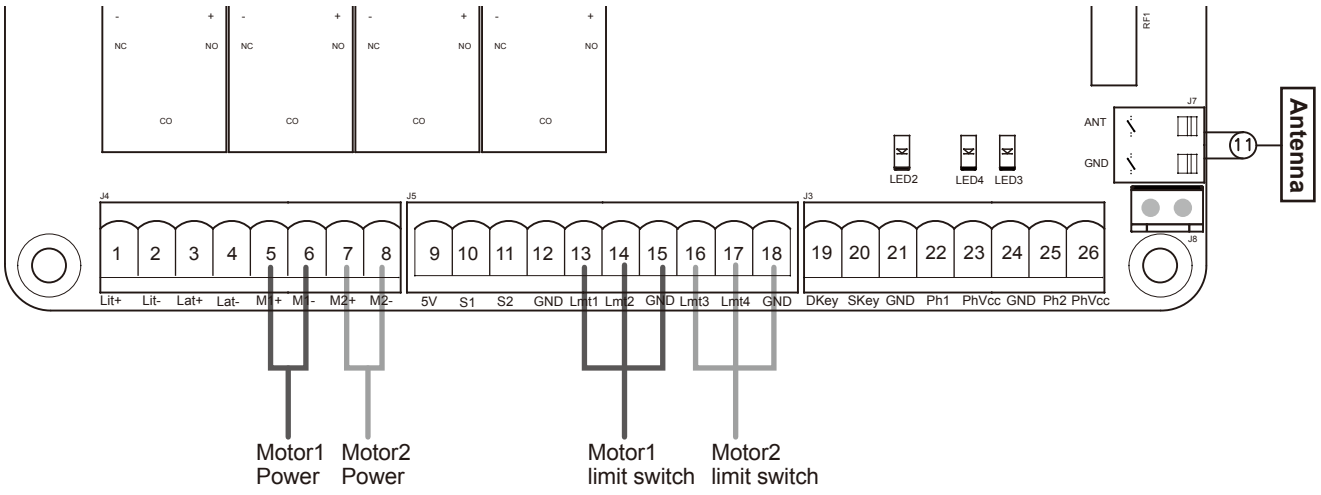
Motor Only

Figure 1(2)



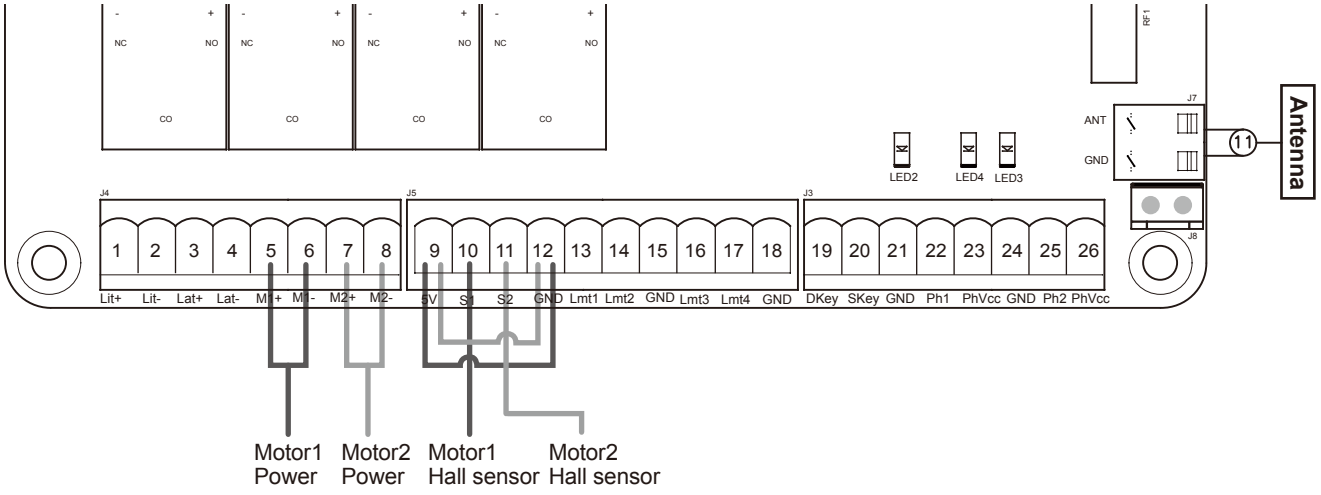
Motor with Limit switch

Figure 1(3)



