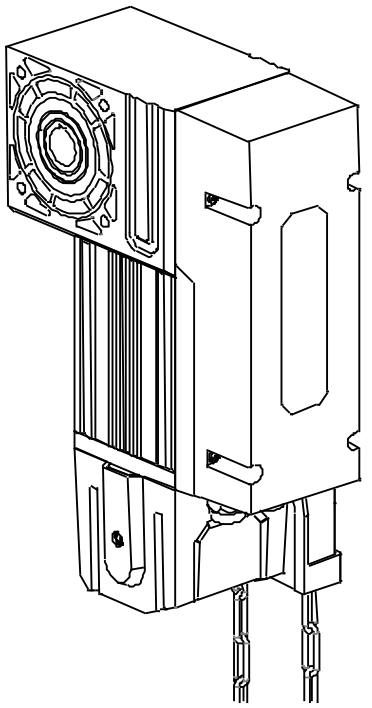
INDUSTRIAL GATE OPERATOR
USER MANUAL



Dear users,
Thank you for choosing this product. Please read the manual carefully before assembling and using it. Please do not leave out the manual if you send this product to a third party.

⚠ Safety Instruction

1. The industrial gate operator should be installed and put into operation by qualified personnel. Otherwise, serious personal injury or property damage may occur.

2. Installation and wiring must be in accordance with the construction standards and electrical standards, diameter ≧ 1.5mm^2; power must have a reliable grounding, ground wire must be reliably connected to the place labeled ground tab, ground lead on the power line is prohibited to be removed; front end of incoming power line should be installed with electrical leakage protector which is in line with national standards.

3. This industrial gate operator is only allowed to be installed on well-balanced gate which has balance spring, otherwise machine may be damaged due to overload.
4. Gate should be flexible and run without stagnation; lead rail end of gate must be installed with mechanical stop block and buffering booster to prevent the gate from rolling out.

5. Control box should be installed in the wall or column of 1.4 meters where the operation of gate can be observed to prevent children from inadvertently touching. While keeping the remote control, prohibit children to touch or play just in case of danger. Do not use the remote control when you cannot see the operation of gate.

6. Before repairing and moving the gate machine and control box, please cut off the power supply, and make sure that the gate has been locked and the risk of falling due to self-weight is null.

7. Pedestrian and vehicle are prohibited to go through or stay below the running gate.

8. Hand-pulled chain on the machine is prohibited to be pulled during the operation of gate machine to prevent the machine from damage.

9. To ensure the safety of pedestrian and vehicle, please install the infrared protection device and airbag protection device

10. Relevant safety protection devices and the operation of the gate should be checked frequently to ensure the security and stability of gate.

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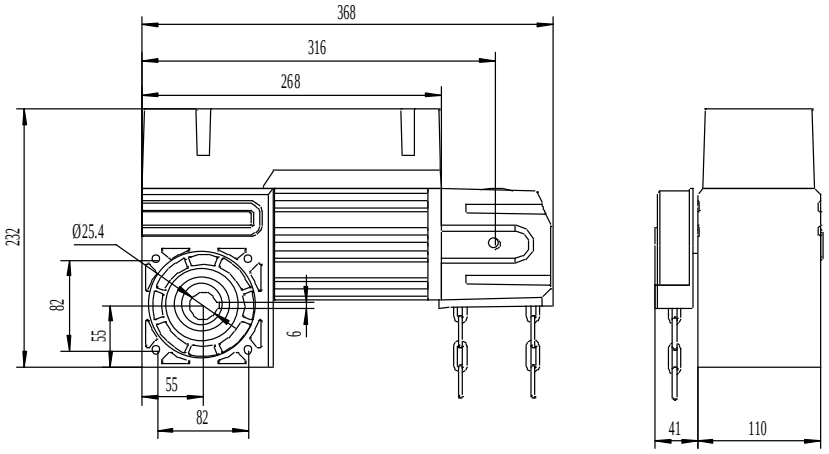
Industrial Gate Operator Technical Parameter

Model (Single Phase AC220V±10%)	IGO4000
Rated Power	400W
Torque	60N.m
No-load Continuous Running Time	15min
Model (Three Phase AC380V±10%)	IGO4000(AC380)
Rated Power	550W
Torque	100N.m
No-load Continuous Running Time	15 min
Other Parameter Characteristics of Above Industrial Gate Operator	
Thermal Protection Temperature	120℃
Reduction Ratio	1:58
No-load Rotation Speed	24r/min
Lubricating System	Oil-immersed
Noise	≤55dB
Hand Release Device	360°Hand-pulled chain
Quick Release	Optional
Maximum Limit Travel	Output shaft rotates 20 rounds
Output Shaft Diameter	Φ25.4mm
Environment Temperature	-20℃ ～+45℃
Working Duty	S2-15min
Protection Class	IP54
Main engine Dimension	232x151x368 mm.
Main engine Weight	13Kg

Control Unit Technical Parameter

Model	IGC4000	IGC4000(AC380)
Power Supply	AC220V/50Hz	AC380V/50Hz
Remote Control Model	RT21	RT21
Applicable Model	IGO4000	IGO4000(AC380)
External Three Button Switch	Available (Optional)	Available (Optional)
Protection Class	IP54	IP54
Alarm Lamp	Available (Optional)	Available (Optional)
Infrared Sensor	Available (Optional)	Available (Optional)
Power Lock	Available (Optional)	Available (Optional)
Airbag Switch	Available (Optional)	Available (Optional)

Dimension and Component of Industrial Gate Operator



① Mechanical limit cam

② Gearbox

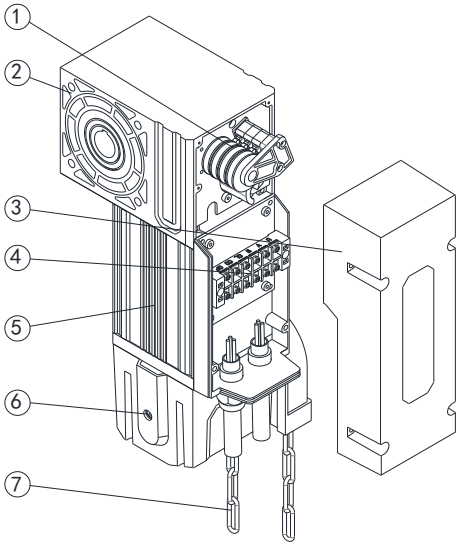
③ Plastic cover

④ Terminals

⑤ Motor

⑥ Adjusting screw

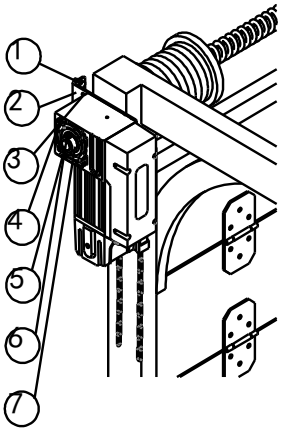
⑦ Hand-pulled chain



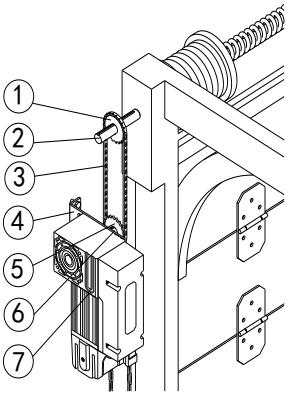
Installation Guide of Industrial Gate Operator

