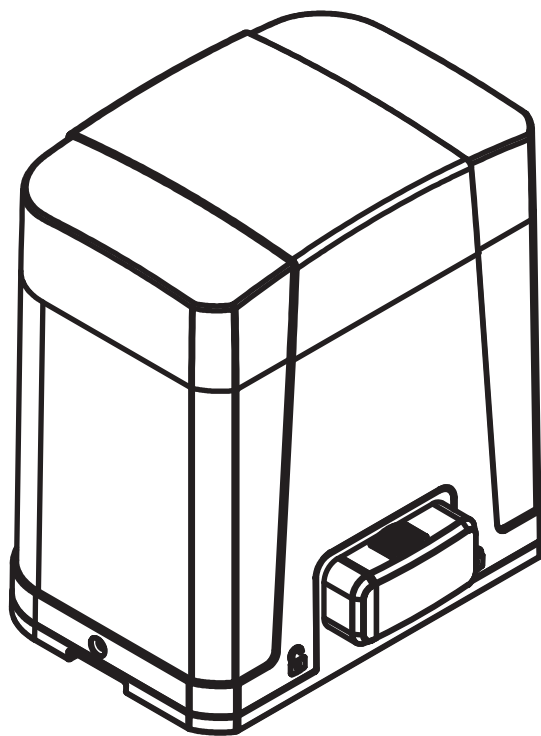


PL500 24V DC MOTOR

SLIDING GATE OPENERS

FOR RESIDENTIAL
USER MANUAL



Declaration of Conformity

Applicant: Powertech Automation Inc.

Manufacturer: Timotion Technology Co., Ltd.

Address: Shiyong Minying Industrial Zone, Hengli Town, DongGuan City, GuangDong, China

Model: PL500, PR-1

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 tested 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)

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| 2.3 Dimension of Device | P.4 |
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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 PL500 system and this manual for further consultation.

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

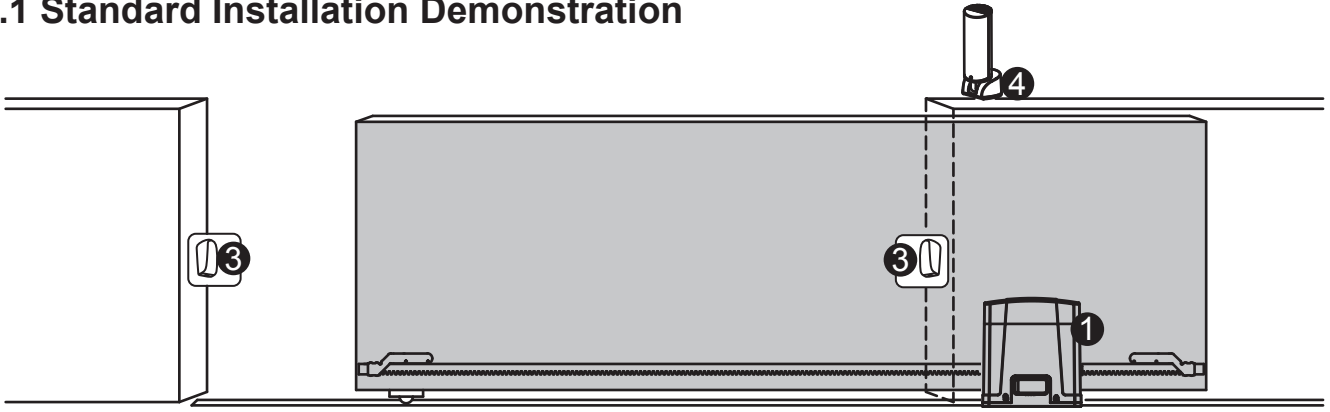


- Be aware of the hazards that may exist in the procedures of installation and operation of the gate-automated system. Besides, the installation must be carried out in conformity with local standards and regulations.
- If the system is correctly installed and used following all the standards and regulations,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

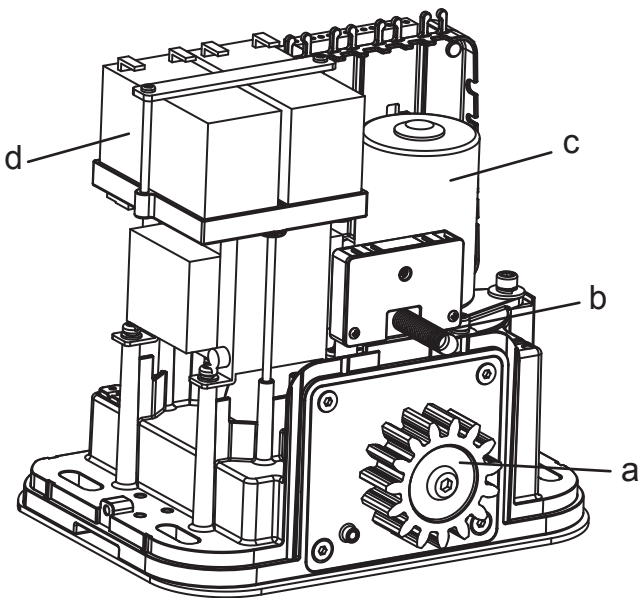
2. Installation:

