POWERTECH

DESIGNED FOR RESIDENTIAL APPLICATION

KIT PL600/PL1000 SLIDING GATE OPENERS

Best Quality GATE OPENERS
The strongest solution for sliding gates

PL600/PL1000 electro-mechanical sliding gate openers are designed for residential application.
Stylish appearance of the gear motors with innovative design of motor release by the key in case of power failure.
Magnetic limit switch and spring limit switch are available for customer's choice.
Over-current function with adjustable setting provides various choices for the gate installation.

KIT PL600/PL1000

PL600 Gear Motor

PL1000 Gear Motor

PF-1 Flashing Light

PH-1 Photocells

PR-1 Transmitter

PKS-1 Key Selector

PPB-1 Push Button

PRK-1 Rack

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 Electronics Inc. is not responsible for improper installation and failure to comply with local electrical and building regulations.

Keep all the components of PL600/PL1000 system and this manual for further consultation.

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

- Be aware of the hazards that may exist in the procedures of installation and operation of the gate-automated system. Besides, the installation must be carried out in conformity with local standards and regulations.
- If the system is correctly installed and used following all the standards and regulations, it will ensure a high degree of safety.
- Make sure that the gates works properly before installing the gate-automated system and confirm the gates are appropriate for the application.
- Do not let children operate or play with the gate-automated system.
- Do not cross the path of the gate-automated system when operating.
- Please keep all the control devices and any other pulse generator away from children to avoid the gate-automated system being activated accidentally.
- Do not make any modifications to any components except that it is mentioned in this manual.
- Do not try to manually open or close the gates before you release the gear motor.
- If there is a failure that cannot be solved and is not mentioned in this manual, please contact qualified installation personnel.
- Do not use the gate-automated system before all the procedures and instructions have been carried out and thoroughly read.
- Test the gate-automated system weekly and have qualified installation personnel to check and maintain the system at least every 6-month.
- Install warning signs (if necessary) on the both sides of the gate to warn the people in the area of potential hazards.

2) Product Description and Applications

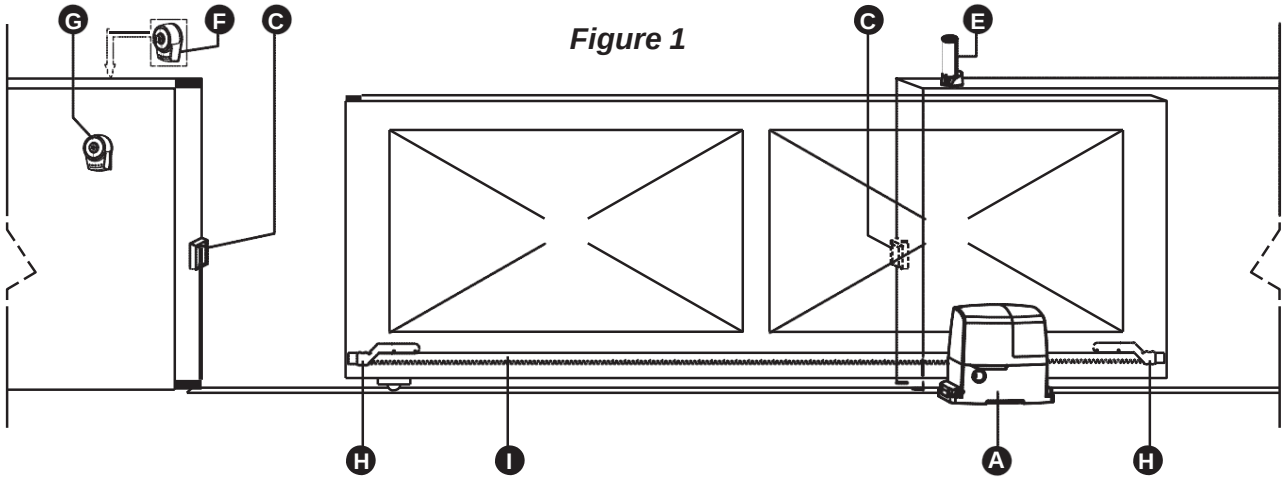
2.1 Applications

PL600/PL1000 is applied for residential automation of sliding gates. PL600/PL1000 has to be operated with electricity and it's forbidden to be operated by back-up batteries for normal use. Back-up batteries (optional) are only allowed for emergent operation when there is a power failure, and the gearmotor can be released by the key to move the gate manually.

2.2 Description of the Automation

The following diagram of PL600/PL1000 typical installation describes some terms live in whereever you are and whenever you are and accessories of a gate automation system:

Figure 1



2.3 Description of Devices

PL600/PL1000 may include the accessories shown in Figure 2.

Please check the accessories the same as the package provided.

Attention: Some accessories of PL600/PL1000 are not included due to local regulations or customized order.

A) 1 PL600/PL1000 electromechanically gearmotor including control unit
B) 2 release keys
C) 1 pair of PH-1 photocells
D) 2 PR-1 radio transmitters
E) 1 PF- flashing light
F) 1 PKS-1 key selector with two keys
G) 1 PPB-1 push button
H) 2 limit switch brackets
I) Various small parts: screws, nuts, etc. (see table1)
J) 4 PRK-1 Rack

Figure 2

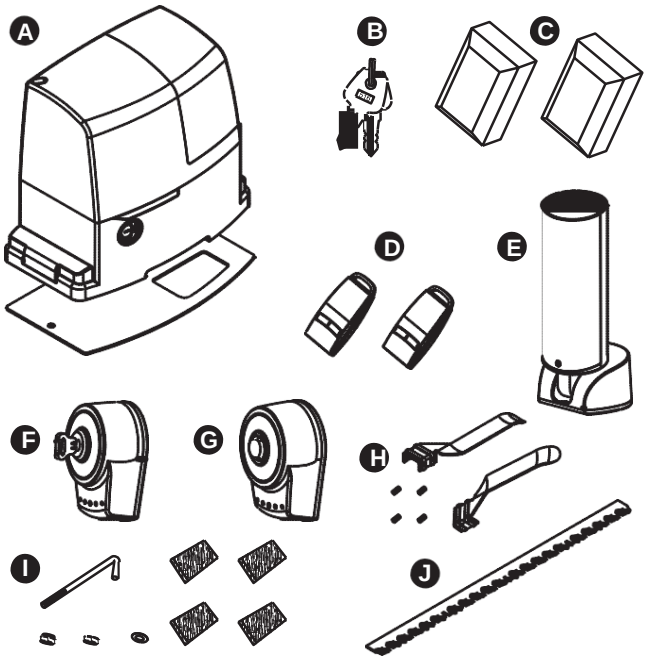
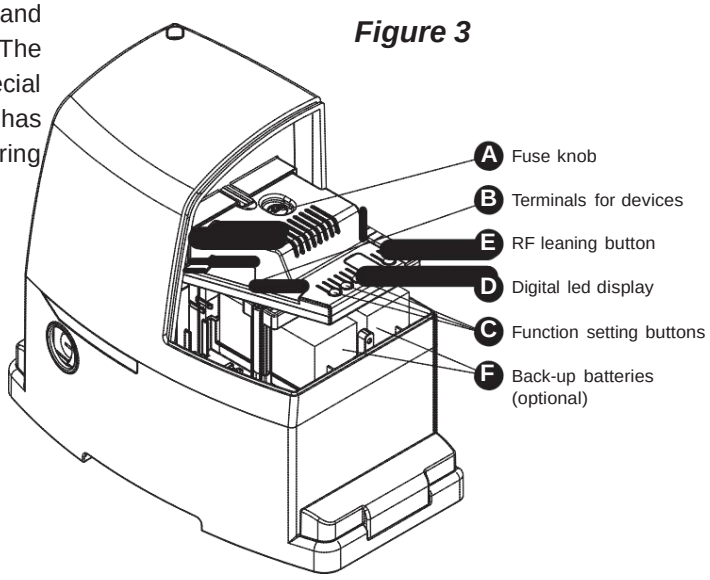


Table 1: List of small parts for PL600 & PL1000	
Bent bins / Washers / Nut	2 pcs / 6 pcs / 4 pcs
Foundation Plate	1 pce
Screws with no head	4 pcs
Limit Switch	2 sets

2.3.1 PL600/ PL1000 Electromechanical Gearmotor

PL600/PL1000 consists of an electronic control unit and connector for the optional radio control receiver. The gearmotor could be released manually by special release keys when there is power failure. Besides, it has a back-up battery (optional) which can be used during the power failure as well.