The industrial gate operator is mainly used in the industrial sectional gate equipped with balance spring, but also can applied in lifting industrial gate. The installation of gate machine has two forms, shaft drive and chain drive. The factory standard configuration is shaft drive. If user want to adopt chain drive installation, they can choose the appropriate combination of sprocket chain according to the installation needs.

Shaft Drive Installation



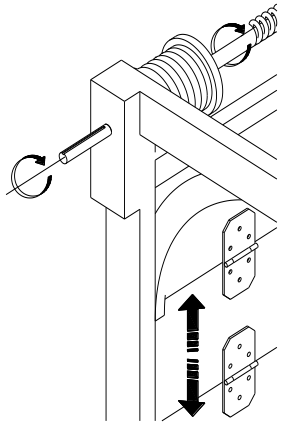
Chain Drive Installation



Shaft Drive Installation	Chain Drive Installation
① Expansion Screw	① Driven wheel
② Mounting Bracket	② Gate Shaft
③ Mounting Screw	③ Chain
④ Main Engine	④ Mounting Bracket
⑤ Special Flat Key	⑤ Driving Sprocket
⑥ Gate Shaft	⑥ Driving Sprocket Shaft
⑦ Fixing Sleeve	⑦ Main Engine

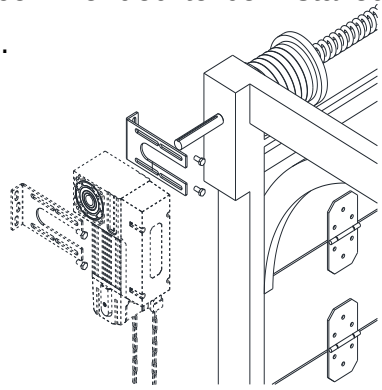
1) Check the gate

After the gate is installed, adjust the torsion spring, manually opening or closing the gate should be flexible and run without stagnation, observe the direction of rotation of the rope sheave which should be consistent with the direction of opening and closing of industrial gate operator.



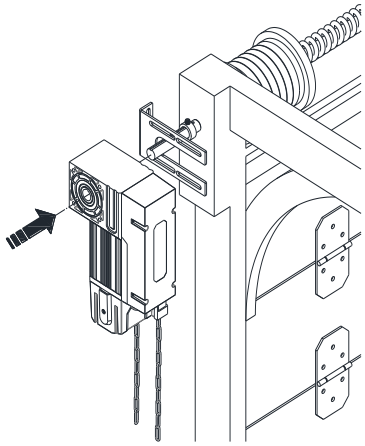
2) Determine the installation position

Consider the boundary dimension and installation direction of the gate machine, determine the position of the mounting bracket, mark the insert cavity position, drill the screw hole and fix the mounting bracket. (The mounting bracket can be fixed inside and outside the gate machine, recommended to be installed inside, for the convenience of disassembly of gate machine).



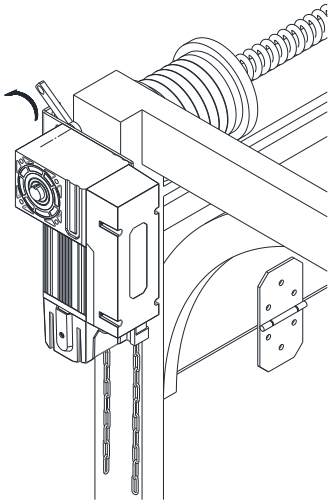
3)Try to install industrial gate operator

Install a fixing sleeve on gate shaft in advance, and insert the industrial gate operator into the gate shaft.



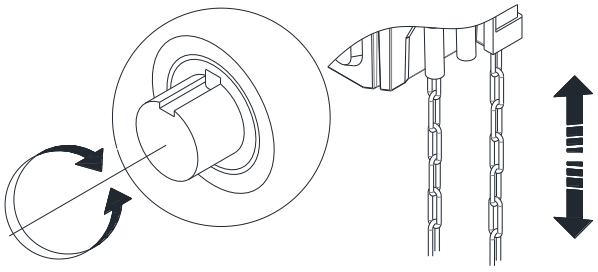
4) Pre-fixing industrial gate operator

Fix the industrial gate operator on mounting bracket by 4 pieces of hexagon head flange bolts M10×20, do not tighten.



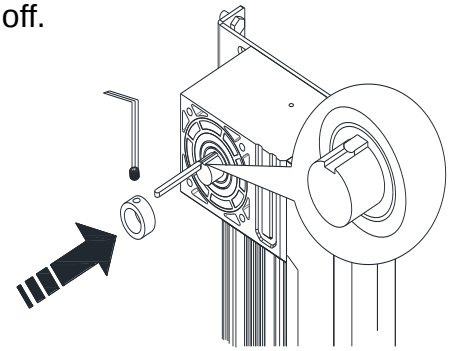
5) Find the direction of key slot

Rotate the output shaft of industrial gate operator by pulling the hand-pulled chain up and down until the key slot of the output shaft is fully aligned with the key slot of the gate shaft. (Note: When releasing the hand-pulled chain, make sure that the hand-pulled chain has been reset successfully.)



