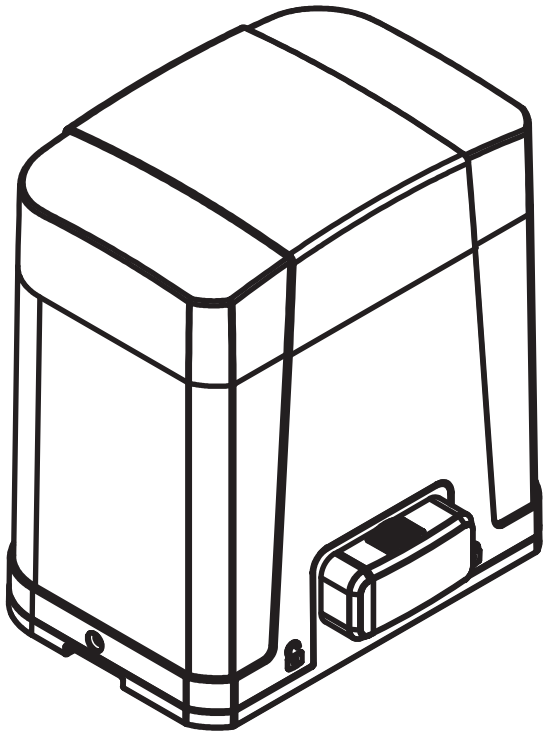
PL600H / PL1000H 24V DC MOTOR

SLIDING GATE OPENERS

FOR RESIDENTIAL

USER MANUAL



CE Declaration of Conformity

Applicant: Powertech Automation Inc.
Manufacturer: Timotion Technology Co., Ltd.
Address: Shiyong Minying Industrial Zone, Hengli Town, DongGuan City, GuangDong, China

Model: PL600H, PL1000H, PR-2

1. Certificate of conformity of a product with the essential requirements art. 3.2 of the R&TTE Directive 1999/5/EC.
2. The above product has been tested with the listed standards and in compliance with the European Directive LVD 2006/95/EC.
3. The submitted sample of the above product has been tasted for CE marking according to the following European Directives: 2006/42/EC Machinery Directive.

Comply with the following Standards:

EN 301489-1 V1.8.1: 2008
EN 301489-3 V1.4.1: 2002
EN 300220-1 V2.1.1: 2006
EN 300220-2 V2.1.2: 2007

EN 60335-1: 2002+A11:2004+A1:2004+A12:2006+A2:2006+A13:2008
EN 60335-2-103: 2003
EN 62233: 2008

EN 12445: 2001
EN 12453: 2001

And also declare that the machinery may not be put into service until the machine, which will be integrated or become one of the components, and announced to comply with the provisions as the required.

Taiwan, Aug 23, 2013

David Lan

(Deputy Managing Director)

INDEX

1) Warnings

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

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

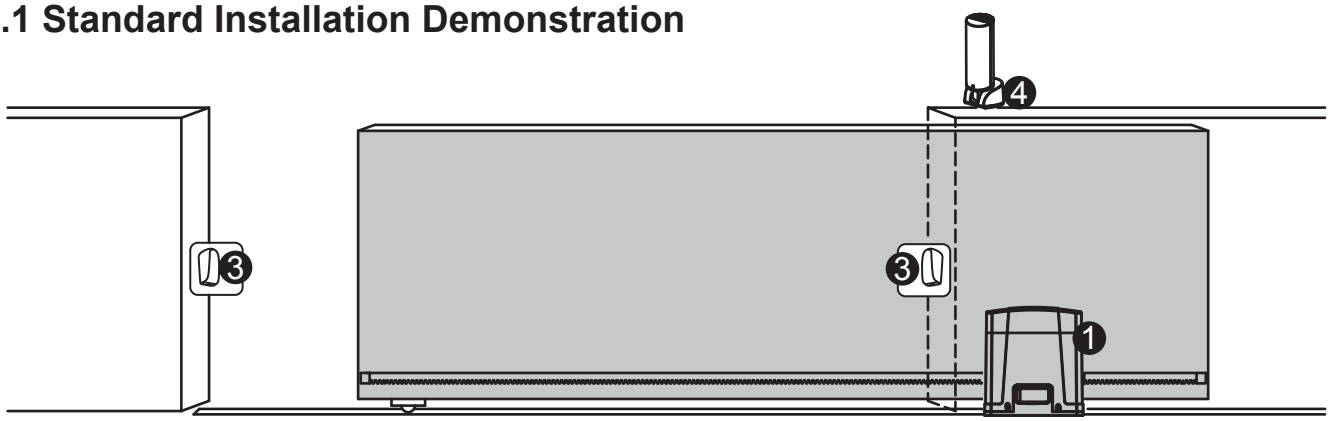
Keep all the components of PL600H/ PL1000H system and this manual for further consultation.

- 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 work 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 both sides of the gate to warn the people in the area of potential hazards.

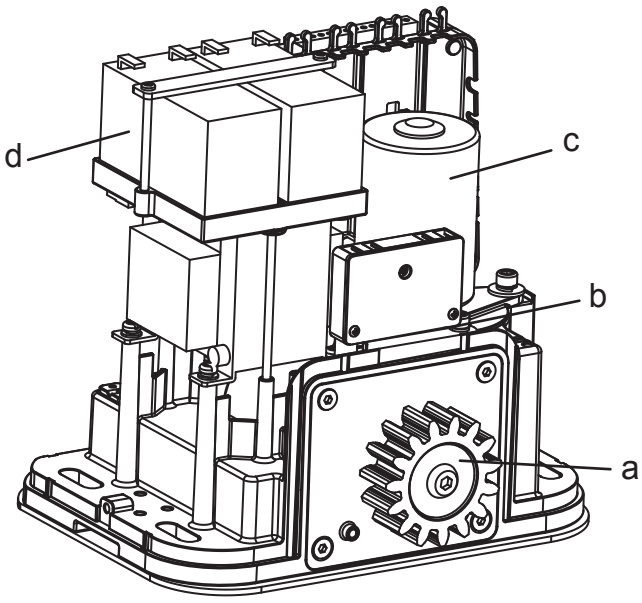
2) Installation:

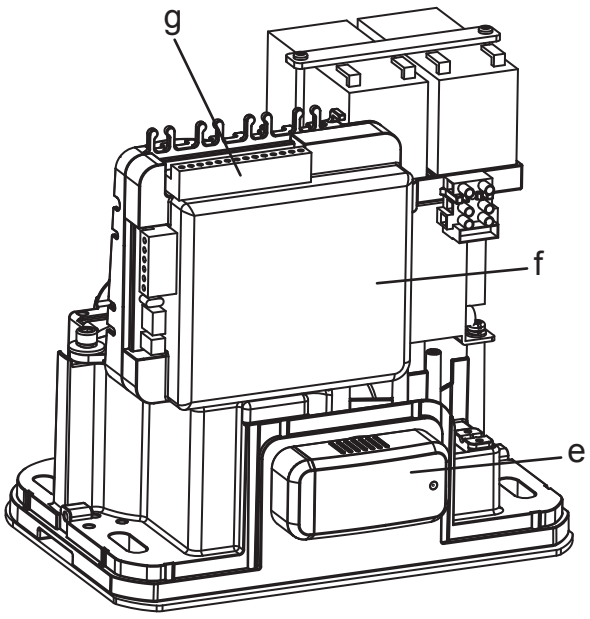
2.1 Standard Installation Demonstration



1. 24V DC sliding motor
2. Transmitter
3. Safety photo sensor
4. Flashing light

2.2 Description of Device

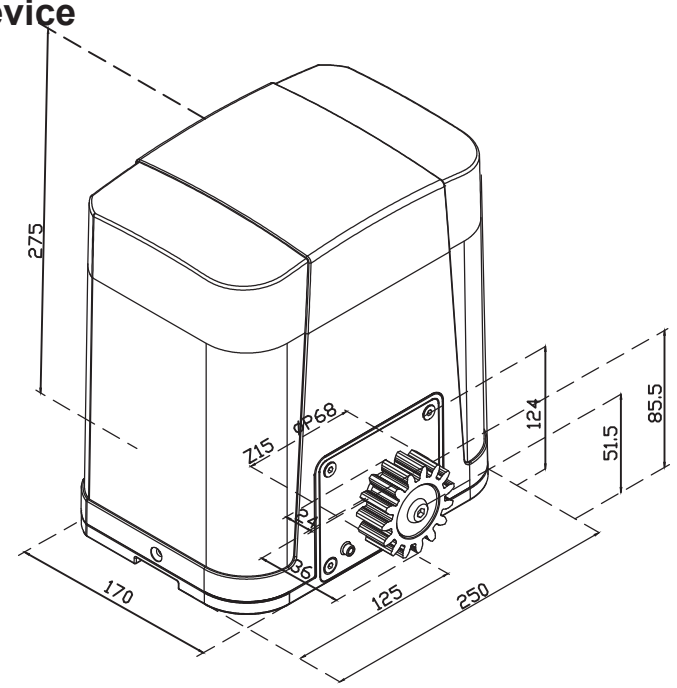




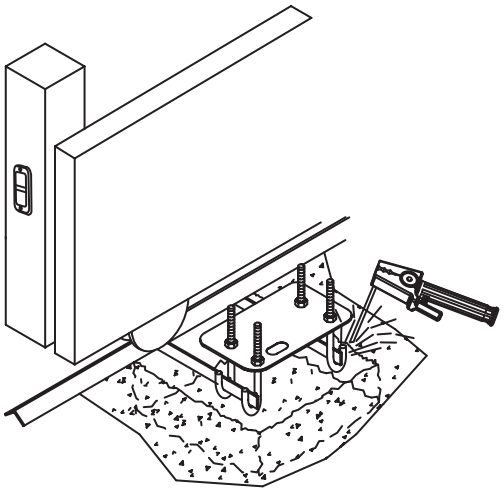
a. Operation gear
b. Limit switch device
c. 24Vdc motor
d. Back-up batteries (Optional)

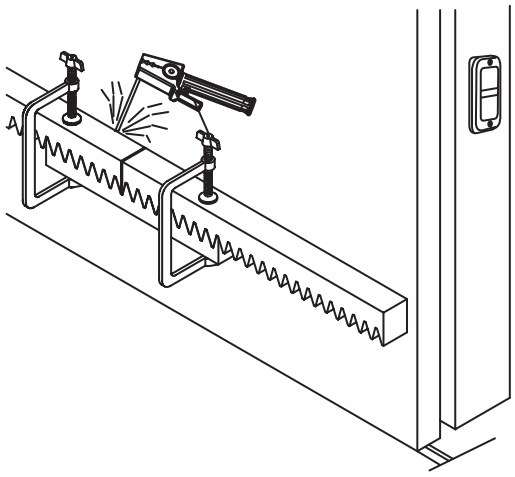
e. Release device
f. Control panel
g. Terminals of devices

