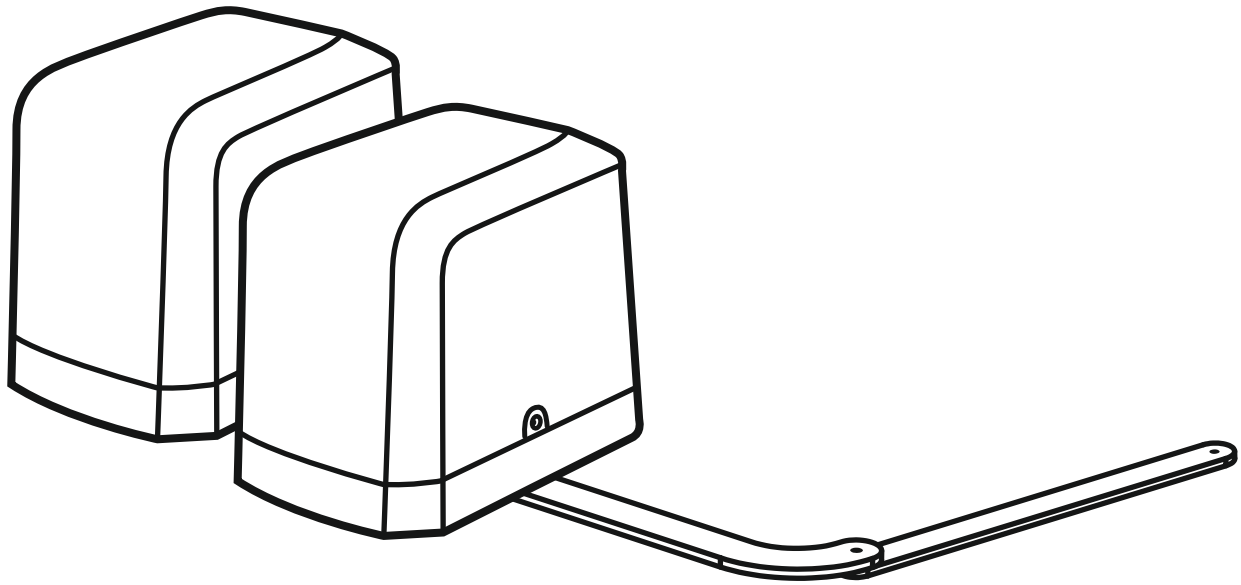
DC 250 SWING ARM

ARTICULATED ARM OPENERS

24V DC GEAR MOTOR

FOR RESIDENTIAL

USER MANUAL



GRITAL GROUP
AUTOMATIC SYSTEMS

INDEX

1.1 Warnings

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

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

Keep all the components of 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.

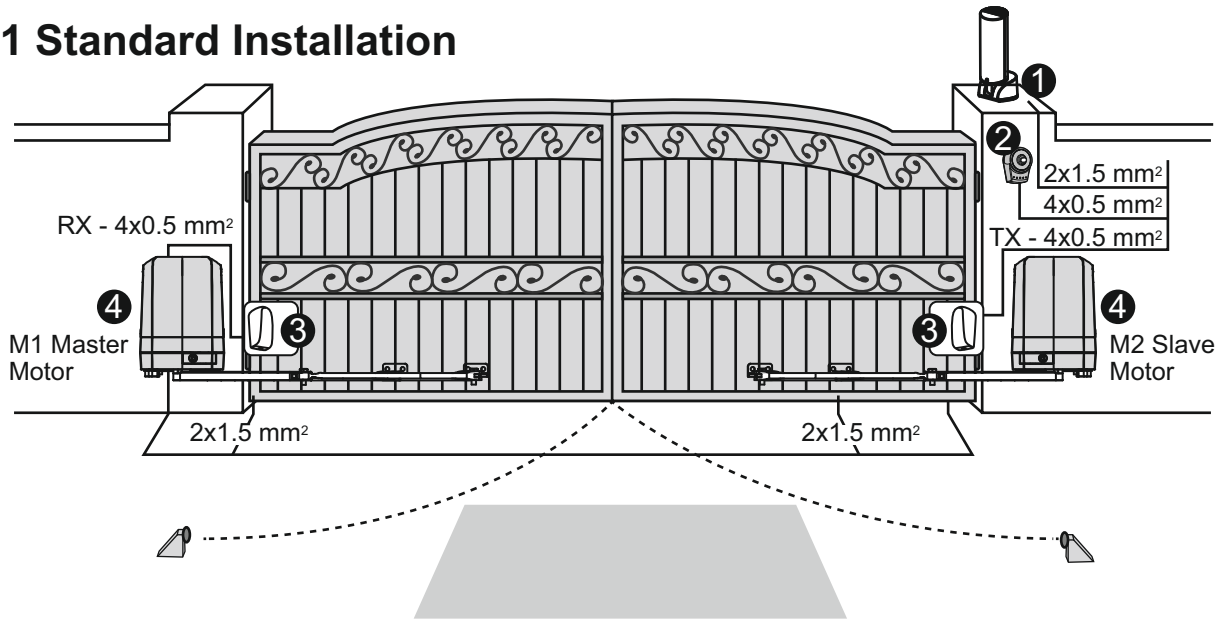
Do not use the gate-automated system before all the procedures and instructions have been carried out and thoroughly read.

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.

1.2 Installation

1.2.1 Standard Installation



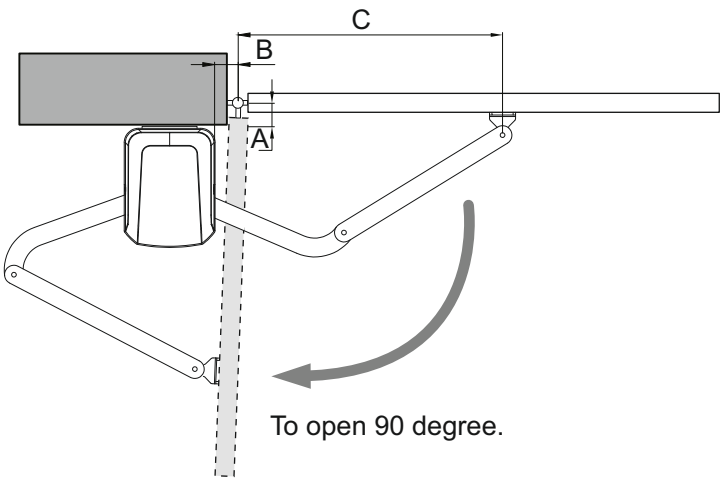
1. 24V DC blinker with integrated antenna
2. Push Button
3. Photocells
4. 24V DC articulated arm opener
5. PR-1 Transmitter

1.2.2 Dimension Chart

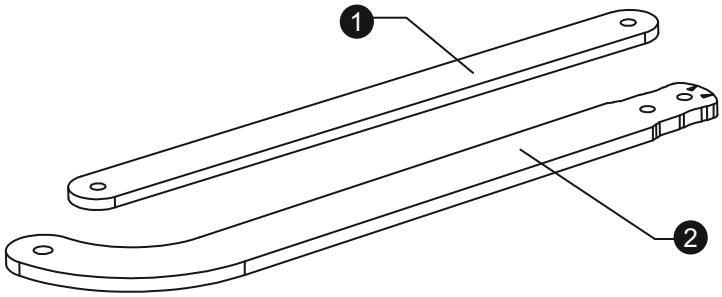
Please comply with the measures shown on the chart for proper installation. If necessary, please adjust the gate structure to the best operation.
Before starting the installation, please make sure that the gate moves freely and that :
1) Hinges are properly positioned and greased.
2) No any obstacle in the moving area.
3) No frictions between two gate leafs or and on the ground while moving.
4) Installation reference: to open the gate with 90 degree, please refer the data table below:
   A: Distance between the gate hinge and the wall bracket.
   B: Distance between the gate hinge and side face of the motor.
   C: Distance between the gate hinge and the fixing point of the arm.