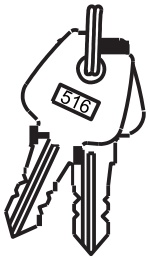
Figure 3



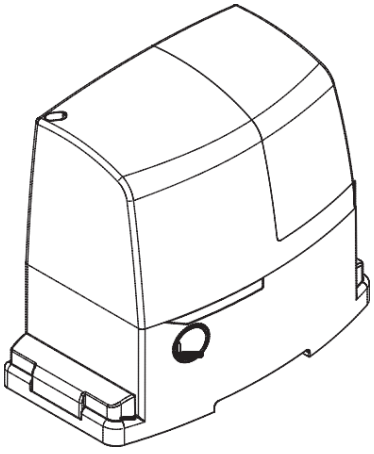
2.3.2 Release Keys

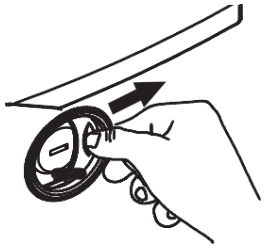
The two keys enable the gearmotor to be released when there is power failure.

Figure 4

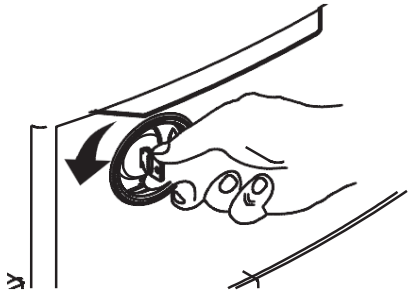


2.3.2.1 Release Gearmotor

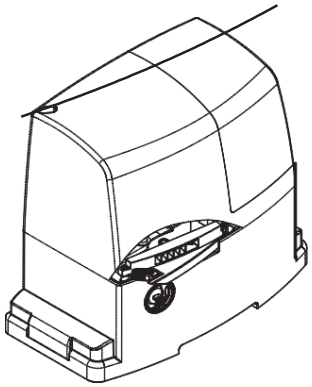




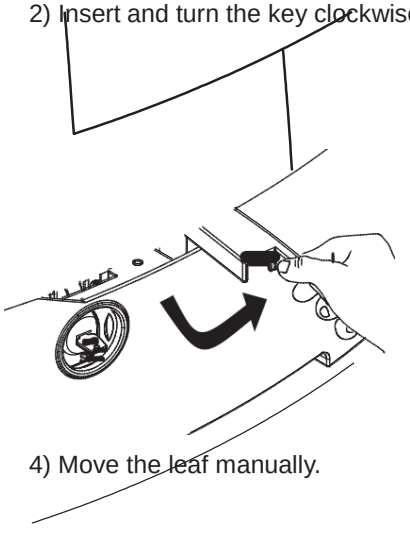
1) Slide the lock cover disc.



2) Insert and turn the key clockwise.



3) Pull the release handle.

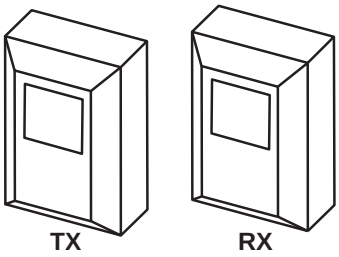


4) Move the leaf manually.

2.3.3 PH-1 Photocells

The pair of PH-1 photocells has to be installed on the wall and connected to the control panel. The function of the photocells is to detect the obstacles found on the optical axis between the transmitter (TX) and the receiver (RX).

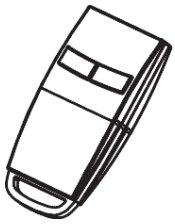
Figure 5



2.3.4 PR-1 Radio Transmitter

PR-1 radio transmitter is used for the remote control of the gate movement. To use the transmitter, press and hold the button for 1 second. There are two buttons on the transmitter and (A) button is **"open-stop-close mode"** and (B) button is **"pedestrian mode"**.

Figure 6



2.3.5 PF-1 Flashing Light

PF-1 flashing light is controlled by PL600/1000 control unit and blinks when the gate is moving or blinks 3 seconds before the gate moves. The flashing light stops blinking when the gates

Table 2: List of small parts for PPB-1	Quantity
3*20 Screw	3 pcs
Nylon screw anchor	3 pcs

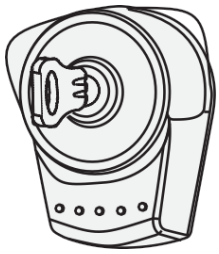
Figure 7

2.3.6 PKS-1 Key selector

The PKS-1 key selector is used for opening the gate outdoors without the radio transmitter. PKS-1 key selector is supplied with two keys

Table 3: List of small parts for PKS-1	Quantity
3*20 Screw	3 pcs
Nylon screw anchor	3 pcs
Keys	3 pcs

Figure 8

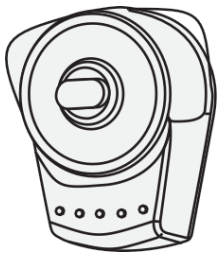


2.3.7 PPB-1 Push Button

The PPB-1 push button is used for opening the gate indoors without the radio transmitter.

Table 4: List of small parts for PPB-1	Quantity
3*20 Screw	3 pcs
Nylon screw anchor	3 pcs

Figure 9



3) Installation:

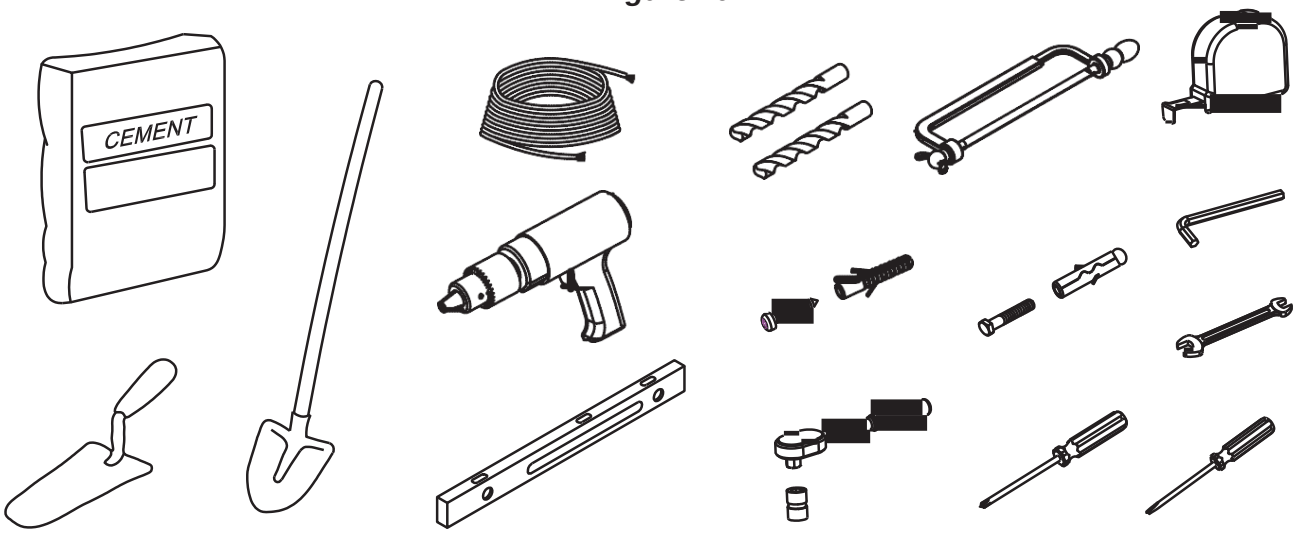
3.1 Notes of Motors in Operation

The PL600/PL1000 gate openers are applicable to per gate leaf of 600/1000 kg in weight for residential use; where the performance shall be influenced by the factors such as gate dimension, weight and climate that the driven torque is necessarily to be adjusted properly.

3.1.1 Tools in Installing

Please make sure all tools and cables are ready and conform to the industrial safety standard before installation. Please refer to ***Figure 10***.

Figure 10



3.1.2 Motors, Components and Its Installation in Illustration

The installation procedure of PL600/PL1000 may be changed due to various accessories and quantities installed. No wiring cables for accessories are supplied with KIT PL600/PL1000.