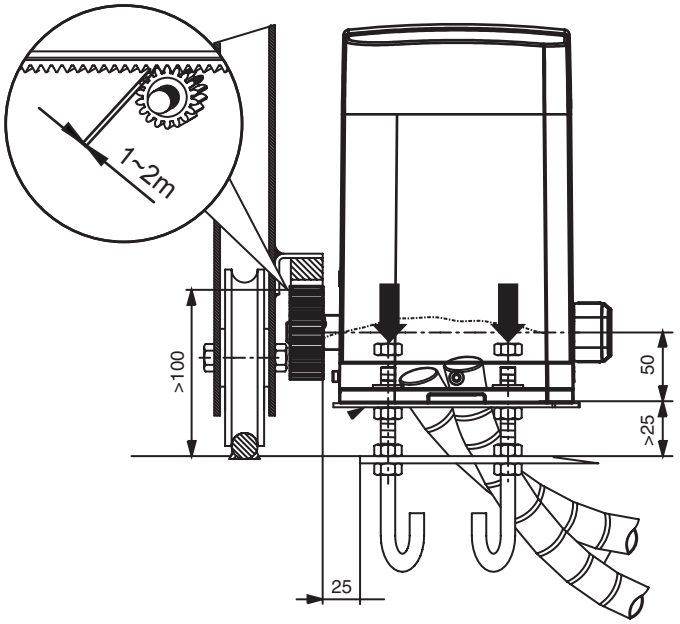
2.3 Dimension of Device

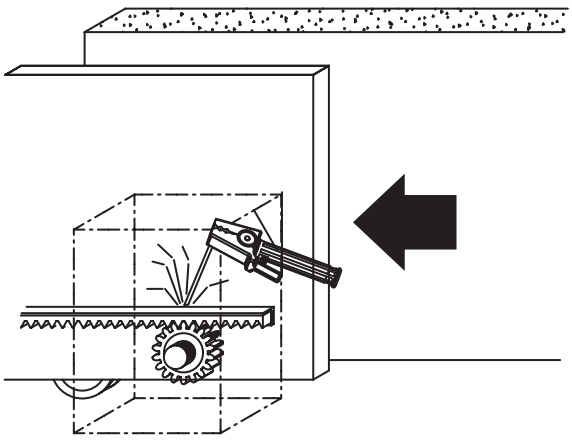


2.4 Installation of Motor Gear and Gear Rack

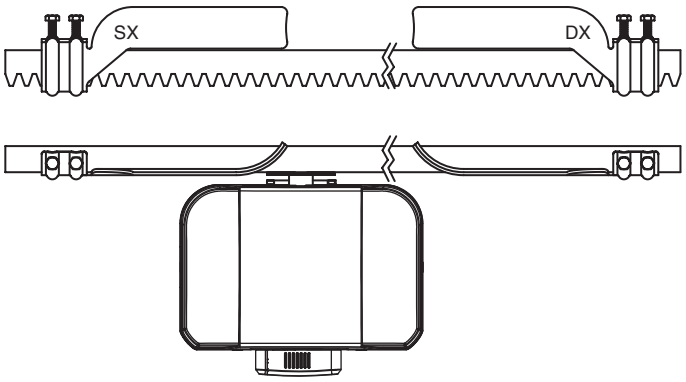


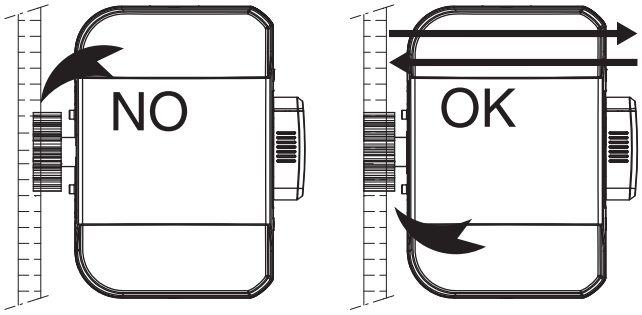






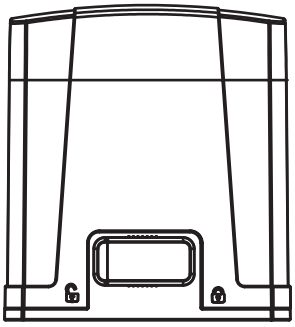
2.5 Checking for Installation





2.6 Emergency Release

In the case of power failure for emergency release of the motor, please follow the procedure as below:



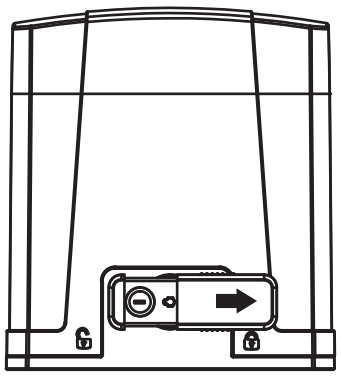
Step1. Push the lid of release chamber and move rightward

Step2. Insert the key and turn counterclockwise to unlock the device.

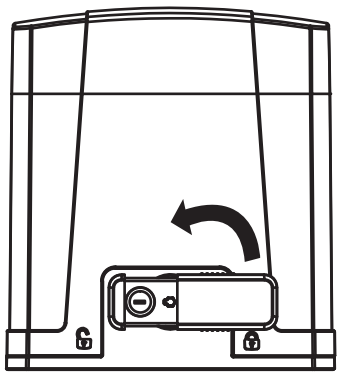
Step3. Turn counter-clockwise of the bar to release the motor

To restore the automation, simply reverse the above procedure.

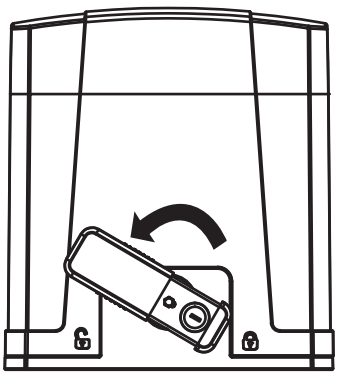
Step1.



Step2.



