# Installation Guide

Version 01-20C

# DT

## Swing Gate Opener



☑ Standard
☑ Solar

# 1. Features

1. Manufacturer has patent for manual release mechanism. Use this feature in case of power failure, during installation or maintenance
2. Unique easy self-learning feature (Page 9)
3. Commercial power & solar energy power source can be connected at the same time
4. Over current immediate stop function (A0~A1/ B0~B1)
5. Adjustable time of fast speed & slow speed (A2~A5/ B2~B5)
6. Adjustment of force during fast speed & slow speed (A6~A7/ B6~B7)
7. Auto Close function with adjustable closing time delay
8. Use max up to 99 sets of remote controllers
9. Optional Devices: Backup battery, DC24V gate lock, photocell, keypad system, flashing light (AC110V/220V) & DC24V, push button, etc.
10. Low power consumption, static current low to 15mA/30V, upgraded for rainy and cloudy seasons.
11. New design to improve power charging efficiency.
    Super high voltage protection design for solar panel terminal.
12. PCB Built-in smart self -detect and self-protection
13. New added error code self checking LED message
14. Built-in Modbus-RTU protocol
15. New advanced built-in 32 bits /48MHZ CPU

# 2. Technical Specifications

**DT**

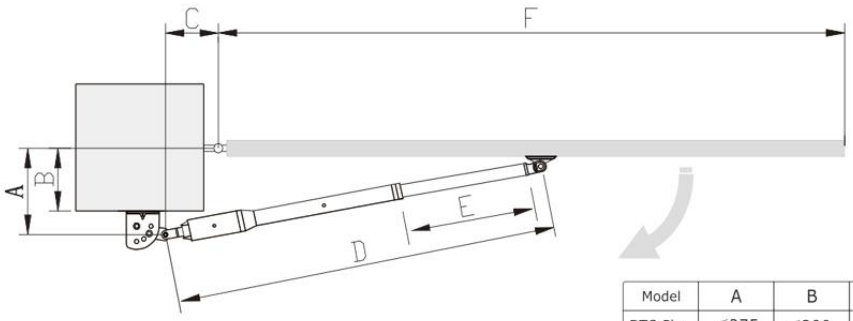
Electrical

| | |
|---|---|
| Power Supply | AC110V~240V |
| Operating Voltage | DC 24V |
| Electronic Controller | Microcontroller Based |
| Safety Detection | Over Current Detection |
| Safety Barrier | Infrared Beam Sensor (Optional) |
| IP Rating | IP66 |

Mechanical

| Swing Type | DT 3 Plus | DT 3 |
|---|---|---|
| Max. Piston Stroke | 430mm | 330 mm |
| Max. Length of motor | 1240mm | 1036 mm |
| Max. Leaf's Weight | 400 kg/ Leaf | 350 kg/ Leaf |
| Suitable Leaf's Length | 3.5 meter/ Leaf | 2.5 meter/ Leaf |
| Frame Housing | 304 Stainless Steel / Aluminum Alloy | |
| Driving Method | Screw Driven Piston Type | |
| Opening Degree | 0 to 110 degree | |
| 90 Degree Rotation Time | 12 to 18 seconds | |
| Temperature | -15℃ to +55℃ | |

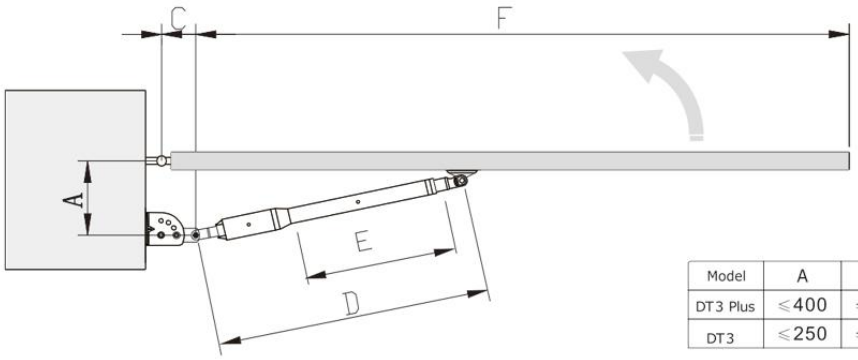
# 3. Mechanical Installation




Inward Swing

Measurement: mm

| Model | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| DT3 Plus | ≤275 | ≤200 | ≤180 | 1300 | 430 | ≤4000 |
| DT3 | ≤225 | ≤150 | ≤130 | 1105 | 330 | ≤2500 |

