



The Beginning of Quality Life

Sliding Gate Operator

Sliding Gate Operator

Patented Sliding Gate Operator ML Series

Intelligent Remote-control
Sliding Gate Operator



Product Manual

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I. Foreword

Thank you for choosing our intelligent remote-control sliding gate operator. Please carefully read this Manual and the Control Box Instructions Manual before installation and use in order to get the correct methods of installation and operation and the important knowledge on safety.

The production and quality management systems of our sliding gate operator have passed ISO9001: 2000 certification and the core assemblies have passed CE certification. Therefore, we offer sufficient warranties for the quality and after-sales services of our products and customer satisfaction is well guaranteed. Please consult your local distributor or our Technical Department if you have any technical problem that you can't settle.

Due to continuous updating and improvements, please browse our website for more details and information about products release.



National patent certificates



ISO 9001 certificate



CE certificate

VIII. Packing list of sliding gate operator in standard configurations

Name	Specification	Quantity	Unit
Driving motor	AC220V or DC24V	1	Set
Controller	(Integrated gate operator has no independent controller)	1	Set
Remote controller		2	Set
Clutch cover key		2	Piece
Clutch control handle		1	Unit
Limit magnetic steel	Magnetic steel for open and magnetic steel for close	2	Piece
Magnetic steel cushion plate	Big and small cushion plates	2	Piece
Base pressing plate		1	Piece
Base pressing strip		2	Piece
Set bolt of base of the gate operator	12mm in dia.	4	Piece
Instructions manual		1	Copy
Warranty certificate		1	Copy
Conformity certificate		1	Copy

IX. Some optional parts of sliding gate operator

Name	Specification	Quantity	Unit
Rack	1,000mm/piece	To be determined according to gate width	Piece
UPS	DC24V/7Ah (only for DC motor)	1	Set
Card reader	DC12V	1	Set
Infrared light barrier	DC12V	1	Pair
Video bell	Color, 4" or 7"	1	Set
Standing transmitter	DC9V	1	Set

VII. Troubleshooting

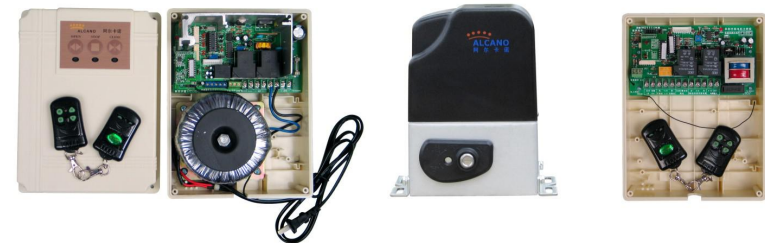
Trouble	Causes	Solutions
The gate operator can't be started	1.No power supply	Check the input and output voltages of the power supply
	2.Blown-out fuse	Replace (same specification)
	3.Failing capacitor	Replace the capacitor
	4.Thermal protective device is started due to overloading	Check if there is any obstacle on the guide rail of the gate and restart 20 minutes later
	5.The gate operator stops immediately after the open/close key is pressed (sensor short circuit or leakage)	Replace the limit sensor
	6.Short circuit of limit switch wire (stops immediately after start)	Check the circuit
The gate operator can only work to open or close the gate	1. Open circuit or detached wiring terminal of the open/close motor	Check the circuit and wiring terminal
	2. Short circuit of limit sensor	Replace the limit sensor
	3. Erroneous connection of the common terminal of the motor	Adjust the wiring terminal
Limiting failure	1. The sensor is too far away from the magnetic steel	Adjust the position of the magnetic steel
	2. Sensor is damaged or cable is broken	Replace the sensor and cable
	3. Erroneous wiring of limit switches	Make the correct wiring according to the wiring diagram (exchange the wires of open/close limit switches)
Failure of manual clutch	1. Control handle is damaged	Replace the control handle
	2. Erroneous rotation direction	Rotate in the direction of the arrow
	3. Clutch is stuck fast	Rotate the output gear left and right (push the gate back and forth)
The gate is closed when the open key is pressed	Erroneous wiring of motor	Make the correct wiring according to the wiring diagram (exchange the wires of open/close circuit)
The gate operator doesn't work in one direction after a period of normal operation	1. Wiring terminal is loosened or has broken wire	Connect the wires again
	2. Short circuit of the sensor or limit switch wire	Replace the limit sensor