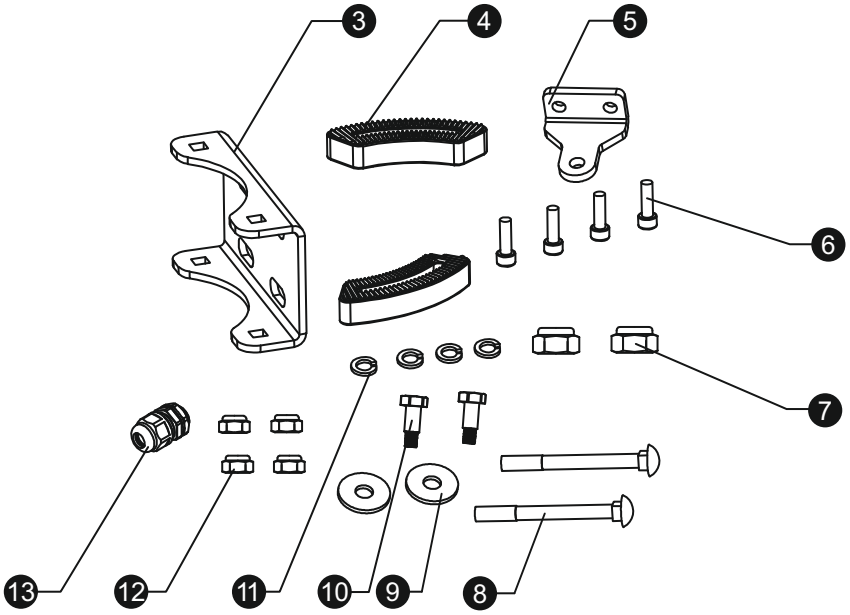
		B		
	C ↘	50	100	150
A	50	625	575	545
	100	615	565	540
	150	600	550	/
	200	585	535	/
	250	565	515	/
	300	540	/	/

unit: mm



1.2.3 Components of Installation



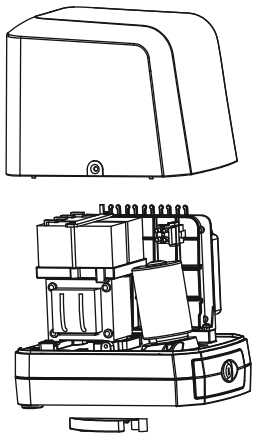


1	Straight arm	1 pce
2	Curved arm	1 pce
3	U-shaped fixing plate	1 pce
4	Mechanical stopper	2 pcs
5	Front-end fixing bracket	1 pce
6	Screw	4 pcs
7	Nut Ø10	2 pcs
8	Screw	2 pcs
9	Gasket	2 pcs
10	Screw	2 pcs
11	Spring washer	4 pcs
12	Nut Ø8	4 pcs
13	Cable gland	1 pce

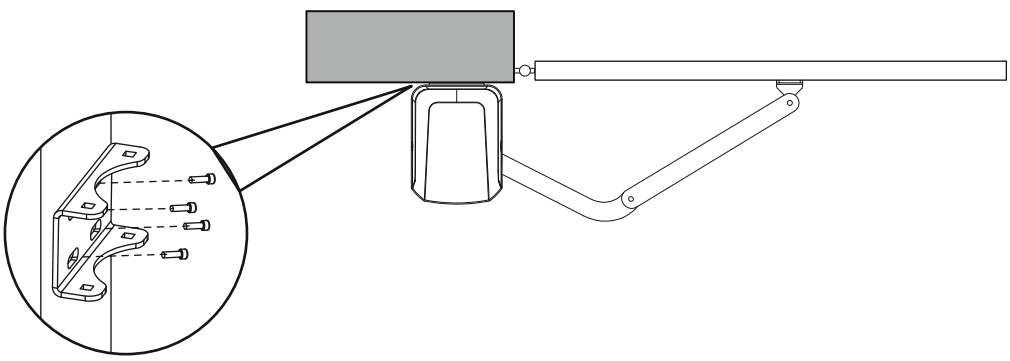
1.2.4 Installation of Articulated Arm Opener

1. Refer to the Dimension Chart to choose the correct dimensions of the motors and position to be installed.
2. Check if the mounting surface of the brackets to be installed is smooth, vertical and rigid.
3. Arrange the cables for power supply cable of the motors.
4. Motor installation and setting for mechanical stopper in opened and closed position.

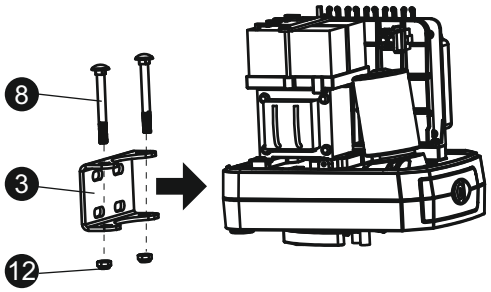
1) Remove the upper cover and mechanical stoppers on the bottom of motor.



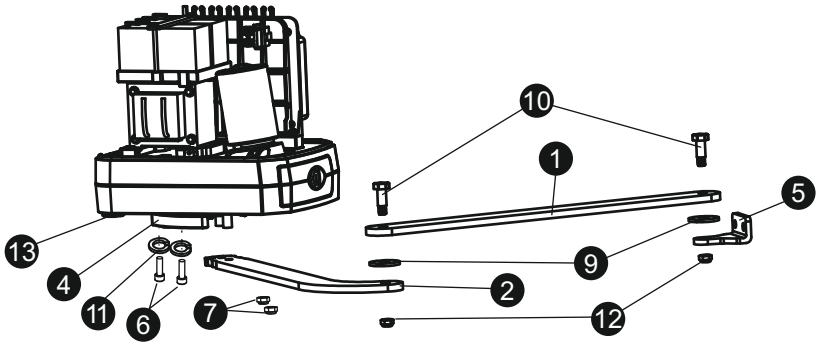
2) Place the gate in the full closed position and fix the U-shaped fixing plate on the wall.



3) Install the motor on the U-shaped fixing plate with corresponding screws and nuts.



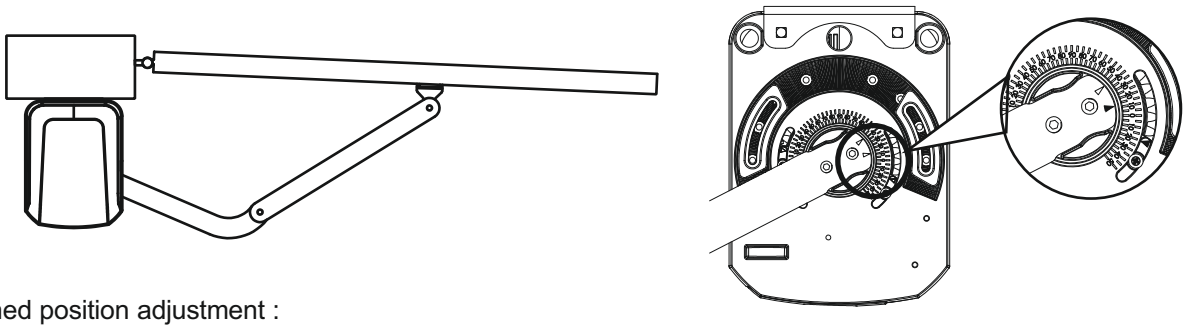
4) After positioning the front of curved arm on the bottom of motor, release the motor and position the minor arm on the end of curved arm and mounting bracket with corresponding screws and nuts.



5) Closed position adjustment :

4.1 After the full closed position decided, fix the corresponding mechanical stopper at the position.

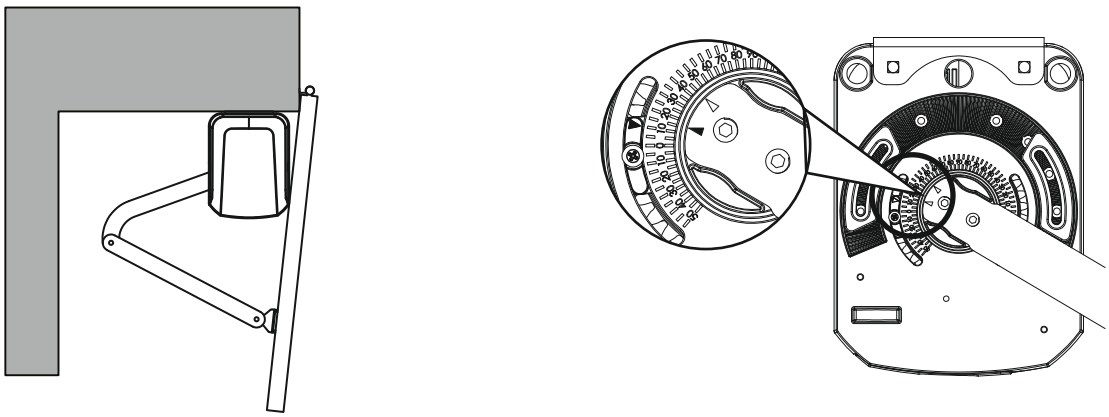
4.2 After the full closed position decided, make the pointer on limit switch aligned with the pointer on the curved arm. (Red points shown on the figure below indicate the pointers)



6) Opened position adjustment :

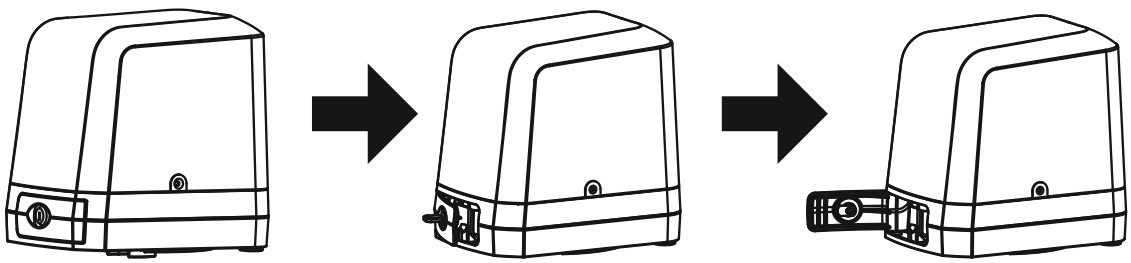
5.1 Adjust the gate to full opened position and after the position decided, fixed with corresponding mechanical stopper.

