# USER'S MANUAL

SLIDING GATE OPENER
SL350 SERIES
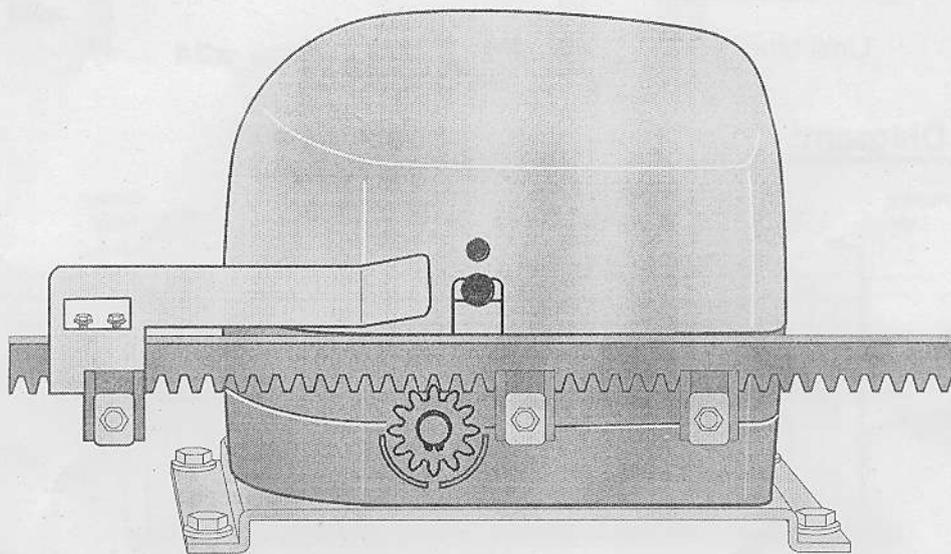
Equipped with quick release keys for gear clutch

Remote control with 433MHz Rolling code

Soft stop function which treasures your gate

Adjustable Auto-close function

Content of the Kit:

x1

x2

x1

Base plate x1

x3

Release Keys

←- - - - - - - 50cm - - - - - - →

Tooth Rack x 8

IR Transmitter

IR Receiver

1 Set of Photocell

x4

Limit blocks

x4

x4

x4

x24

x24

Wiring Diagram:

Warning
Light

Garden
Lamp

max 350 kg

interior installation

Control inside

Garden
Lamp

Warning
Light

max 350 kg

Photocells

exterior installation
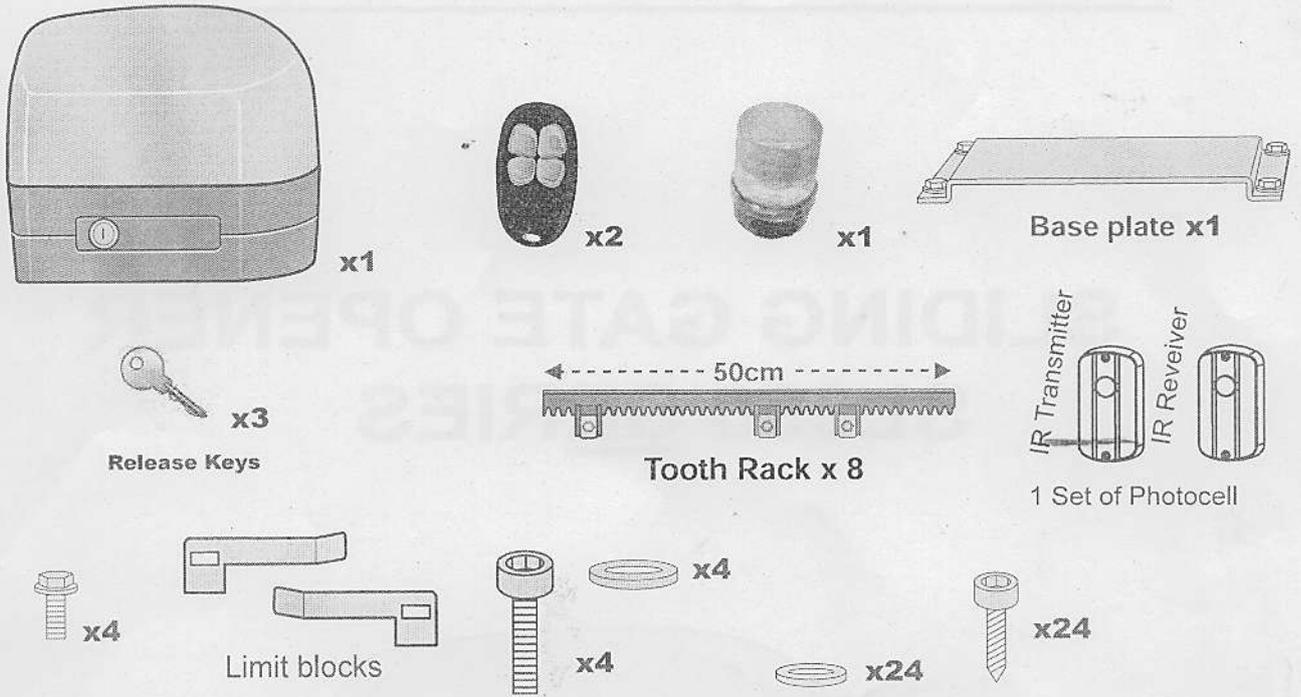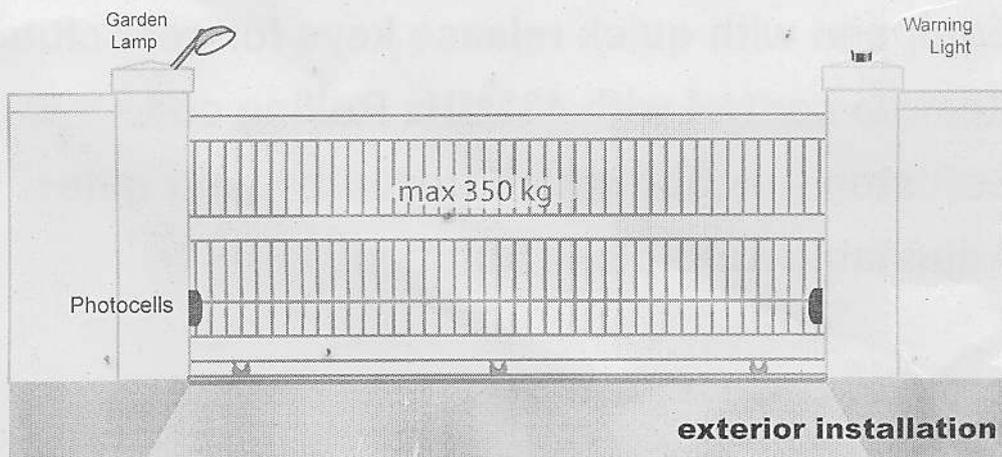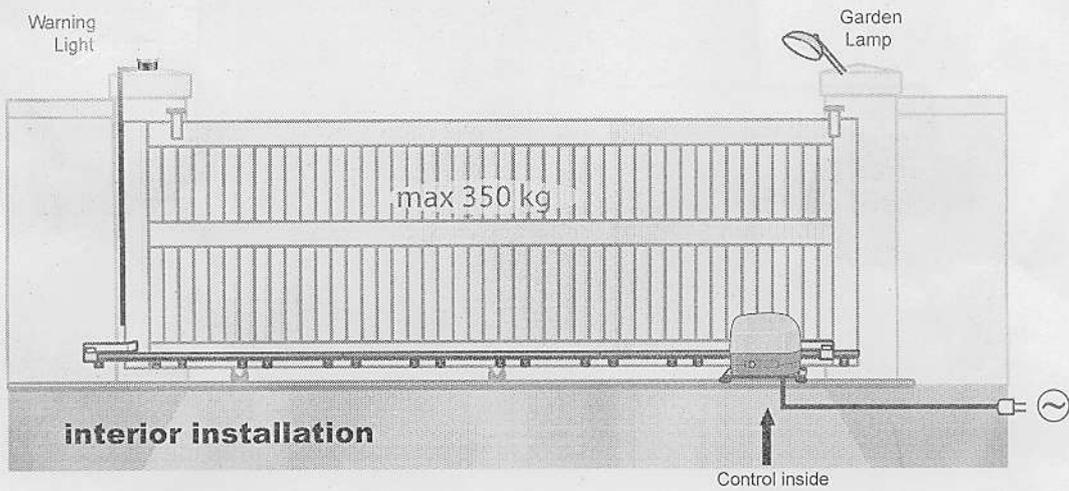
Important Safety Advice:

1. Knowledge of the relevant electro-technical regulations is required.
2. Training in use and maintenance of safety equipments is necessary.
3. Professional assistance is required when some mechanism adjustment is needed.
4. Always lay mains and control cables separately.
5. Test every equipment before initial operation.
6. Make familiar with the use of the system before initial operation.
7. Unplug the mains before attempting to connect power cable to the system.

Measurements (mm)
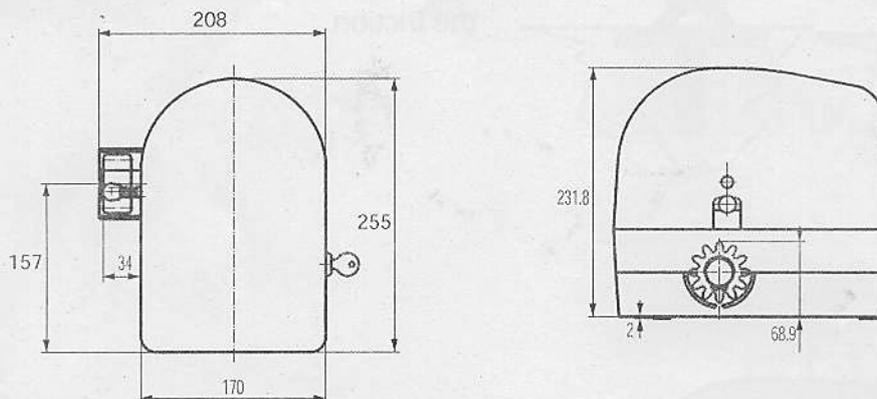
Qualification of a properly designed sliding gate:

As a general rule, an automatically operated gate must be stronger and smoother than a manually operated gate. Since the gate is a major component of the system, great care and concern must be given to the gate design.