3.2 Power Connection

The users are advised to read the installation manual carefully before going for it. After getting to know all accessories and their positions, suggest starting from cable conduit arrangement to prevent the cables from being broken or damaged.

3.2.1 Notes for Power Connection

1).The installation of power supply cable to the motor should be implemented by a qualified professional electrician.
2).The power supply cable of the motor should be equipped with short circuit protection and leakage protection. Please make sure to shut off the power before going installation or maintenance.

3.3 Preparation for Motor Installation

PL600/PL1000 is not applicable to a gate which is inefficient or unsafe, neither to solve the defects due to incorrect installation nor poor maintenance.

Check the following items before going for installation:

1). Make sure the weight and dimensions of the gate conform to the operation range of PL600/PL1000. Don't use PL600/PL1000 if the gate specifications do not meet the requirements.

2). Make sure the gate structure conform to the criteria of automatic operation and force regulations.

3). Make sure there is no serious friction existing in the opening or closing travel of the gate.

4). Make sure the gate is at horizontal level that the gate will not move aside at any position.

5). Make sure the gate can bear the impact of the motor torque when it is installed on the plate which the surface is sufficiently sturdy.

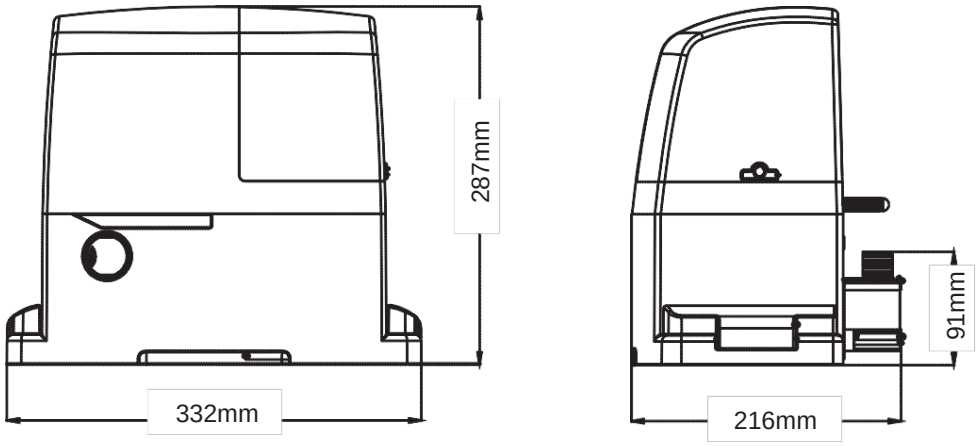
6). Make sure that the installation area is not easy to be invaded by flood. If necessary, mount the raised from the ground.

7). Make sure the photo sensors (optional) are installed on flat surfaces to ensure the two ends of receiving and transmitting corresponded to each other.

8). Make sure the installation area is suitable to the size of and the area is safe and easy to release the gearmotor.

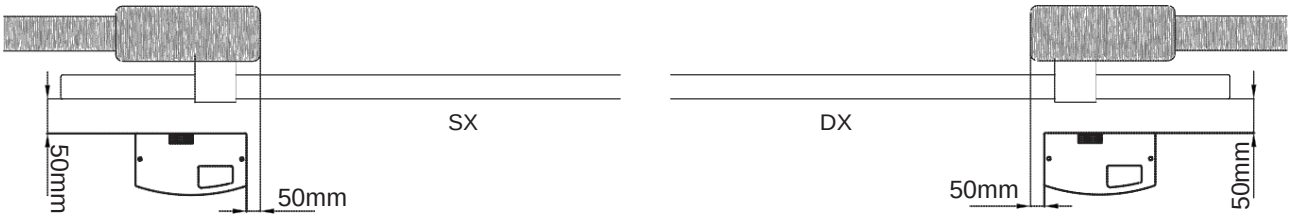
Check the dimensions of the motors as below:

Figure 11



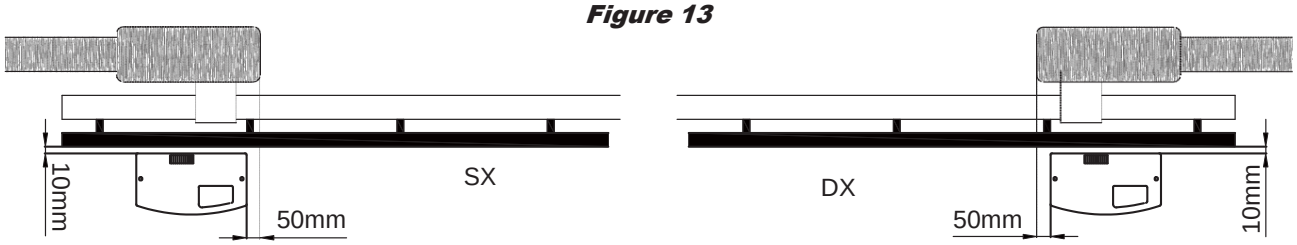
9). The installed at the left side and at the right site as below:
Gate without rack: the distances indicated in ***Figure 12.***

Figure 12



Gate with rack: the distances indicated in ***Figure 13***.

Figure 13



10) To install the limit switch brackets, the rack must project from the axis of the pinion by distances indicated in ***Figure 14*** (Left opening) and ***Figure 15*** (Right opening).

Figure 14 (Left opening)

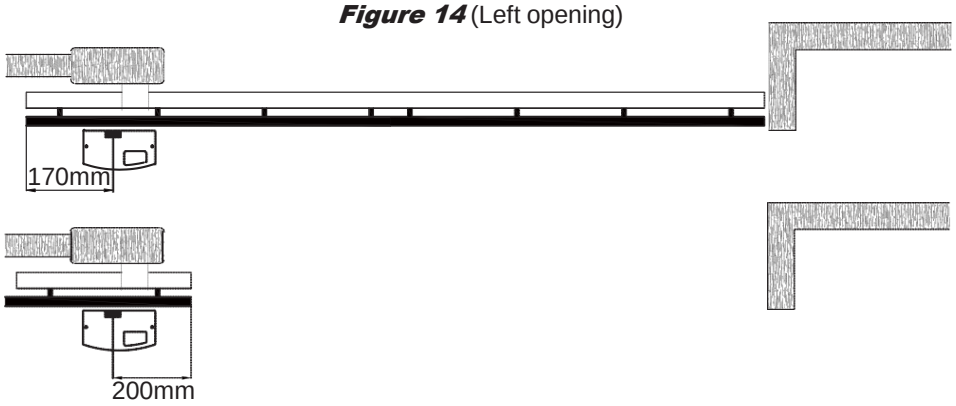
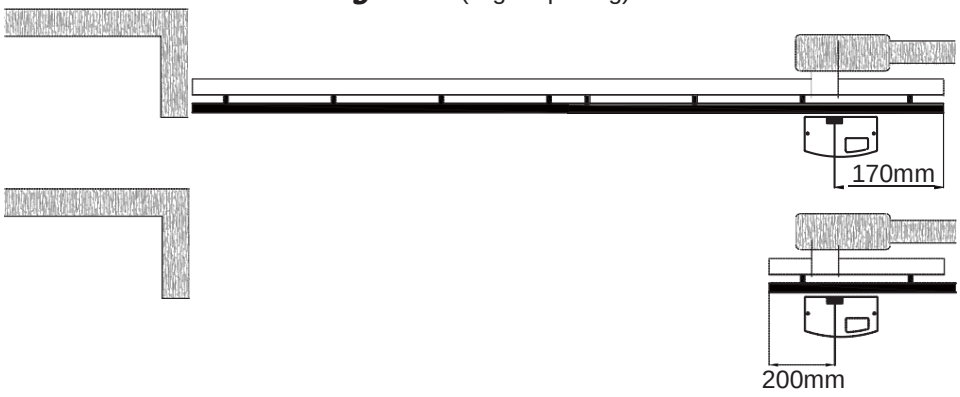
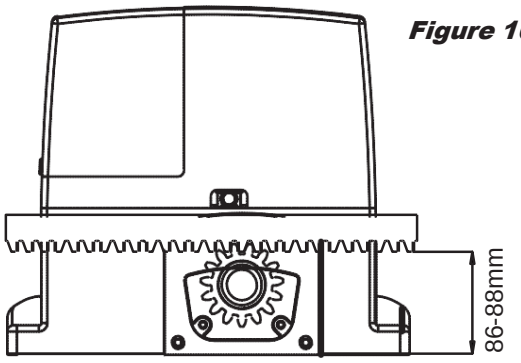


Figure 15 (Right opening).