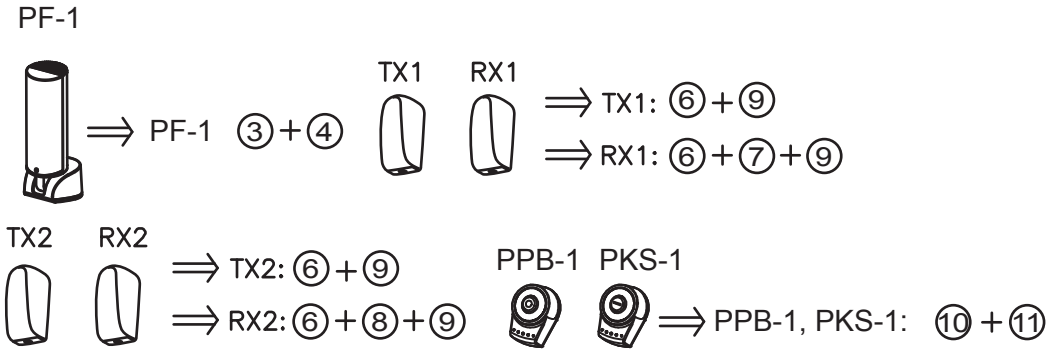
Step3.

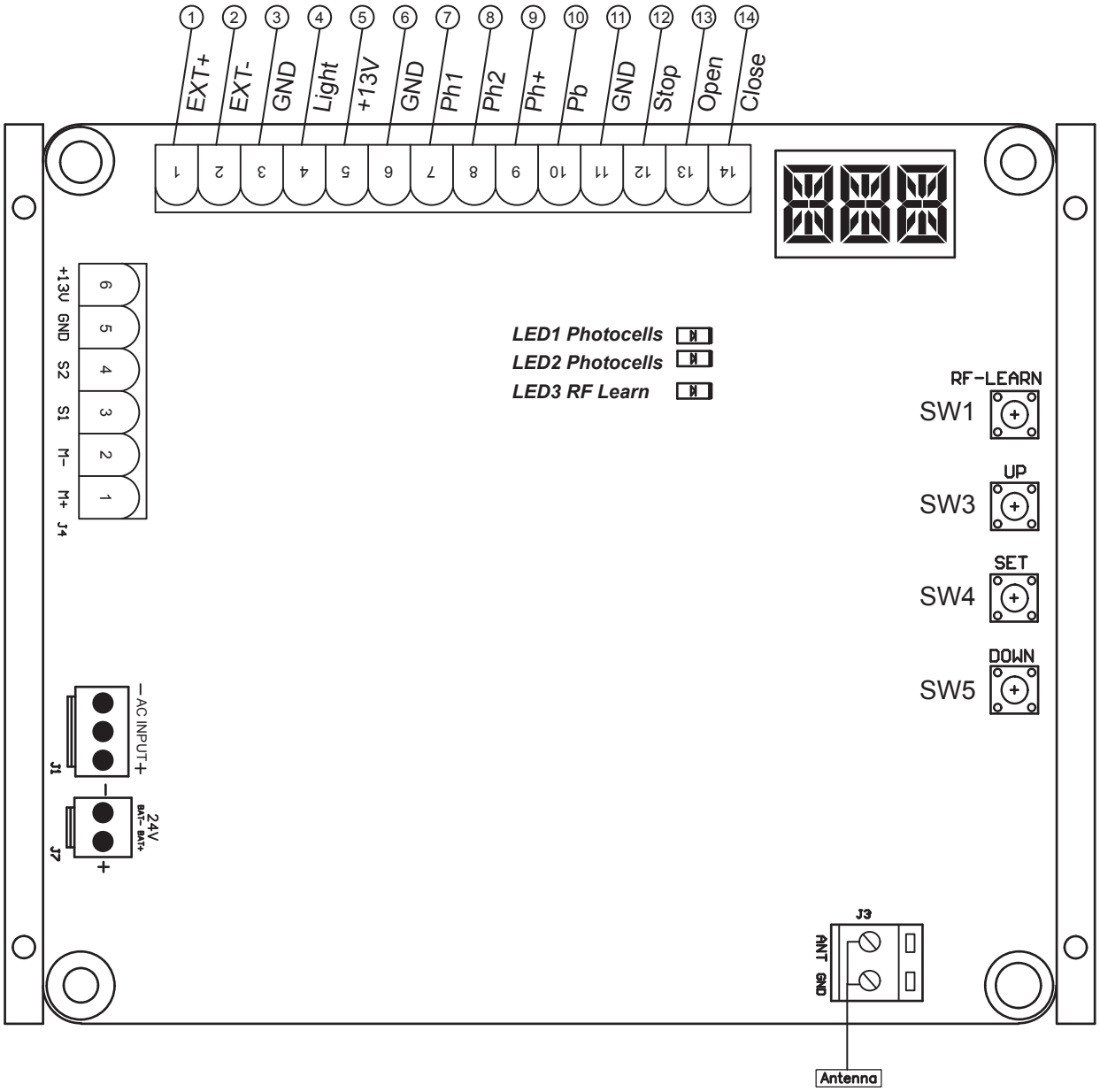


3) Setup and Function Setting:

3.1. Wire Connection

If the LED display is in normal performing refer to “4.2.1”, you can control the gate by either transmitters or the button on the board: “UP”-clockwise moving, “SET”- stop and “DOWN”- Counterclockwise moving.

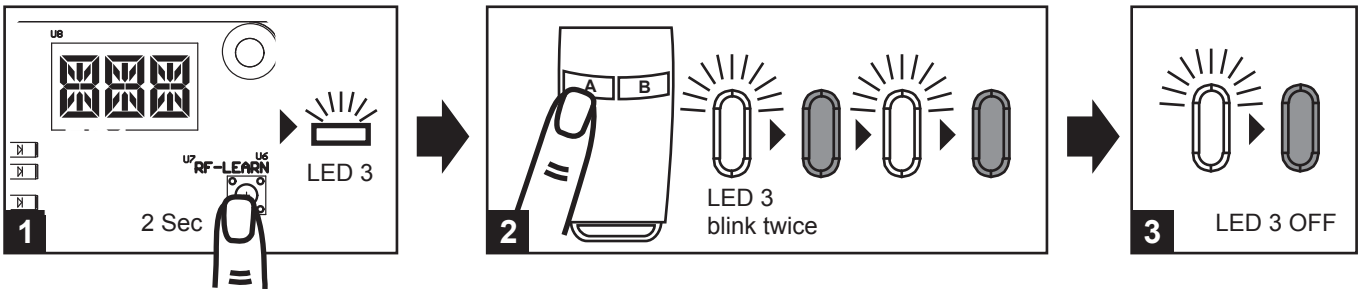




3.2 Transmitter Memorizing and Erasing Process

(1) Transmitter Memorizing: Press “RF Learn” button for 2 seconds, and the LED3 is on; then press the transmitter left button (A); the LED3 will blink twice and then be off. The transmitter learning is completed. **1** **2**