A poorly designed gate can damage a gate operator.

Check if the gate slides smoothly on the rail without binds or excessive resistance.
The rail has to be level, so the gate will slide without resistance on it.
The gate structure must be an in-line structure and has a ballanced center of gravity.

Upper roller guides: The gate must be equipped with a set of roller guide with at least 2 rollers in one line.


Roller guides
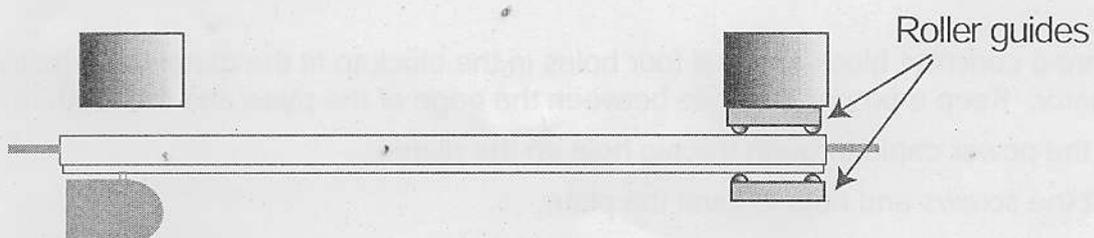
Caution: A stopper on each end of
the rail is required to bring the gate
back to still condition and prevent
the gate from getting off the rail.
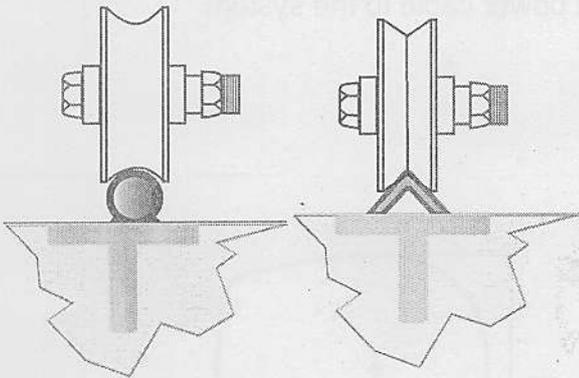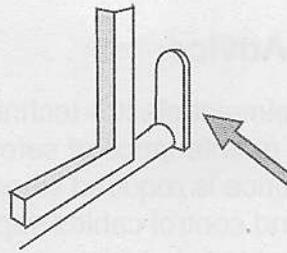
Wheels: To keep the gate sliding smoothly,
the shape and size of the wheel should
suit the shape and size of the rail,
so there will be no resistance coming from
the friction.

Four screws to secure the motor.

adjust the screws at the four corners of the plate,
to make the plate horizontal.
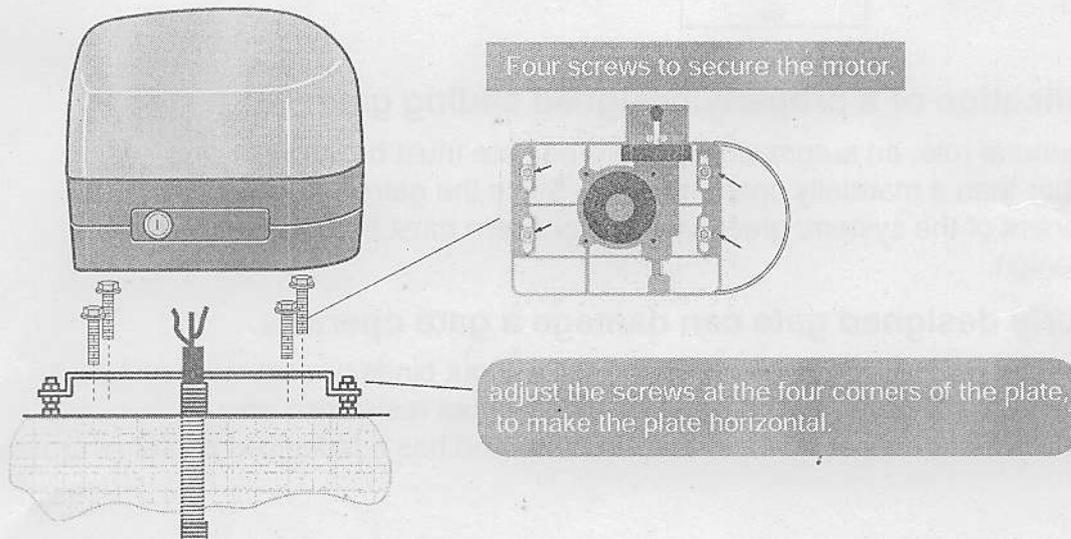
1. Prepare a concrete block and drill four holes in the block to fit the metal base plate for
   the motor. Keep a proper distance between the edge of the plate and the tooth rack,

2. Pass the power cable through the big hole on the plate.

3. Adjust the screws and nuts to level the plate.

4. Adjust the position of the motor to make the tooth rack connect with the tooth cog wheel of the motor leaving 2-3mm vertical distance between tooth rack and cog wheel.