2.1 Standard Installation Demonstration

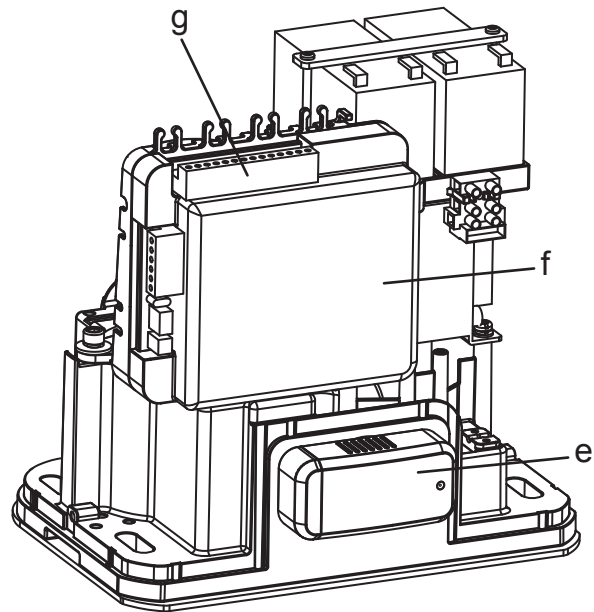


1. 24V DC sliding motor
2. Transmitter
3. Safety photo sensor
4. Flashing light

2.2 Description of Device

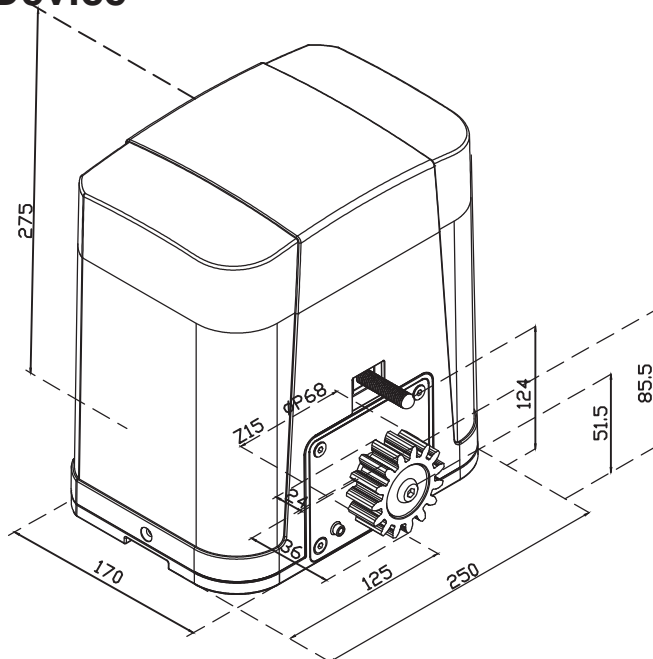


- a. Operation gear
- b. Limit switch device
- c. 24Vdc motor
- d. Back-up batteries (Optional)