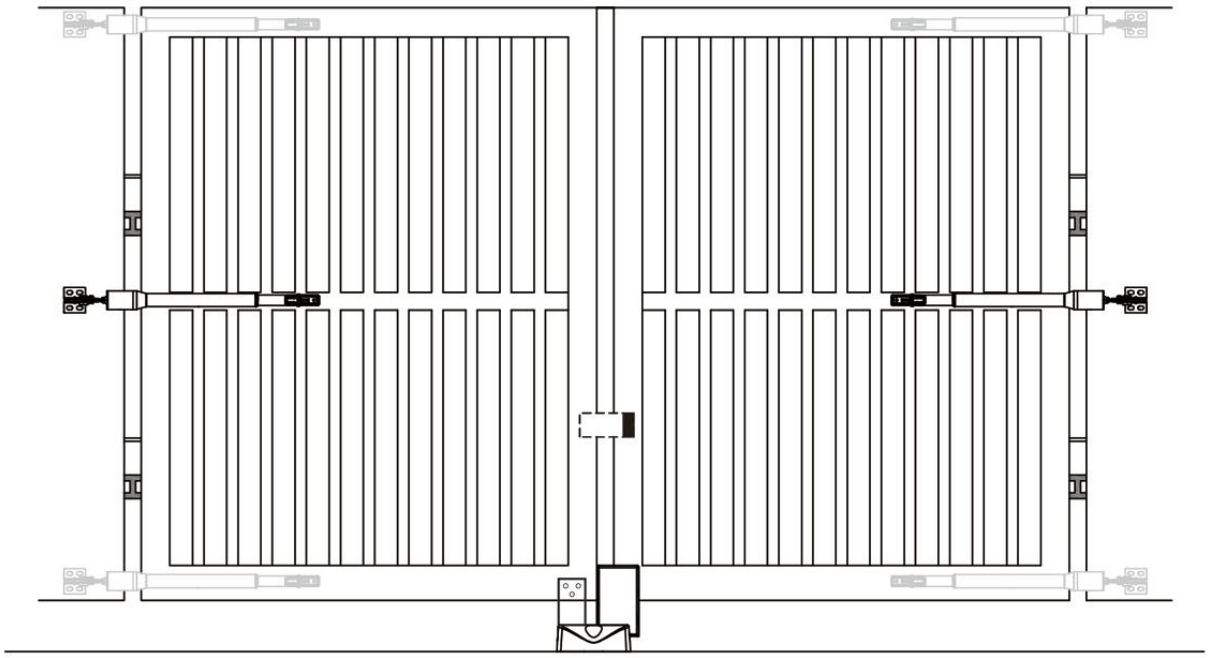



Outward Swing

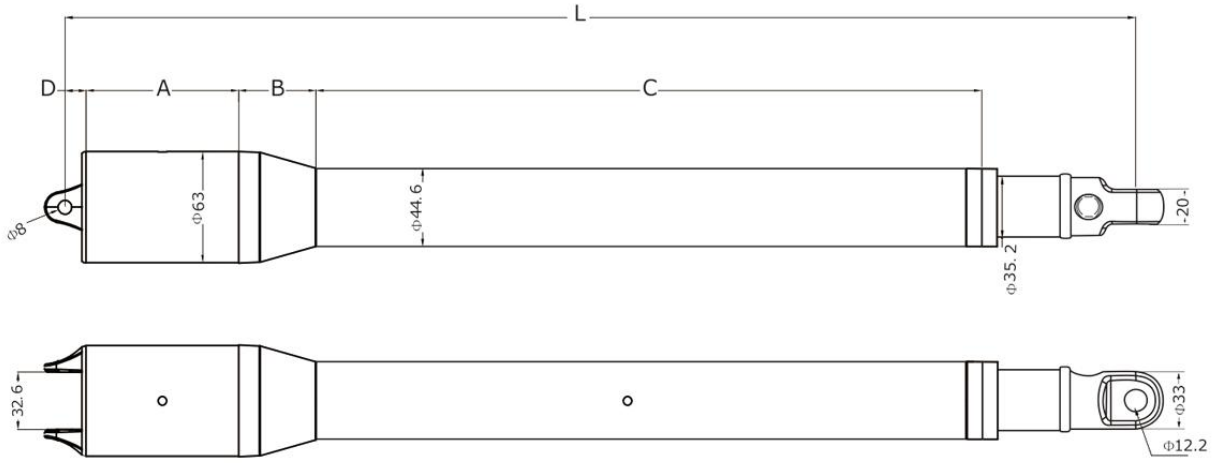
Measurement: mm

| Model | A | C | D | E | F |
|---|---|---|---|---|---|
| DT3 Plus | ≤400 | ≤180 | 850 | 430 | ≤4000 |
| DT3 | ≤250 | ≤100 | 755 | 330 | ≤3000 |

## Diagram Installation



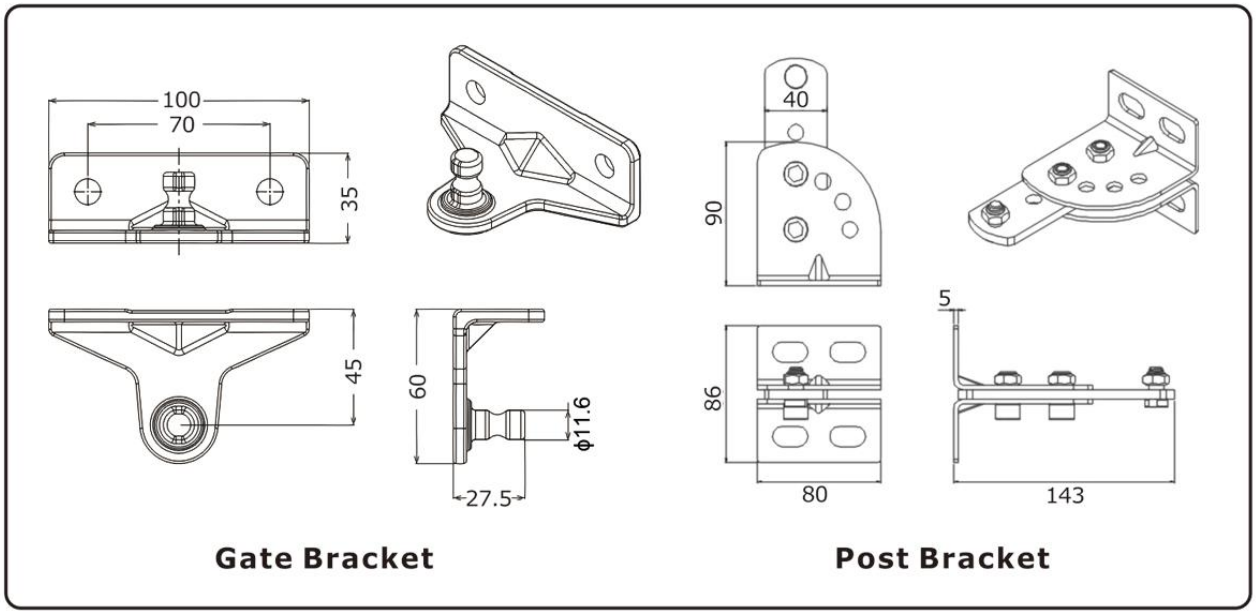
## Opener Dimension




Measurement: mm

| Piston Stroke | A | B | C | D | L |
|---|---|---|---|---|---|
| 430 | 135 | 45 | 550 | 12.5 | 797/1247 |
| 330 | 135 | 45 | 425 | 12.5 | 686/1036 |

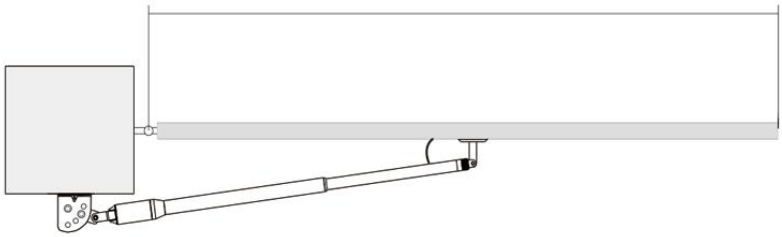
## Bracket Dimension

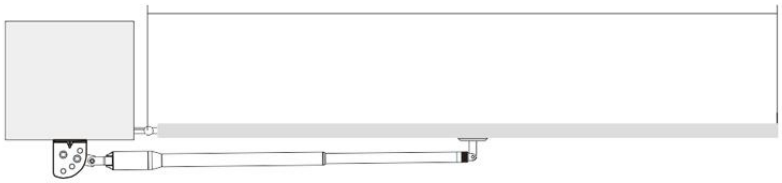



Measurement: mm

## Installation Precautions

1. Please make sure there is some angle between the position of the gate bracket and the post bracket.
   These two brackets should not be parallel to each other.