Keep a distance of about 2~3mm between tooth rack and the output cog wheel through out the full length of the rack

2~3mm
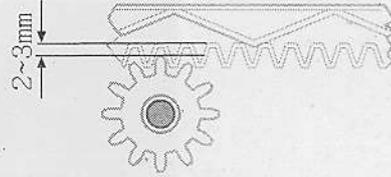
5. Secure the motor on the base plate by tighten the four screws.
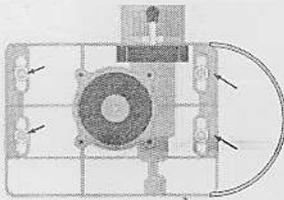
Four screws to secure the motor.

6. Insert and turn the key counterclockwise and pull to release the motor clutch and move the gate to see if the gate slides well.
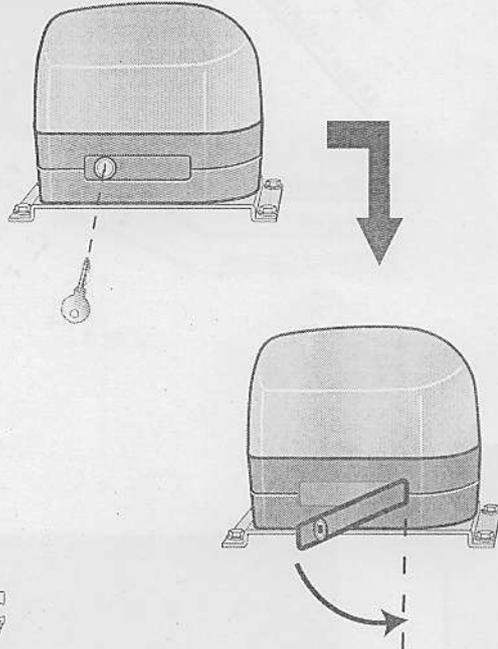
7. Fit the limit block to the tooth rack at the intended position, fix the limit block with the screws provided.
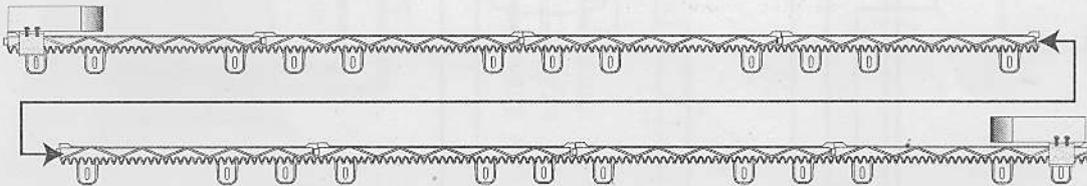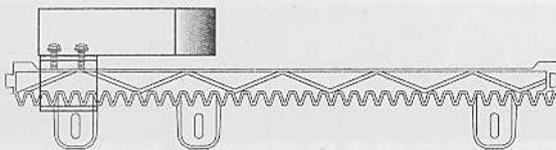
8. Lock up the clutch.

9. Make sure the power cable is disconnected from the mains and connect the three wires to the power socket in the system.

Neutral
Ground
Phase

Functional diagram

Speed Trimmer
Auto Close Timer
Obstacle Detection
Sensibility

VR1 VR2 VR3 VR4

LD1 LD2 JP1

Radio Channel Selector

Open/Close Learning

Motor Polarity Test

P1 SET P2 RADIO

ANT ▽ VA TXF EDG PHO ▽ EL STR ▽ PED STP FCL ▽ FOP LAMP

MOT BAT 12/24V

Radio Antenna
Photocell
Extented Control

Transformer
Battery
Motor
Limit Switch

Wiring with PCB:

ANT ▽ VA TXF EDG PHO ▽ EL STR ▽ PED STP FCL ▽ FOP LAMP

MOT BAT 12/24V

Additional
Antenna

red

black

black

Tx

+12V
GND

COM
GND
NC
+12V

Rx

brown
white
black

Safety Edge

DC GND
+12V

DC GND NO NC COM
+12V

Wiring of exterior manual buttons:

ANT ▽ VA TXF EDG PHO ▽ EL STR ▽ PED STP FCL ▽ FOP LAMP

MOT   BAT   12 / 24V

Emergency Stop

Open gate (partially)