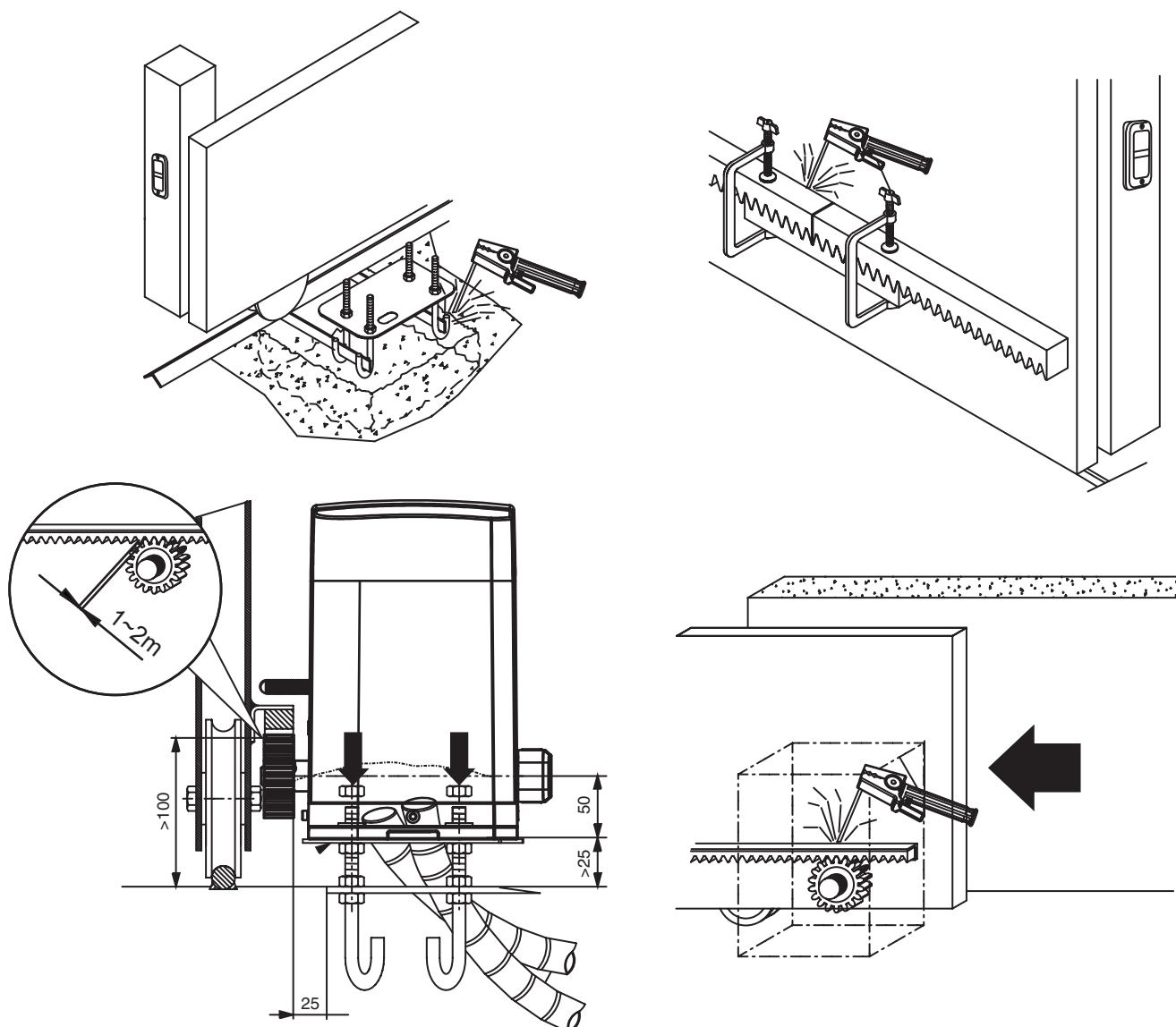


- e. Release device
- f. Control panel
- g. Terminals of devices

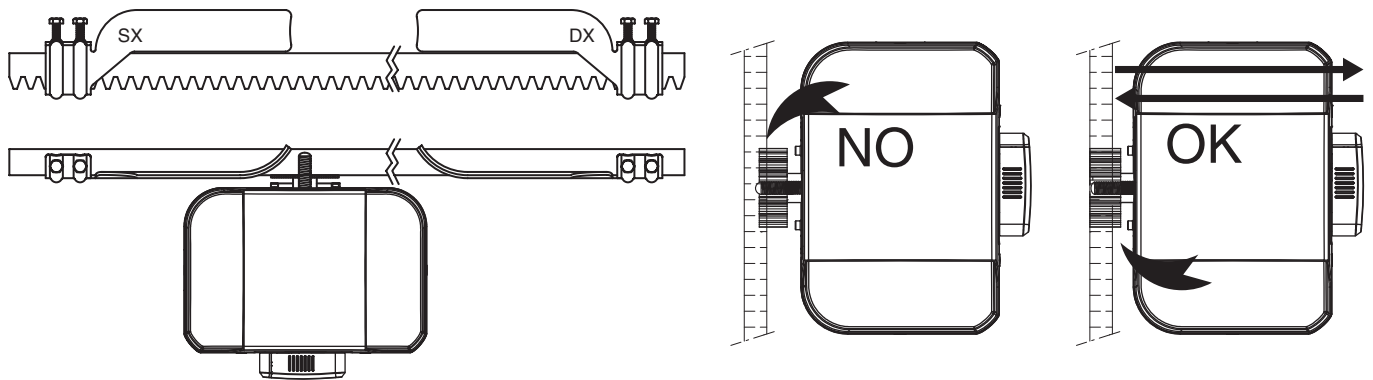
2.3 Dimension of Device



2.4 Installation of Motor Gear and Gear Rack



2.5 Checking for Installation



2.6 Emergency Release

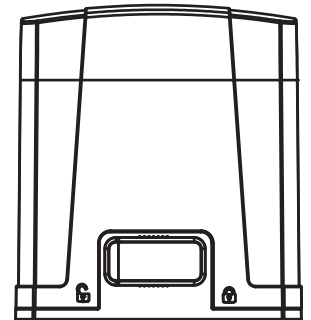
In the case of power failure for emergency release of the motor, please follow the procedure as below:

Step1. Push the lid of release chamber and move rightward

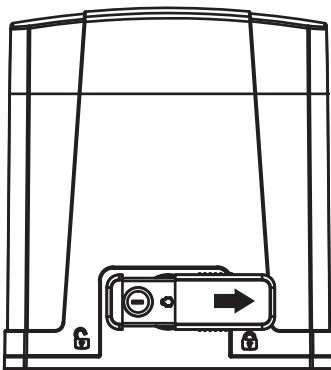
Step2. Insert the key and turn counterclockwise to unlock the device.

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

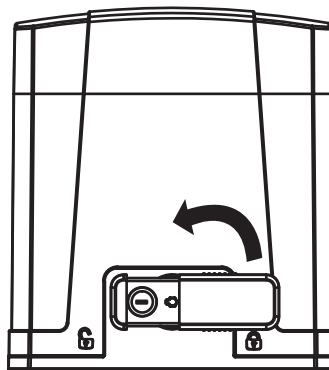
To restore the automation, simply reverse the above procedure.



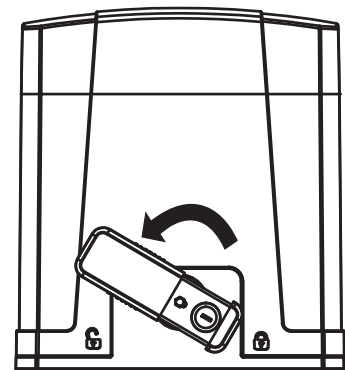
Step1.



Step2.