2. Ensure the motor has at least 5mm of travel left in the open position (inward swing) or closed position (outward swing).

3. There are two small holes on the swing arm motor , please make sure these holes are facing down to ensure weatherproofing.

4. The motor must be completely level once installed. To check, use a level on the motor. DO NOT install the motor on an upward and downwards slope towards the gate.

# 4. Manual Release

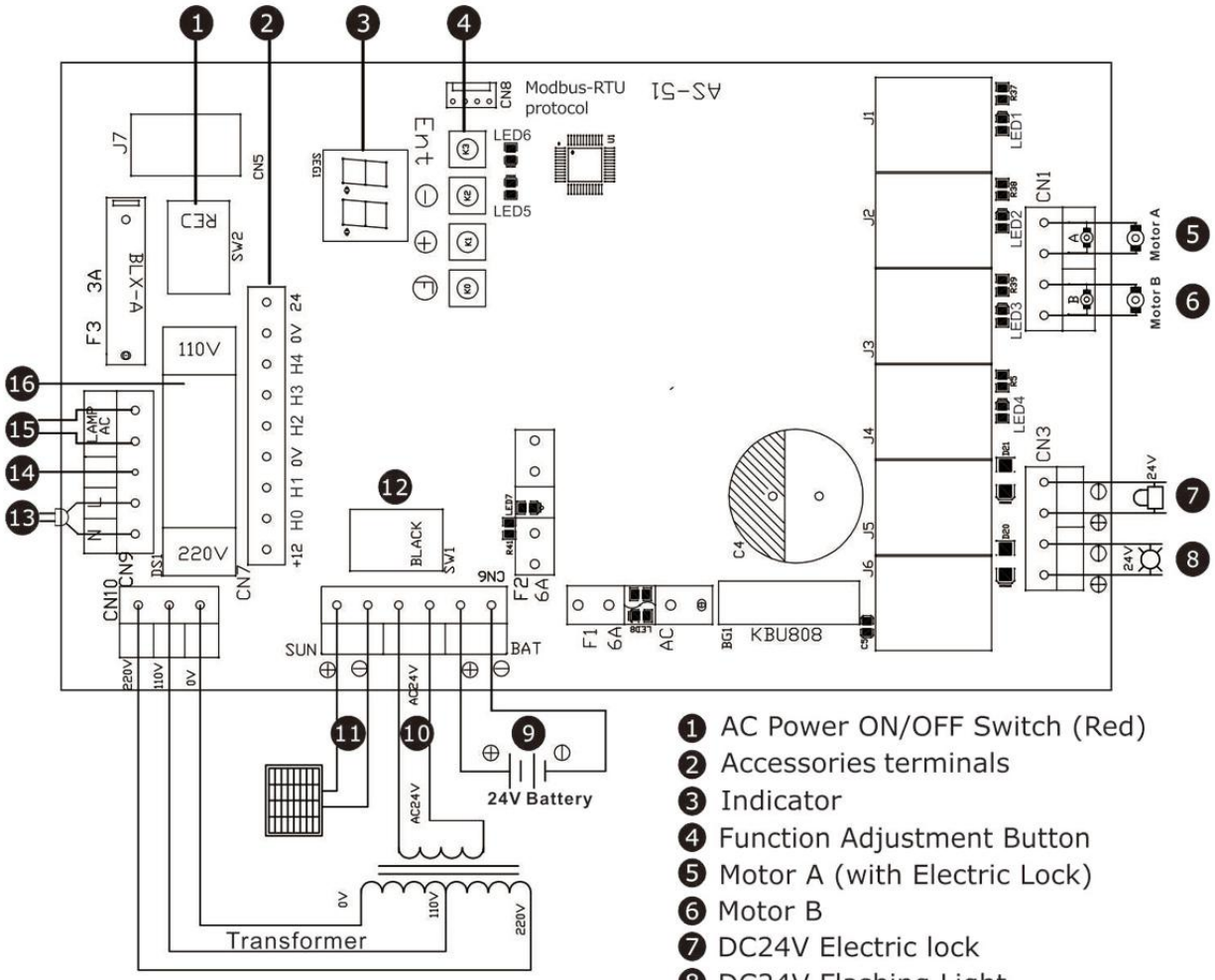
In case of power failure , the motor can be disengaged from the gate . Follow the directions below to release the motor to enable the manual release function.

1. Using the Special Key.
2. Separate the motor and gear bracket.
3. Inversely repeat the previous action to lock.



# Control Box Wiring

## 1. Wiring




1. AC Power ON/OFF Switch (Red)
2. Accessories terminals
3. Indicator
4. Function Adjustment Button
5. Motor A (with Electric Lock)
6. Motor B
7. DC24V Electric lock
8. DC24V Flashing Light
9. Backup Battery (12V 9ah x 2 in series)
10. AC24V terminal for transformer
    Only accept AC24V to 26V voltage
11. Solar Panel
12. Power ON/OFF Switch (Black)
    (AC power and battery)
13. Power Supply (AC220V / 110V )
14. Earth wire connection
15. AC Flashing Light
    (not used in 24V system)
16. Selector Switch for AC220V or 110V