Open gate by pushing manual button
or by interphone
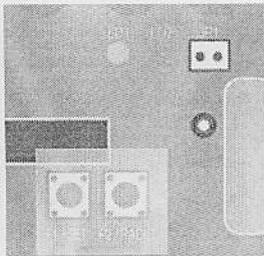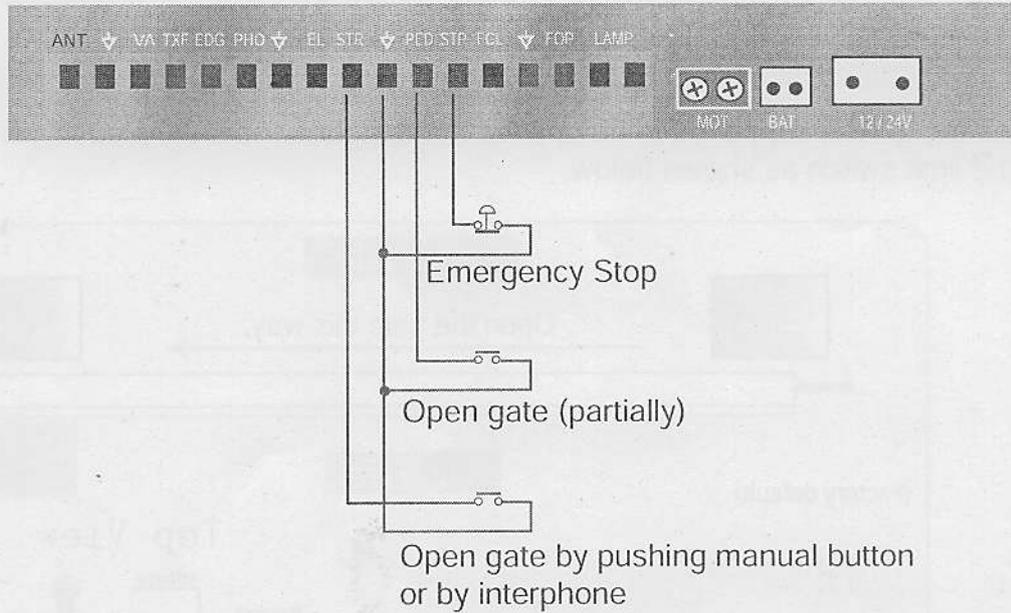
P1 / SET

Press P1 button for over 2 seconds to proceed the
open/close learning of gate operating length.
The system will learn where to stop softly according
to the position of limit blocks.

P2 / RADIO

Press P2 button for over 2 seconds, the system will test the
polarity of the motor. Please check if the gate opens first
and then closes. In case the gate closes first then the
wires of the motor have to be switched.

Indication LEDs
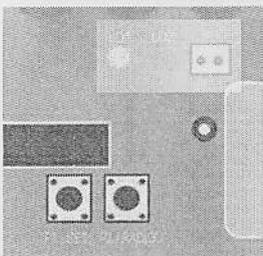
Jumper in: The upper buttons of the remote control are selected.
A for fully open, B for pedestrian's open.

Jumper out: The lower buttons of the remote control are selected.
C for fully open, D for pedestrian's open.

LD1   LD2   JP1

Wiring of the limit switch:

ANT VA TXF EDG PHO EL STP PED STP FCL FOP LAMP

brown
white
black
red
black

Additional
Antenna
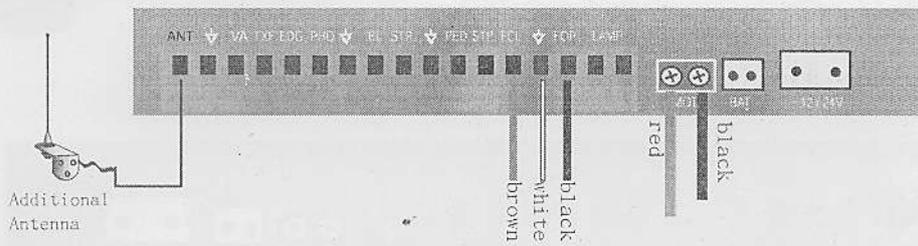
When the gate is supposed to be opened to the right hand side, please connect the wires of the limit switch as shown below.

outside

Open the gate this way →

inside

(Factory default)