(2) Erasing Memory: Press "RF Learn" button for 5~6 seconds as LED3 is on, then wait for LED3 off. **3**



3.3 System Learning, Reset Process, and LED Display

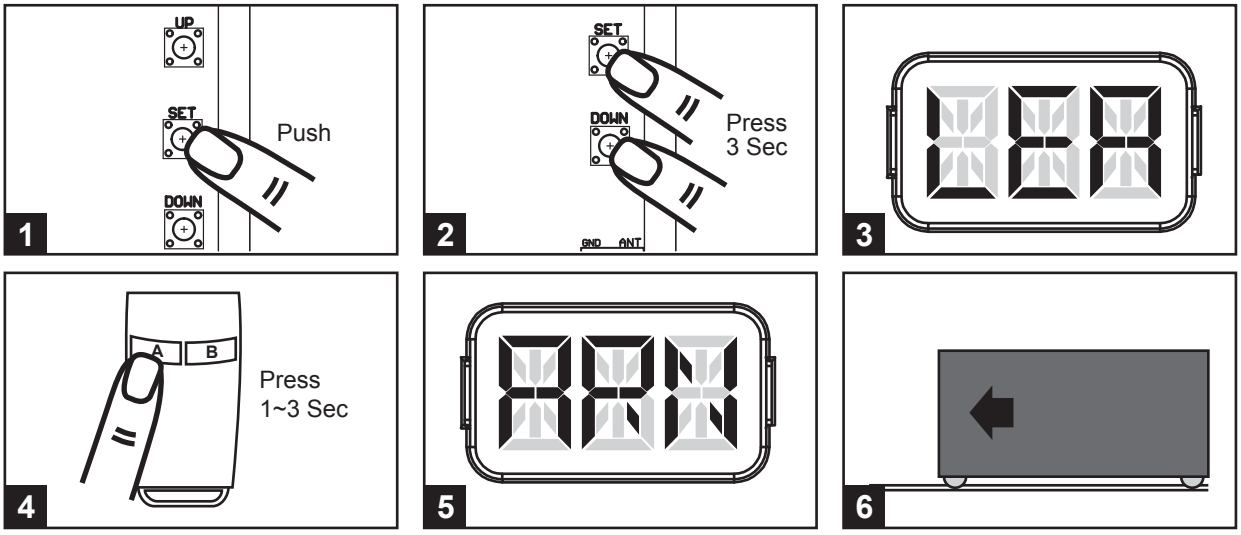
! CAUTION: Before proceeding to system learning, the transmitter memorizing process has to be completed.

(1) To Complete the System Learning:

Step1: Press “SET”; then press “SET” + “DOWN” for 3 seconds, and the LED display shows “LEA” **1** **2** **3**

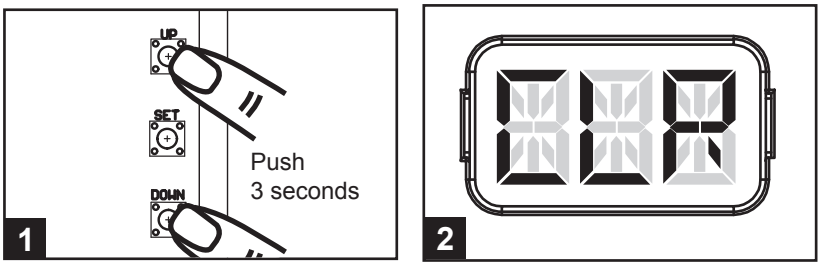
Step2: Press left button (A) on time, the LED display should show “ARN” **4** **5**

Step3: The gate goes to Auto-learning, please wait for the learning process to be completed **6**



(2) To Reset Factory Setting:

Press UP and DOWN for 3 seconds, and the LED display shows “CLR”



LED Display	Programmable Functions
N-L	“N-L”: The PL600H/ PL1000H system learning
RUN	“RUN”: The PL600H/ PL1000H system is in normal operation To program, press SET button for 3 seconds, when the LED display change from RUN to F1, press UP or DOWN to change function settings (F1 to FA). Then press SET to enter the sub function within each group, press UP or Down to select sub functions and press SET for confirmation.

LED Display	Programmable Functions
LEA	“LEA”: Enter learning mode and then wait for learning instructions.
ARN	“ARN”: The system learning is in progress. The Auto-learning process of gate moving: “Gate open to the end- stop close to the end- stop.”
CLR	“CLR”: Reset Factory Setting.

3.4 Programmable Function Settings

LED Display	Definition	Function	Value	Description
F1	Options of Gate Opening direction	F1-0	Clockwise Opening	1. The function can adjust the direction of gate opening. 2. The factory setting is "F1-1".
		F1-1	Counter clockwise Opening	
F2	Automatic Closing	F2-0	No automatic closing	1. This function can cause the gate toclose automatically after the paused time. 2. The factory setting is"F2-2": 15 Secs as the pause time.
		F2-1	5 seconds	
		F2-2	15 seconds	
		F2-3	30 seconds	
		F2-4	45 seconds	
		F2-5	60 seconds	
		F2-6	80 seconds	
		F2-7	120 seconds	
		F2-8	180 seconds	
F3	Over current setting	F3-1	2A	1. The function can adjust the running force of motor to be compatible with the gate weight. 2. The factory setting is "F3-5".
		F3-2	3A	
		F3-3	4A	
		F3-4	5A	
		F3-5	6A	
		F3-6	7A	
		F3-7	8A	
		F3-8	9A	
F4	Photocell 1 function	F4-0	Close	1. The factory setting is "F4-0".
		F4-1	Open	
F5	Photocell 2 function	F5-0	Close	1. The factory setting is "F5-0".
		F5-1	Open	
F6	Stop connector function	F6-0	Close	1. The factory setting is "F6-0".
		F6-1	Open	
F7	Length of gate	F7-1	F7-1: Normal length of gate	1. The factory setting F7-1
		F7-2	F7-2: Short length of gate (like 1.5M)	