11) If the rack is already installed on the gate, make sure the position of the rack is fitted for the size limits indicated in ***Figure16***.

Figure 16



3.3.1 Installation of the Gearmotor

The PL600/PL1000 can be installed in two situations:

1). Installing on gates without rack; in this condition must be installed first, followed by PRK-1 rack.

2). Installing on a gate with rack; in this condition must be connected to the existing rack.

3.3.1.1 Installing on Gates without Rack

1). Dig the foundations based on “Preparation for Motor Installation” and please notice the distances indicated in ***Figure 12***.

2). Lay the conduits for the power cables and leave 30-50 cm longer as ***Figure 17***.

3). Fit the two bent bins (as below Ⓑ part in ***Figure 18***) into the foundation and fix them above and below with two nuts (as below Ⓐ part in ***Figure 18***); make sure the outstanding part does not exceed the maximum height as ***Figure 18.***

Figure 17

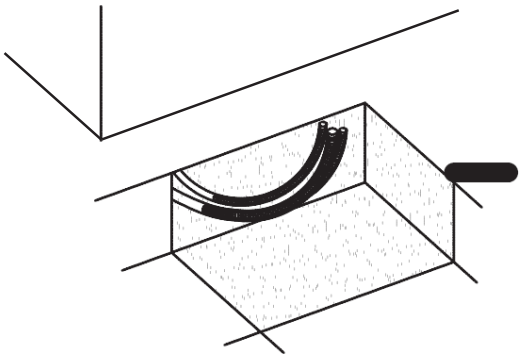
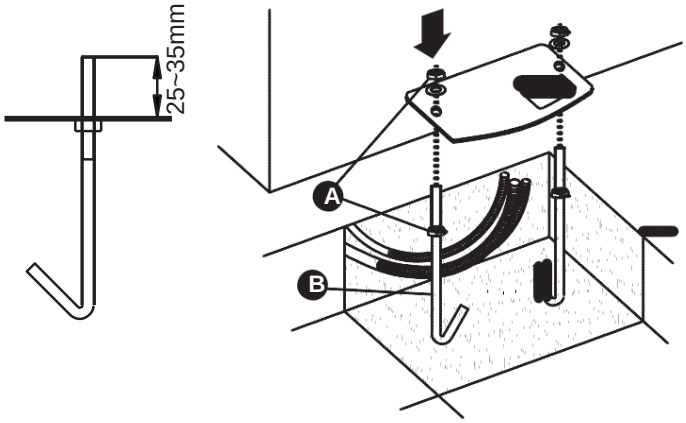


Figure 18



4). Put the foundation plate and make sure the gate keeping the distances shown as ***Figure 12***.

5). Fit the conduits through the hole of the foundation plate.

6). Pour the concrete.

7). Sink the plate into the concrete and make sure it is parallel to the leaf.

8). After the concrete is dry enough, remove the two upper nuts form the plate and cut the cable conduits above the plate if the conduits are too long.

9). Remove the two caps beside the left and right sides of the gearmotor as shown in ***Figure 19***.

10). Put gearmotor on the plate and then screw the two nuts and washers as ***Figure 20.***

Figure 19

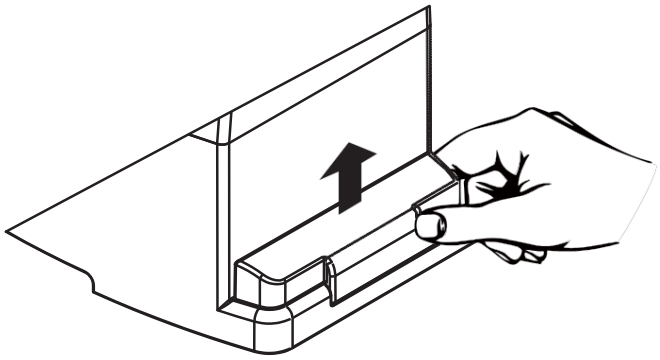
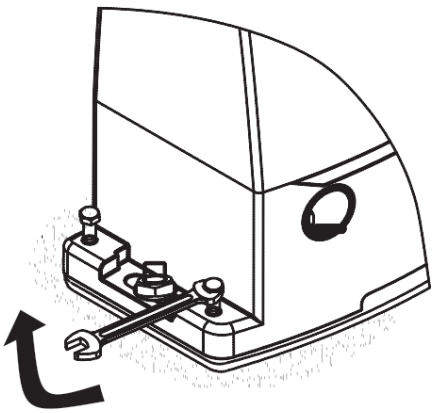


Figure 20



11). Release the gearmotor by using the release key if necessary.
12). Fully open the gate and place the first piece of the rack on the pinion so that it projects from the axis of the pinion by distance followed as ***Figure 14*** or ***Figure 15***, which means, the space reserved for the limit switch brackets.
13). To keep the rack level with the pinion, mark the hole for fixing when the slot matches the axis of the pinion. Repeat this operation for each fixing point ***Figure 21***.
14). Keep 1~2 mm space as ***Figure 22*** between the rack and pinion so that the gate does not weigh on the gearmotor. Continually install the other pieces of the rack until the racks are sufficient for work.

Figure 21

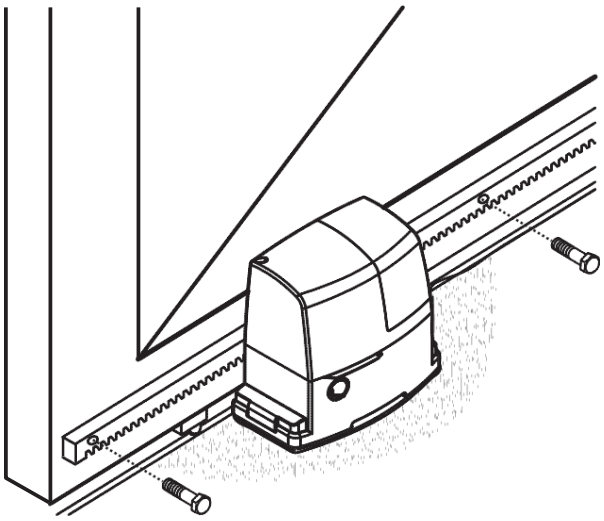
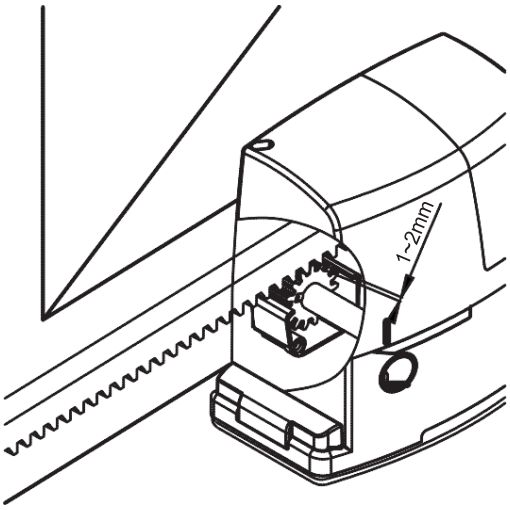


Figure 22



15). After fixing the last piece, cut away the unnecessary parts of racks by a hacksaw if necessary.
16). Open and close the gate several times manually and make sure that the rack goes with the pinion smoothly within a maximum tolerance of 5mm.
17). Fix the two limit switch brackets with the relative dowels as the Ⓔ part in ***Figure 23***.
Slide the gate in the open position keeping at least 2~3 cm from the mechanical stop. And then slide the bracket along the rack in the opening direction until the limit switch cuts-in. The brackets should be located at a sufficient distance from mechanical stops in order to keep the gate from crashing.
Operate the same steps for the limit switch in the closed position.

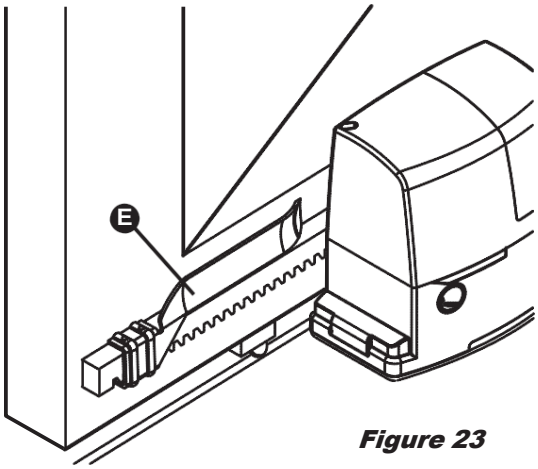


Figure 23

18). For electrically connections of the various devices, please see ***"4.1.1 Design of PL600/PL1000 control unit"***.