5.2 Adjust the gate to full opened position and after the position decided, make the pointer on the electromechanical limit switch aligned with the pointer on the curved arm. (Red points shown on the figure below indicate the pointers)



1.2.5 Emergency Release

1) Insert the release key to the release slot
2) Turn the release key anti-clockwise
3) Pull out the release bar
4) Turn the release key clockwise to fix the release bar, the release bar has to be in pulled out position when turning the release key clockwise



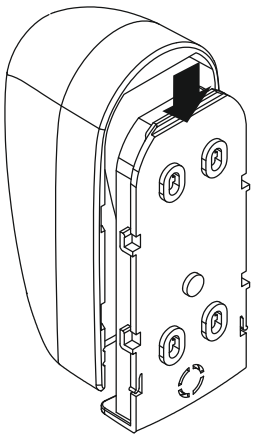
1.2.6 Photocells

The safety photocells are security devices for control automatic gates. Consist of one transmitter and one receiver based in waterproof covers; it is triggered while breaking the path of the beams.

SPECIFICATION:

Detection Method	Through Beam
Sensing Range	25M
Input Voltage	AC/DC 12~24V
Response Time	100MS
Emitting Element	IR LED
Operation Indicator	Red LED(RX): ON(When Beam is Broken), Green(TX):ON
Dimensions	96*45*43mm
Output Method	Relay Output
Current Consumption Max	TX: 35MA/Rx: 38MA (When beam aligned properly); TX: 35MA/ Rx: 20MA (When beam is broken)
Water Proof	IP54

Figure 1(1)



INSTALLATION:

Wire Connection of Photocells

TX: Connect terminals DC+ and GND on the transmitter with the terminals PhVcc and GND on the PC190U.

RX: Connect terminals DC+, GND, N.C. and COM on the receiver with the terminals PhVcc, GND, Ph1/Ph2 and GND on the PC190U.

Figure 1(2)

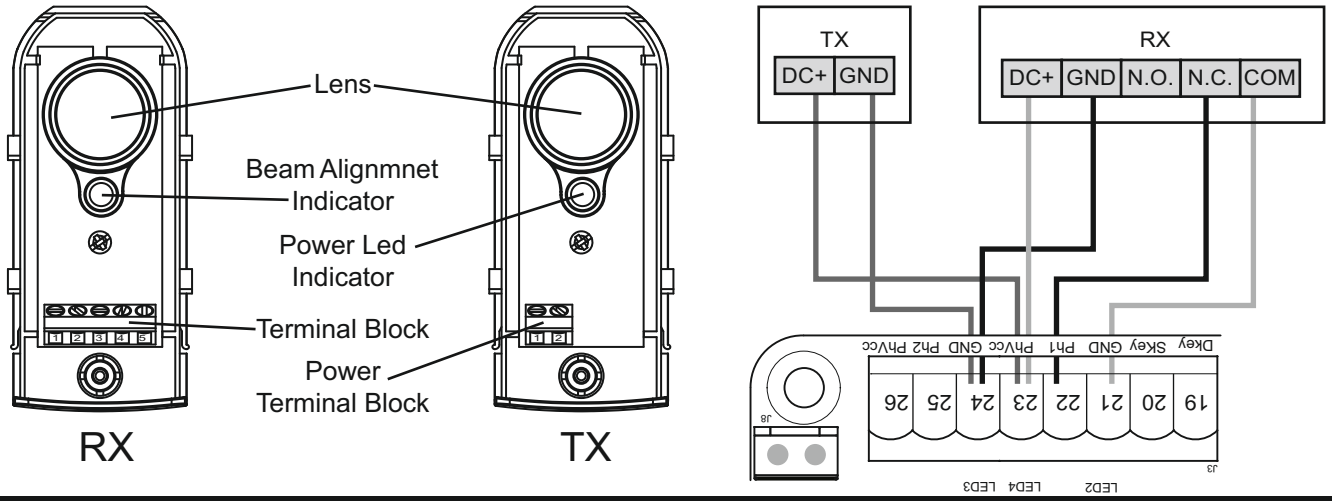
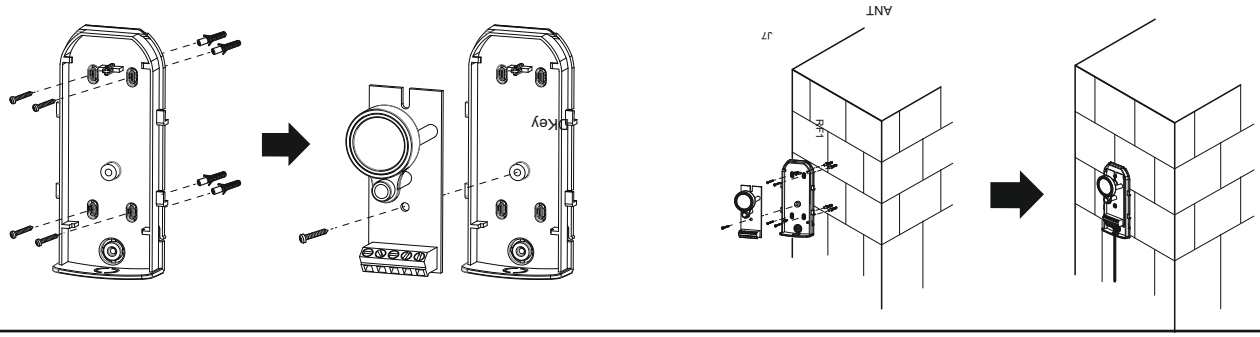


Figure 1(3)