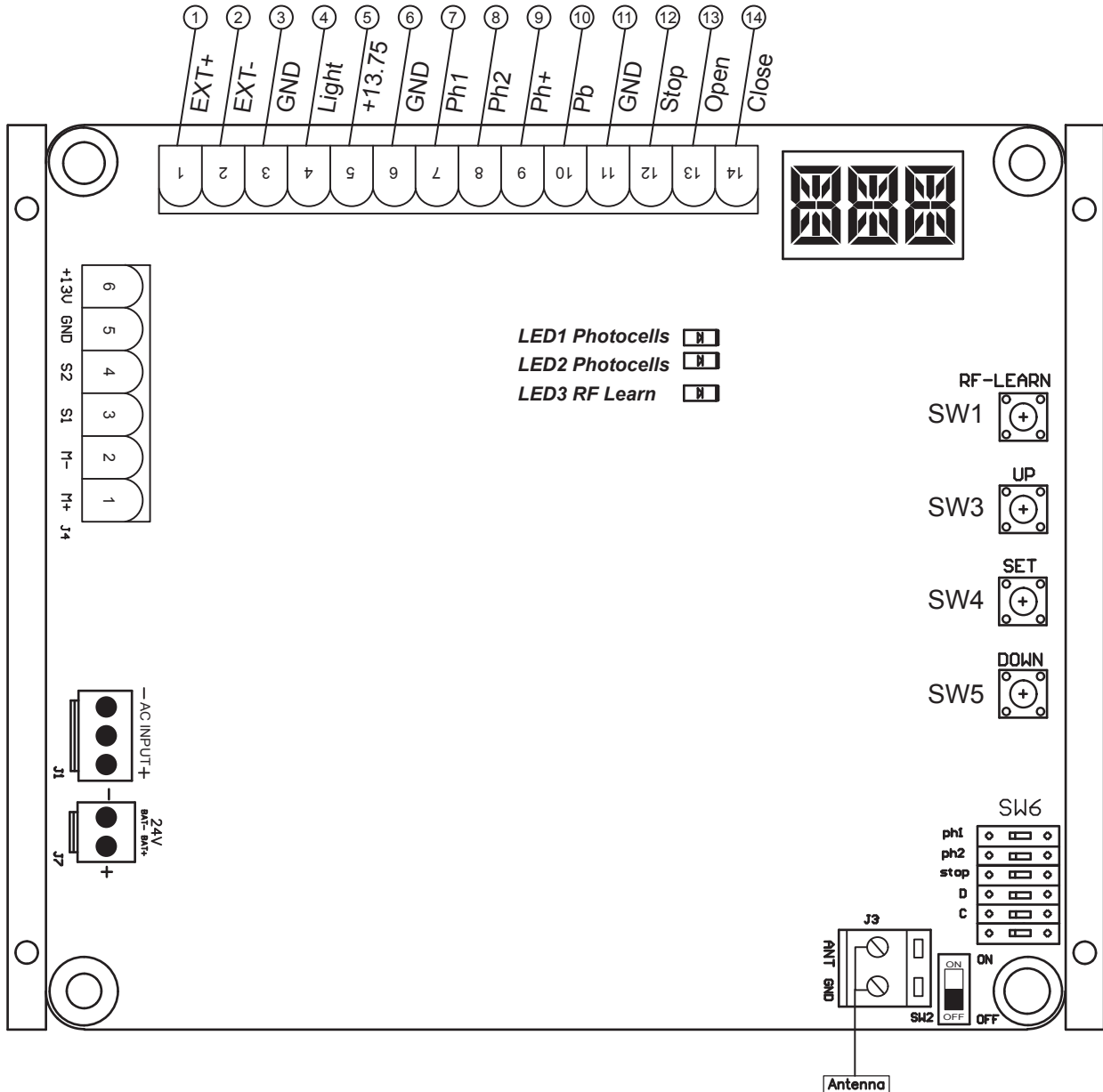
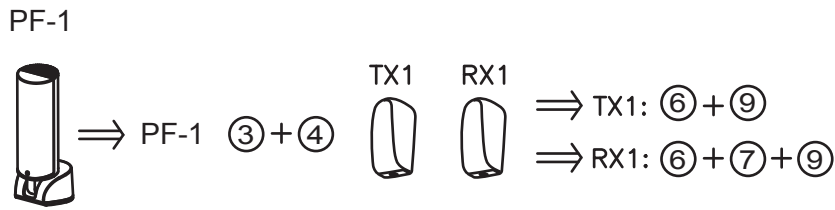
Step3.