3.3.1.2 Installing on Gates with Rack

1). Dig the foundations based on “Preparation for Motor Installation” and please notice the distances indicated in ***Figure 12***.

2). Lay the conduits for the power cables and leave 30-50 cm longer as ***Figure 24***.

3). Fit the two bent bins (as below Ⓑ part in ***Figure 25***) into the foundation and fix them above and below with two nuts (as the Ⓐ part in ***Figure 25***); make sure the outstanding part does not exceed the maximum height 25~35 mm as ***Figure 25***.

Figure 24

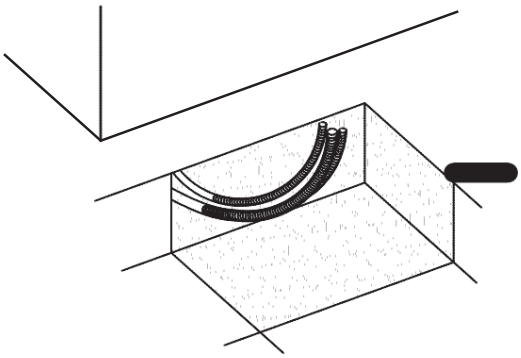
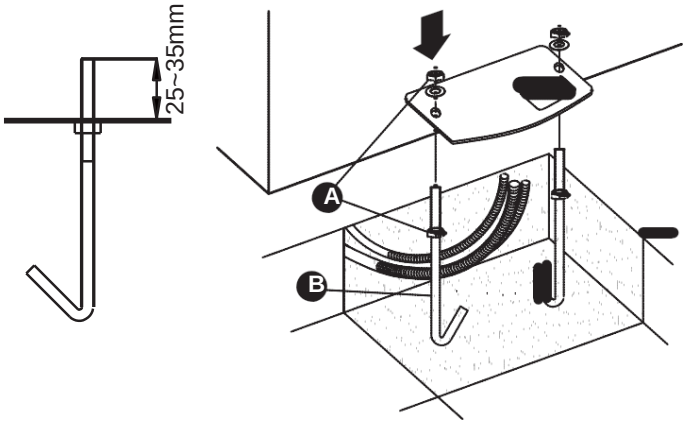


Figure 25



4). Put the foundation plate and make sure the gate keeping the distances shown as ***Figure 12***.

5). Fit the conduits through the hole of the foundation plate.

6). Pour the concrete.

7). Sink the plate into the concrete and make sure it is parallel to the leaf as below ***Figure 26***.

8). After the concrete is dry enough, remove the two upper nuts (which will no longer be used) form the plate and cut the cable conduits above the plate if the conduits are too long.

9). Open the cap by the rear of the gearmotor as shown in ***Figure 27***.

Figure 26

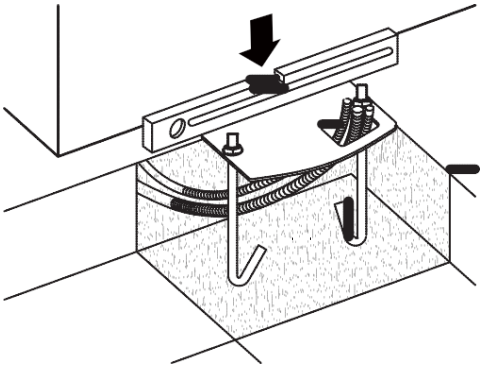
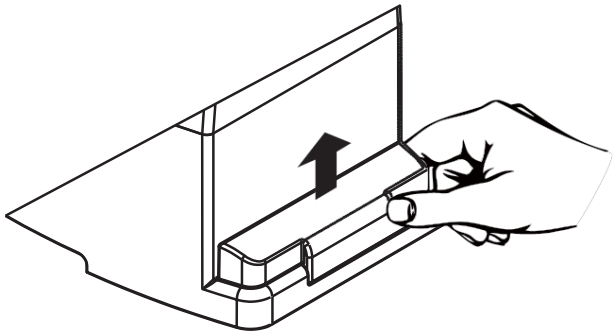


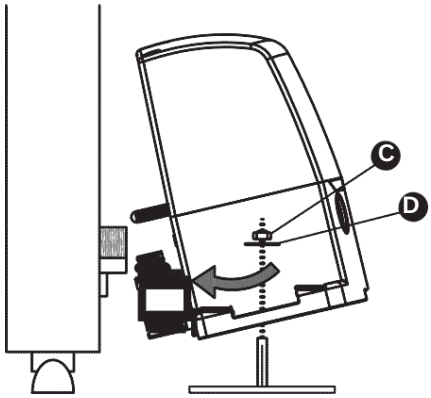
Figure 27



10). Put the gearmotor onto the plate and underneath the rack. This step of installation can be operated by tilting the gearmotor so that the pinion can be easily under the rack. Make sure the gearmotor lies ideally parallel with the gate. Then fix it by fastening the two nuts and washers. (as the Ⓒ & Ⓓ parts in ***Figure 28***)

11). If necessary, adjust the height of the gearmotor (Max. 10mm) with the 4 dowels. It is better to fix the gearmotor without dowels as it is fastened firmly and securely on the plate.

Figure 28



12). Keep 1~2 mm space as ***Figure 29*** between the rack and pinion so that the gate does not weigh on the gearmotor. Continually install the other pieces of the rack until the racks are sufficient for work.
13). Release the gearmotor by using the release key if necessary.
14). Open and close the gate several times manually and make sure that the rack goes with the pinion smoothly within a maximum tolerance of 5mm
15). Fix the two limit switch brackets with the relative dowels as the Ⓔ part in ***Figure 30***.
Slide the gate in the open position keeping at least 2~3 cm from the limit switch. And then slide the bracket along the rack in the opening direction until the limit switch cuts-in. The brackets should be located at a sufficient distance from mechanical stops in order to keep the gate from crashing.
Operate the same steps for the limit switch installed in the closed position.
16). For electrically connections of the various devices, please see ***"4.1.1 Design of PL600/PL1000 Control Unit"***.

Figure 29

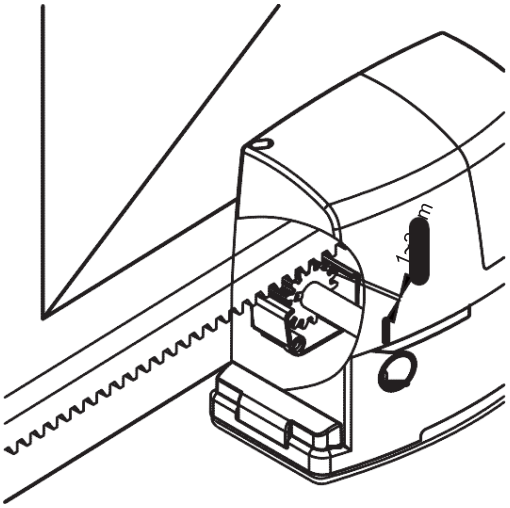
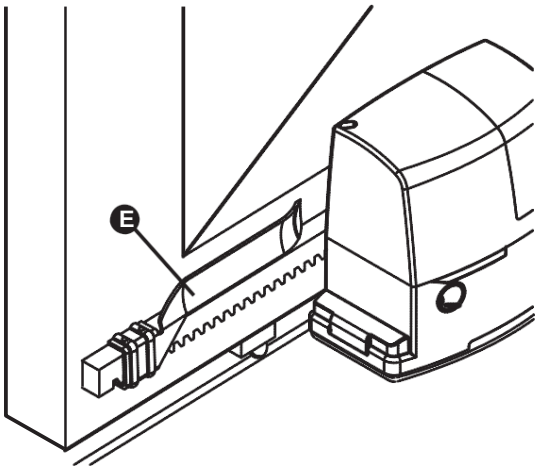


Figure 30



3.3.2 PH-1 Photocells

1). Decide the installation position of the photocells. See ***Figure 3.3.2 (1)***.
2). Unscrew the screws and secure the photocells on the post A, B or C. See ***Figure 3.3.2 (2)*** and ***(3)***.