1.2.7 Power Supply Connections

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

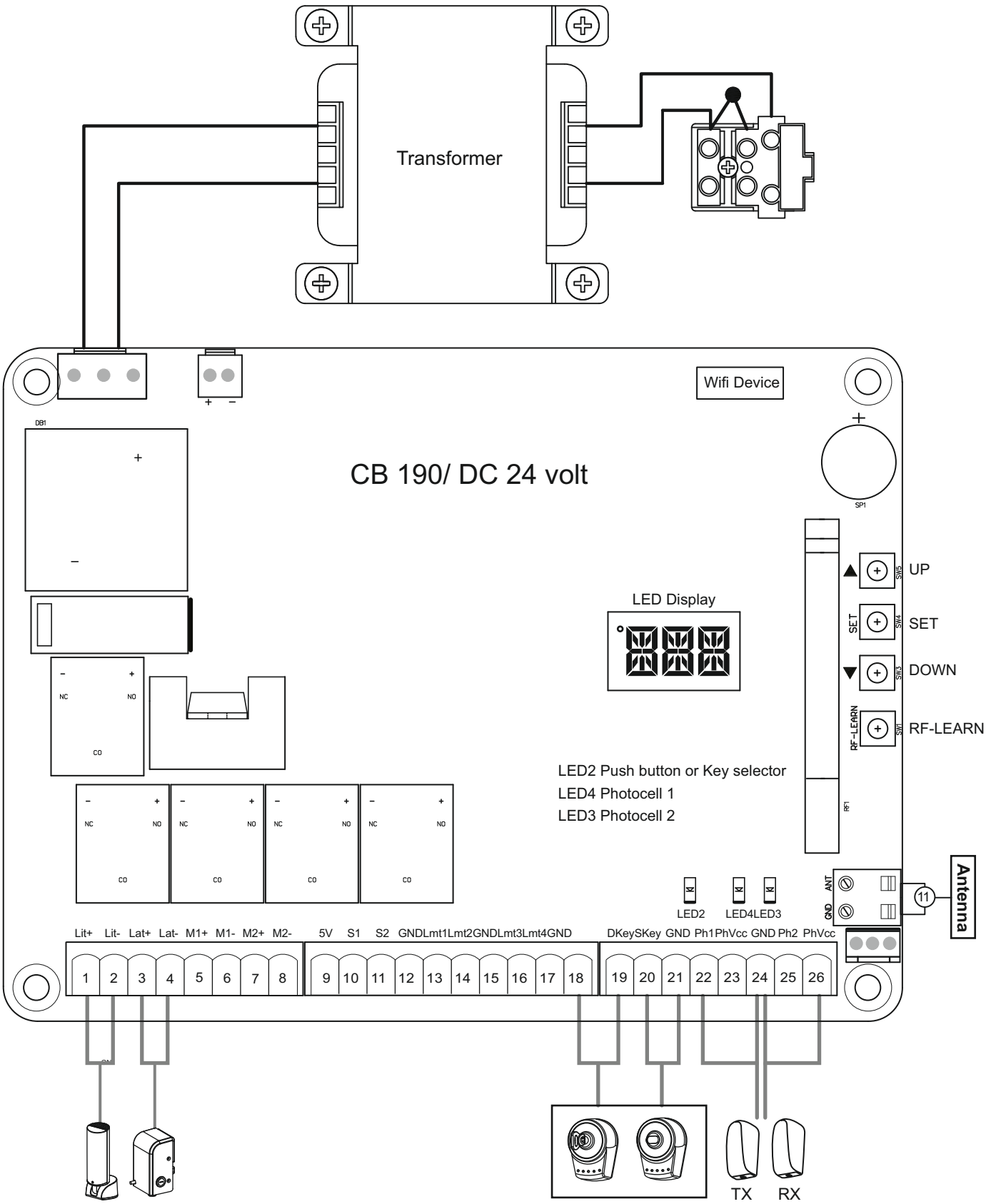
1). Make sure the gearmotor is not connected to the power supply before the installation is done.

2). Make sure all the wires are firmly connected.

3). Supply the gearmotor with the power.

2.1 Wiring Connection

Figure 2(1)



2.1.1 Master Motor is installed at right side

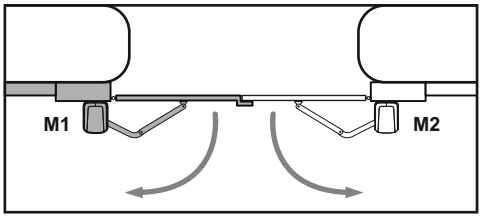
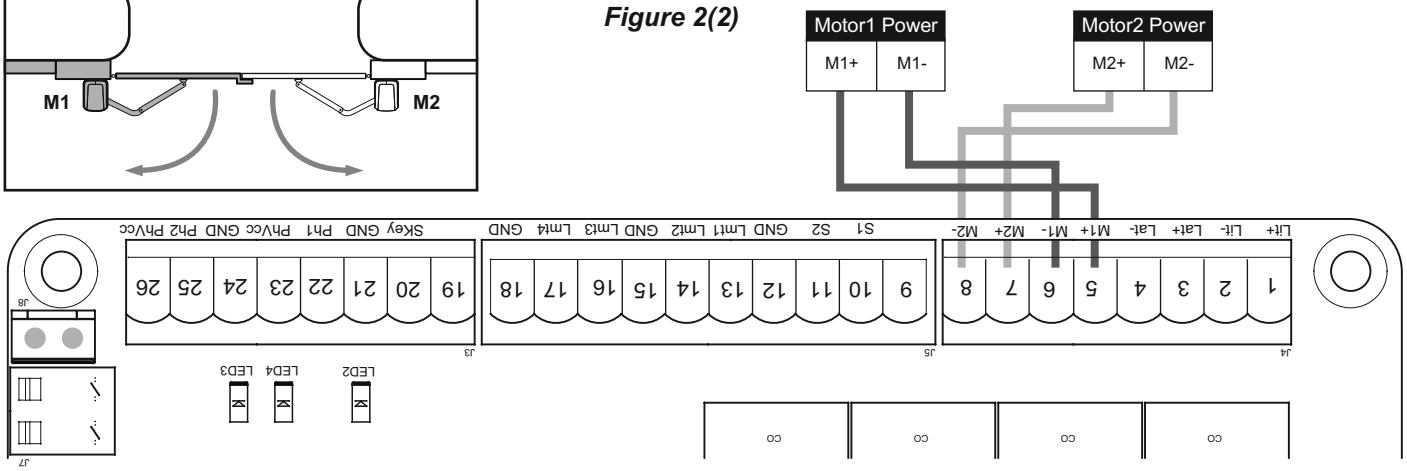
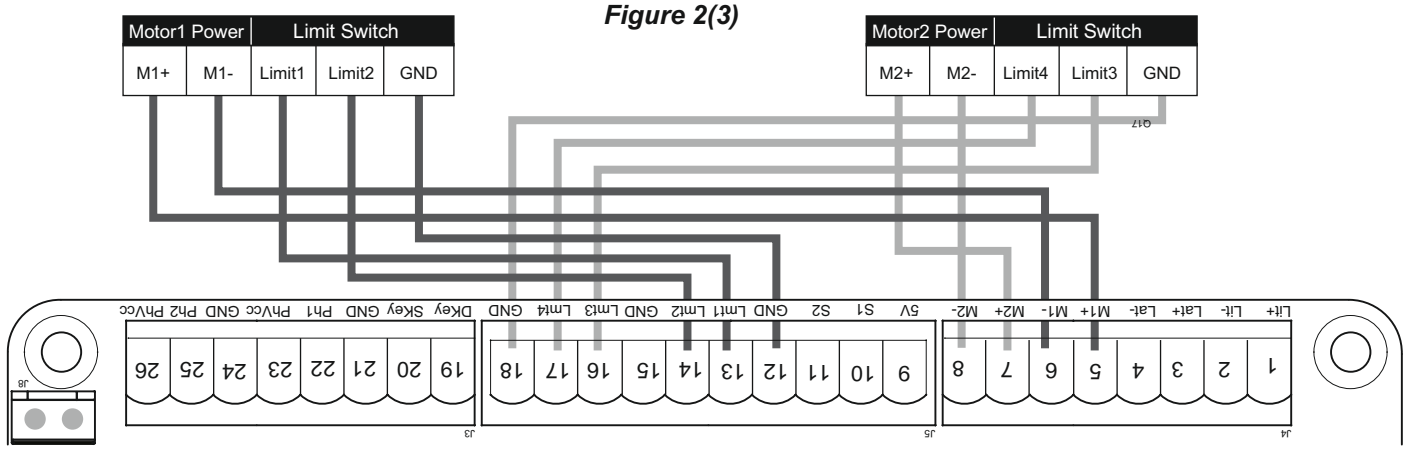


Figure 2(2)



with Limit switch

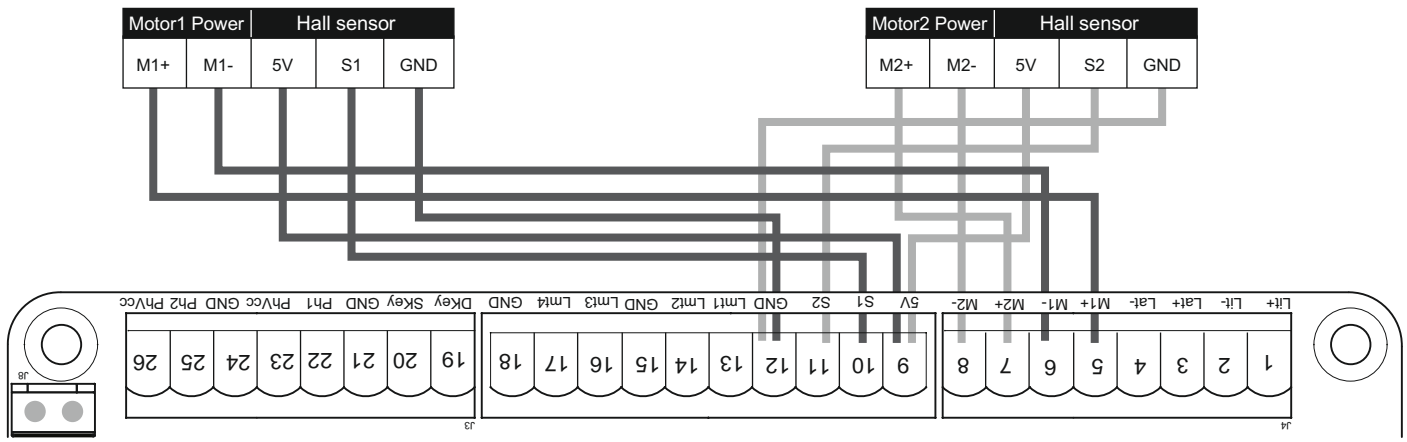
Figure 2(3)