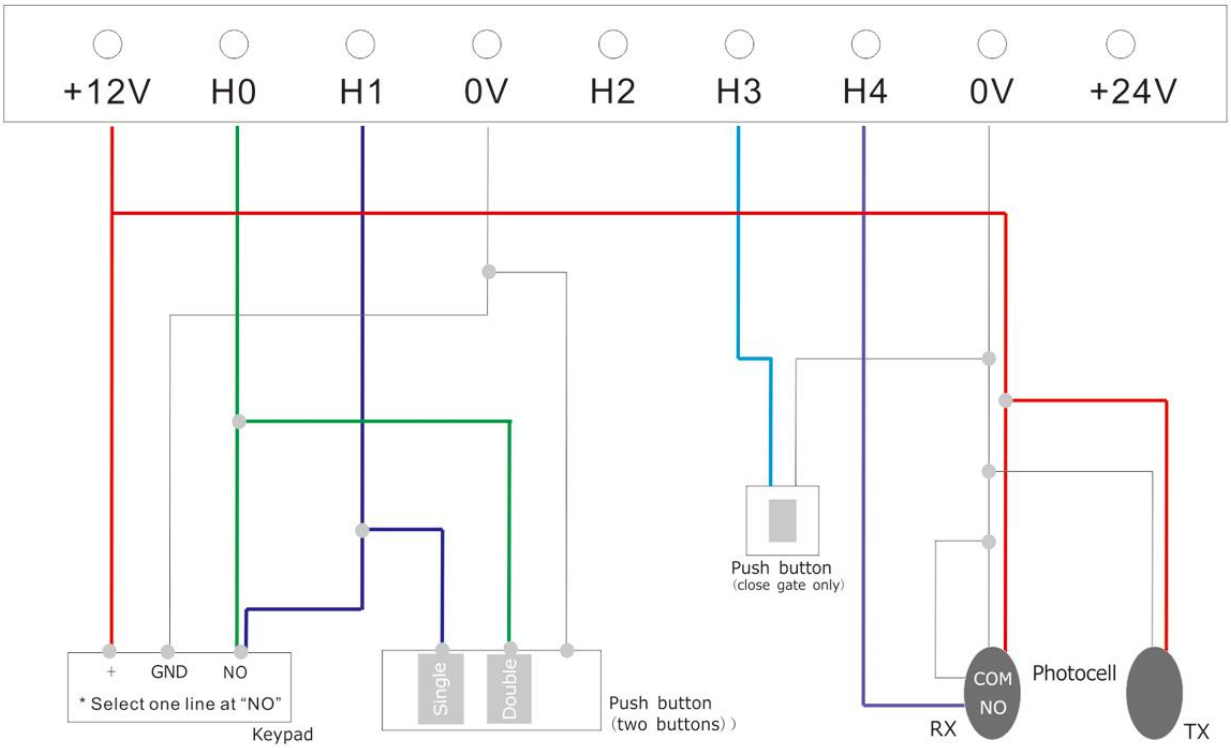
## LED Diagram

Power On, LED5 will blink.

LED1 Motor A open LED
LED2 Motor A close LED
LED3 Motor B open LED
LED4 Motor B close LED
LED5 Power LED
LED6 Received signal for remote control LED

* Make sure the "16 selector switch for AC 220v or 110V" is at the correct position before power on
* Please switch off the power before connecting any accessories
* The solar system doesn't include transformer, if you need to use AC220V or 110V mains power, please add a transformer first

# 2. Wiring for Optional Accessories




| Item | +12V | H0 | H1 | 0V | H2 | H3 | H4 | 0V | +24V | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Description | Stable voltage output | Dual Open/Stop/ Close | Single Open/Stop/ Close | "-" & "Concentration line" | Only OPEN | Close | Sensor | "-" & "Concentration line" | | |
| Keypad (single open ) | ● | | ● | ● | | | | | | |
| Keypad (dual open ) | ● | ● | | ● | | | | | | |
| Push button (two buttons) | | ● | ● | ● | | | | | | |
| Push button (one button) | | | | | | ● | | ● | | close gate only |
| | | | ● | ● | | | | | | single open |
| | | ● | | ● | | | | | | dual open |
| Photocell (sender) | ● | | | | | | | ● | | |
| Photocell (receiver) | ● | | | | | | ● | ●● | | |

"●"Means the connection port

*Please switch off the power before connecting any accessories

**Instructions for photocell**

During gates closing, if the photocell detect any obstacles, the gates will stop immediately and then reverse back. Only until the obstacles be removed, the gates will operate according to new command.

## How to Connect the Motors

**Motor A:**

Connect the two wires from the motor to the "Motor A" terminals marked letter "A" (see page 6, Shown as terminal 5.)

If you find the motor is operating in the wrong direction, reverse the motor wires on the circuit board.

**Motor B:**

Connect to terminal marked letter "B" (see page 6, Shown as terminal 6.)

# 3. Remote Control Setting

## Activating the Remote Control

Press and hold the "**F**" button for approximately 2 seconds until the indicator displays "**FF**" and keeps flashing , then release the "F" button.

Press "**□stop**" button on the remote control, if the display stops flashing "**FF**", it means the remote control is programmed to the PCB and is valid.

* 99 remote controls can be set at most
* Verify the remote control is operating by pressing a button on the remote, when any button is pressed on the remote control, LED6 (on the PCB) will be on.

## Erasing the Code

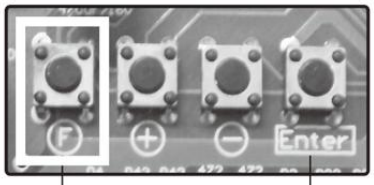
Press and hold the "**F**" button for approximately 2 seconds until the indicator displays "**FF**" and keeps flashing , then release the "F" button.

Press and hold the "**Enter**" button until the display stops flashing "**FF**", this indicates all remotes have been erased and are invalid.

****Pedestrian opening push "Ⓟ" button to perform single swing opening**

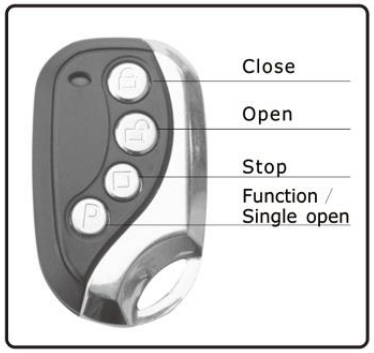
(Note: Only valid for double swing systems)

Function adjustment button




Ⓕ/Exit Enter

**433MHZ** Remote control




The remote control cyclic form is " open - stop - close "

* When remote control signal weakens , please replace the battery of remote control and check the receiver on the control board
  Weak signal will shorten the distance of remote control or send wrong instruction to control board
* If the remote control can't be set , please Erasing all the code and then activate the remote control you want to use

# 4. Self-learning (Easy and Smart)

## Checking before self-learning

1. Check the wiring of the motors
2. Check the manual release is in the locked position
3. Make sure the gate(s) are in the **fully open** position.
4. There should be hard stoppers at both fully opened positions and fully closed position.
5. Please disconnect the solar panel when doing the self-learning, connect the solar panel after done the self-learning

STEP 1

**Gate Fully Opened**

## Self-learning setting (motor setting)

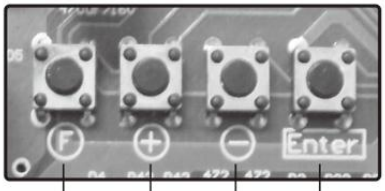
1. Press the "F" button on the PCB. If d7 is not on the display,Tap the "+" or "-" button until it is shown.
2. Hold down the "Enter" button on the PCB for 3 seconds until the display starts to blink and release the button. This enters self learning mode.
3. Self-learning is finished when d7 is steady on the display. You can now use the remote control.

* Do not operate the remote control during the above self-learning process.Press the "F" button to exit the learning mode if you require an emergency stop. to restart the self learning process,start from step 1.

If you find problems with the gate operation in heavy winds or with other obstacles, adjust "MOTOR SETTING" and total timer adjustment manually as stated on page 10.


indicator

**PCB** Function adjustment button

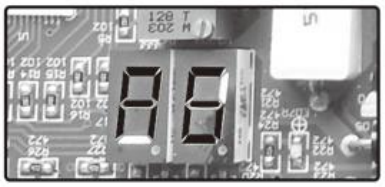



F/Exit + − Enter

STEP 2

**System Self Learning**

## PCB Manual Adjustment





### After the self-learning process if manual adjustment is required to get optimum parameters, please following below:

If opening or closing does not reach the required positions, you can increase the force during slow speed (A6,B6) by 10 and then repeat the self-learning process.