3. Setup and Function Setting:

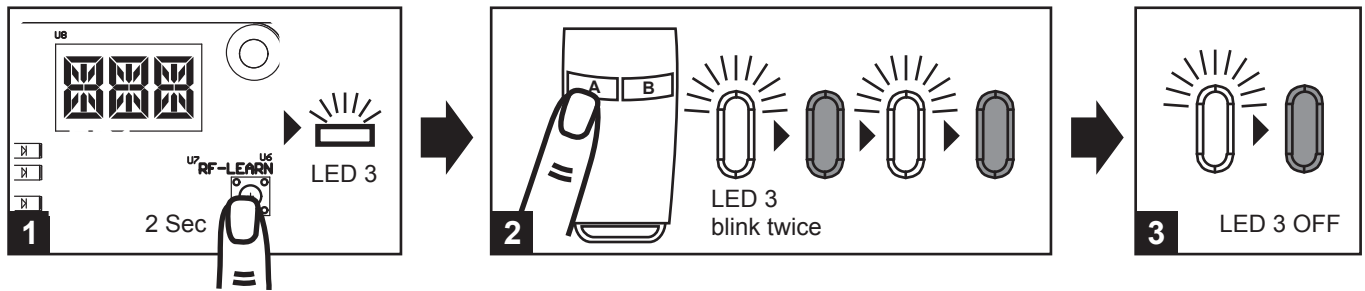
3.1. Wire Connection

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

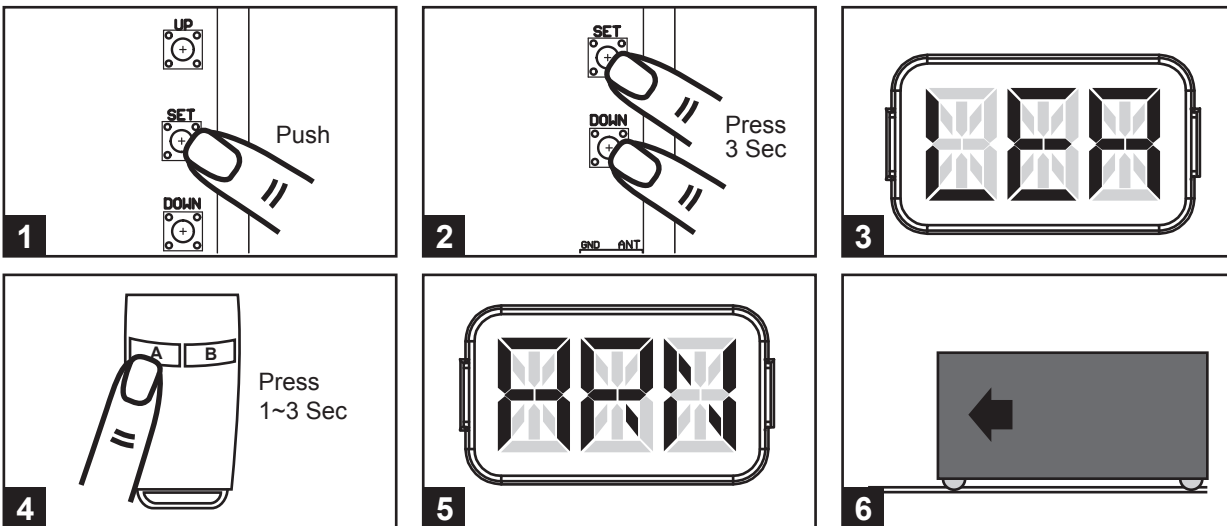
! CAUTION: Before proceeding to system learning, the transmitter memorizing process has to be completed.

(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**

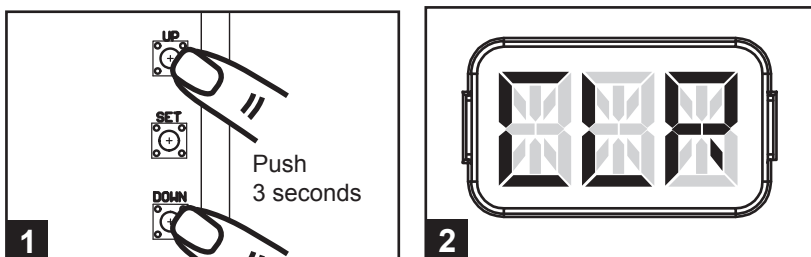
Step2: Press left button (A) on time, the LED display should show “ARN” **4 5**

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 | LED Display | Programmable Functions |
|-------------|--|-------------|---|
| | “N-L”: The PL500 system learning is not done. | | “LEA”: Enter learning mode and then wait for learning instructions. |
| | “RUN”: The PL500 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. | | “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”: 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 | Counterclockwise Opening | | |
| F2 | Automatic Closing | F2-0 | No automatic closing | 1. This function can cause the gate to close automatically after the paused time. 2. The factory setting is "F2-3": 30secs 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 | The reactions of the photocells/ safety edge/ loop detector when detecting obstacles | F3-1 | Please refer to page 9, F3 settings | 1. The factory setting is "F3-1". | |
| | | F3-2 | | | |
| | | F3-3 | | | |
| F4 | Motor Speed | | Speed 1 | Speed 2 | 1. The function can adjust the running speed of motor. 2. Speed 1: Motor full speed; Speed 2: Speed during learning mode (of full speed) 3. The factory setting is "F4-4." |
| | | F4-1 | 50% | 50% | |
| | | F4-2 | 70% | 60% | |
| | | F4-3 | 85% | 70% | |
| | | F4-4 | 100% | 80% | |
| F5 | Motor Over Current Setting | F5-1 | Light  Heavy | 1. The function can adjust the running force of motor to be compatible with the gate weight. 2. The factory setting is "F5-4". 3. The motor force value: F5-1: 2A F5-6: 7A F5-2: 3A F5-7: 8A F5-3: 4A F5-8: 10A F5-4: 5A F5-9: 13A F5-5: 6A 4. As over current setting | |
| | | F5-2 | Light  Heavy | | |
| | | F5-3 | Light  Heavy | | |
| | | F5-4 | Light  Heavy | | |
| | | F5-5 | Light  Heavy | | |
| | | F5-6 | Light  Heavy | | |
| | | F5-7 | Light  Heavy | | |
| | | F5-8 | Light  Heavy | | |
| | | F5-9 | Light  Heavy | | |
| F6 | Pedestrian Mode | F6-0 | 3 seconds | 1. The function can adjust the time of opening partially. 2. The factory setting is "F6-1". 3. Press button B on the remote to operate the pedestrian mode. | |
| | | F6-1 | 6 seconds | | |
| | | F6-2 | 9 seconds | | |
| | | F6-3 | 12 seconds | | |
| | | F6-4 | 15 seconds | | |
| | | F6-5 | 18 seconds | | |
| F7 | Pre-flashing | F7-0 | The flashing light blinks when the gate starts to move. | 1. The factory setting is "F7-0". | |
| | | F7-1 | The flashing light blinks 3 seconds before the gate starts to move. | | |
| F8 | Deceleration point programming of total travel distance | F8-1 | 75% | 1. The factory setting is "F8-1". | |
| | | F8-2 | 80% | | |
| | | F8-3 | 85% | | |
| | | F8-4 | 90% | | |
| F9 | Deceleration Speed (of learning speed) | F9-1 | 100% | 1. The factory setting is "F9-2". | |
| | | F9-2 | 80% | | |
| | | F9-3 | 50% | | |
| | | F9-4 | 30% | | |
| FA | Auto - Reverse when object impacted | FA-0 | No Auto - reverse | 1. The factory setting is "FA-3". | |
| | | FA-1 | 1 second | | |
| | | FA-2 | 3 seconds | | |
| | | FA-3 | Reverse to the end | | |