6) Mount flat key and fixing sleeve

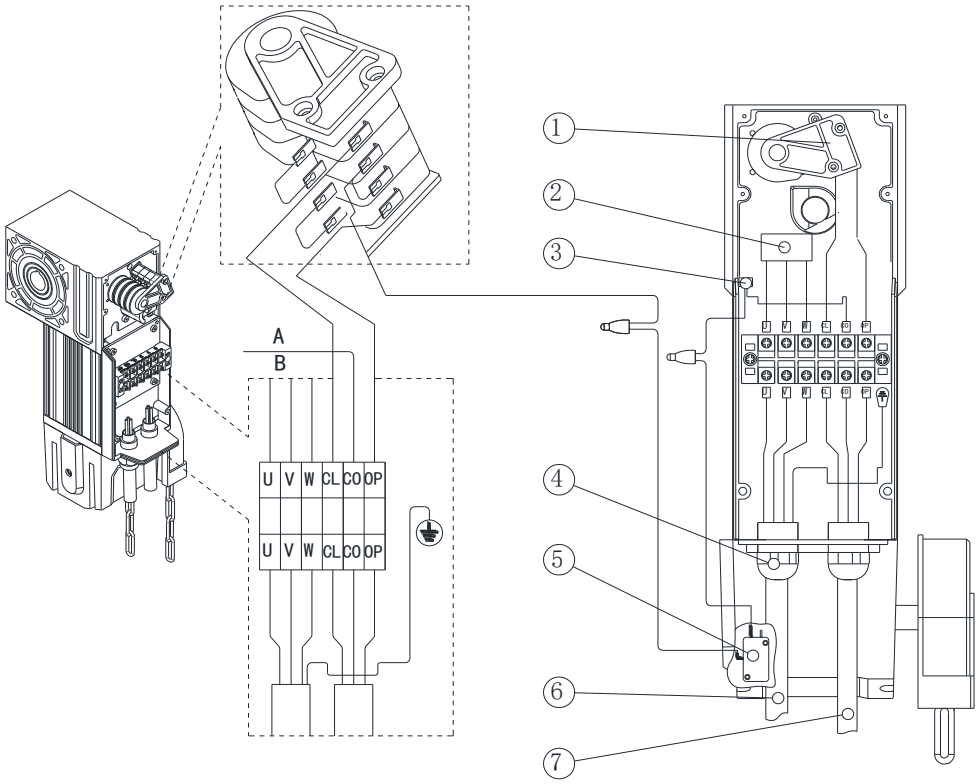
Mount the flat key, keep two fixing sleeves close to the two ends of the output shaft, fasten the two M8 head screws in the key slot of gate shaft in order to prevent the flat key from loosening and falling off.



7) Tighten the screws, prepare wiring and debugging Tighten all screws.

Industrial Gate Operator Wiring

Pull the cable through the waterproof connector on the main engine, connect it with the terminal inside the industrial gate operator according to the instruction of cable marker.



A: Thermal Protection Wire B: Motor Wire

① Limit Switch ② Motor Wire Single phase 220V: U Blue, V Brown, W Black
Three phase 380V: U Red, V White, W Black

③ Motor Thermal Protection Wire White

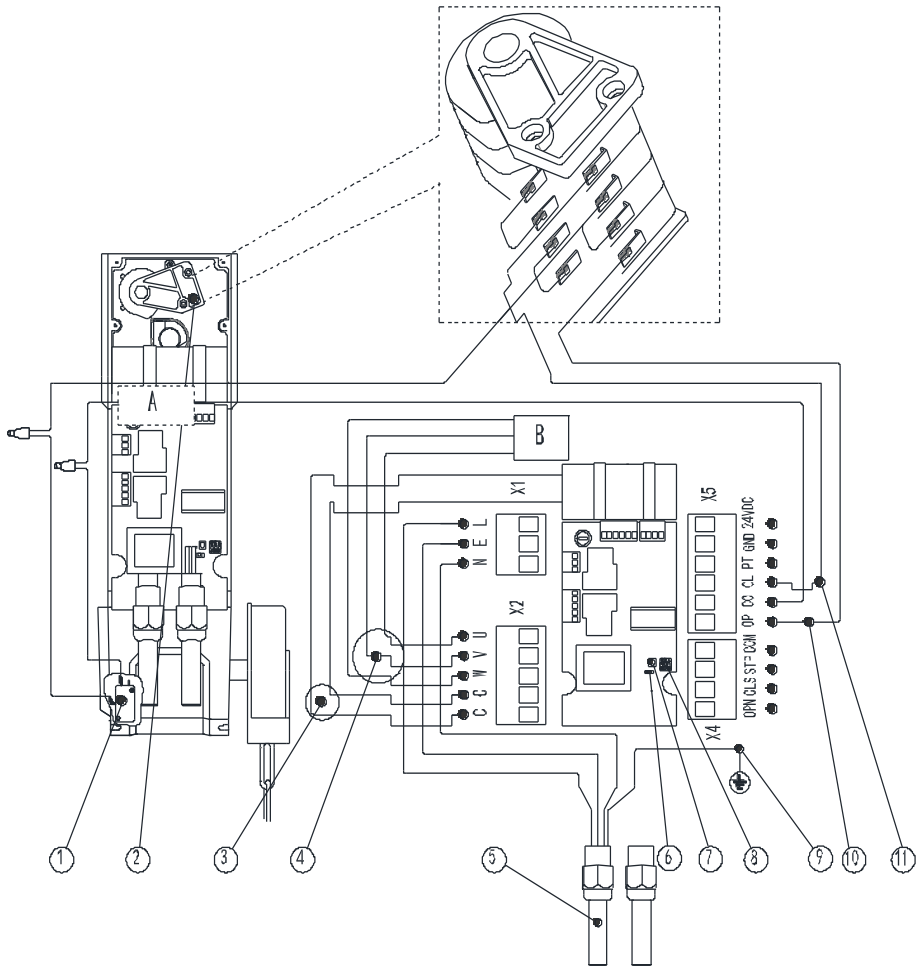
④ Waterproof Connector ⑤Protection Switch of Hand-Pulled Chain (N.O.)

⑥ Cable Blue U, Brown V, Black W, Yellow Green Double Colors (Grounded)

⑦ Cable Cl Red, CO White, OP Green.

IGO4000 (Control Board Built In Operator)
Single Phase AIO Wiring Instructions

1. AIO Wiring

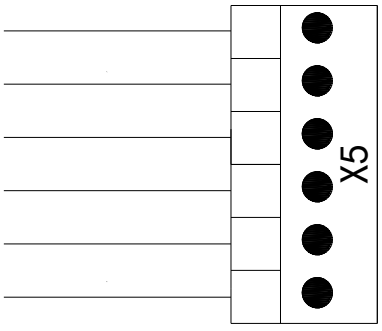


A: Thermal Protection Wire B: Motor Wire
① Limit Switch of Hand-pulled Chain (N.O.) ② Limit Switch
③ Capacitor Cable (BLUE, BROWN) ④ Motor Wire (U BLUE, V BROWN, W BLACK)
⑤ Cable (BLUE, BROWN, BLACK, double YELLOW BLUE) ⑥ Power Indicator Light LED1 ⑦ Remote Control Learning Button AN1 ⑧ DIP Switch ⑨ Grounded Wire (double YELLOW BLUE) ⑩ Open Limit Wire (GREEN) ⑪ Close Limit Wire (RED)