● Photocell function:

The reactions of the photocells when detecting obstacles			
Gate Status	Photocell 2	Photocell 1	Photocell 1/ Photocell 2
Closed	Stop opening	No effect	Stop opening
Open	No effect	Reloads automatic closing time	
Stop during moving	Stop opening	Reloads automatic closing time	
Closing	No effect	Open	Locks and, on release, reverses to open
Opening	Closes the leaf	No effect	Locks and, on release, continues opening

3.5 Programmable Functions of LED Display

LED Display	Programmable Functions
	"N-L": The PL600H system learning is not done.
	"RUN": The PL600H system is in normal performing.

LED Display	Programmable Functions
	“LEA”: Enter learning mode and then wait for learning instructions. The operation of gate learning: (1). Press “SET” one time; then press “SET” + “DOWN” for 3seconds, and the LED display shows “LEA” ; and then press the transmitter (A) button one time. After 1~3seconds, the LED display shows “ARN”
	“ARN”: The system learning is in progress. The Auto-learning process of gate moving: move at low speed“Gate open to the end- stop close to the end- stop.

3.6 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.	

3.7 The logic of gate movements

1. When gate moves in the first time, the gate will move at middle speed: ”gate open to the end-stop, close to the end stop”.

“ARN”: The system learning is in progress.
The Auto-learning process of gate moving: move at low speed“Gate open to the end- stop close to the end- stop.

2. While restarting the system, it will move at high speed for most distance, at middle speed for rest distance.
3. After travelling total distance, but still not reach to the stopper the system will move at middle speed until overcurrent. When overcurrent occurs, the gate will reverse for 1 second.
4. During the opening state, the gate will stop immediately when overcurrent occurs.
5. During the closing state, the gate will reverse to the end when overcurrent occurs within 90% of the operation distance. During the closing state, the will stop immediately when overcurrent occurs within the last 10% of the operation distance.
6. If gate can not move, please try press (C) button 4 times to operate the system at middle speed compulsively. After gate move to the end of gate, please call to installer to check the system.

3.8 Backup Battery

1). The Gate Opener can be installed 2 pcs 12V 1.3A and it will supply 24V DC power to Gate Opener.
2). When using back up batteries to provide the electricity, the gate can be close and open ten times. In the tenth operation, the gate will stop in the open state until the electricity supply.
3). The gate will operate once at 30% full speed after the electricity come back on.

4) Testing

Make sure the notices included in chapter 1 “WARNINGS” have been carefully observed.

- Release the gearmotor with the proper release key.
- Make sure the gate can be moved manually during opening and closing phases with a force of max. 390N (40 kg approx.)
- Lock the gearmotor.
- Using the Key selector switch, push button device or the radio transmitter, test the opening, closing and stopping of the gate and make sure that the gate is in the intended direction.
- Check the devices one by one (photocells, flashing light, key selector, etc.) and confirm the control unit recognizes each device.
- Measure the impact force according to EN 12445 standard. If “motor force” control is used to support the system for the reduction of the impact force, try to find the adjustment which offers the best results.

5) Maintenance and Disposal

5.1 Maintenance

The maintenance operations must be performed in strict compliance with the safety directions provided in the manual and according to the applicable legislation and standard.
In order to have good and safety performances, test the gate-automated system weekly and have qualified installation personnel to check and maintain the system at least every 6-month.

5.2 Disposal

Some electronic components and the batteries may contain polluting materials; do not pollute the environment. Make sure the recycling or disposal systems available under the regulations locally in fore.
PL600H/PL1000H are consist of different types of materials; some of them can be recycled such as aluminum, plastic, electric cables while some need to be disposed, such as electronic boards.

6) Additional Information

6.1 Adding or Removing Device

After you have added or removed any devices, the automation system must be tested again according to the operation mentioned in paragraph 5 “Testing”.

6.2 Troubles Shooting

Symptoms	Recommended checks and possible solution
Overheated Back-up Batteries	● Check the wiring connection of the batteries.
The radio transmitter does not control the gate, and the LED on the transmitter does not light up.	● Check to see if the batteries are run out, if necessary replace them.
The radio transmitter does not control the gate but the LED on the transmitter lights up.	● Check to see if the transmitter has been memorized correctly with the radio receiver.
The maneuver doesn’t start and the LED 1~3 on the control unit doesn’t flash.	● Check the power cord is plugged into the electricity socket. ● Check to see if the fuses are blown; if necessary, identify the reason for the failure and then replace the fuses with others having the same current rating and characteristics.
The maneuver doesn’t start and the flashing light is off.	● Check the order is actually received. If the order reaches the OPEN input, the corresponding “OPEN” LED must light up; if you are using the radio transmitter, the LED on control unit must make two long flashes.
The maneuver doesn’t start and the flashing light flashes a few times.	● Count the flashes and check the equivalent value in table.
The gate starts but it is immediately followed by a reverse run.	● The selected force could be too low to move the gate. Check if there are obstacles; if necessary increase the force. ● Check the hall sensor wiring connection is firm. ● Cut off the AC input power, and cut off the batteries output for five seconds, then power the whole unit by connecting the AC and battery terminals
The maneuver is done but the flashing light does not work.	● Check that there is voltage on the flash light’s terminal during maneuver; if there is voltage, the problem could be the lamp, so try to replace the lamp with a new one.
The gate only moves a little distance when pressing the button of the transmitter.	● Check the wiring connection of the hall sensor is firm.
The gate shall be closed instead of opening.	● Adjust the direction of gate opening by Programmable Functions; please refer to “4.2 Programmable Functions Lists”.
The gate suddenly stop during moving.	● Make sure the wiring connection of the gearmotor is firm. ● Make sure the hall sensor wiring connection is firm. ● The GND terminal of the photocells on the PCB must be short-circuited if no photocells installed. ● Make sure the fuse is workable.
The gearmotor does not run and the relay is noisy when operating the gate opening and closing.	● Check if the fuse is burned.