Remark:
Limit1, Limit3 (Open limit)
Limit2, Limit4 (Close limit)

Motor with Hall sensor

Figure 2(4)



2.1.2 Master Motor is installed at left side

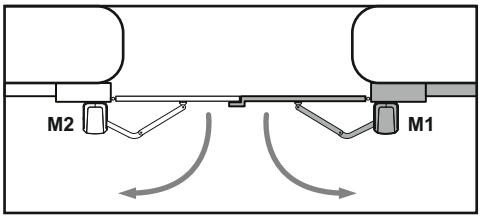
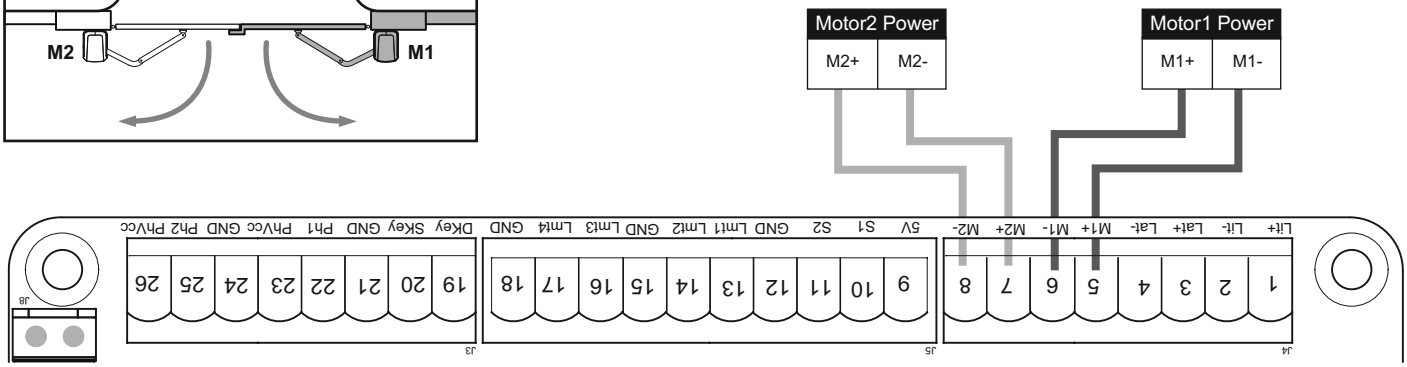
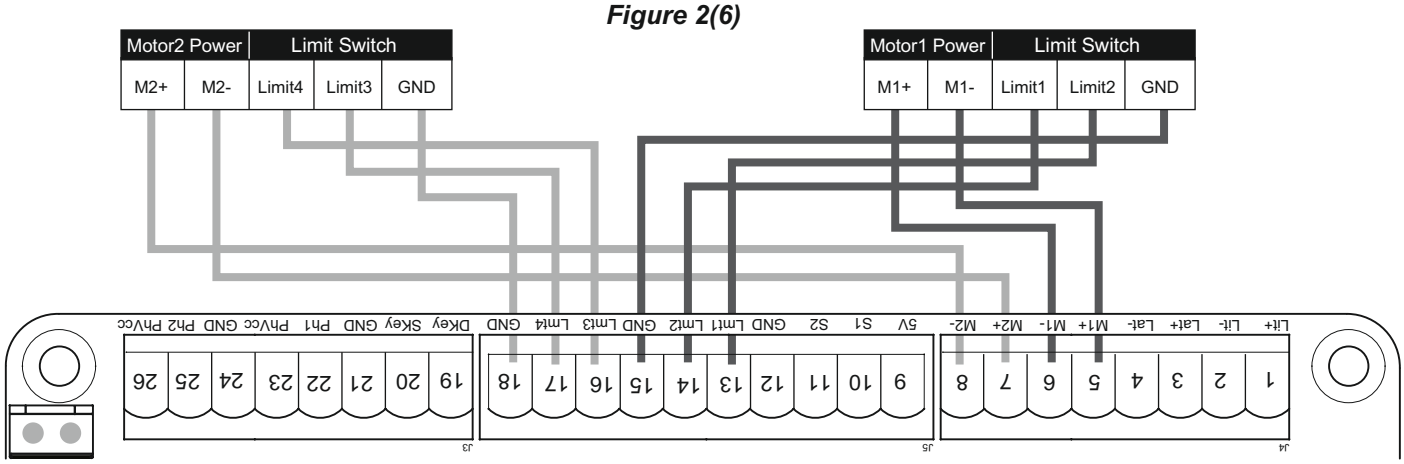


Figure 2(5)



Motor with Limit switch

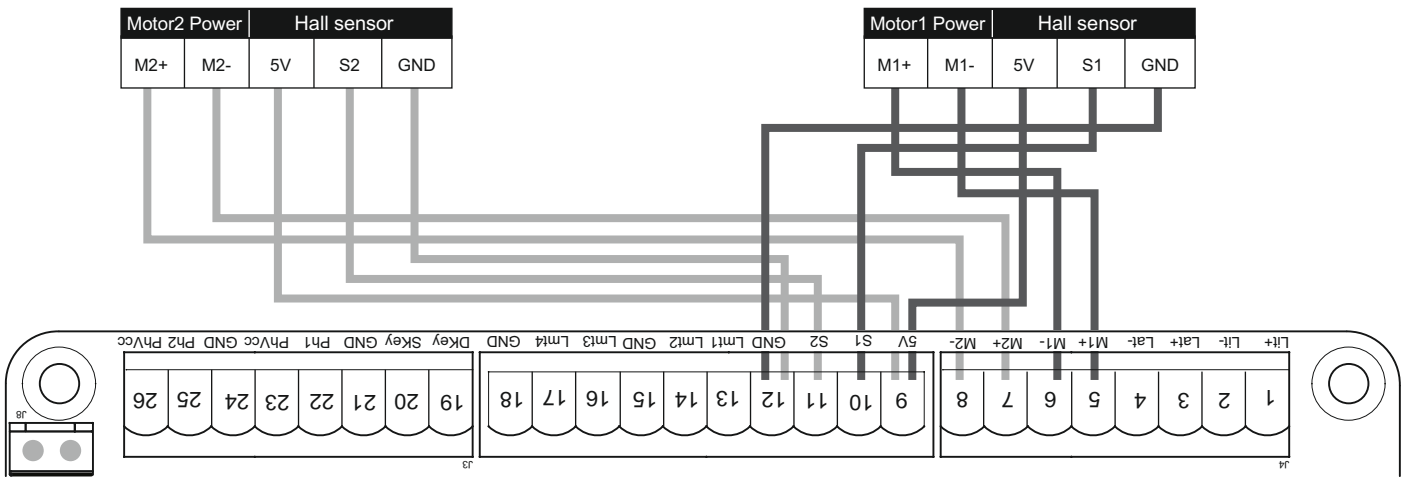
Figure 2(6)



Remark:
Limit1, Limit3 (Close limit)
Limit2, Limit4 (Open limit)

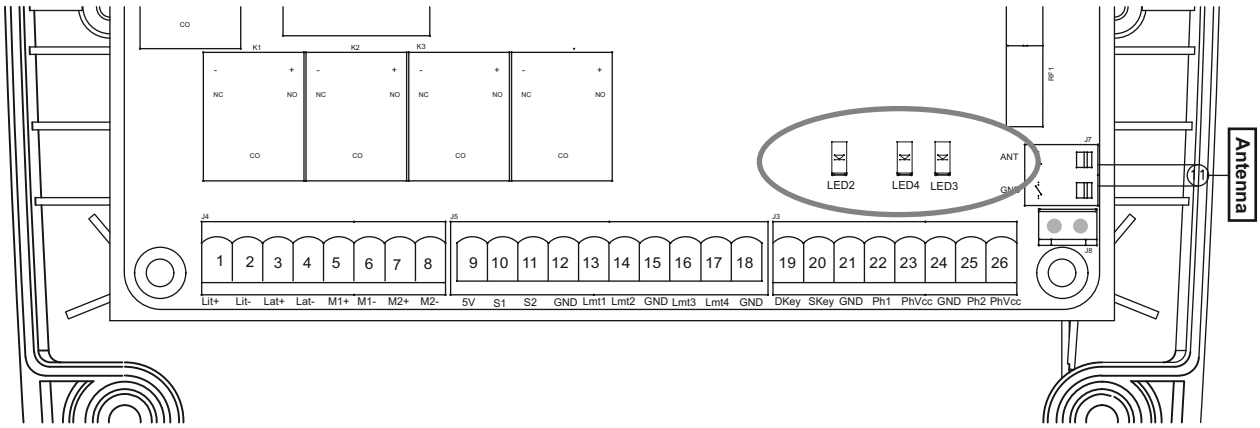
Motor with Hall sensor

Figure 2(7)