2. Terminal Introductions

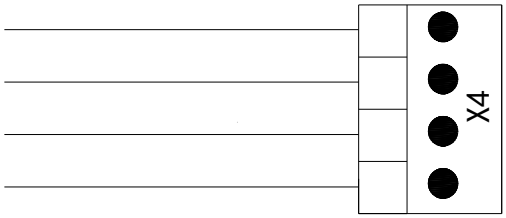
a. Limit, Infrared, Airbag Ports (X5):

Infrared Power	24VDC
Infrared Power	GND
Infrared, Airbag Signal	PT
Close Limit (Connected with Red Limit Switch Line)	CL
Common	CO
Open Limit (Connected with Green Limit Switch Wire)	OP



b. External Three Button Switch (Terminal X4)

Common	COM
STOP	STP
CLOSE	CLS
OPEN	OPN



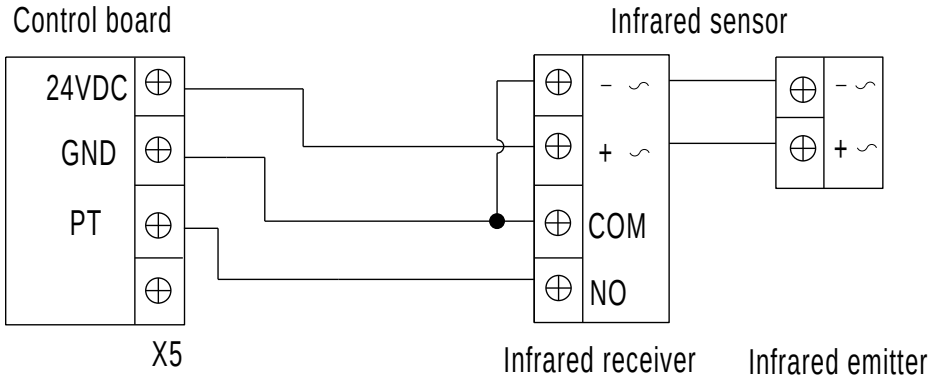
3. Remote Control Learning Button AN1

(Learning method is the same as control panel)

4. DIP Switch Setting

(Setting method is the same as control panel)

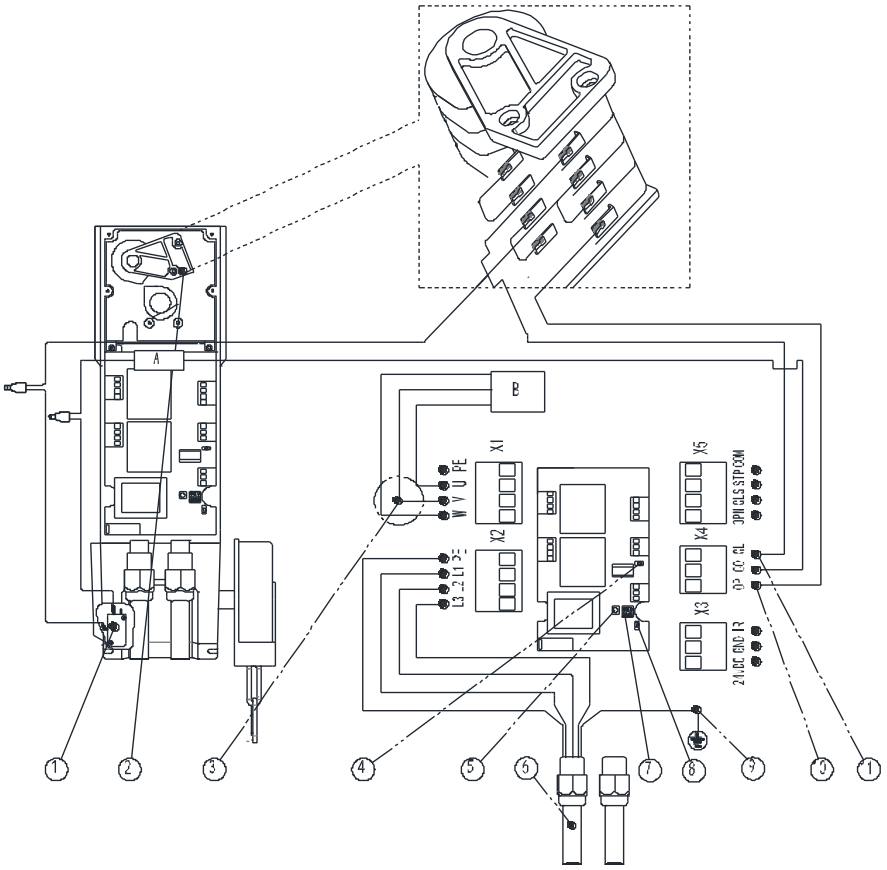
NOTE: Wiring principle of Infrared sensor is as follows:



If infrared sensor is interrupted when the gate is closing, the gate will immediately turn to open. The infrared output signal must be normally open (N.O.).

IGO4000(AC380)(Control Board Built In Operator)
Three Phase AIO Wiring Instructions

1. AIO Wiring

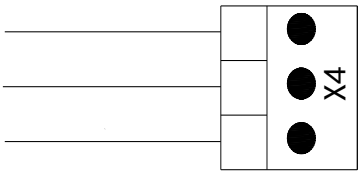


A: Thermal Protection Wire B: Motor Wire
① Limit Switch of Hand-pulled Chain (N.O.) ② Limit Switch
③ Motor Wire (U RED, V WHITE, W BLACK) ④ Indicator Light LED2
⑤ Remote Control Learning Button AN1
⑥ Cable (BLUE, BROWN, BLACK, double YELLOW BLUE) ⑦ DIP Switch
⑧ Power Indicator Light LED1 ⑨ Grounded Wire (double YELLOW BLUE)
⑩ Open Limit Wire (GREEN) ⑪ Close Limit Wire (RED)

2. Terminal Introductions

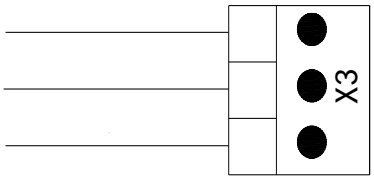
a. Limit (Terminal X4)

Close Limit (Connected with Red Limit Switch Wire)	CL
Common	CO
Open Limit (Connected with Green Limit Switch Wire)	OP



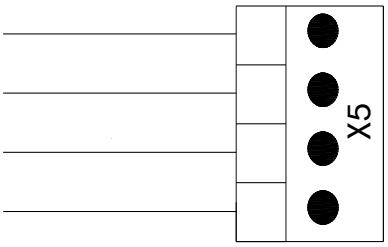
b. Infrared, Airbag (Terminal X3)

Infrared Power	24VDC
Infrared Power	GND
Infrared, Airbag Signal	IR



c. External Three Button Switch (Terminal X5)