white brown black white

Top View

White
Brown
FCL
FOP
White
Black

ANT VA TXF EDG PHO EL STP PED STP FCL FOP LAMP

brown
white
black
black
red

Additional
Antenna
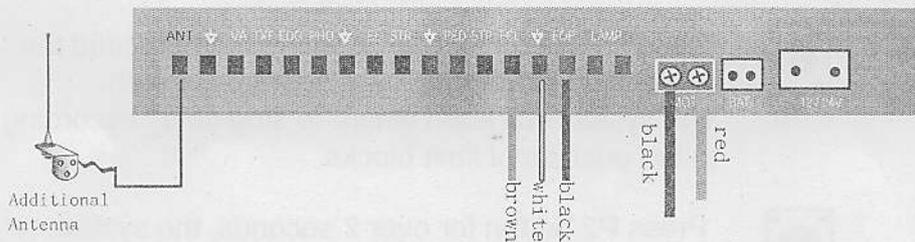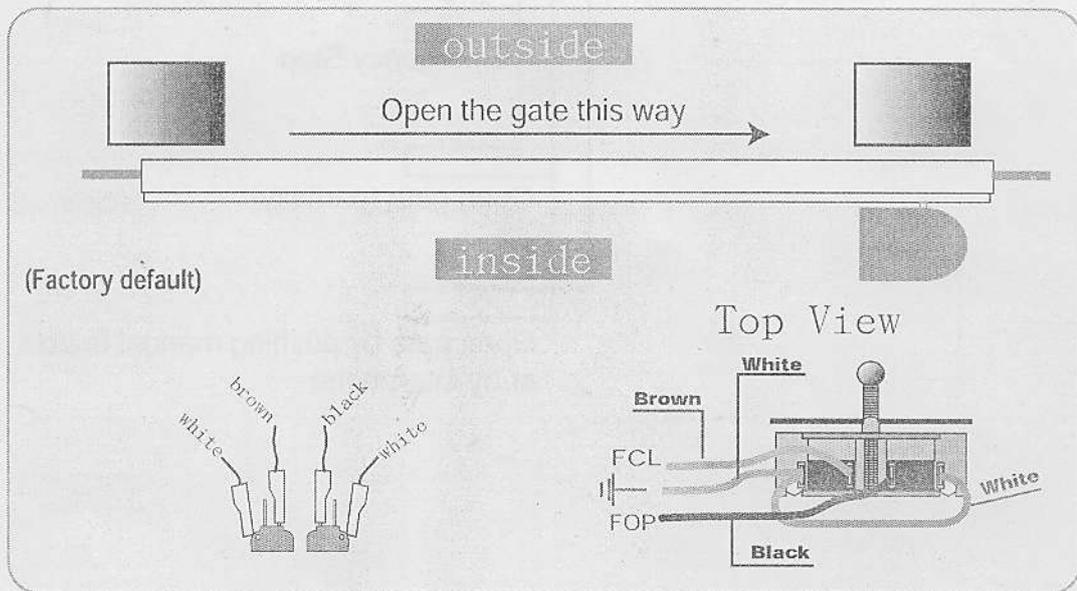
When the gate is supposed to be opened to the left hand side, please connect the wires of the limit switch as shown below.

outside

← Open the gate this way

inside

Top View

White
Black
FOP
White
FCL
Brown

white black brown white
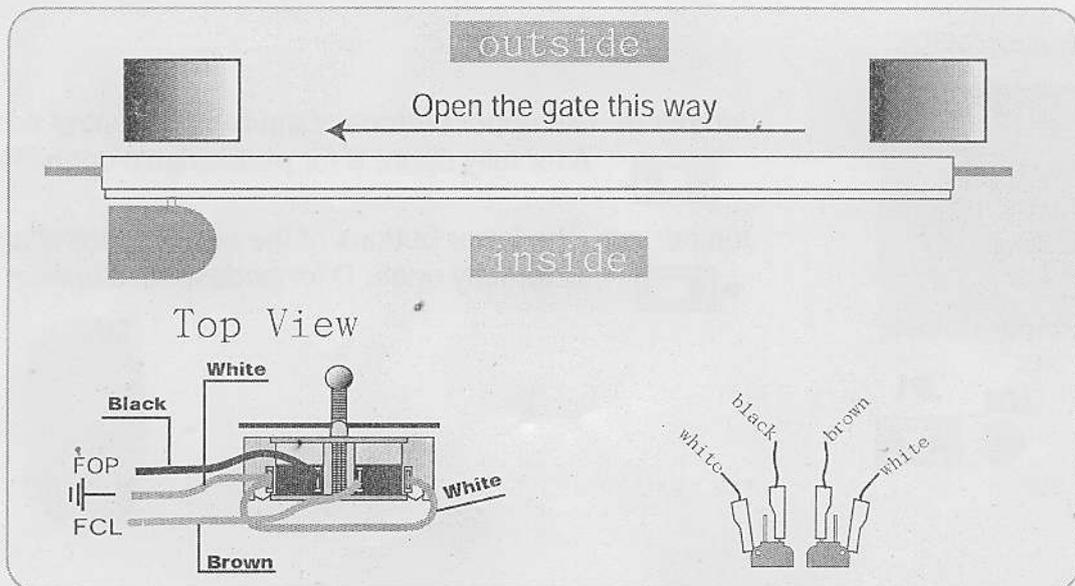
Quick Start

Connect the power cord, motor, photocells and warning light to the control box

↓

Check the Polarity of motor

Switch on the control box and press P1/SET button for 2 sec. → LD1 flashes

↓

The gate opens a bit, stops and closes fully.

↓

Open / Close Learning

Press P1/SET button for 2 sec. → LD1 lights up, Learning mode entered

↓

The gate opens fully ← The gate opens a bit and then closes fully.

↓

The gate closes fully

↓

RF learning

Press P2/RADIO button for 2 sec. → LD2 lights up, RF Learning mode entered

↓

LD2 blinks for 3 times, remote control learnt. ← Press on any button on the remote control

↓

learn another remote control or abort automatically.

Test the polarity of the motor:

To make sure that the motor rotates in right direction, please proceed this function prior to the Open / Close Learning.

Press "P2/RADIO" button on the PCB before the system finishes with 8 flashes of LD1 (green LED) right after the power connection. After releasing the "P2/RADIO" button, it will enter the test mode for the polarity of the motor as below:

Remove any obstacle could possibly block the gate.
Before the motor start, the warning light will blink.
The sequence of the learning process will be: "open--stop--close fully".