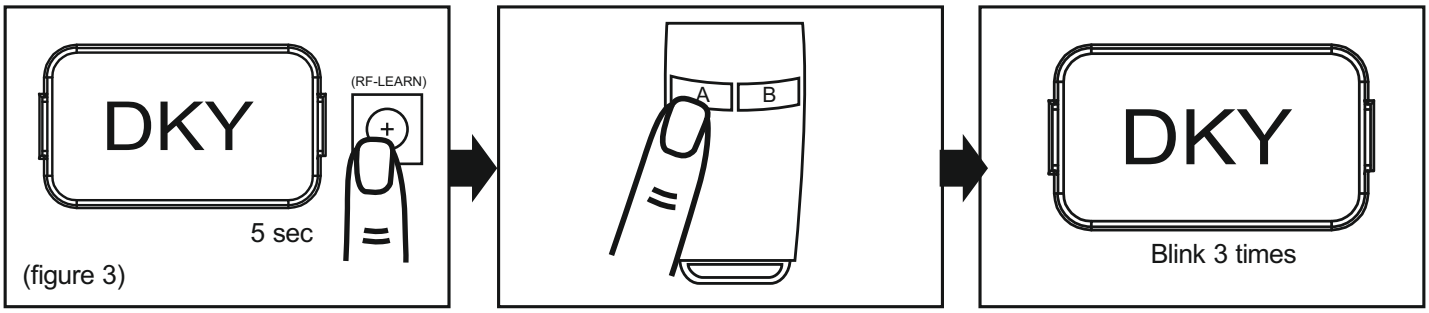
2.2 LED Indication

LED2 D Key/S Key : Key selector, or the push button is activated, LED2 will be on.
LED4 Ph1 : LED4 will be on when Ph1 are triggered.
LED3 Ph2 : LED3 will be on when Ph2 are triggered.



2.3 Deleting memory of single command:

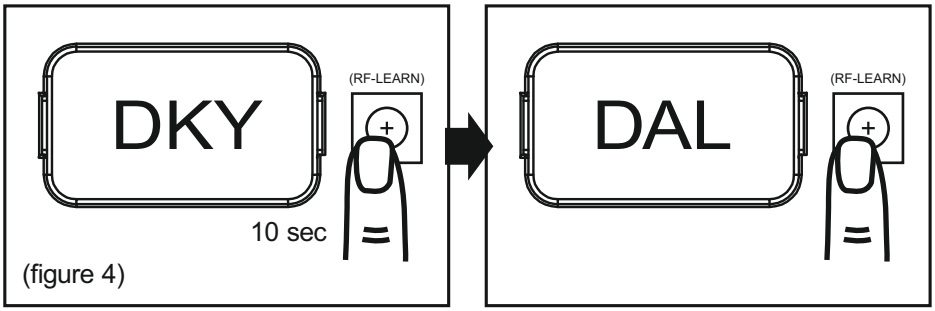
Single deletion stage is needed for each memorized button.
1. Press and hold down RF-LEARN button (Figure 3) on the control board for 5 seconds.
2. Wait until the LED display shows “DKY”, then, within three seconds:
3. Press the button of the remote to be deleted. If the remote has been deleted, the LED display will flash quickly five times.
4. Repeat above steps if more button to be deleted.



(figure 3)

3.1.3 Deleting all memory of all remotes:

With this operation all the memorized transmitters will be deleted.
1. Press and hold down RF-LEARN button (Figure 4) on the control board for 10 seconds.
2. Wait until the LED display shows “DAL”. (When you see DKY, keep holding, don’t let go the button.). All memory is deleted.



(figure 4)

3. Get Started

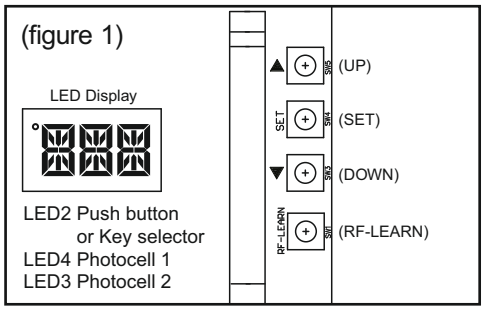
Note:
(A) Transmitter memorizing must be done before system learning.
(B) **Verifying the GATE CONDITION.**
1) Release the gearmotor with the release key and move the gate to the middle so that it is free to move in both opening and closing directions; then lock the gearmotor.
2) Perform the gate opening and closing several times and make sure the gates touches the limit switch at least 2~3 cm before the mechanical stop.

3.1 Step 1: Remote Memorizing

3.1.1 Memorizing

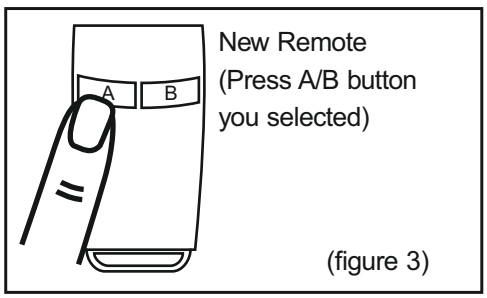
1. Press button RF-Learn on the control board (Figure 1) as many times as the number corresponding to the desired command, according to the following table, Within 10s, press the desired button on the remote that you want it to be memorized (figure 1)

(figure 1)



	Command	Message code
1 **times**	Open-Stop-Close circle	LED display “OSC”
2 **times**	Pedestrian mode	LED display “PED”

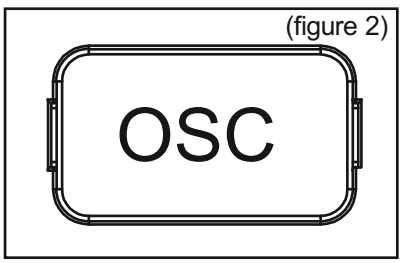
(figure 2)

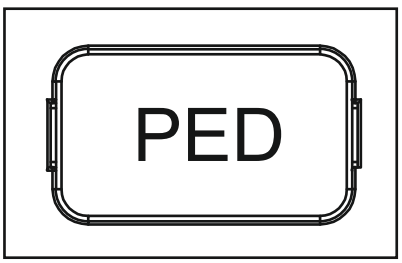


(figure 3)

2. Make sure that the LED display shows the “OSC” or “PED” three times quickly. The code is corresponding to the selected command. (figure 2)

(figure 2)





3. Repeat step 1 & 2 within 10s, if there are other remotes to be memorized for the same type of command. No action within 10s, the memorization stage will terminate automatically.

3.1.2 Step 2: System Learning

Step1:

Press and Hold the Press SET button for 3s, When LED shows “LEA” then release SET, then the motor runs the system learning procedure automatically, once learning completed shows “D-G” or “S-G”
(No remote required)

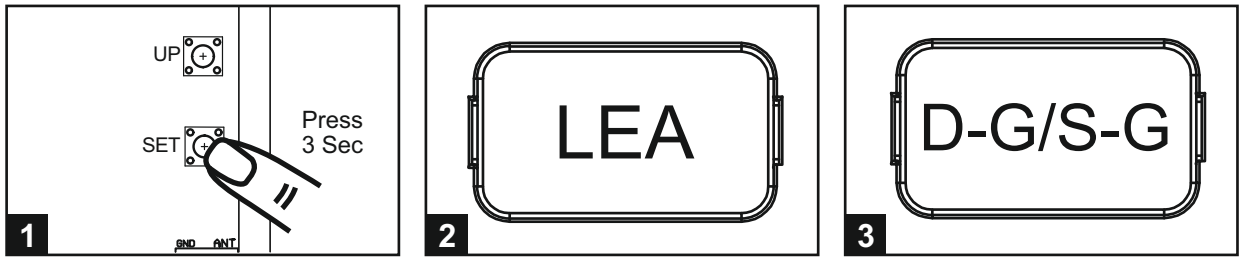
Note: Please check the parameter setting of “FI”(Dual/Single) before going into system learning.