*Note: System learning/ starting midway speed is roughly 20% slower than normal operation.

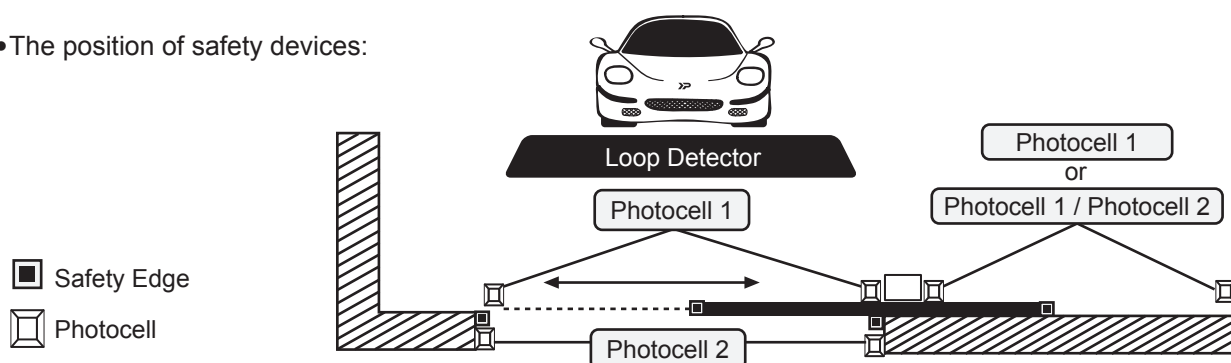
- F3 function settings:

| Logic F3-1 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 |

| Logic F3-2 The reactions of the safety edge/ photocell when detecting obstacles | | |
|---|---------------------------------|--------------------------------|
| Gate Status | Safety Edge | Photocell 1 |
| Closed | Stop opening | No effect |
| Open | Reloads automatic closing time | |
| Stop during moving | Stop opening/ closing | Reloads automatic closing time |
| Closing | Reverses to open for 2 seconds | Open |
| Opening | Reverses to close for 2 seconds | No effect |

| Logic F3-3 The reactions of the loop detector/ photocell when detecting obstacles | | |
|---|--------------------------------|--------------------------------|
| Gate Status | Loop Detector | Photocell 1 |
| Closed | Open | No effect |
| Open | Reloads automatic closing time | |
| Stop during moving | Open | Reloads automatic closing time |
| Closing | Open | Open |
| Opening | Open | No effect |

- The position of safety devices:

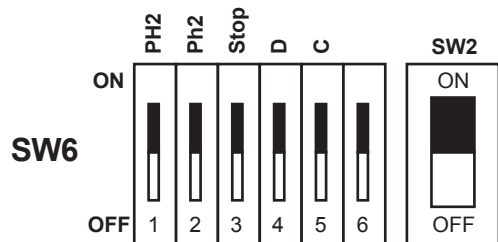


3.5 Testing And Checking

Make sure the notices included in 1.1 General safety precaution “WARNINGS” has 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.

3.6 SW2/SW6 Setting:



| SW6 Dip Switch | | | |
|----------------|---------|--------|--------------------|
| Dip Switch | Setting | Device | Description |
| 1 | ON | Ph1 | Ph1 NOT connected |
| | OFF | | PH2 connected |
| 2 | ON | Ph2 | Ph2 NOT connected |
| | OFF | | Ph2 connected |
| 3 | ON | Stop | Stop NOT connected |
| | OFF | | Stop connected |

| Transmitter | SW2 Dip Switch on | | SW2 Dip Switch off | |
|-------------------------------------|--|--------------------------------|--|--------------------------------|
| 2 channel transmitter | Button A(left): Open-Stop-Close-Stop Button B(right): Pedestrian Mode | | Button A(left): Open-Stop-Close-Stop Button B(right): External Device | |
| 4 channel transmitter (Optional) | Button A(left): Open-Stop-Close-Stop Button B(right): Pedestrian Mode | | Button A(left): Open-Stop-Close-Stop Button B(right): External Device | |
| | SW6 Dip Switch 4 on, Dip Switch 5 off | | SW6 Dip Switch 4 on, Dip Switch 5 off | |
| | Button C(up): External Device | Button D(down): No Function | Button C(up): Pedestrian Mode | Button D(down): No Function |
| | SW6 Dip Switch 4 off, Dip Switch 5 on | | SW6 Dip Switch 4 , Dip Switch 5 on | |
| Button C(up): No Function | Button D(down): External Device | Button C(up): No Function | Button D(down): Pedestrian Mode | |