Check if the working directions are right as you need.
If not, please switch the wires of the motor connected on the terminal of the PCB.

P2

LD1

LD2

JP1
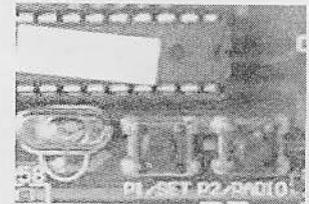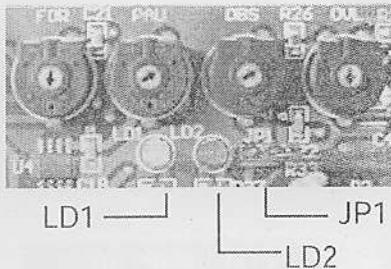
Open / Close Learning:

Please proceed this function before using this product, otherwise the system will drive the gates improperly. E.g.: The gate can't close or open completely.

To activate this function, press " P1/SET" button on the PCB for 2 seconds while the PCB is on.
After releasing the "P1/SET" button, it will enter the open/close learning mode as below:
The system will close the gates first.
Remove any obstacle could possibly block the gate.
Before the motor start, the warning light will blink.
The sequence of the learning process will be:
"open-stop-close fully-open fully-close fully"
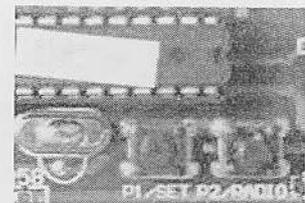
P1

NOTE:
The Open/Close Learning might not be done successfully due to the over-weight of the gates. Meanwhile, the Current Limit (VR4) needs to be increased a bit. Please refer to page 13 of this manual.
If any assistance is needed, please contact the technicians of our agent.

Remote Learning (activation of remote control for gate operation):

To activate the remote control service, please proceed the following steps:

A. RF gate learning: (for Open/Close the Gate)
1. Press and hold "P2/RADIO" button on the PCB until the LD2 (red LED) lights up,
   while the PCB is on. (now the learning mode is entered)
2. Press any button on the remote control,
   LD2 will now blink for 3 times (learning succeeded)
   or light off after 10 seconds without blinking
   (learning failed, please try again the whole process).
3. Please learn the next remote control right after the 3 blinks of LD2.
   If no blink followed, please repeat step 1 and 2, otherwise the
   unlearnt remote control won't be recognized by the system.
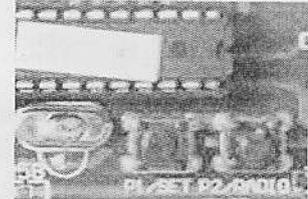
P2

Remote Control:

Use the 2 upper buttons (A, B) while the JP1 is in.
Use the 2 lower buttons (C, D) while the JP1 is out.
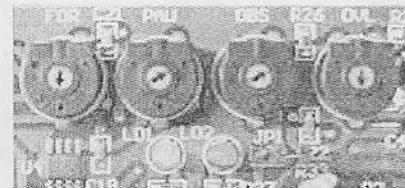
LD1 ——⏐   ⏐—— JP1
                        ⏐——LD2

The remote control has 4 buttons on it, only two of them are necessary for the operation.
User can connect the pins of JP1 for choosing A and B buttons, disconnect the JP1 for
C and D buttons.

Operation with revolving commands (open, close and stop) by remote control:
When the VR2 is turned to the end of the CW direction, the system operates with revolving
commands which no Auto-Close function will follow:
Button A or C: the first press will open the gate fully, next press to stop, next to close the gate,
            next to stop...and so on.
Button B or D: the first press will open the gate for pedestrian to pass, next press to stop, next
            to close the gate, next to stop...and so on.

When opening the gate:
1. Warning light will blink for 3 seconds, then gate opens.
2. If the gate hits something, the motor will reverse a bit and wait for next command.

When closing the gate:
1. The motor will close after the warning light blinks for 3 second.
2. If the gate hits something, the motor wil reverse a bit and proceed Auto-Close function twice,
   in case any obstruction is still on the way. After that the system will halt any action and wait for
   next command.

Remark: The gate operation works properly only after sucessful Opening/Closing Learning.

Photocell triggered during the rotation of the motor:

1. While opening, the gate will still go on with opening.
2. While closing, the gate will open fully and ready for Auto-Close Function.
3. During Auto-Close Function, the gate will stand still upon triggered photocell.
   The gate will close as soon as the photocell resumed.

Auto close:

SL350 will close the gate automatically after the gate has been opened for a certain period of time
as set by turning the VR2 adjustment on the PCB (0~90sec).
Please note: If the VR2 is turned to the stop point of the adjustment in the CW direction, NO Auto-
Close funciton will proceed. (Operation with revolving commands (open, close and stop) by remote
control on page 10)

Clear RF memory:

Press "P2/RADIO" button on the PCB until the LD2 flashes, let go the button and press the button
again until the LD2 flashes 6 times at a faster speed. RF memory is cleared.