If the speed is not slowing down at the ends of the cycle, decrease A6 and B6 by about 5 and then repeat the self-learning process.

STEP 3

**Manual Adjustment**

**Note:**

1. After the above adjustment and the opening or closing is still not reaching the designated position, is slower than normal, or does not function, the following reason may be caused by:

   a. The motor will not work if the supply voltage is outside operating parameters. Please confirm the input voltage is within ± 10% of 24 volts
   b. Advise to choose above 2.5 square mm with copper wire. It will be better to increase the wire diameter if long distance wiring.
   c. Adjust the motor installed position.

2. In case if you have changed the parameters, make sure to restore factory default settings before proceed with self-learning procedure. (Set d2)

# Function Adjustment

**(Follow the steps below)**

Step 1: Press ″F″ button, the indicator will show ″d7″

Step 2: Press ″+″ button, it'll show in turn ″d8,d9,dA,H0,H1,H2,H3,H4″
Press ″−″ button, it'll show reversely

Step 3: Press ″F″ button, after choose the item, the indicator will show numbers

Step 4: Press ″+″ or ″−″ button to select levels

Step 5: Press ″Enter″ button to confirm

Step 6: Press ″F″ button for return to previous configuration menu

Function Debug Form

| Code | Function / Explaination | Setting Range | Default Setting | Remarks |
|---|---|---|---|---|
| A0/b0 | Intermediate Stop Function with slow speed.<br>This refers to the sensitivity of gates when meeting obstacles during slow speed operation. | 0~99 | 17 | Lower setting means the gates will be more sensitive to stopping. |
| A1/b1 | Intermediate Stop Function with high speed.<br>This refers to the sensitivity of gates when meeting obstacles during high speed operation. | 0~99 | 45 | Higher setting means the gates are not as sensitive to stopping on hitting an obstacle. |
| A2/b2 | Time of opening - slow speed.<br>Low speed operating time during gate opening. | 0~9.9s | 9s | This is the time it takes to Open/Close the gate for the Slow Speed part of the sequence. |
| A4/b4 | Time of closing - slow speed.<br>Low speed operating time during gate closing. | 0~9.9s | 9s | |
| A3/b3 | Time of opening - high speed.<br>High speed operating time during gate opening. | 0~99s | 10s | This is the time it takes to Open/Close the gate for the Fast Speed part of the sequence. |
| A5/b5 | Time of closing - high speed.<br>High speed operating time during gate closing. | 0~99s | 10s | |
| A6/b6 | Force of opening and closing - slow speed.<br>Force adjustment for low speed operating during open and close. | 0~99 | 56 | This is the force the motor applies on the gates. If the gates are heavy, you will need more force to speed up the opening and closing of the gates.<br>(Note: if the gates can open/close into position, you do not need to adjust the default settings.) |
| A7/b7 | Force of opening and closing - high speed.<br>Force adjustment for high speed operating during open and close. | 0~99 | 99 | |
| C0 | Reverse swing of motor A.<br>If you choose "0", the gate system will not have gate lock function or reverse swing operation.<br>If you choose "1", the gate system will have gate lock function but no reverse swing operation.<br>If you choose "2", the gate system will have gate lock function and reverse swing operation. | 0~2 | 2 | No need to adjust this if the gate installed has end stoppers. |
| C1 | Electric lock.<br>If you choose "0", the gate system will not have gate lock operation after gate is closed.<br>If you choose "1", the gate system will have gate lock operation after gate is closed. | 0~1 | 1 | When activated (Option "1"), the gates can't be pushed open. |
| C2 | Motor delay setting.<br>If you choose "0", only motor A working, motor B do not working<br>If you choose "1", motor B will delay open during opening.<br>If you choose "2", motor B will delay open during opening, motor A will delay start during closing.<br>If you choose "3", motor B and motor A will start working at the same time. | 0~3 | 2 | |

| Code | Function / Explaination | Setting Range | Default Setting | Remarks |
|---|---|---|---|---|
| C3 | Time of auto close.<br>If you choose "0", the gate system will not have auto closing function.<br>If you choose "10", it means the gates will automatically close 10 seconds after completing its opening. | 0~99s | 0 | |
| C4 | Time delay for opening, and delay for closing.<br>During opening, motor B will open a little later than motor A<br>During closing, motor A will close a little later than motor B | 0.1~9.9s | 2 | |
| C5 | Delay activating time for remote control button (for avoiding misoperation)<br>If you choose " 0 ", normal operation<br>If you choose " 1 ", press and hold the button 2 seconds then start the operation | 0~1 | 0 | |
| C6 | Operating time of lock when opening the gate | 0.9~5.0 | 1.7 | |
| C7 | Reverse swing of motor B when start opening<br>If you choose "0", the motor B will not have reverse swing operation.<br>If you choose "1", motor A and B will have reverse swing operation. | 0~1 | 0 | |
| C9 | Reserved terminal for maintainance and testing | | | |
| d0 | PCB Model Number | | | Display PCB Model & Software version Number |
| d1 | PCB Software version | | | |
| d2 | Restore default setting<br>" 09 " = restore factory settings | | 0 | |
| d3 | " Only Open " terminal function<br>*Cancel under voltage warning | 0~1 | 0 | 0 = when receive a signal from this terminal, gate won't move after fully open<br>1 = The signal can continue opening gate after fully open<br>*97 = Cancel the function: motor stops working and show L1 on the displayer when power supply voltage is too low |
| d4 | Motor A Current display during operating | 0.1~9.9 A | | |
| d5 | Motor B Current display during operating | 0.1~9.9 A | | |
| d6 | Charging Voltage | 24~48V | | The voltage should be higher than 27V |
| d7 | Charging Current | 00~16A | | |
| d8 | Battery Capacity Display | 00~99 | | Below 20 = Battery soon will be run out<br>99 = Fully charged |
| d9 | Battery Voltage Display | 00~28V | | |
| d7 | Self-learning feature | | | Press & hold "Enter" button to turn to self-learning mode |