II. General description

Our sliding gate operator is characterized by technological excellence, stable performance, safety and reliability. This series of products features a compact structure, high starting torque, convenient installation, nice profile, full functionality and cost-effectiveness and other advantages. It is extensively applicable for the remote opening and closing of villa gates, iron gates, courtyard gates, community or factory gates. It is the top choice for the automatic and intelligent control of sliding gates.

The following models of sliding gate operators are recommended for your choice:

1. ML370 and ML550 single-phase AC 220V gate operator
- Applicable for various types of sliding gates in a weight of 800-1500kg
2. MLDC360 LV DC 24V gate operator



DC controller

Driving motor

AC controller

III. Safety precautions

1. Please have the gate operator installed and commissioned by a qualified electrical or gate professional. Please also ask the professional to introduce the correct operating methods, safety knowledge and emergency measures.
2. Please properly keep this Manual and the Instructions Manual of the controller for immediate reference.
3. Do not install the operator where there are inflammables, explosives and corrosives and where floods may occur. Otherwise, potential hazard may be created to endanger personal and property safety.
4. Please disconnect the power supply before installation or repair of the gate operator and the gate. The metal casing of the gate operator shall be reliably grounded (earth wire $>=1.5\text{sqmm}$, earthing resistance $\leq 4\text{Ohm}$). Meanwhile, a dedicated power switch and a leakage/over-current protector shall be provided.
5. The local mains voltage shall satisfy the working voltage of the operator. Otherwise, do not install.
6. Non-professionals are not allowed to dismantle or repair the gate operator and the controller.
7. Do not let children touch and play with the remote controller and panel switch of the controller.
8. Operator shall keep any child away from the gate once the gate operator starts operation.
9. Please install relevant safety devices if necessary, e. g. alarm light, infrared light barrier, anti-clipping and anti-collision devices, etc.
10. Do not change the structure and performance indexes of or overload the gate operator without approval.

Note: Do not install or use this product if you fail to observe the foregoing provisions. The Company shall not bear any responsibility except those arising from quality defects of this product.

7. Energization and trial operation

- 1) Please carefully check the mains voltage, earthing conditions and electrical wiring before energization.
- 2) Manually open and close the gate once to check the operating conditions of the gate and the gate operator. If the operation goes well, please push the gate half open and then switch the clutch to the status of electrical operation.
- 3) Energization: start the gate operator and observe the operating conditions of the gate and the gate operator (if they operate smoothly and if the keys operate in a flexible and correct manner).
- 4) Observe if the open and close positions of the gate are satisfactory. Otherwise, move the big and small cushion plates on the racks and fasten the set screws after the gate and the gate operator operate satisfactorily to avoid looseness.

VI. Maintenance and services

- 1) Frequently check if the casing of the gate operator is loosened or broken to avoid ingress of rains and dusts. Check if various set screws are loosened.
- 2) Check if the earthing and leakage protective devices are in a sound condition.
- 3) Check if the guide rollers and the travelling wheels of the gate body are in a sound condition and replace them if not in order to avoid shortening the service life of the gate operator and the controller due to failure or overloading of the gate operator.
- 4) The rotational parts in the gate operator are furnished with quality lubricant and therefore need not to be replaced. If any abnormal noise is detected inside the gate operator, please stop operation immediately and ask a professional for inspection and repair.