Common	COM
STOP	STP
CLOSE	CLS
OPEN	OPN



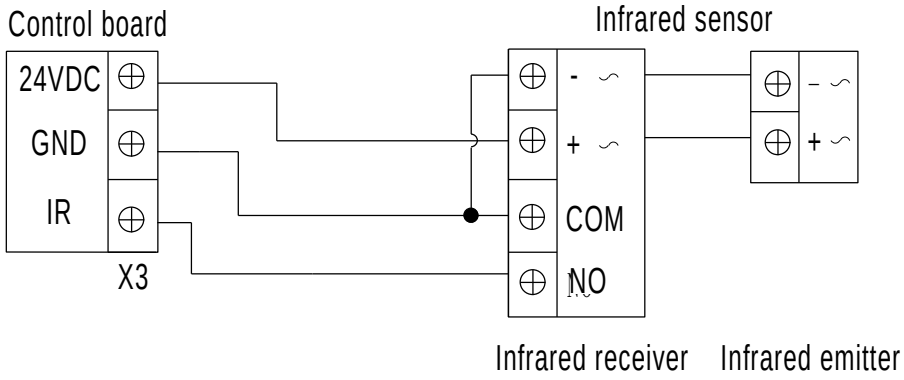
3. Remote Control Learning Button LEARN

(Learning method is the same as control panel)

4. DIP Switch Setting

(Setting method is the same as control panel)

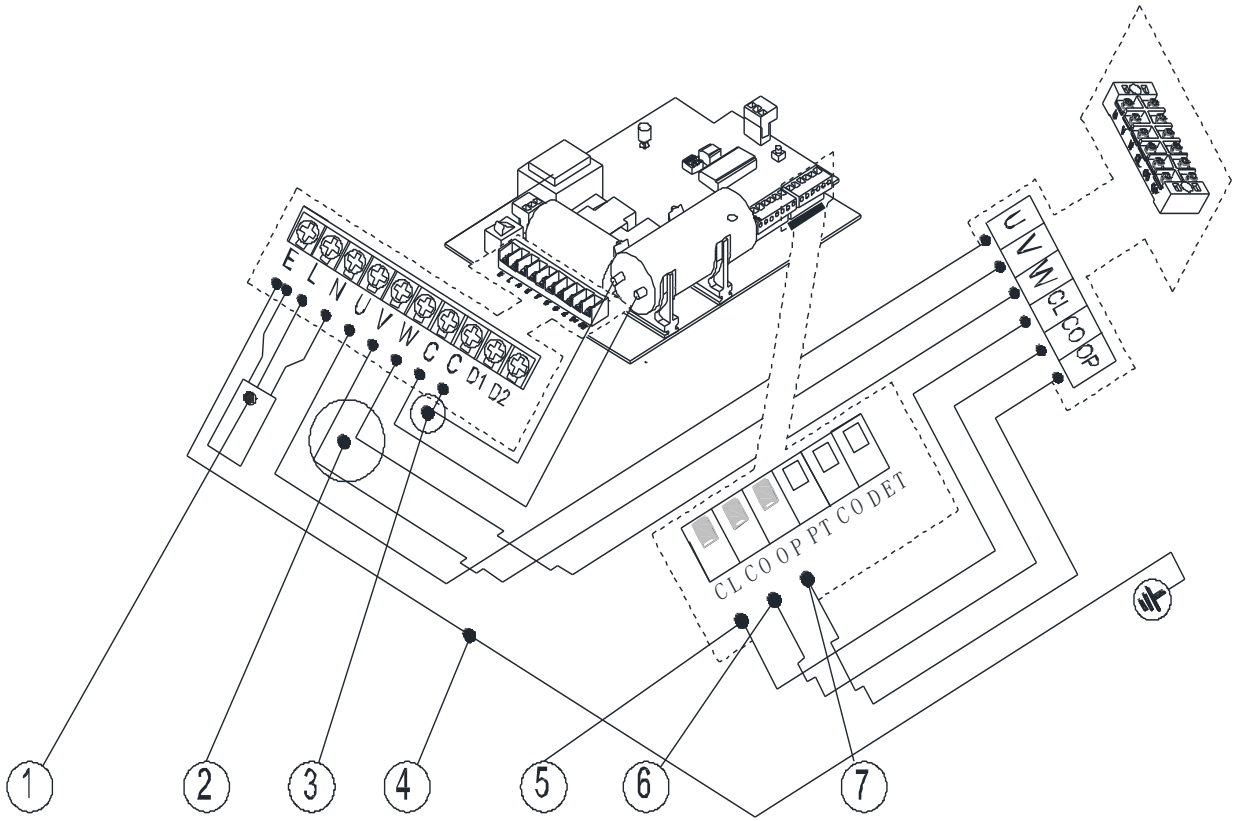
NOTE: Wiring principle of Infrared sensor is as follows:



If infrared sensor is interrupted when the gate is closing, the gate will immediately turn to open. The infrared output signal must be normally open (N.O.).

IGC4000 Control Panel Wiring (AC220V)

Wiring of power, motor and limit switch of IGO4000 single phase control box as shown below



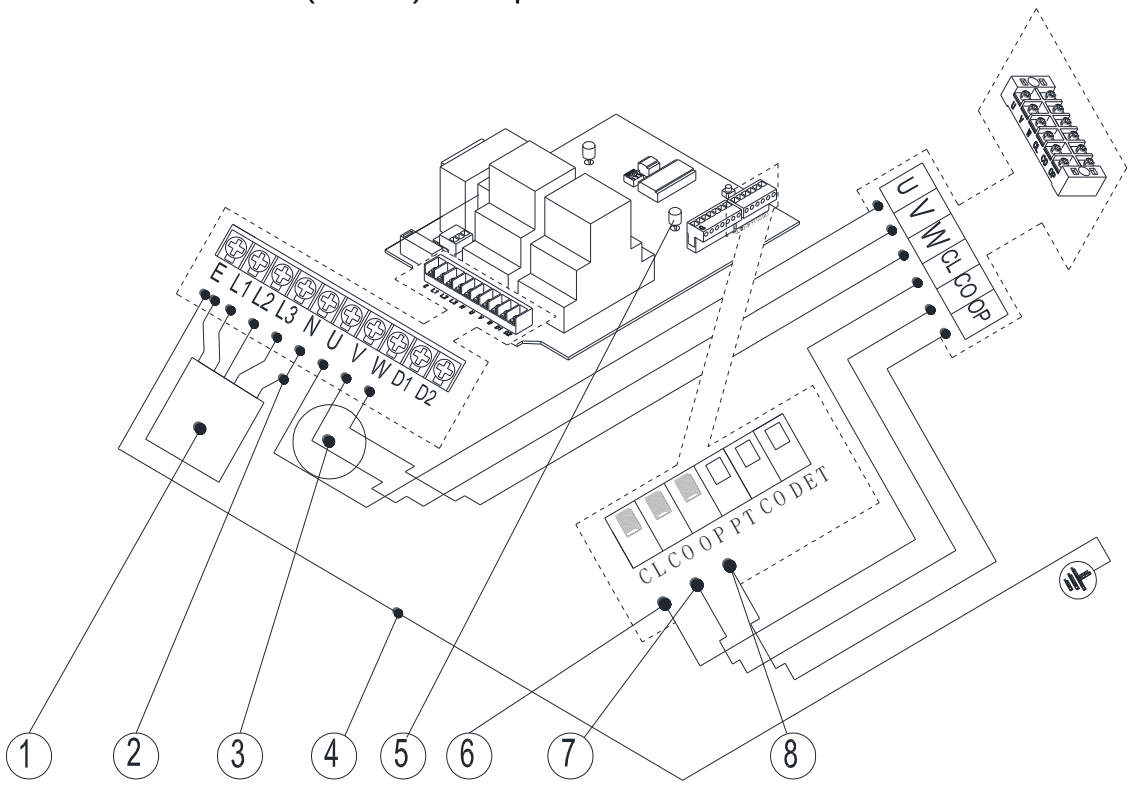
① Single Phase Power Wire L, N ② Motor Wire (U BLUE, V BROWN, W BLACK) ③ Capacitor Wire (C BLUE, C BROWN)
④ Grounded Wire (E YELLOW GREEN double color) ⑤ Close Limit Wire (CL RED)
⑥ Limit Common Wire (CO WHITE) ⑦ Open Limit Wire (OP GREEN)