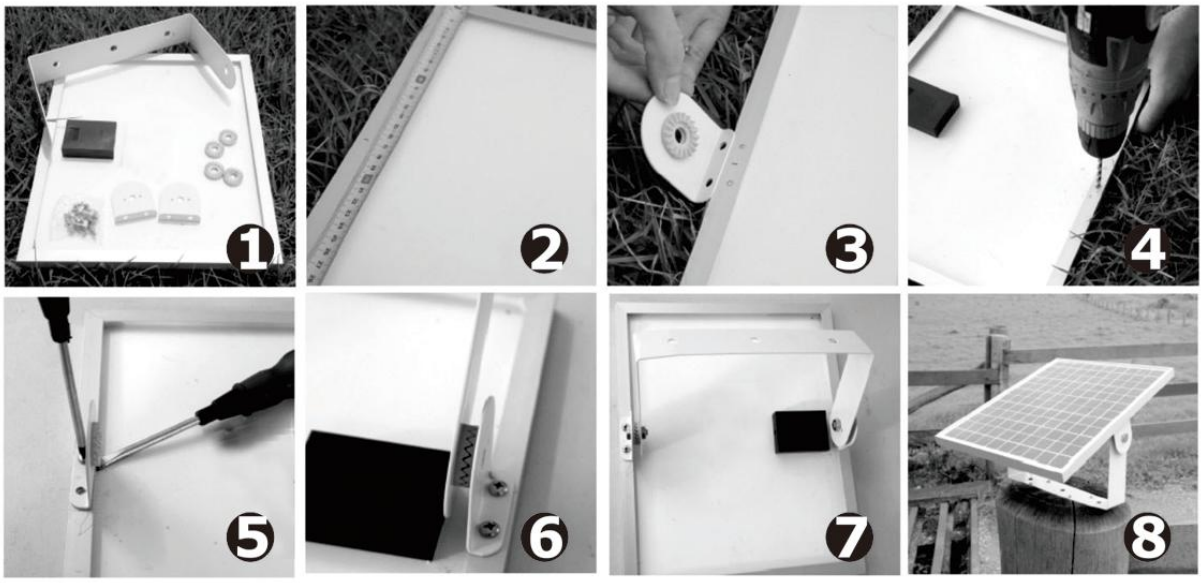
* Use this guide to help trouble shoot gates that are not operating properly. You can also set the delay functions by this guide.

1. For most of these functions, it's only necessary to adjust them if the system is not opening or closing as desired.
2. Default settings can be reset directly from the Control Box.
3. Please note that the gates open and close in the following manner: soft start, fast swing and slow finish. To adjust each of these speeds, refer to the chart above.

# Solar System Installation

## Solar Panel Installation

1. Measure and mark halfway along the long sides of both solar panel sides.
2. Place the holding brackets over this halfway point and mark the holes. Attach the plastic washers to the holding brackets and holding arms
3. Carefully drill the 4 holes with a 13/64 drill bit and be suer you don't drill into the glass. Use a piece of thin metal between the frame you are drilling and the white to protect it.
4. Place the holding brackets and use the 10mm screws and bolts to hold in place (You can also use the 4*13mm hex screws included).
5. Install the holding arm to the holding brackets with the 25mm screws and bolts. This can be done after you attach the holding arm to your fence post with the wiring. For maximum sun exposure, align the solarpanel so the bottom is facing sunrise and the top is facing sunset.




* If you choose solar power system,suggest to use Ahouse solar panel(20W solar panel) to make sure the motor work properly.

## Solar Panel Wiring Instruction

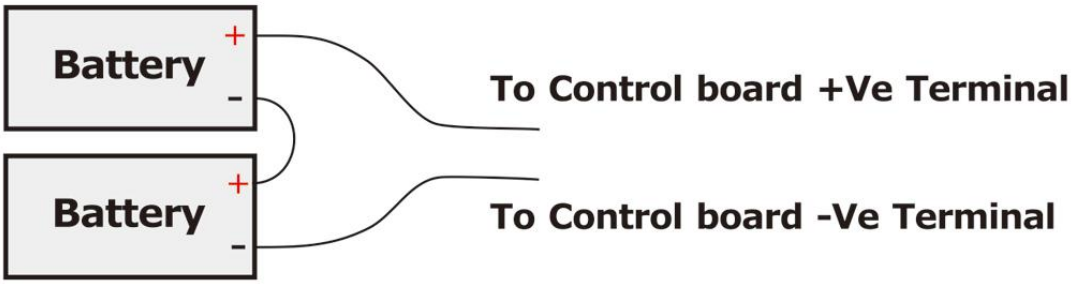
1. Using the cables, connect one cable to the positive (+) terminal of the solar panel. Connect the other end of the same cable to the positive (+) terminal of the solar panel terminal in the control board (terminal 11 – see page 6).
2. Using the other cables, connect one cable to the negative (-) terminal of the solar panel. Connect the other end of the same cable to the negative (-) terminal of the solar panel terminal in the control board (terminal 11 – see page 6).

* Our standard components doesn't include the cable connecting the control box to the solar panel

# Battery Wiring Instruction

1. Using the supplied wire, connect the connector to the positive (+) terminal of one of the batteries. Connect the other end of the wire to the negative (-) terminal of the OTHER BATTERY.
2. Using the other wire, connect the connector to the positive (+) terminal of the battery. After the batteries are installed, the other end will be connected to the control board.
3. Using another wire, connect it to the negative (-) terminal of the battery. After the batteries are installed, the other end will be connected to the control board.

**Note: make sure the bare ends of the wires do not touch together or do not touch the same metal surface at the same time.**




4. Install the batteries in the control box using cable ties as shown.

5. Connect the other end of the wire that is already connected to the positive terminal (+) of the battery to the positive (+) terminal in the control board for the battery (terminal 9 – see page 6 ).
6. Connect the other end of the wire that is already connected to the negative (-) terminal of the battery to the negative (-) terminal in the control board for the battery (terminal 9 – see page 6).

## Battery Maintenance

Before use the batteries, please make sure that they are fully charged, it will lead to wrong operation if it is not fully charged, and need to check or replace the batteries by qualified person on a regular time basis.

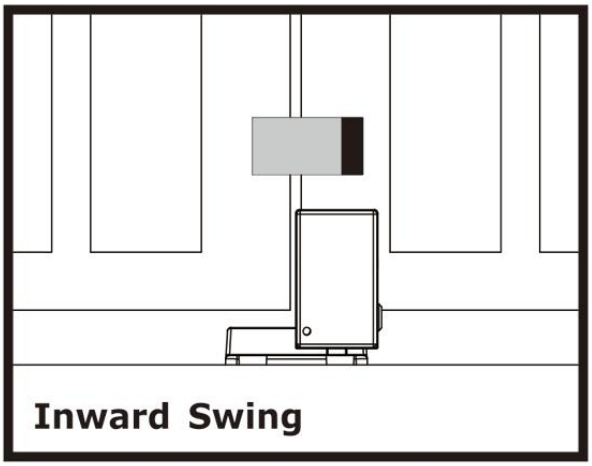
* Using 2 x 12V 7/ 9Ah batteries in series wiring for the solar panel back up power .
* Battery is consumable, suggest to change battery every 9 or 10 months.