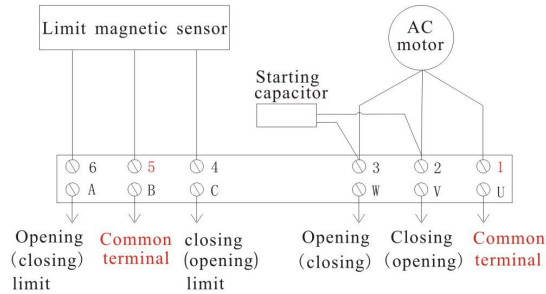
6. Installation of the controller (no controller is needed for integrated operators)

A) 1. Install the controller at the right position and height, preferably indoors to avoid sunshine and rains. The controller shall have an independent power switch and an overcurrent and leakage protector.
2. Please measure the working orientation of the remote controller before installation.

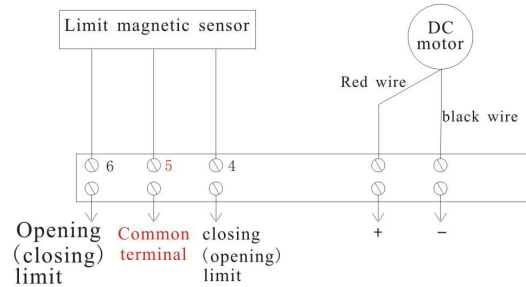
B) Wiring and controller operation (please see the XX for details)

B) Wiring and controller operation (please see the XX for details)

Wiring diagram of single-phase AC220V gate operator



Wiring diagram of DC 24V gate operator



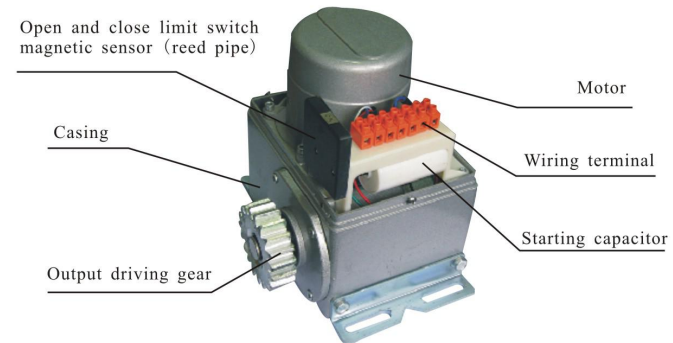
Infrared light barrier shall be installed at a height of 600 to 800mm if any. The light transmitter and the light receiver shall be installed on the left and right posts at the same height and at an axial angle opposite to each other horizontally and vertically.

Use a 3x0.5sqmm cable to connect the infrared light barrier's receiver to the controller. Use a two-core cable to connect its transmitter to the receiver.

If any card reader is installed, use a 4x0.5sqmm cable to connect it to the controller.

IV. Sliding gate structure and classification

1. Sliding gate structure



Structure of Main Body of the Gate Operator

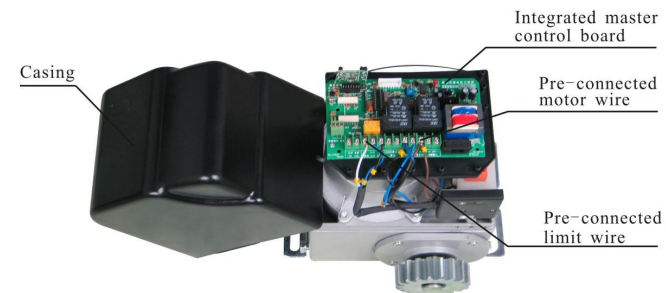


Illustration of the "Integrated Operator" (integration of control and driving units)

2. Classification of gate operator

A) Single-phase AC220V gate operator-main technical data

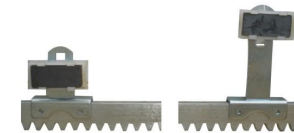
- 1) Working voltage: AC220V/50Hz
- 2) Motor power: 370W, 550W, 750W
- 3) Starting current: 3A to 6A
- 4) Motor speed: 1,400r/min
- 5) Operating speed: 12m/min (uniform speed)
- 6) Applicable max. gate weight: 1,000 to 2,000kg
- 7) Ambient temperature: -35 to +65 degrees Celsius
- 8) Power cables reserved for installation: 6-core cables with a section of at least 1sqmm