3.6.1 Recognition of LED

| LED Indication | Descriptions |
|------------------|---|
| LED1 Photocells | LED1 will be on when the first pair of the photocells are activated. |
| LED2 Photocells | LED2 will be on when the second pair of the photocells are activated. |
| LED3 RF Learning | LED3 will be on when RF-learn button is pressed. |

4. Technical Characteristics:

4.1 Technical Data Sheet Of Series

| Motor | PL500 |
|---------------------------|--------------------------|
| Gear type | Worm Gear |
| Peak thrust | 5500N |
| Nominal thrust | 5000N |
| Engine RPM | 3800 RPM |
| Absorbed Power | 60W |
| Power supply | 24 Vdc |
| Nominal input power | 3A |
| Maximum gate weight | 500kg |
| Maximum gate length | 6 Meters |
| Maximum operating current | 5.5A for Maximum 10 secs |
| Operating Temperature | -20oC~+50oC |
| Dimension LxWxH mm. | 250 X 170 X 265 |
| Weight | 8 kg |
| Speed | 21.9 cm / sec |

4.2 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°C~+60°C |
| Protection class | IP54 |
| Dimension | 96mm * 45mm * 43mm |

4.3 PR-1 Transmitter Data Sheet

| | |
|-----------------------|--|
| Application | Radio transmitter |
| Frequency | 433.92Mhz |
| Coding | Rolling code |
| Buttons | 2, for single-gate or dual-gate operation |
| Power Supply | 3V with one CR2032 button type lithium battery |
| Operating Temperature | -20°C~+50°C |
| Dimension | 71.5mm * 33mm * 14mm |

4.4 PF-1 Flashing Light Data Sheet

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

4.5 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 |

5. Additional Information:

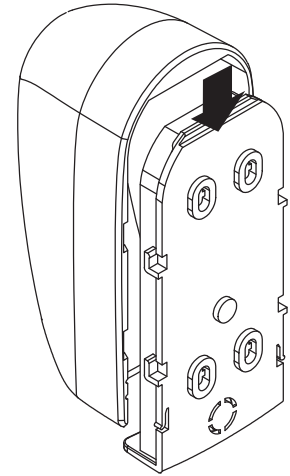
5.1. PHOTOCELL INSTALLATION GUIDE

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)

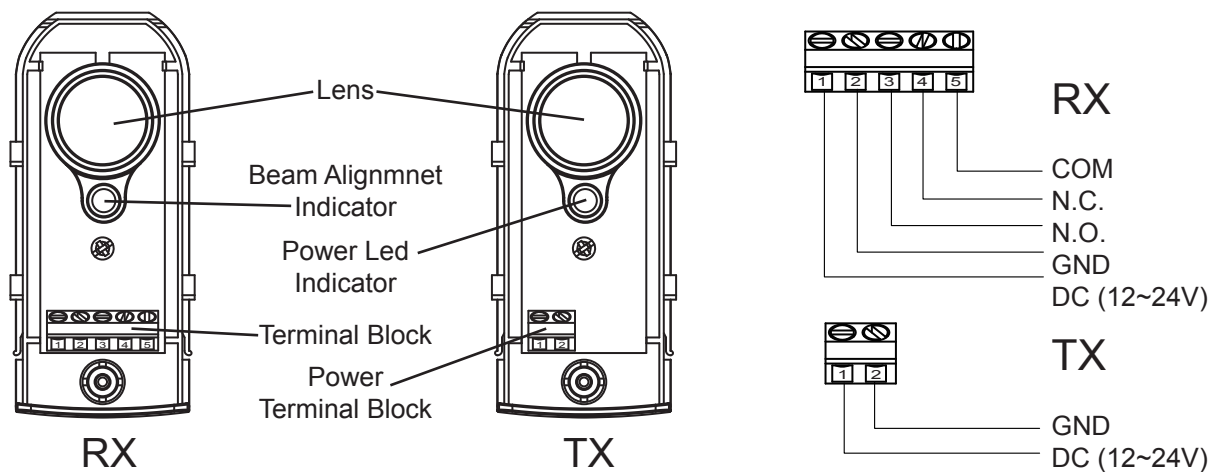
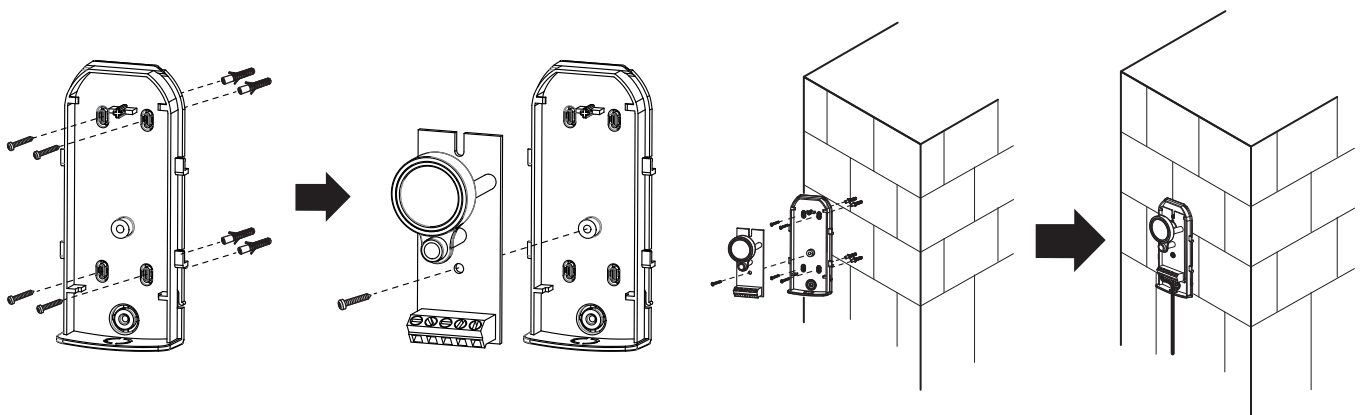
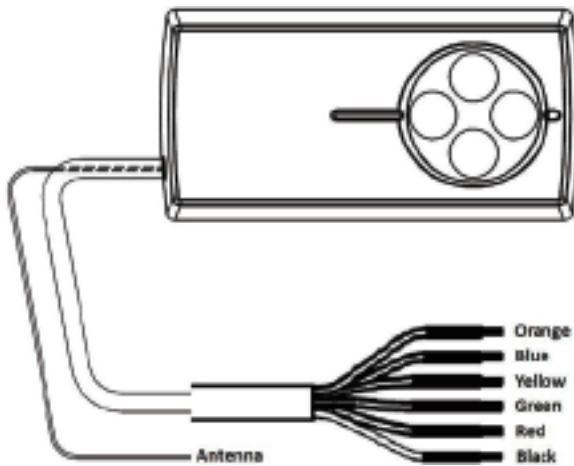