Figure 3.3.2 (1)

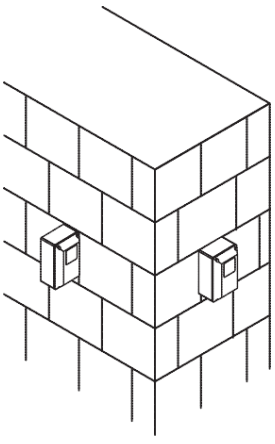


Figure 3.3.2 (2)

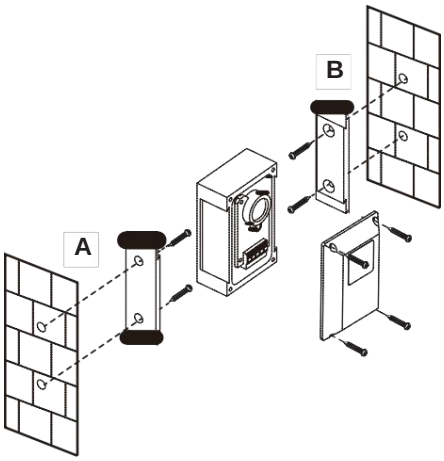
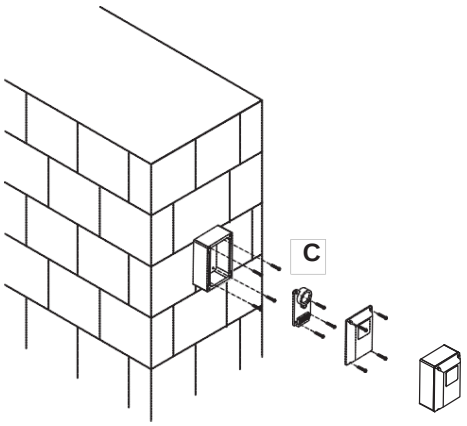


Figure 3.3.2 (3)



3). Wiring connection:

TX: Connect the (1) and (2) terminals on the transmitter with the terminals +12V and GND on the PL600/ 1000 PCB.

RX: Connect the (1), (2) and (4) NC terminals on the receiver with the terminals+12V、GND and PH1 on the PCB600/1000 PCB. And use an extra wire to connect terminal (2) and (5) on the receiver as bridge. See ***Figure 3.3.2 (4) Figure 3.3.2 (5)***.

Figure 3.3.2 (4)

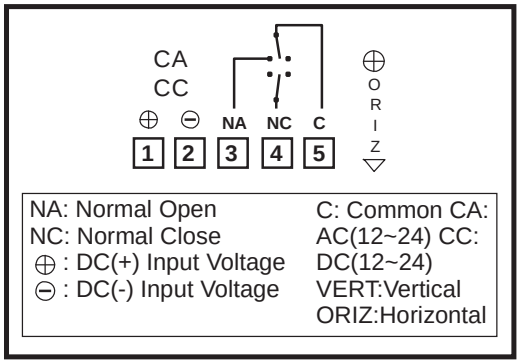
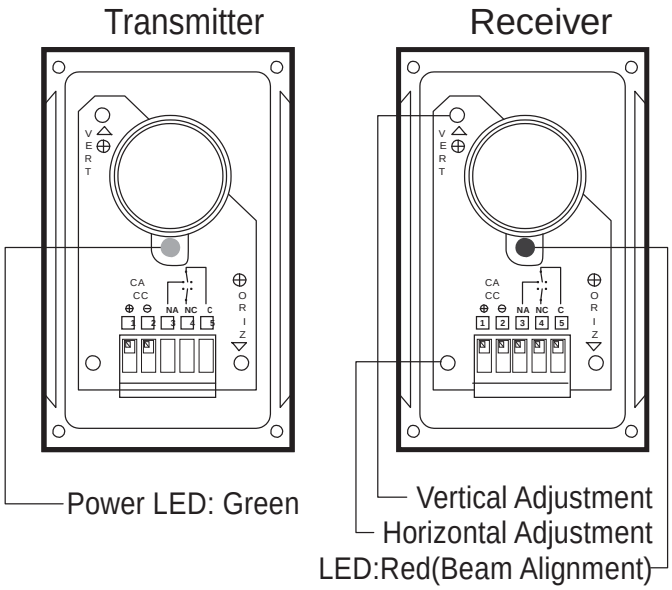


Figure 3.3.2 (5)



3.3.3 PF-1 Flashing Light

1). Decide the installation position of the flashing light. The flashing light has to be installed near the gate and easy to be seen by users and passersby. The flashing light can be installed horizontally or vertically. See ***Figure 3.3.3 (1)***.

2). Unscrew the four screws on the light base and separate the base with the bottom as shown in ***Figure 3.3.3 (2)***.

3.) Connect the wires and penetrate the wires into the hole of the base. See ***Figure 3.3.3 (3)***.

4.) Drill the holes in the wall and fix the bottom to the wall by three screws. See ***Figure 3.3.3 (4)***.

Figure 3.3.3 (1)

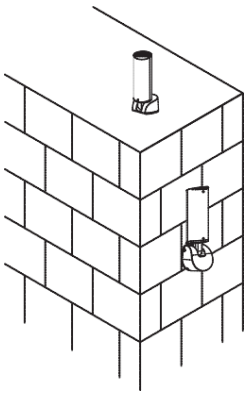


Figure 3.3.3 (2)

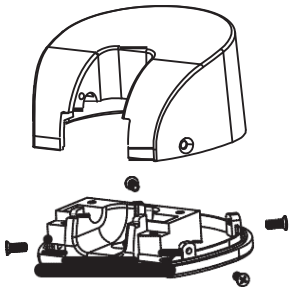


Figure 3.3.3 (3)

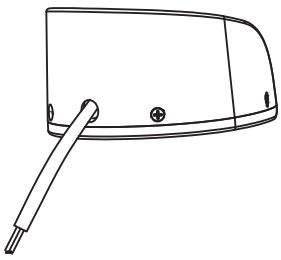
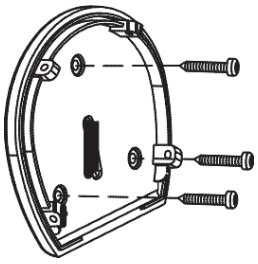


Figure 3.3.3 (4)



5). Connect the four wires of the light and the antenna to the PCB terminals and place the wires into the conduit if necessary. See ***Figure 3.3.3 (5)***.
6). Tighten the four screws back on the light base. ***Figure 3.3.3 (6)***
7). Replacing the bulb set. See ***Figure 3.3.3 (7)***
7.1) Unscrew the flashing light wires from the PCB terminals and make sure the power of the light is off.
7.2) Release the three screws (A)、(B)、(C) of the flashing light cover.
7.3) Separate the flashing light cover and replace the bulb set with a new one.
7.4) Tighten the three screws (A)、(B)、(C) of the flashing light cover.

Figure 3.3.3 (5)

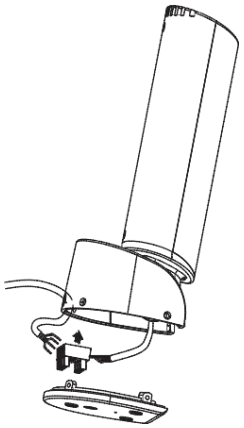


Figure 3.3.3 (6)

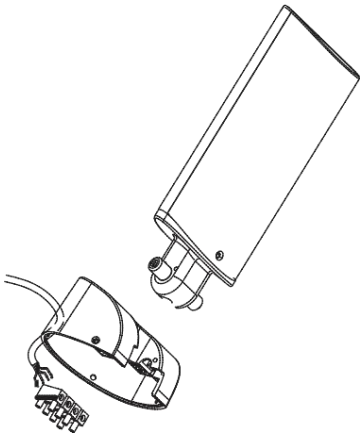
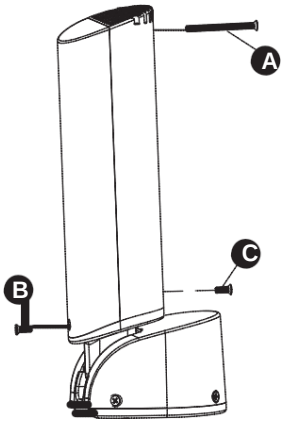


Figure 3.3.3 (7)



3.3.4 PKS-1 Key Selector

1). PKS-1 key selector is installed outside and close to the gate at the height of about 100cm, so that it could be used by most people. Decide the installation position of PKS-1 first. See ***Figure 3.3.4 (1)***.
2). Remove the round cover (A) by prizing it out with a screwdriver. See ***Figure 3.3.4 (2)***.
3). Unscrew the two screws beside the lock body. See ***Figure 3.3.4 (3)***.
4). Turn the key and separate the bottom of the shell with the lock body. See ***Figure 3.3.4 (4)***.