Note: Make sure the wires are securely connected. After the wiring is completed, please tighten the waterproof connector, so that the wire is completely fixed.

WARNING: When connecting the power wires, be sure power is off so as to avoid electric shock!

IGK4000(AC380) Control Panel Wiring (AC 380V)

Wiring of power, motor and limit of IGO4000(AC460) three phase control box as shown below



① Three Phase Power Wire L1, L2, L3 ② Power Neutral Wire N ③ Motor Wire (U RED, V WHITE, W BLACK)
④ Grounded Wire (E YELLOW GRENN double color) ⑤ LED2 Indicator Light ⑥ Close Limit Wire (CL RED)
⑦ Limit Common Wire (CO WHITE) ⑧ Open Limit Wire (OP GREEN)

Note: 1. Make sure the wires are securely connected. After the wiring is completed, please tighten the waterproof connector, so that the wire is completely fixed.

2. If re-wiring, change in phase sequence which may cause the machine reverse should be avoided. Under the correct condition of phase sequence, LED2 indicator light should be off rather than flashing.

WARNING: When connecting the power line, be sure power is off so as to avoid electric shock!

Setting and Adjustment of Limit

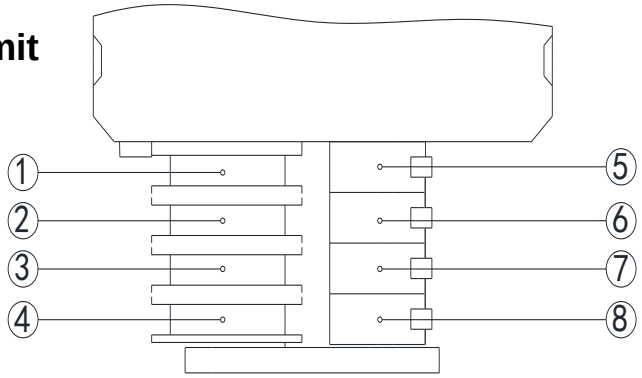
Limit Switch Structure:

①②Open Limit Cam (GREEN)

③④Close Limit Cam (RED)

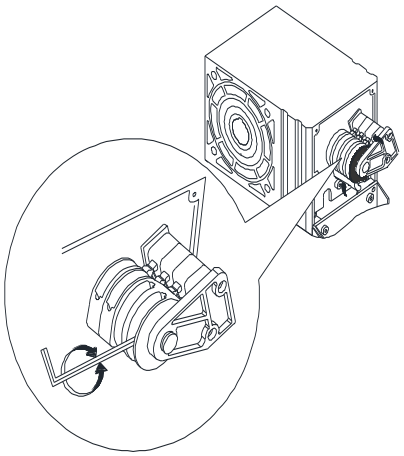
⑤⑥Open Signal Micro switch (N.C.)

⑦⑧Close Signal Micro switch (N.C.)



1) Close Limit Setting

Electronically close the gate to the close limit position, and press the "STOP" button on the control box to stop the gate. During the closing of gate, observe the rotation direction of red cam on the limit gear (see below). After the gate is stopped, make the two red cams continue to rotate in this direction by hand until both red cams pin down the limit switch, which will make cracking sounds, and then tighten the head screw in the middle of copper nut by hex wrench to fix two red cams.



2) Open Limit Setting

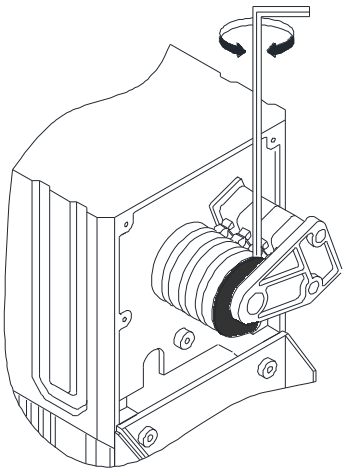
With the same way of close limit setting, fix the two green cams of open limit to the desired open limit position.

3) Precise Adjustment of Limit

Test the industrial gate operator. If open or close limit position is not ideal, open or close limit can be adjusted precisely.

a. Precise Adjustment of Close Limit:

Rotate the micrometer adjusting screw of two red cams clockwise or counterclockwise (as shown in the right), and observe the direction of movement of the cam. When the direction of movement is consistent with the original cam rotation direction, the close limit switch moves up and the



close position will be higher. Otherwise

close position will be lower; under normal

circumstances, if the hex wrench is rotated 90 °, the close position will differ by around 25mm.

b. Precise Adjustment of Open Limit: With the same way, rotate the micrometer adjusting screw of two green cams until the desired open limit position is reached.

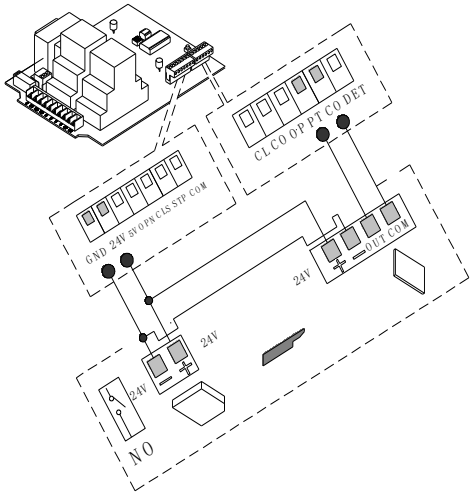
Note:

1) During debugging of gate operator, please use the buttons on the control box for operation.