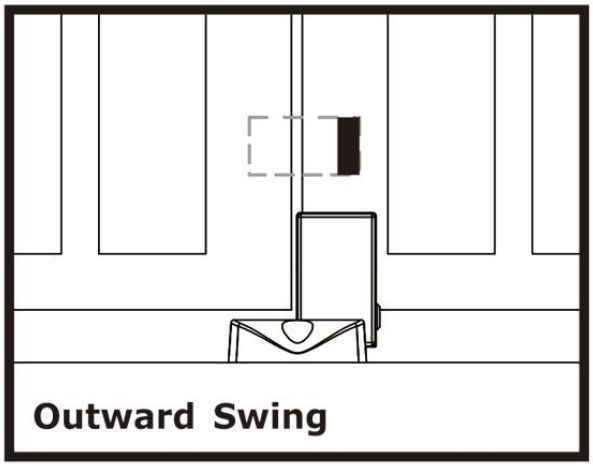
# PCB
# Self Debug and Error Code List

| Items | Descriptions | Remarks |
|---|---|---|
| L0 | Voltage from AC mains supply or Battery is too high | |
| L1 | Voltage from AC mains supply or Battery is too low | |
| L2 | Current of motor A is too high when overloading | |
| L3 | Voltage from +12V accessories terminal is too high | |
| L4 | Voltage from +12V accessories terminal is too low:<br>The current of accessories connected to +12V is too high | Please make sure the current of all the accessories connected to 12V are less than 300mA<br>Check if the accessory is faulty or shorted |
| L8 | Current of motor B is too high when overloading | |
| L9 | Motor terminal short circuit | Please check the wiring of motors |
| n1 | Charge protection (battery terminal short circuit) | Please check the wiring of batteries |
| n3 | The motor is not connected or motor wiring failure | If it is a single gate, suggest setting C2 to 0<br>If the motor works properly, single swing or testing then can ignore n3 |
| n5 | When C5 = 1 , Press and hold remote control less than 2 seconds , the remote control will not be functioned | |
| n6 | Gate can't be opened or closed :<br>To check there is an Emergency stop signal or photocell detect something or there is an open signal | |
| A8/b8 | Gate A stops working (A8)<br>Gate B stops working (b8) | 0= Motor hasn't started yet |
| | | 1= Pressed the button connected to the "Stop" terminal |
| | | 3= Finished the total opening time |
| | | 5= Hampered stop during high speed |
| | | 6= Pressed the "P" button on the remote control |
| | | 8= Pressed the "stop" button on the remote control |
| | | 9= Stopped working relate to any optional accessories connection to terminal "H0" |
| | | 10= Stopped working by the Modbus-RTU Communications Directive |
| | | 11= Stopped working relate to any optional accessories connection to terminal "H1" |
| | | 13= Finished the total closing time |
| | | 15= Hampered stop during slow speed |
| dA | The last signal to open the gate | 1= Signal comes from the Modbus-RTU Communications Directive |
| | | 2= Signal comes from the "Open" button on remote contorl |
| | | 3= Signal comes from the "H2" (Only open) terminal |
| | | 4= Signal comes from the "H0" (Dual open/stop/close) terminal |
| | | 5= Signal comes from the "P" button on remote control |
| | | 6= Signal comes from the "H1" (Single open/stop/close) terminal |
| | | 7= Signal comes from the "Single open" terminal |
| | | 8= Signal comes from "reverse when meet an obstacle" |
| | | 9= Signal comes from the "delay for opening" |