Figure 4(3)



5.2 Wire Connection and Setting of PRB-1 External Receiver 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 | |

1. Situation:

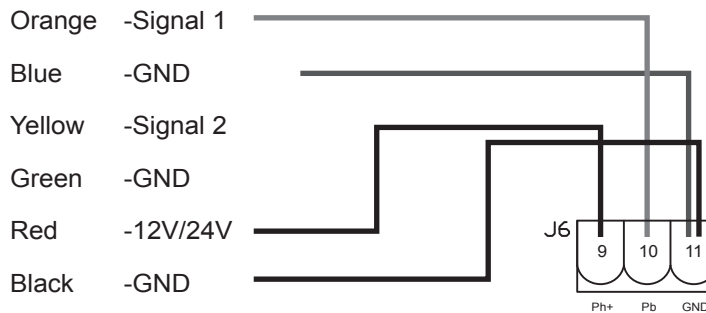
In order to use one 4 channel remote to operate with additional device besides the original gate automation system. Install a receiver box to connect with the 2nd device (such as another Powertech Slider) or the 3rd device (Such as garage automation system)

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

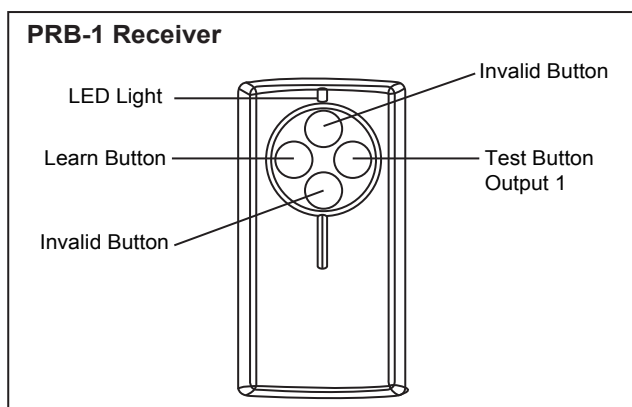
3rd device: install an external receiver box, connect the output 2 to the 3rd device (such as garage door), use the Button D now to operate.

2. Wire Connection:



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

3. Device Testing & Remote Memorization



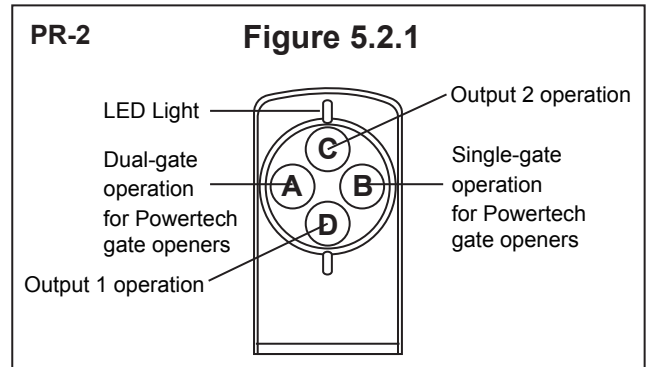
- After connect all necessary cables properly , press Test Button to exam if the output 1 is working, the gate opener should operate.
- If Output 1 is functional, press and hold Learn Button for 1 second, the LED light should be "ON"
* If the LED does not respond, please check the cable connection again
- 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"

4. Memory Erasing

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

5. 4 Channel Transmitter Operation

Please refer to figure 5.2.1



34100-095-B



POWERTECH

THE STRONGEST SOLUTION FOR SWING GATES

- Worm gear provides durability and silence in motor operation.
- Slowdown during opening and closing phase.