B) DC24V gate operator - main technical data

- 1) Mains voltage: AC220V/50Hz, working voltage: DC24V
- 2) Motor speed: 1,400r/min
- 3) Operating speed: 10 to 15m/min
- 4) Max. gate weight: 800kg
- 5) Ambient temperature: -35 to 65 degrees Celsius
- 6) Dissipation power: 360W
- 7) Power cables reserved for power distribution: 2-core cables with a section of 2.5sqmm (motor cables) and 3-core cables with a section of 0.5sqmm (limit wires)

5. Installation of limit components and magnetic steel

- a) Before installing the limit components and magnetic steel, please disengage the clutch firstly so that the gate operator is in a state of manual operation.
- b) Manually push the gate to the positions of fully open and fully close separately. Determine the primary installing positions of the limit magnetic steels for opening and closing separately.
- c) Fasten the big and small cushion plates in the corresponding positions on the racks.



Positions of Big and Small Cushion Plates
(including Magnetic Steels) to Racks

- d) Use the clutch handle to engage the clutch so that the gate is in a state of electric operation.
- e) Open and close the gate electrically to see if the limit switches work properly. Otherwise, adjust the height of the magnetic steels (move the magnetic steel of the small cushion plate downwards as far as possible and that of the big cushion plate upwards. The gate operator's limit magnetic sensor may be actuated erroneously and the operator may be disabled if the magnetic steels of the big and small cushion plates offset towards the middle) until the correct limiting is realized.



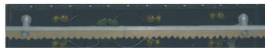
Positions of Opening and Closing Limit Magnetic
Steels to Magnetic Sensors

- b) The protective jacket of the motor wire shall be buried underground from the control box until the base of the gate operator. A length of 400mm shall be reserved for connection to the motor terminal.
- c) After the cement cures, fasten the gate operator onto the fixing plate of the base with bolts. Adjust the gate operator to the appropriate position (with reference to the position of the racks to be installed) and keep it level. Finally, screw on the nuts to securely fasten the gate operator.

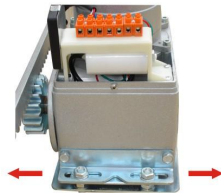
4. Rack installation

Use the clutch handle (or clutch key) to disengage the clutch of the main motor before installation of the racks (insert the clutch handle and rotate it by 90 degrees counterclockwise) so that the gate operator is in a state of manual operation.

- a) Determine the position where the racks can be reliably engaged with the driving gears and weld the cylindrical nuts in the corresponding position below the gate (all nuts shall be aligned horizontally).



Welded nuts and fixed racks



Move the gate operator horizontally until it is engaged with the racks

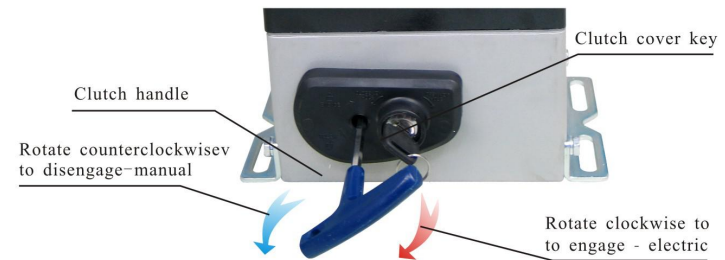
- b) Adjust the position of the racks vertically until the racks are properly engaged with the gear with a clearance of 1mm between. Then securely fasten the racks onto the cylindrical nuts with bolts.

Please adjust the position of the gate operator to the racks if necessary (loosen the set nuts of the gate operator and adjust its position back and forth) in order to ensure the effective engagement of the driving gears and racks.