7) Technical Characteristics:

7.1 Techanical Data Sheet Of Series

Motor	PL600H	PL1000H
Gear type	Worm Gear	Worm Gear
Peak thrust	6500N	10500N
Nominal thrust	6000N	10000N
Engine RPM	3800 RPM	3600 RPM
Absorbed Power	60W	144W
Power supply	24 Vdc	24 Vdc
Nominal input power	3A	6A
Maximum gate weight	600 kg	1000 kg
Maximum gate length	6 M	10 M
Maximum operating current	5.5A for Maximum 10 secs	6A for Maximum 10 secs
Operating Temperature	-20°C~+50°C	-20°C~+50°C
Dimension LxWxH mm.	333 X 216 X 287 mm	333 X 216 X 287 mm
Weight	7.5 kg	8 kg
Speed	21.9 cm / sec	25.6 cm / sec

7.2 PH-2 Photocell Data Sheet

Detection type	Through beam
Operating distance	25 meters
Response time	100ms
Input voltage	AC/DC 12~24V
Operating Temperature	-20℃~+60℃
Protection class	IP54
Dimension	96mm * 45mm * 43mm

7.3 PR-2 Transmitter Data Sheet

Application	Radio transmitter
Frequency	433.92Mhz
Coding	Rolling code
Buttons	4, for single-gate or dual-gate operation
Power Supply	3V with one CR2032 button type lithium battery
Operating Temperature	-20℃~+50℃
Dimension	71.5mm * 33mm * 14mm

7.4 PF-1 Flashing Light Data Sheet

Application	For outdoor use
Installation	Wall mounted vertically
Operating Temperature	-20℃~+50℃
Dimension	85mm * 60.5mm * 40.5mm

7.5 PRB-1 External Receiver Box Data Sheet

Power Supply	12V ~ 24V ac/dc
Radio Frequency	433.92Mhz
Max. remote memorized	200pcs
Dimensions	106mm* 53mm* 20mm (L*W*H)
Output terminals	Output 1 & Output 2

8) Additional Information:

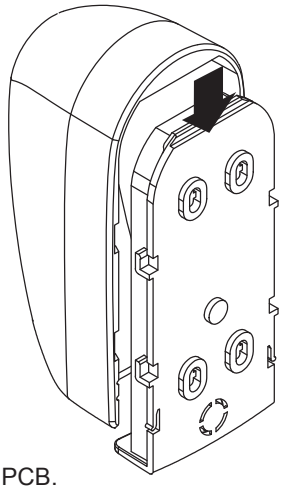
8.1. PHOTOCELL INSTALLATION GUIDE

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 4(1)



INSTALLATION:
Wire Connection of PH-2 Photocells See figure 4(2)
TX: Connect terminals 1 and 2 on the transmitter with the terminals Ph+ and GND on the P600B PCB.
RX: Connect terminals 1, 2 and 4 on the receiver with the terminals Ph+, GND and Ph1 on the P600B PCB.
And use an extra wire to connect terminals 2 and 5 on the receiver as a bridge.

Figure 4(2)