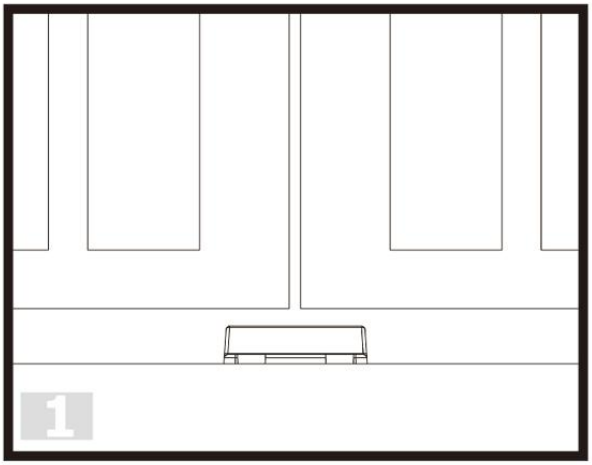
# Gate lock installation

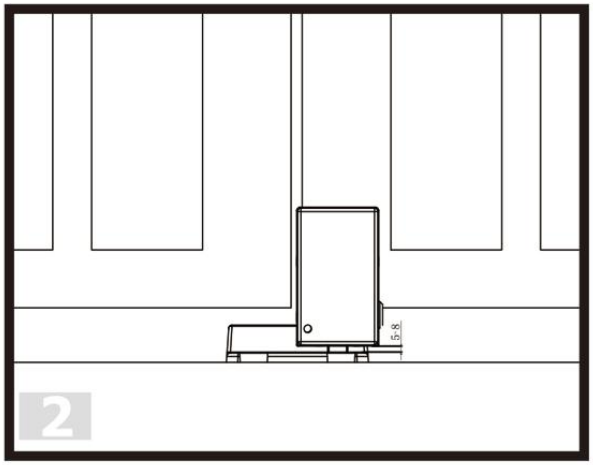
## Model : Ds218

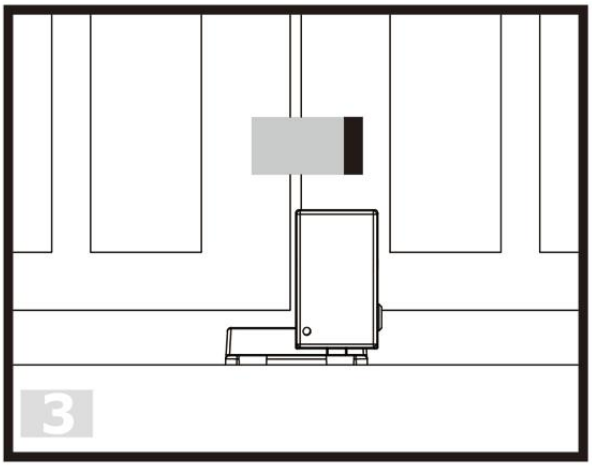



## Installation



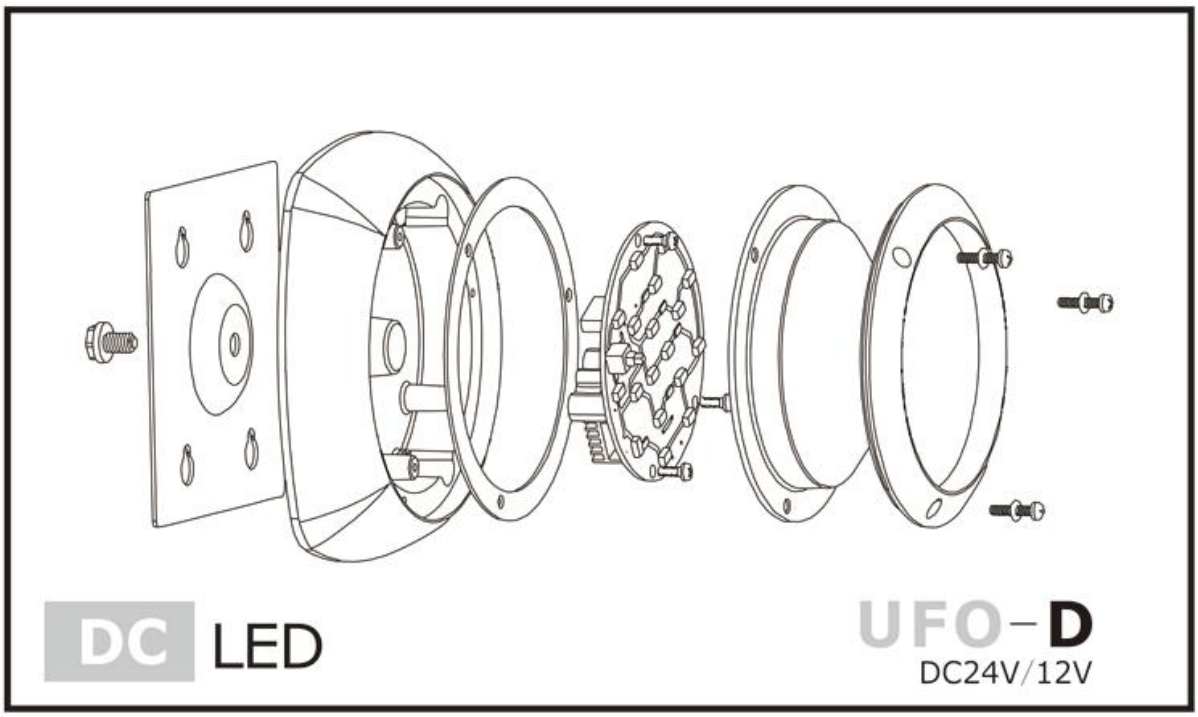




1. Install the stopper
2. Fix the lock body onto the first moving side of the gate leaf, make sure there is at least 5 to 8 mm space between the stopper location hole surface & the bottom of lock body.
3. Install the stopper plate in corresponding position onto the same leaf which installed with lock DS218, this is to make sure when 2 leaves are closed, the stopper plate can limit the leaf which cannot opened either.

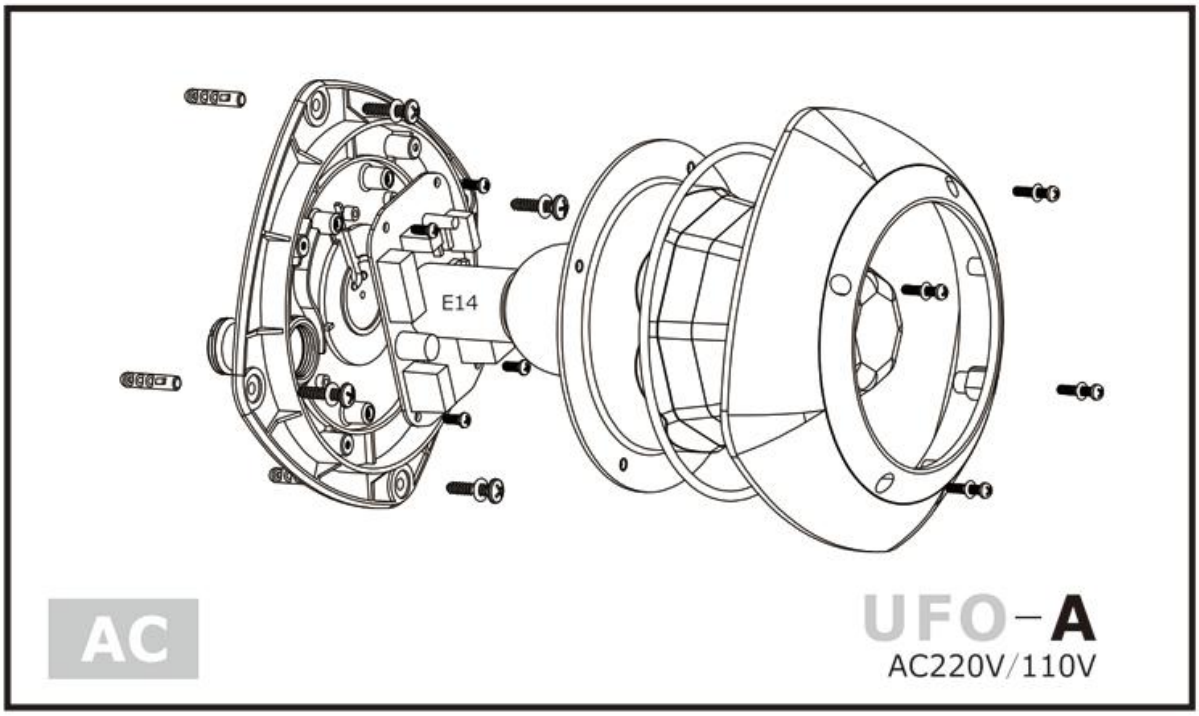
* The lock bolt pin must be in vertical position with the bolt pin of the stopper .

# Flashing light installation



DC LED

UFO–D
DC24V/12V




AC

UFO–A
AC220V/110V

If using solar systems, connect with DC 24V flashing light only.
*wiring for flashing light, (see page 6)

# DT

## Swing Gate Opener

DC 24V two wires Easy Installation
Unique manual release feature
Self Learning Function
Solar System Compatible

### Before installation:

1. The  gates must be in horizontal lines, make sure the gates and the gate post are in vertical positions.
2. Make sure the gates can be moved by hand push force, and can be easily stopped anytime.
3. The gates can be operated quietly and stable.
4. Make sure the gates can operated smoothly within the installation area.
5. The opening degree and the push force of the gate operator is related to the installation position of the gate brackets and the post brackets. So please read the manual carefully to make sure the installation is fit into the need of the consumers.
6. Before you fix the gate brackets and the post brackets, please first make sure the gate operator can be in fully horizontal position during both opening and closing gates, and it ifs on problem to open/ close the gates manually.