Quick release:

The SL350 series are equipped with a clutch mechanism inside the motor to provice user with
an alternative to open the gate manual during power failure. Please unlock the clutch only
when the motor is static.

Sleeping mode during Battery low:

The SL350 system will be forced to enter the sleeping mode when the battery is low. During the
sleeping mode, all funtional features will be seized until power recovery.

IR Transmitter **IR Receiver**
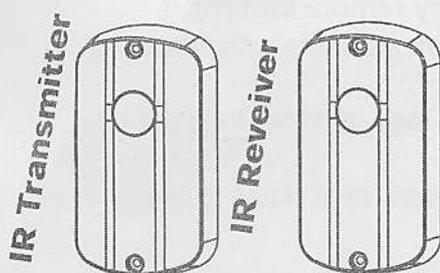
1 Set of Photocell

Operation of Photocell:

Select a proper installing location, where the IR transmitter and receiver along the same line
and at the same height. Connect the wires of the photocell to the operator's PCB as wiring
diagram above.
Power on the system, try and see if it works properly by obstructing the IR between the
transmitter and receiver for some times. The relay in the receiver should respond accordingly
while LED switches ON and OFF.

With photocell well installed, while it's triggered during sliding open, the system will ignore
the IR obstruction and still go on with opening. While it's triggered during sliding close, the
gate will reverse a bit, then stop and wait for next command .

Troubleshooting:

Problem	Probable Cause	Correction
No response when open command is given. (neither the gate moves nor the motor starts)	No Power	Plug the power cable to the system
	Emergency shut-down activated	Make a jumper between the STP and earth on the terminal bus. (page 5)
	Fuse burnt	Replace with a new fuse
	Defect power cable to motor	Replace with proper power cable.
	Obstruction of Photocell beam	Make sure the Photocell well aligned and not obstructed.
	Button jammed	Make sure the buttons on the remote control and interphone are functioning well.
	Wrong wiring on the limit switches or PCB	Check out the wiring according to page 5~7
The motor starts when it receives command, but the gate stands still.	Gate slides badly	Make sure the roller guides is well lubricated and unlock the clutch to slide the gate manually ato see if it slides smoothly.
	Clutch is open	Lock the clutch up
	Insufficient motor force	Turn the VR4 CW a bit and try again
The gate closes while it should open.	Wrong connection on the terminal for motor	Check out the wiring according to page 5~7
The gate opens but never close	The system is in the mode of revolving command	Make sure the VR2 is not at the maximum point
	Bad alignment of Photocell	Check alignment and reassure the wiring of the photocell.

Facto y settings of Adjustments:

VR1	VR2	VR3	VR4
FOR	PAU	OBS	OVL
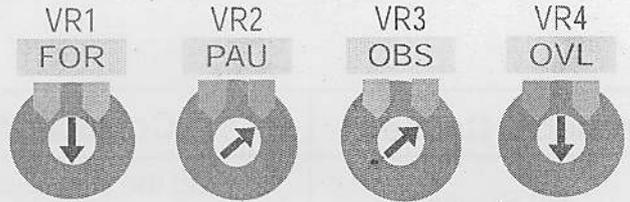
Please note: The adjustment has a maximum rotation of 1 turn, beginning from the CCW end to the CW end. Please do not force the adjustment past the stop points.
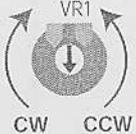
Adjustment on motor speed
CW=speed up
CCW=slow down

Auto Close Timer
CW=increase waiting time   CCW=decrease waiting time

This timer works also as a swtich for revolving command mode, when it's turned to the end of CW direction. It maks the system close the Auto Close function and do Open-stop-close-stop-open... in turns when you press the remote control.

CW to Maximum
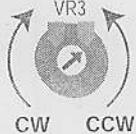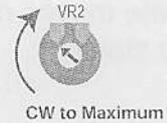
Obstacle Detection
CW=increase tolerance time to react while the gate runs into an obstacle
CCW=decrease tolerance time to react while the gate runs into an obstacle
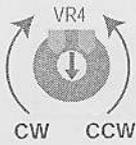
Sensibility
CW= DECREASE sensibility to the resistance against sliding
   (for heavy gate or badly maintained gate)
CCW= Increase sensitility to the resistance against sliding
   (for gate which slides smoothly)

Specifications :

Model	SL350
Power Supply	110 / 230V AC + 10% 60 / 50Hz
Power for Motor	12 / 24 VDC
Maximum Gate Weight	350KGS (770Lbs) Max.
Maximum Gate Width	Not important
Length of Tooth Rails	3.1M (10Feet) with 6 tooth racks
Opening Speed	9 meters per minute
Protection Rating	IP 44
Thermal Overload Protection	135°C
Duty Cycle	20%
Operation Temperature	-20°C / +50°C
Overload Protection	Adjustable Current Detection
Backup Recharging Battery Foundation	Yes (Not Including Battery 12V,7AH)
Auto Close Function	Adjustable timer (0~90sec)
Extension Terminal	Warning Light / Photocell / Back-up Battery
RF Carriage	433.92 MHz w/ Rolling Codes
Control Range	Approx. 30~50 Meters