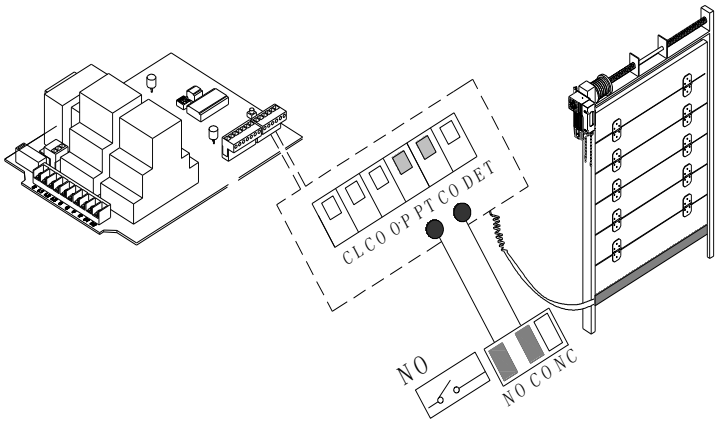
2) Test several times to ensure the normal opening or closing of gate, and control box should be installed in the wall or column of 1.4 meters where the operation of gate can be observed, and to prevent children from inadvertently touching.

Fittings Wiring

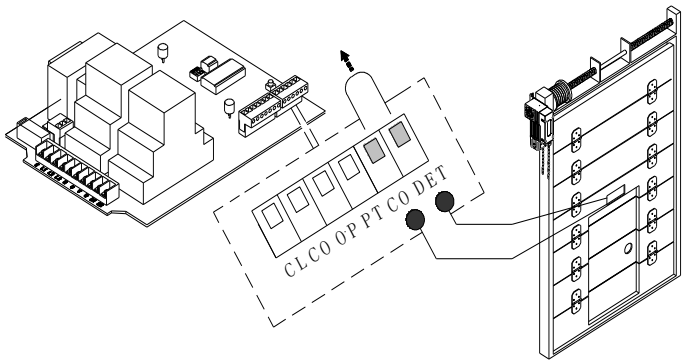
1. The signal wire of infrared sensor should be connected with PT and CO (State as delivered is N.O.), power with "24V" and GND";



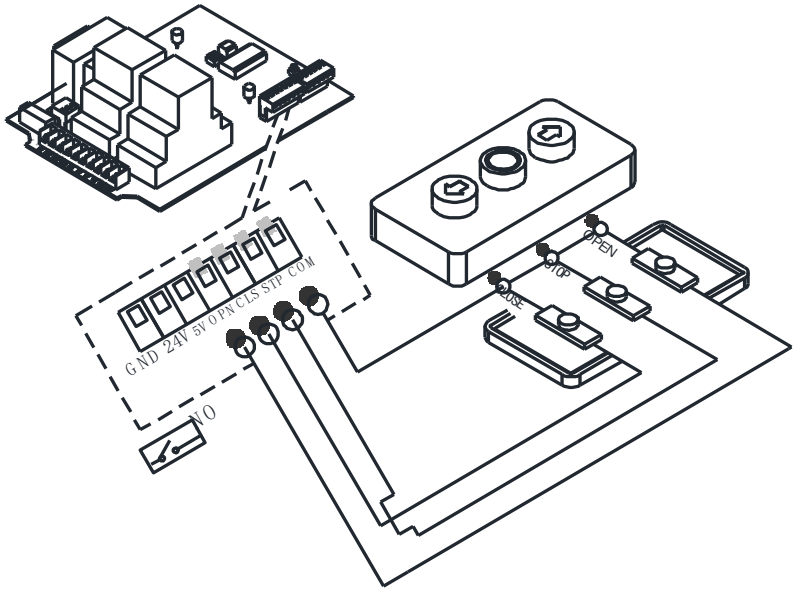
2. Airbag switch should be connected with PT and CO (State as delivered is N.O.)



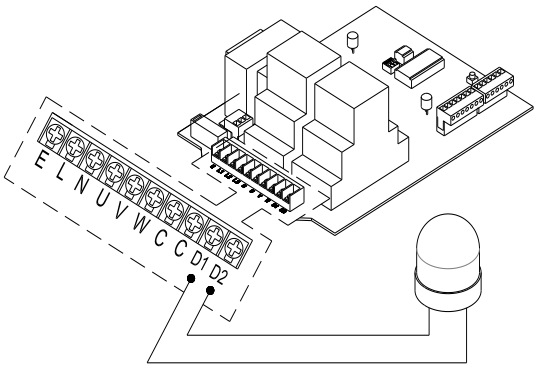
3. The gate in gate switch is wired with "DET" and "CO" (State as delivered is N.C.). When connect the gate in gate switch, please remove the short circuit wire jumper between "DET" and "CO".



4. External three button switch should be connected with OPN, CLS, STP, COM (State as delivered is N.O.). Open control wire with OPN; Close control wire with CLS; Stop control wire STP; COM is common wire.



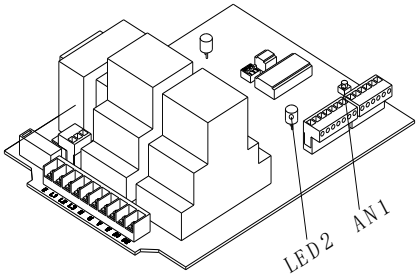
5. AC220V alarm lamp can be connected with D1, D2.



Setting and Debugging of Control Box

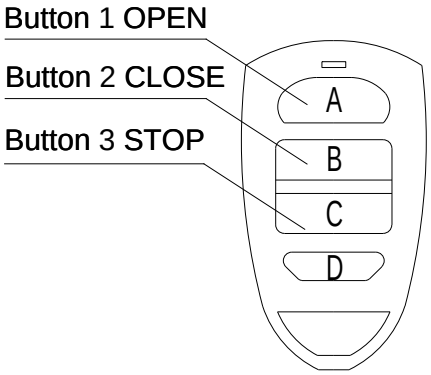
After confirming the wiring, turn on the power for the debugging of next step (the following debugging steps can be applied to both single phase and three phases control box):

a. Remote control learning:



① Press the black button AN1 on the circuit board, LED2 indicator light flickers, then press any button of transmitter (usually Button 1), LED2 indicator light flickers again, and then press the same button of transmitter, LED2 indicator light will be strobe for 4 seconds and later off. The learning of the remote control is finished.