Motor with Hall sensor

Figure 1(4)



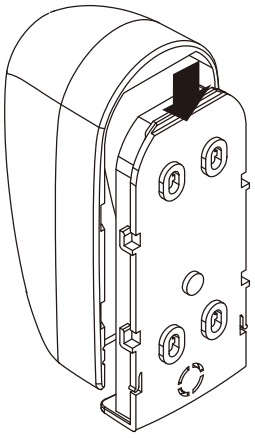
1.2 Photocell Installation Guide

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(5)



INSTALLATION:

Wire Connection of Photocells

TX: Connect terminals 1 and 2 on the transmitter with the terminals GND and PhVcc on the P190 PCB.

RX: Connect terminals 1,2 and 4 on the receiver with the terminals GND, PhVcc, and Ph1/Ph2 on the P190 PCB. And use an extra wire to connect terminals 2 and 5 on the receiver as a bridge.

Figure 1(6)

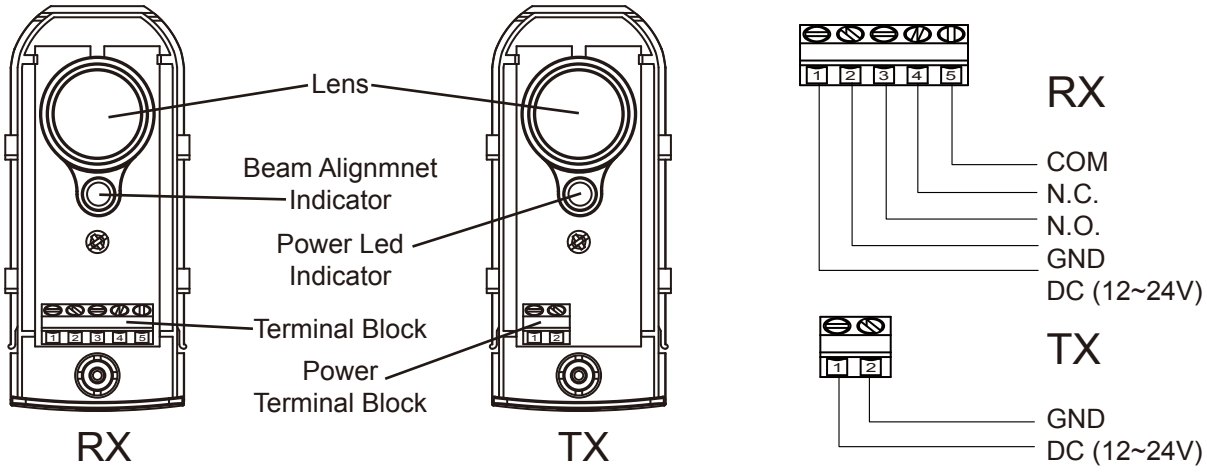
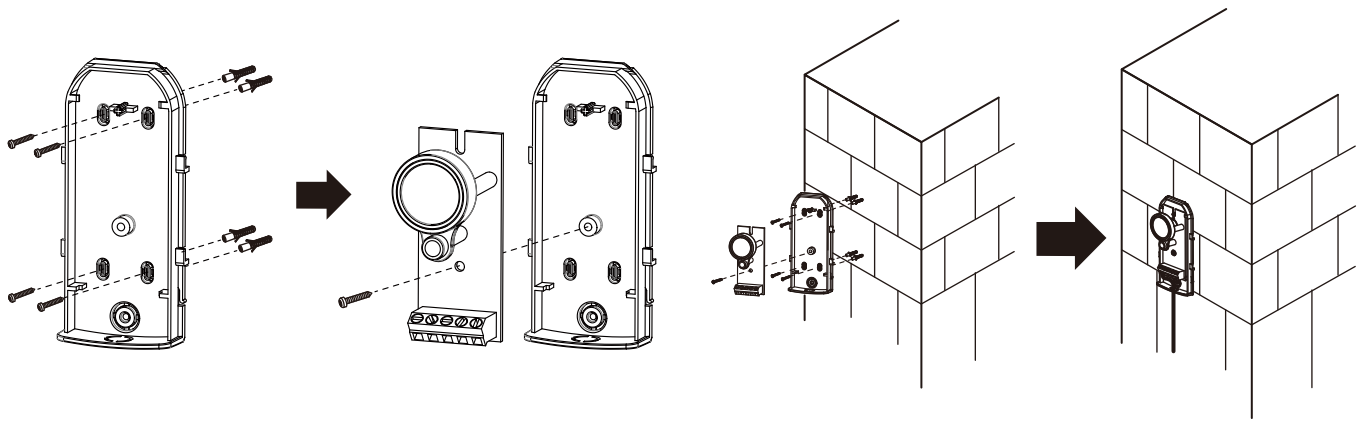
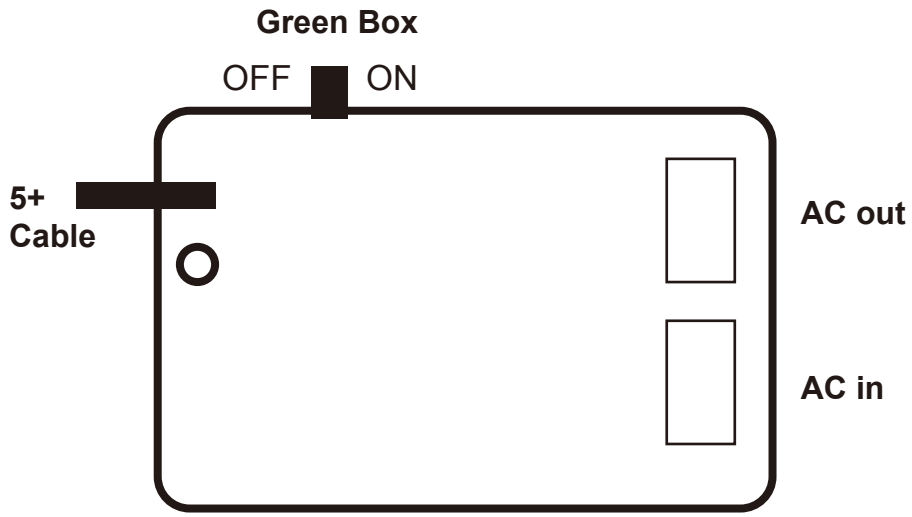


Figure 1(7)



1.3). Green Box Installation Guide

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.

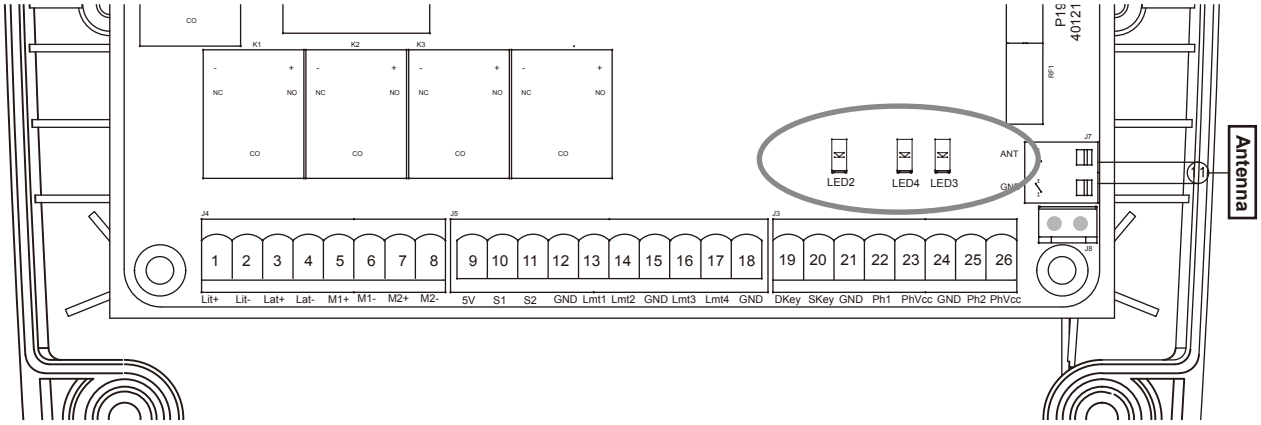
CAUTION:
In case of loop or installation of photocell which need power consumption anytime, please do not install Green Box.