Restore system default setting

Press and Hold the **UP + SET + DOWN** button for **5s** and panel restores back to default setting

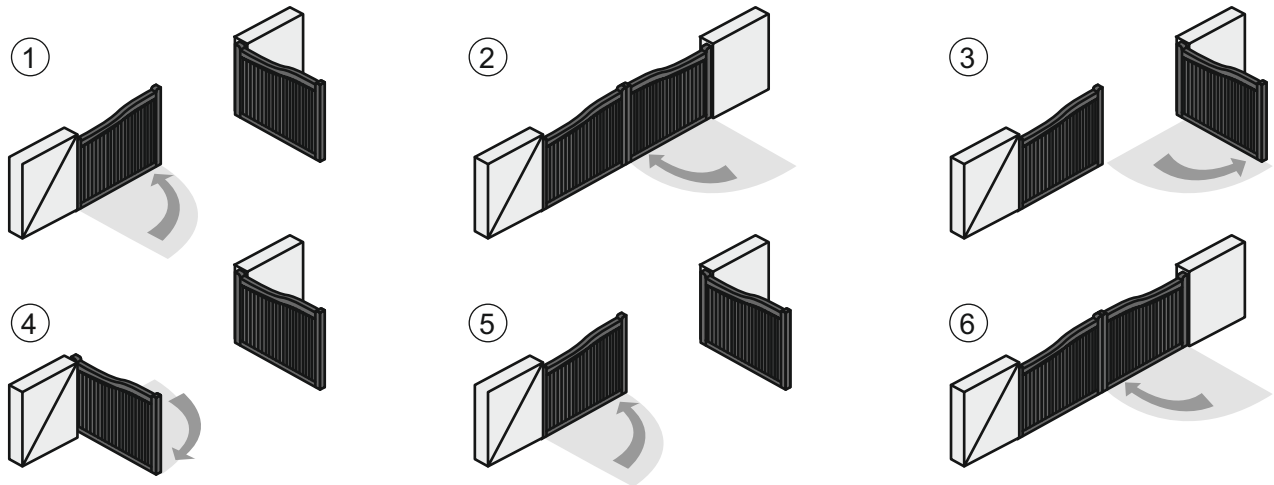
Note:

1. LED Shows “D-G” tells the system learning has be completed for Dual Gate installation
2. LED Shows “S-G” tells the system learning has be completed for Single Gate installation



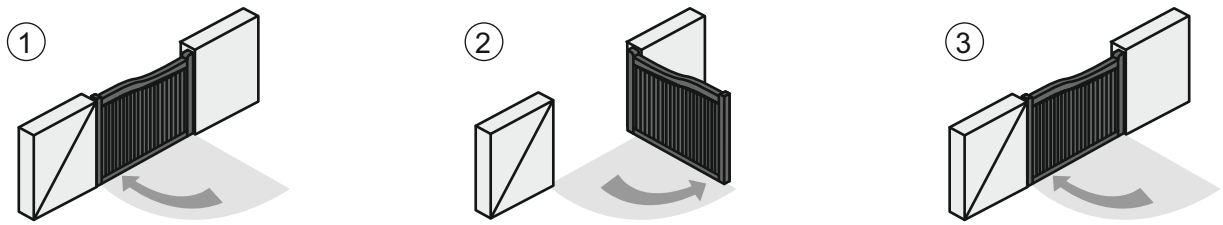
A. Dual Gate:

(1) Slave Gate Close → (2) Master Gate Close → (3) Master Gate Open →
(4) Slave Gate Open → (5) Slave Gate Close → (6) Master Gate Close



B. Single Mode :

(1) Master Gate Close → (2) Master Gate Open → (3) Master Gate Close



3.2 Gate-moving Logic

(A) In gate-opening phase: The gates stop if the transmitter/push button/key selector is activated, and close when the transmitter/push button/key selector is reactivated.
(B) In gate-closing phase: The gates stop if the transmitter/push button/key selector is activated, and open when the transmitter/push button/key selector is reactivated.
(C) In gate-opening or gate-closing phase: For safety purpose, the gates stop if encountering obstacles.

3.3 Checking the Gate Movement

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. Function Setting

4.1 Function Of The Led Display

LED Display	Programmable Functions
	[LEA] means motor into the system learning mode, do not interrupt during this procedure
	[D-G] means motor completed the learning procedure for dual gate installation
	[S-G] means motor completed the learning procedure for single gate installation
	The memory of the system is all deleted/cleaned by press and hold the UP + SET+ DOWN button together for 5s and the panel will be back to default settings
	When the gate is opening, the LED Display show 'OPN' for 2s and then change to Amp current indication

LED Display	Programmable Functions
	When the gate is stopped, the LED Display show 'STP' until next commend has been made, after 10s no further movement, the LED turns to OFF
	When the gate is closing, the LED Display show 'CLS' for 2s and then change to Amp current indication
	LED display shows "S01" means the panel did not detected the M1+/M1 and M2+/M2 both been connected before the system learning procedure, check for 2 motors' wire connection, for dual gate system
	LED display shows "S02" means the panel did not detected the M1+/M1 but detected M2+/M2 been connected, notice the installer to check the motor wire connection, if this is single gate system, motor wire should connect to M1+/M1 not on M2+/M2
	LED display show "S03" means same button on the remote has been identified for more than 2 functions

4.2 Photocell Adjustment

FA-1 Photocell OPEN/CLOSE (Standard set up)

Position of Gate	When safety devices are activated	
Type of Safety Device	PH1 Photocell-CLOSE	PH2 Photocell-OPEN
FULLY CLOSED	No effect	Open not allowed
FULLY OPENED	Reload automatic closing time	No effect
STOP DURING MOVING	Reload automatic closing time	Open not allowed
CLOSING	Open	No effect
OPENING	No effect	Close

FA-2 Safety Edge

Position of Gate	When safety devices are activated	
Type of Safety Device	PH1 Photocell-CLOSE	PH2 Safety Edge
FULLY CLOSED	No effect	Open not allowed
FULLY OPENED	Reload automatic closing time	
STOP DURING MOVING	Reload automatic closing time	OPEN/CLOSE not allowed
CLOSING	Open	Reverse to open for 2 seconds
OPENING	No effect	Reverse to close for 2 seconds

FA-3 Open Only Device (Vehicle detector)

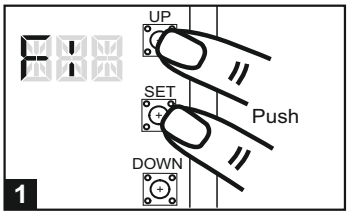
Position of Gate	When safety devices are activated	
Type of Safety Device	PH1 Photocell-CLOSE	PH2 Opening Device
FULLY CLOSED	No effect	Open
FULLY OPENED	Reload automatic closing time	
STOP DURING MOVING	Reload automatic closing time	Open
CLOSING	Open	Open
OPENING	No effect	No effect

FA-4 Double photocell set up

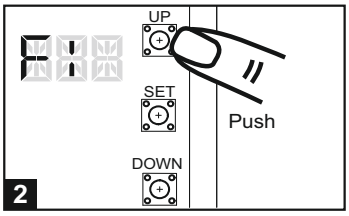
Position of Gate	When safety devices are activated	
Type of Safety Device	PH1 Photocell-CLOSE	PH2 Photocell-OPEN/CLOSE
FULLY CLOSED	No effect	Open not allowed
FULLY OPENED	Open for 2 seconds, when auto closing is ON	No effect
STOP DURING MOVING	Close not allowed	Open not allowed
CLOSING	Open	No effect
OPENING	No effect	Stop

5. Parameter Modification

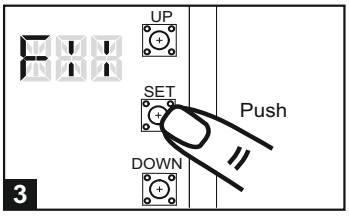
5.1 Parameter Learning



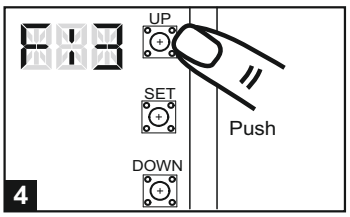
Press “UP+SET” for 3 seconds to get into the program setting display from F1.



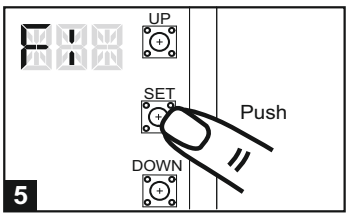
Press “UP” or “DOWN” to change setting item from F1 to FJ .