① As for the learning of the other remote control, repeat the above steps. The same control panel can learn up to 25 remote controls. The remote control is in three button mode (i.e. the first button is "OPEN", the second button is "CLOSE", the third button is "STOP".)



Three button mode remote control

Note: As long as the "Button 1" is learned, the entire remote control learning can be completed.

b. Delete remote control:

Delete remote control that have been learned; press the learning button AN1 and indicator light will be on; loosen the button until LED2 is off. This indicates that all remote controls that learned previously have been deleted.

Note: Users are suggested to delete the original remote controls and re-learning them before the formal use in favor of security.

c. DIP switch selection:

By setting the DIP switch to set the required functions

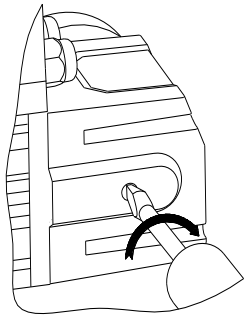
(See fig. below):

DIP Switch 1 2 3 ON OFF Automatic close function Enable	DIP Switch 1 2 3 ON OFF Automatic close function Disable
DIP Switch 1 2 3 ON OFF Inch moving (Automatic close is disabled)	DIP Switch 1 2 3 ON OFF Continuously moving (Automatic close is enabled)
DIP Switch 1 2 3 ON OFF Automatic close time 4s	DIP Switch 1 2 3 ON OFF Automatic close time 14s

Use of Hand-pulled Chain

When you drive the industrial gate manually, hand-pulled chain is needed. Hand-pulled chain should be operated by evenly continuous force, to avoid to damage the hand-pulled chain mechanism by furiously pulling. In the process of pulling the chain, the protective switch in the hand-pulled chain mechanism will automatically cut off the power supply. When the chain is released, the protective switch in the hand-pulled chain mechanism will be automatically reset to restore the normal electric use of the industrial gate operator. When the hand-pulled chain is not in use, please fix the hand-pulled chain to the wall in the appropriate way.

When using a period of time, if the chain can not smoothly open or close the gate, please adjust the adjustment screw on the hand-pulled chain clockwise (as shown in the right) until the gate can be opened normally by the hand-pulled chain.



Note:

1. After the chain is used, when the close indicator light of control box keeps flashing, the gate cannot be opened or closed electrically, because protection switch in the hand-pulled chain mechanism has not been automatically reset. Slightly lift the chain up and down, the control box can work properly until the gate-closing indicator light is off.

2. In the process of electrically opening or closing of gate, chain is strictly prohibited to be pulled, to avoid any accidents.

3. Hand-pulled chain is used for special circumstances such as power outage only, and cannot be used as a long-term normalized operating.

Common Faults and Countermeasures

No.	Trouble	Possible Cause	Countermeasures
1	The STOP indicator light on the control box is off or LED1 indicator light of circuit board is off.	1.The power supply is not connected or the wire connector is loose.	Tighten the screw of the wiring and re-power on.
		2.The emergency stop terminal is loose or emergency stop button is not reset.	Reinsert the emergency stop terminal or reset the emergency stop button.
		3.Power has input, while transformer without voltage output. Transformer has damaged in transit.	Replace the circuit board.
		4.The fuse in the single phase control box is burnt.	Replace the fuse.
2	After three phase control panel is powered on, LED2 indicator light on circuit board keeps flashing.	1.Phase sequence of power connection is wrong; phase sequence detection is activated.	Turn off the power, exchange any two phases among L1, L2, and L3 until the LED2 indicator light is off.
		2.Power phase shortage.	Use a multimeter to find out which power supply phase is missing and then rewiring.
3	CLOSE indicator light keeps flashing, press the buttons on control box or remote control buttons, the machine cannot work.	1.The protective device is activated, the hand-pulled chain mechanism is not reset, the disengagement wrench is not closed.	Slightly lift the chain up and down until the CLOSE indicator light is off. Close the disengagement wrench, so that limit switch makes cracking sound. Wait for a period of time after the motor cools down.
		2. Limit faults.	1.Check whether the terminals of machine and control box are correctly connected in accordance with the instruction of color or cable maker. 2.Whether the white limit common wire inside the control box is in poor contact; 3.Whether the OPEN limit cam and CLOSE limit cam hold down the limit switch simultaneously.

4	The opening and closing directions are opposite to the control box buttons.	Motor wires U, V and W are wired incorrectly.	Exchange the two wires V and W on the control box.
5	The gate cannot stop automatically after reach up the opening and closing limit position.	Open limit wire and Close limit wire are wired incorrectly.	Exchange the two wires OP and CL on the control box.
6	Press either the up or down button, the gate is opening upward only.	1.The DIP switch code of “Airbag Switch” or “Infrared Sensor” is on NC.	Adjust the airbag switch, dial the code to NO.
		2.Short circuit occurs inside the airbag switch, N.O. is turned into N.C..	Replace the airbag wire.
		3.Infrared protection is activated.	Adjust the infrared sensor.
7	The machine stops working suddenly in the running. The down button indicator light keeps flashing.	Motor runs too frequently, resulting in motor overheating, and the thermal protection is activated.	Wait for a period of time after the motor cools down.
8	The machine stops working suddenly in the running, and the up or down button indicator light is on displaying the machine is in progress.	Balance of the gate balance spring is lost or the gate meets obstacle, the motor cannot drive the gate, motor locked.	1.Adjust the balance spring; 2.Rail is deformed, find where is the obstacle and remove it.
9	The gate cannot be completely closed or opened.	Limit adjustment is unreasonable or loose.	Re-adjust the limit.
10	Remote control does not work	1.The remote control indicator light is off 2. The transmitter does not match the receiver.	1.Replace the battery. 2.Re-learning the remote control.
11	After the gate in gate switch is connected, the control box doesn't work.	The gate in gate switch function is activated, and the wire between CO and DET is disconnected.	1.Close the small gate, make sure that the switch is normal. 2.Re-connect the wire between CO and DET.

Note: Please check the opening and closing travel of industrial gate operator, the accuracy and reliability of limit and the balance of gate, and make the adjustment timely. If necessary, repairs and adjustment shall be done by professionals.

PACKING LIST

Main Engine Packing Box IGO4000/IGO4000(AC380)			
No.	Name	Amount	Note
1	Main engine	1	
2	Mounting bracket	1	
3	Fixing sleeve	2	Contain M8×10 fastening screw
4	Special wrench	1	2.5
5	Special flat key	1	6×70
6	Hexagon head flange bolts M10×20	4	
7	User manual	1	

Control Unit Packing Box IGC4000/IGC4000(AC380)			
No.	Name	Amount	Note
1	Control box	1	
2	Remote control	2	
3	Motor four-core wire	1	5 meter
4	Limit four-core wire	1	5 meter
5	Accessory bag	1	