1.4 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.

2.2 LED Indication

LED1 System Learning: blue LED1 in receiver board blinks three times when learning is completed.
LED2 RF : If the switch of the transmitter, 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 "UP-DOWN"3 button on the PCB for 5 seconds.

(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 double gate learn; or set the function F2-2 for sigle gate learning.

Step3: Press and hold the “UP+SET+DOWN” button on the PCB for 3 seconds. After LED1 blinks once per second, press the button on the transmitter to choose dual-gate(A button) or single-gate(B button) system learning. In system learning mode, the gates will proceed with the following procedures.

Step4: When changing F2 setting, it is required to do the system learning process again.

(A) Dual-Gate Mode: Slave Gate closes→Master Gate closes→Master Gate opens→Slave Gate opens→Slave Gate closes→Master Gate closes.

(B) Single-Gate Mode: Master Gate closes→Master Gate opens→Master Gate closes.

The completion of system learning:

(A) For Dual-Gate installation: The system learning is completed when LED1 quickly blinks twice per second.

(B) For Single-Gate installation: The system learning is completed when LED1 quickly blinks once per second.

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 isa power failure.

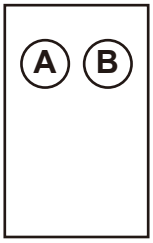
(C) The slave gate opens 3 seconds after the master gate opens and the master gate closes 3 seconds after the slave gate closes.

(D) While using limit switch mode, please make sure the motor hit 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 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 reaches the limit switch at least 2~3 centimeters before the mechanical stop.

3.1 Function Setting

3.1.1 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.

3.1.2 Operations for Function Settings

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

Step	Operations	LED Display after the Step
1.	(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. (*) 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”.	
2.	(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. (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. (**) 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. (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. 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.	   
3.	After setting all functions you need, then wait for 10seconds, the LED will display “RUN”. And you can use transmitter to operate the gate.	

3.2 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", refer to the note of page 8.
		F3-2	3A	
		F3-3	4A	
		F3-4	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	
		F8-8	300 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 funciton on and push B key in the transmitter, one gate will open partically. 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 forword 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	
		FH-4	D Key	
FI	Auto-Close function Key	FI-0	No key to control	1. The key is to turn on or off the Auto-Close function. 2. The factory setting is "FI-3". 3.When the flasher and buzzer is running, the auto closed button has no function till flasher and buzzer finish running.
		FI-1	A Key	
		FI-2	B Key	
		FI-3	C Key	
		FI-4	D Key	

Note(F3 setting in Hall sensor mode):

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).

3.3 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 clsoe 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

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	1. Check if LED3 or 4 is "OFF". 2. Check if the voltage of the batteries is upon 22V. 3. Check if LED1 is "OFF". 4. Make sure all the wiring connections are firmly connected to the terminals on the PCB. 5. 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	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	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 Characteristics

5.1 P190 Control Box

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	Wall mounted vertically
Operating Temperature	-20℃~+50℃
Dimension	275mm * 195mm * 102mm