3. Working principles and property

The gate operator consists of a high-strength aluminum alloy casing, a high-quality motor, a worm gear, a reducer, a gear-type clutch and an output driving gear. During operation, the motor's main shaft drives the reducer, the clutch and the worm gear and driving force is transmitted to the output driving shaft which further drives the vertical racks parallel to the gate body so that the gate is opened or closed. The gate operator is furnished with overheat protection device to guarantee operating safety.

For manual operation (e.g. in case of power failure or insufficient backup power), please insert the special handle into the key hole and rotate it counterclockwise so that the gear-type clutch is disengaged and the gate is manually opened or closed.

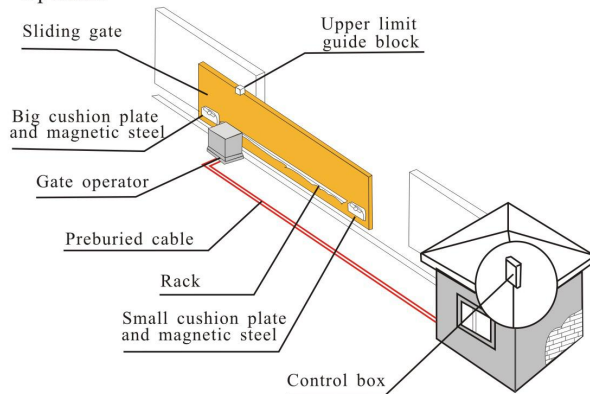


switch between electric and manual modes with clutch

V. Installation and commissioning

The electric sliding gate system has the following structure and wiring method:

Schematic Diagram of Installation and Wiring of Sliding Gate Operator



1. Requirements on gate body, rail, travelling wheel and guide roller

- a) The gate body shall be of sufficient strength and shall not shake during operation;
- b) Rails shall be laid in a level and straight manner and no crooking or unevenness is allowed (deviation to be kept within 5mm);
- c) Travelling wheels shall be larger than 100mm in diameter with a roller bearing inside;
- d) The guide rollers above the gate body shall be securely installed and rotate flexibly;
- e) An iron stopper shall be securely welded at the end of the wheels' traveling distance on the rail (close to the gate operator) in order to prevent (in case the electrical switch fails) the gate from derailing when it can't stop automatically;
- f) The gate shall not automatically slide in either direction without any external force after the gate body is installed. Otherwise, the rails shall be buried again and the gate body reinstalled or the travelling wheels replaced.

2. Pre-buried power cables

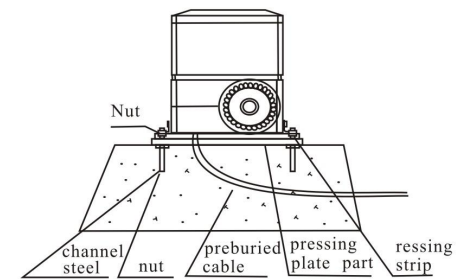
A cable pipe in an inner diameter over 20mm shall be buried between the pre-determined installing positions of the controller (or the mains power in case of integrated operator) and the driving motor. Six-core cables (two-core cables for integrated operator) in a diameter over 1.0mm shall be provided inside the pipe. In addition, copper earth wires in a diameter over 1.5mm must be adopted for reliable grounding.

3. Installation of the gate operator

- a) Install the four set bolts on the fixing plate of the base (an appropriate length of the bolt shall be reserved above the fixing plate for fixing the gate operator later on) and place the base where the gate operator will be installed before a cement base is casted. The cement base shall have a dimension of 350mm (L) x 300mm (W) x 350mm (H). After curing of the cement base, the fixing plate of the base shall be securely fastened onto the cement (use an elongated expansion bolt for reinforcement if it is not securely fastened. The expansion bolt may be welded to the fixing plate).



Prepare the fixing plate and the set bolts



Schematic Diagram of Casted Cement Base