Figure 3.3.4 (1)

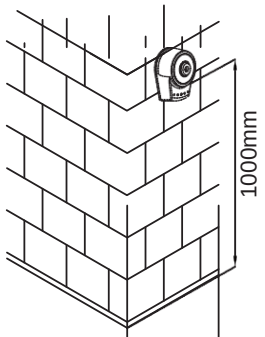


Figure 3.3.4 (2)

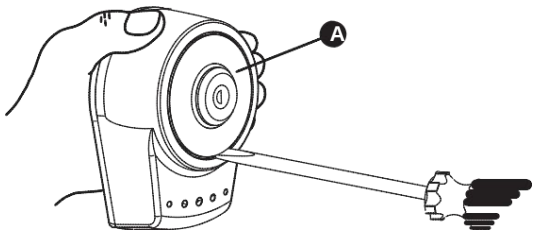


Figure 3.3.4 (3)

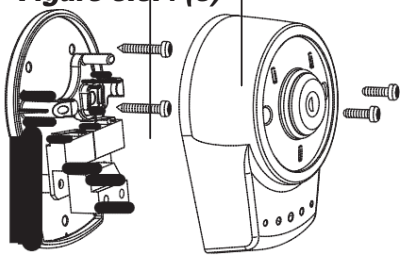
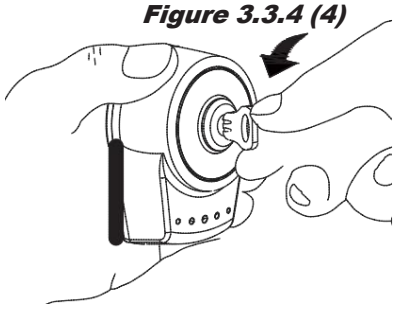


Figure 3.3.4 (4)



5). Breach the three holes at the bottom and mark the points by the holes as reference.
6). Drill the holes in the wall and fix the bottom to the wall by three screws. See ***Figure 3.3.4 (5)***.
7). Connect the electric wires to the terminals as shown in ***Figure 3.3.4(6)***, and it's not required to distinguish any polarity. The terminals can be removed for connecting the wires easily.
8). Turn the key and insert the shell on the bottom. Turn the key back to the center position and the shell will be fixed to the bottom.
9). Tighten the lock body with the two screws and insert the round cover by pressing it to attach to the whole unit.

Figure 3.3.4 (5)

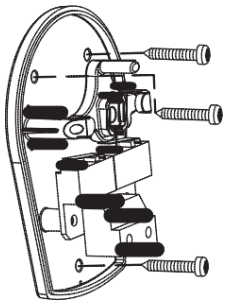
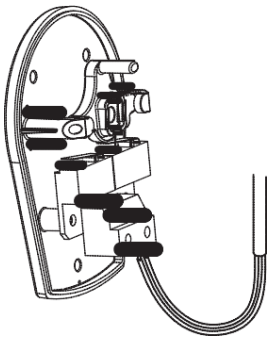


Figure 3.3.4 (6)



3.3.5 PPB-1 Push Button

1). PPB-1 push button is installed indoors at the height of about 100cm, so that it could be used by most people.
2). Remove the round cover (A) by prizing it out with a screwdriver. See ***Figure 3.3.5 (1)***.
3). Unscrew the two screws beside the button.
4). Separate the upper shell with the bottom. See ***Figure 3.3.5 (2)***.
5). Breach the three holes at the bottom and mark the points by the holes as reference.
6). Drill the holes in the wall and fix the bottom to the wall by three screws. See ***Figure 3.3.5 (3)***.

Figure 3.3.5 (1)

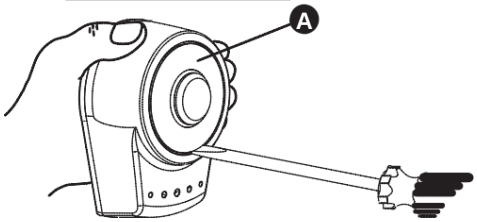


Figure 3.3.5 (2)

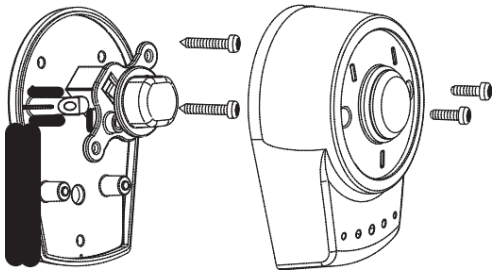
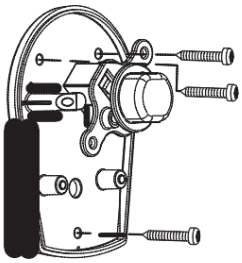


Figure 3.3.5 (3)



3.4 Power Supply Connections

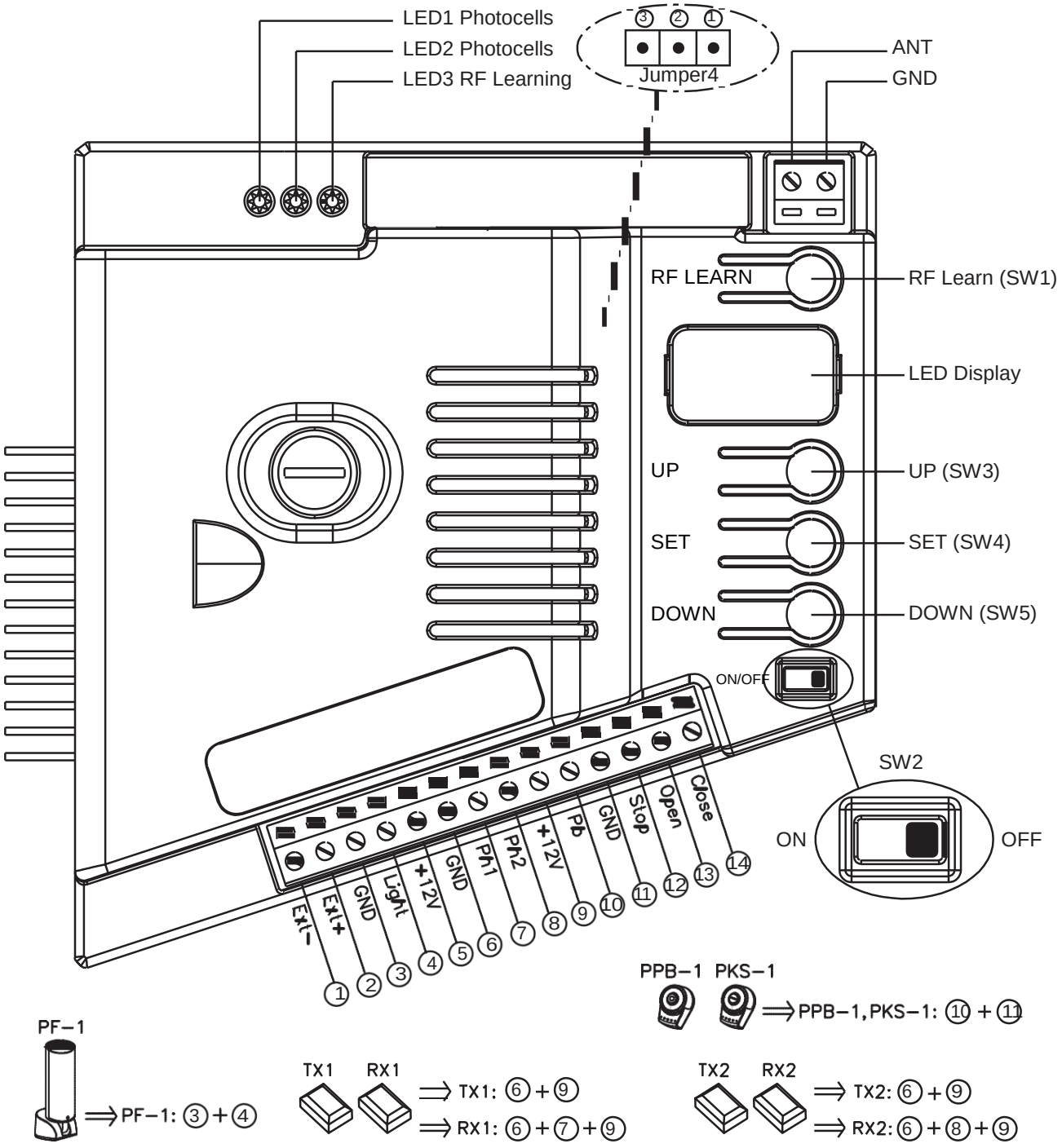
Please kindly notice that the operation of power connection should be carried out by a qualified electrician with following steps:

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.