Press “SET” button again to get into the sub-settings



Press “UP” or “DOWN” to change Push from F1-1 to F1-3.



Press “SET” button again to confirm.

5.2 Parameter

LED Display	Definition	Parameter	Table	Description
F1	Motor Type	F1-1	Overcurrent	1. The factory setting is "F1-1"
		F1-2	Limit Switch	
		F1-3	Hall Sensor	
F2	Overcurrent for Gate Opening	F2-1	2A	1. The factory setting is "F2-2".
		F2-2	3A	
		F2-3	4A	
		F2-4	5A	
F3	Overcurrent for Gate Closing	F3-1	2A	1. The factory setting is "F3-2".
		F3-2	3A	
		F3-3	4A	
		F3-4	5A	
F4	Motor Speed for Opening	F4-1	40%	1. The factory setting is "F4-3".
		F4-2	50%	
		F4-3	75%	
		F4-4	100%	
F5	Motor Speed for Closing	F5-1	40%	1. The factory setting is "F5-3".
		F5-2	50%	
		F5-3	75%	
		F5-4	100%	
F6	Deceleration Speed	F6-1	40%	1. The factory setting is "F6-2".
		F6-2	50%	
		F6-3	60%	
		F6-4	70%	
F7	Time Gap b/w Two Gates (Opening)	F7-0	0 sec	1. The factory setting is "F7-1".
		F7-1	2 sec	
		F7-2	5 sec	
		F7-3	10 sec	
		F7-4	15 sec	
		F7-5	20 sec	
		F7-6	25 sec	
		F7-7	35 sec	
		F7-8	45 sec	
		F7-9	55 sec	

LED Display	Definition	Parameter	Table	Description
F8	Time Gap b/w Two Gates (Closing)	F8-0	0 sec	1. The factory setting is "F8-1".
		F8-1	2 sec	
		F8-2	5 sec	
		F8-3	10 sec	
		F8-4	15 sec	
		F8-5	20 sec	
		F8-6	25 sec	
		F8-7	35 sec	
		F8-8	45 sec	
		F8-9	55 sec	
F9	Auto-closing	F9-0	Function OFF	1. Auto-close mode activates when the gates move to the end position or stopped manually. If the transmitter, push button, or the key selector is activated before the auto-close counting, the gate will close immediately. 2. The factory setting is "F9-0".
		F9-1	3 sec	
		F9-2	10 sec	
		F9-3	20 sec	
		F9-4	40 sec	
		F9-5	60 sec	
		F9-6	120 sec	
		F9-7	180 sec	
		F9-8	300 sec	
FA	Safety Device Function Mode	FA-1	Mode 1	1. Please see 7.3 photocell adjustment for photocell logic 2. The factory setting is "FA-1".
		FA-2	Mode 2	
		FA-3	Mode 3	
		FA-4	Mode 4	
FB	Pedestrian Mode	FB-0	Function OFF	1. The factory setting is "FB-1".
		FB-1	Function ON	
FC	Flashing Light	FC-0	Function OFF	1. When function FC-1, the light will flash for 3 seconds before the gate operates. If set OFF, the flash light will operate with motor at the same time. 2. The factory setting is "FC-0".
		FC-1	Function ON	
FD	Photocell Activation	FD-0	Function OFF	1. The factory setting is "FD-0".
		FD-1	Function ON	
FE	Photocell 2 Activation	FE-0	Function OFF	1. The factory setting is "FE-0".
		FE-1	Function ON	
FF	Alarm Buzzer	FF-0	Function OFF	1. The factory setting is "FF-0".
		FF-1	Function ON	
FG	Electric Latch Mode	FG-0	Standard Gate Opening	1. If the function is FG-1, the motor will be reversed for 0.25 sec. to release the tension. 2.The factory setting is "FG-1".
		FG-1	Release Gate Tension before Opening (Gate Reversing for 0.25s)	
FH	LED Direction	FH-0	When Terminal Block is at Top	1. The factory setting is "FH-0".
		FH-1	When Terminal Block is at Bottom	
FI	Dual / Single Gate	FI-1	Single Gate	1. The factory setting is "FI-2".
		FI-2	Dual Gate	
FJ	Over Current Reverses Time when Close	FJ-0	Function OFF	1. The factory setting is "FJ-0"
		FJ-1	0.1 sec	
		FJ-2	0.2 sec	
		FJ-3	0.3 sec	
		FJ-4	0.4 sec	
		FJ-5	0.5 sec	
		FJ-6	0.6 sec	

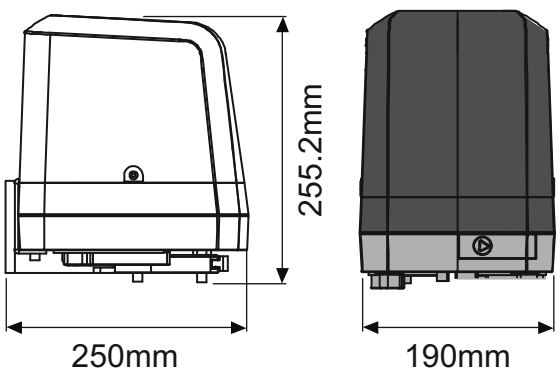
Note(F1-3 over-current setting in Hall sensor mode):
Only in “F1-3”Hall sensor mode, the PCB will record all the current value in learning mode. Please adjust over current value by setting F3 function after learning mode.
The recorded current values will increase according to the value shown on LED display as over current value.

6. Trouble Shooting

Overheated Back-up Batteries	Check the wiring connection of the batteries.
The gate doesn't move when pressing the button of the transmitter	1. Check if LED3 or 4 is "OFF". 2. Check if the voltage of the batteries is upon 22V. 3. Make sure all the wiring connections are firmly connected to the terminals on the PCB. 4. Make sure the fuse is workable.
The gate only moves a little distance when pressing the button of the transmitter.	Make sure the wiring connection of the hall sensor is firm.
The transmitting distance is too short	Make sure the connecting terminals of the Antenna is firm.
The gear motors run very slowly	Check the dip switch setting of the speed adjustment.
The Flashing light does not work	Check if the wiring connection of the flashing light is correct.
The leaves shall be closed instead of opening	Change the polarity connection of the positive (+) with the negative (-) of the gear motors.
The leaves suddenly stop during moving	1. Check if the "RESET" socket is activated. 2. Make sure the wiring connection of the gear motors is firm. 3. Make sure the hall sensor wiring connection is firm. 4. The GND terminal of the photocells on the PCB must be short-circuited if no photocells installed. 5. Make sure the fuse is workable.
The leaves does not move or only move toward one direction	1. Check if the "RESET" socket is activated. 2. Make sure the wiring connection of the gear motors is firm. 3. Make sure the hall sensor wiring connection is firm. 4. The GND terminal of the photocells on the PCB must be short-circuited if no photocells installed.
The master gate closes to the end first and the slave gate stops, the flashing light blinks fast for five seconds.	Cut off the AC input power and the output of the batteries. Release the master gate and slave gate manually, then open the master to the end and close the slave gate to the end by hand, then power the whole unit by connecting the AC and battery terminals.
The gear motors does not run and the relay is noisy when operating the gate opening and closing	Check if the fuse is burned.

7. Technical Features

7.1 Dimension



7.2 Technical Feature:

Model	***DC 250 SWING ARM***
Motor	24Vdc motor
Gear type	Electromechanical worm gear
Nominal thrust	2500N
Maximum Gate Weight	250 kg per leaf
Maximum Gate Length	2.5 meters per leaf
Operating Temperature	-20℃~+50℃
Dimension	256 x 187 x 267mm
Weight	6 kg

CONTROL BOARD

Model	***CB 190 / DC 24 volt***
Main power supply	230Vac/110Vac, 50Hz/60Hz
Back-up battery	2pcs of batteries for emergency operation, 1.2A each
Receiver board	433.92MHz; 200 transmitters memory
Installation	Built - in PCBA
Operating Temperature	-20℃~+50℃
Dimension	275mm x 195mm x 102mm

8. Maintenance

Conduct the following operations at least every 6 months. If in high intensity of use, shorten the period in between.

Disconnect the power supply:

(1) Clean and lubricate the screws, the pins, and the hinge with grease.
(2) Check the fastening points are properly tightened.
(3) Make the wire connection are in good condition.

Connect the power supply:

(1) Check the power adjustments.
(2) Check the function of the manual release.
(3) Check the function of photocells or other safety devise.

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