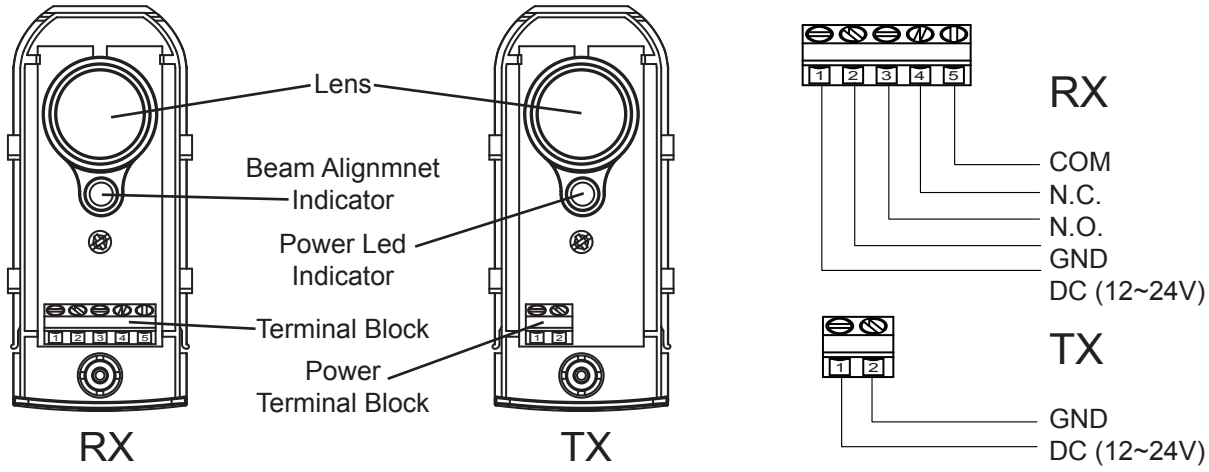
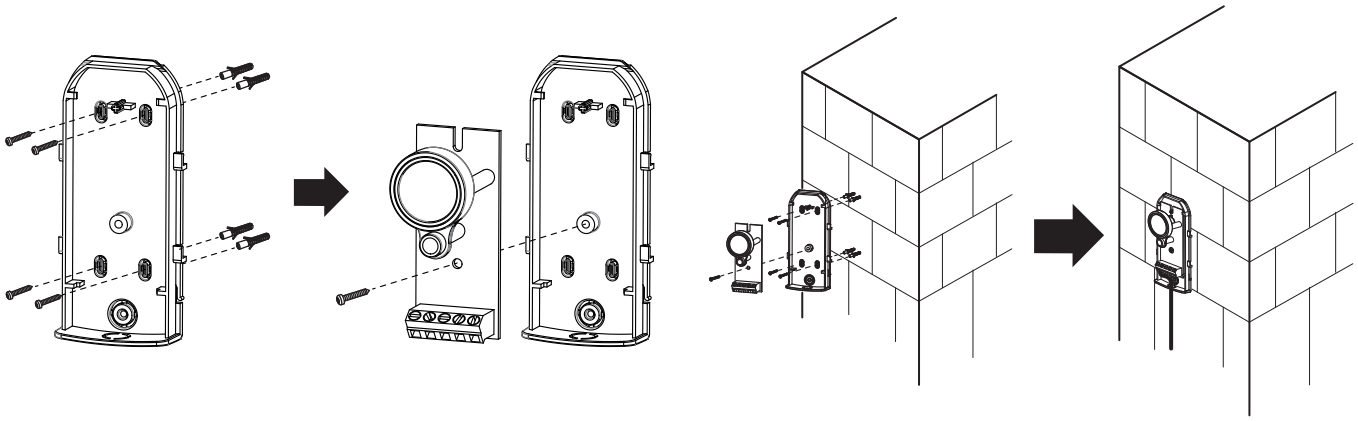
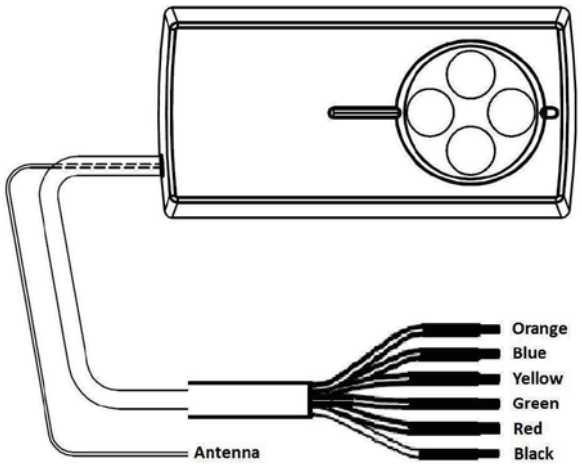


Figure 4(3)



8.2 Wire Connection and Setting of PRB-1 External Reciever Box



RB1 Receiver Box

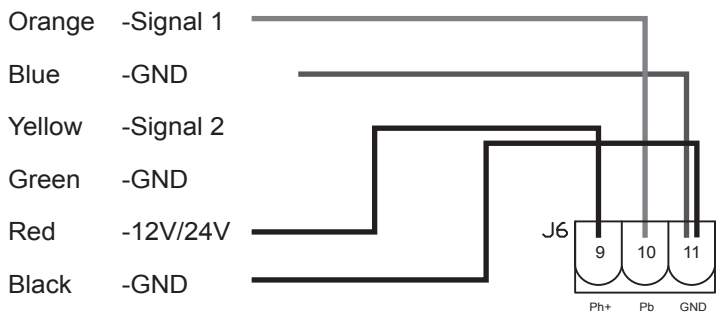
Orange	-Signal 1	Output 1 (Normally Open Relay)
Blue	-GND	
Yellow	-Signal 2	Output 2 (Normally Open Relay)
Green	-GND	
Red	-12V/24V	12V - 24V AC/DC
Black	-GND	

Situation:

In order to use one 4 channel remote to operate with additional device besides the original gate automation system. Install a receiver box to connect with the 2nd device (such as another Powertech Slider)
or the 3rd device (Such as garage automation system)

Original gate automation: Using Button A & B (Pedestrian Mode) on the remote to control gate opener
2nd device: Install an external receiver box, connect output 1 to the 2nd device (such as another Slider, shown as below) use button C on the same remote to control the 2nd device
3rd device: install an external receiver box, connect the output 2 to the 3rd device (such as garage door), use the Button D now to operate.

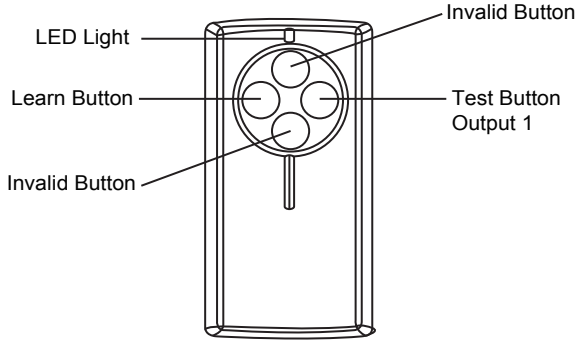
Wire Connection:



a. Orange cable (Signal 1) connect to terminal 10 (Pb) on the control board
b. Blue cable (GND) connect to terminal 11 (GND) on the control board
c. Red cable (12V/24V ac/dc) connect to terminal 9 (Ph+) on the control board
d. Black cable (GND) connect to terminal 11 (GND) on the control board

Device Testing & Remote Memorization

PRB-1 Receiver



a. After connect all necessary cables properly , press Test Button to exam if the output 1 is working, the gate opener should operate.
b. If Output 1 is functional, press and hold Learn Button for 1 second, the LED light should be “ON”
* If the LED does not respond, please check the cable connection again
c. Press and hold Button C on the remote for 1 second after the LED is “ON”. The remote completed the memorizing process when LED light turns “OFF”

Memory Erasing

Press and hold learn button on the receiver box for 10 seconds.

8.3 Channel Transmitter Operation

Please refer to figure 8.3.1

PR-2 **Figure 8.3.1**