4) Final Checks and Start Up

4.1 Initial Checks

4.1.1 Design of PL600/PL1000 control unit



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.

Notice 1: Reset function- In any condition of gate moving and stop, press SW3 and SW5 (clockwise moving and counterclockwise moving) for 3 secs, then the LED will display “CLR” meaning “reset successfully”. All functions including system learning will return to the factory setting and the status before system learning.

1). The transmitter Reaction

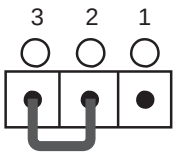
Channel/Functions	SW2 switch on	SW2 switch off
2 channel transmitter	(A)Button: “Open- Stop- Close- Stop” (B)Button: “Pedestrian mode”	(A)Button: “Open- Stop- Close- Stop” (B)Button: Long Press for other device turn-on, like garage door system
4 channel transmitter	(A) Button: “Open- Stop- Close- Stop” (B) Button: “Pedestrian mode” (C) Button: Long Press for other device turn-on, like garage door system **Or** (D) Button: Long Press for other device turn-on, like garage door system	(A) Button: “Open- Stop- Close- Stop” (B) Button: Long Press for other device turn-on, like garage door system (C) Button: “Pedestrian mode” **Or** (D) Button: “Pedestrian mode”

Important notice:

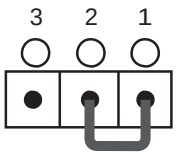
(1) Jumper 4: ② and ③ in place: remote control button (C) usable ; Jumper 4: ①and ② in place: remote control button (D) usable.

(2) Pedestrian mode follows function “F6-0~F6-5” settings.

Button (C) Usable



Button (D) Usable



2). Transmitter Memorizing and Erasing Process

(1) Transmitter Memoring: Press “RF LEARN” button for 2 seconds, and the LED3 is on; then press the transmitter (A) button; the LED3 will blink twice and then be off. The system learning is complete.

(2) Transmitter Memory Erasing: Press “RF LEARN” button for 5~6 seconds as LED 3 is on, then wait for LED3 off.

4.1.2 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.

4.1.3 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.

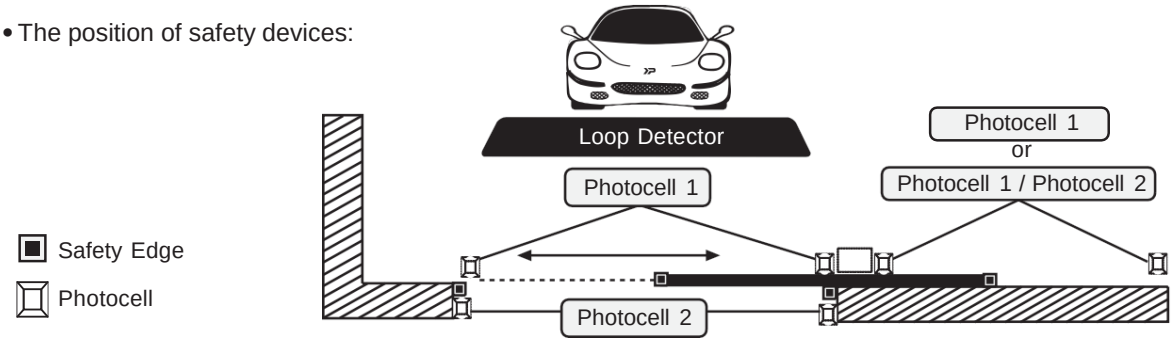
2). Perform the gate opening and closing several times and make sure the gates reaches the limit switch at least 2~3 centimeters before the mechanical stop.

4.2 Programmable Functions Lists

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 "F2-2”: 15secs 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	

LED Display	Definition	Function	Value	Description
F3	The reactions of the photocells/ safety edge/ loop detector when they detecting obstacles	F3-1 F3-2 F3-3	Please the function setting after F8	1. Please the function setting after F 8 2. The factory setting is “F3-1”.
F4	Motor Speed	F4-1 F4-2 F4-3 F4-4	Slow Medium Fast Very Fast	1. The function can adjust the running speed of motor. 2. The factory setting is "F4-4".
F5	Motor Force	F5-1 F5-2 F5-3 F5-4 F5-5 F5-6 F5-7 F5-8 F5-9	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
F6	Open Partially	F6-0 F6-1 F6-2 F6-3 F6-4 F6-5	3 seconds 6 seconds 9 seconds 12 seconds 15 seconds 18 seconds	1. The function can adjust the time of opening partially. 2. The factory setting is "F6-1".
F7	Pre-flashing	F7-0 F7-1	The flashing light blinks when the gate starts to move. The flashing light blinks 3 seconds before the gate starts to move.	1. The factory setting is "F7-0".
F8	Deceleration point programming of total travel distance	F8-0 F8-1 F8-2 F8-3 F8-4	75% 80% 85% 90% 95%	1. The factory setting is “F8-0”.
F9	Deceleration speed	F9-1 F9-2	50% full speed 25% full speed	1. The factory setting is “F9-1”.

• The position of safety devices:



● 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

4.2.1 Programmable Functions of LED Display

LED Display	Programmable Functions
	“N-L”: The PL600 system learning is not done.
	“RUN”: The PL600 system is in normal performing.
	“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: “Gate open to the end- stop close to the end- stop.

4.2.2 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.	

5) 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.

6) Maintenance and Disposal

6.1 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.

6.2 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.

PL600/PL1000 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.

7) Additional Information

7.1 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”.

8) Technical Characteristics

8.1 PL600/ PL1000

	PL600	PL1000
Motor	24Vdc motor with mechanical release	24Vdc motor with mechanical release
Gear type	Worm gear	Worm gear
Peak thrust	6500N	10500N
Nominal thrust	6000N	10000N
Power supply	24Vdc	24Vdc
Nominal input power	2.5A	2.5A
Maximum operating current	5.5A for maximum 10 seconds.	5.5A for maximum 10 seconds.
Maximum gate weight	600 kg per leaf	1000 kg per leaf
Maximum gate length	8 meters	12 meters
Duty cycle	20%	20%
Operating Temperature	-20℃~+50℃	-20℃~+50℃
Dimension	333mm*216mm*287mm	333mm*216mm*287mm
Weight	10.2 kg	10.4 kg
Main power supply	230Vac/50Hz, 110Vac/50Hz	230Vac/50 Hz , 110Vac/50Hz
Back-up battery	2pcs of batteries for emergency operation, 1.2A each, 1.1kg	2pcs of batteries for emergency operation, 1.2A each, 1.1kg
Transformer	6A, 24V	11.4A, 22V
Receiver board	433.92MHz; 200 transmitters memory	433.92MHz; 200 transmitters memory

8.2 PH-1 Photocells

Detection type	Through beam
Operating distance	30 meters
Response time	100ms
Input voltage	AC/DC 12~24V
Operating Temperature	-20℃~+60℃
Protection class	IP66
Dimension	59mm * 87mm * 38mm

8.3 PR-1 Radio Transmitter

Application	Radio transmitter for remote control of PL600/PL1000
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℃~+50℃
Dimension	71.5mm * 33mm * 14mm

8.4 PF-1 Flashing Light

Application	For warning purpose during leaves movement
Lamp	24Vdc Halogens bulb
Operating Temperature	-20℃~+50℃
Installation	horizontally or vertically installed
Dimension	205mm * 80mm * 75mm

8.5 PKS-1 Key Selector

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

8.6 PPB-1 Push Button

Application	For outdoor use
Installation	Wall mounted vertically
Operating Temperature	-20℃~+50℃
Dimension	85mm*60.5mm*40.0mm