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Cold storage sliding door Servo deceleration motor controller

AIG-750L-03 Serial

User manual



Please read this manual carefully before operating the controller
and kept secure for future reference.



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1. Control system specifications:

1.1. Rated parameters:

Refrigerator door control box model	AIG-1500L-01J	
Controller item number	AIG-750L-03 (02: Direct-drive motor 03: Geared motors)	
Servo gear motor model	MT01-JS-45N	
Controller rated voltage	220V	
Controller rated power	0.75KW	
External heating wire specification	Voltage: 220V	Power: < 1KW
External air curtain specifications	Voltage: 220V or 380V	Power: < 2.2KW

1.2. Warning:

Please be sure to read it carefully, and bear the consequences if you violate the law.

- ✧ Please ask a professional electrician to carry out wiring, debugging, overhaul and other operations, the system can only be delivered after normal operation.
- ✧ Be sure to connect the earth wire, which is located in the lower left corner of the controller and is labelled ground.
- ✧ When the cold storage door is normally opened and closed, there is no anti-pinch protection within 20cm from the opening and closing place, please do not force your way in, the user needs to post the precautions in the conspicuous position, and you need to bear the responsibility by yourself in case of personal accidents.
- ✧ The output of the heating wire is 220V, if you connect 36V or other specifications of the heating wire, please adapt to the corresponding transformer.
- ✧ Permanent magnet synchronous motors are moisture-proof but not waterproof, do not install them directly outdoors or in places where water droplets may form.

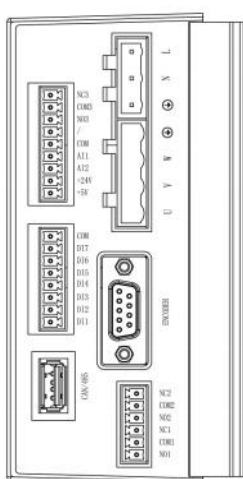


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2. The controller I/O external interface is shown in the following figure:

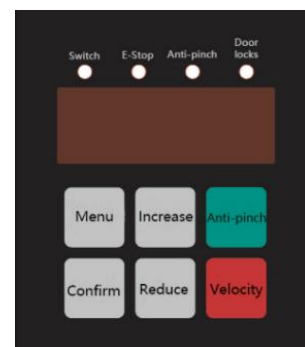


Door Controller Terminal Description			
Terminal name	Define	Terminal name	Define
DI1	Pull-cord signal	L、 N	Input power
DI2	Radar signal	U、 V、 W	Synchronous motor
DI3	Door lock signal	+5V	5V Output
DI4	Closing Signal	A1	Door lock signal (active)
DI5	Warning signal	A2	Remote control input
DI6	Emergency stop	NO1、 COM1、 NC1	Relay 1
DI7	Anti-pinch signal	NO2、 COM2、 NC2	Relay 2
COM	Public side		
ENCODR	Encoders		

3. Controller operation panel and match code description:

3.1. Indicator light description:

The four signal indications of switch, emergency stop, anti-pinch and door lock are normally extinguished, flashing display only when there is an external control signal, the status of the indicator allows you to detect whether the external signal is normal or not.



3.2. Description of the code:

(Factory coded, unless the remote control does not work, then you need to re-code it.)

Press and hold the code pairing button on the remote control receiver module for two seconds, then release, the indicator light is always on, press the remote control or button, the indicator light is off, the code is successful.

Note: 1) If all the remotes can't match the code, it may be the problem of remote control receiving module, if only one of them can't match the code, there is a problem with the remote control or wireless button.

2) You can only work on one at a time, just reopen it when you work on the next one.

3.3. Clear Code Description:

Continuously press and hold the code pairing button on the remote control receiver module for **ten seconds**, the **indicator light** blinks rapidly for a few times, the code is cleared



successfully.

Note: Clear the code only when there is a problem, do not press the remote control during the clearing process.

4. Debugging instructions:

4.1. Check the wiring

Firstly, check whether the motor plug (**screw holes facing forward, plugging in reverse will burn the machine**) and the encoder wire are plugged in properly, whether the encoder fixing screws are tightened, and whether the power cord and external control signal wires such as buttons are wired correctly. Then move the door to the half-open position, check whether the manual can open and close the door normally, confirm that there is no error before commissioning.

4.2. Debugging methods

After powering up without operation, the speaker plays : **' The system will be automatically commissioned in five seconds, please pay attention, five, four, three, two, one.'**

The voice ends to start the automatic test and the voice plays: **"Please note that during commissioning "** , door opens and closes automatically once , upon hearing the : **"Commissioning complete, door in closed position"** , the door is commissioned and ready for use.

Note: 1) If the door is in the open position at the end of commissioning: Press **Menu** → transfer to **F009** → press **Confirm** → display **0000** or **0001** → press **Increase** or **Reduce** → If the current value is **0000** would be changed to **0001** , If the current value is **0001** would be changed to **0000** → press **Confirm** → display **F026** just power down and power up again.

2) Debugged controllers are not automatically tested, can press **Speed** button 5 seconds retest.

3) Do not perform any operation during the measurement, if a malfunction occurs you can stop the measurement by pressing the **Speed** key.

4) When powering up for the first time, it must be ensured that a slow opening or closing operation is in place. **Anti-trap** tests are prohibited.

5) The encoder wire is shielded wire, it is forbidden to **cut** and lengthen it, the problems arising from this will be borne by the customer, if the customer wants to extend it, please contact us to buy the encoder extension wire.



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5. Parameter description:

No.	Name	Setting range	02 Default value	03 Default value
F004	Speed gear setting	Sd01-Sd09 (1st gear is the slowest 9th gear is the fastest)	Sd00	Sd00
F005	Motor starting current	10 - 150 (02) 10-100 (03)	50	150
F008	Working mode selection	3: External control mode 4: Initial angle measurement 5: Door width measurement	4	4
F009	Opening and closing door direction setting	0: Positive mounting 1: Reverse mounting	0	0
F014	Open-to-position tightening torque	10 - 150 (Door doesn't open in place to turn up)	60	40
F015	Closed in place tightening torque	10 - 150 (Failure to close doors increases)	80	60
F018	Opening process anti-clamping torque	2 - 150 (The smaller the data, the lower the anti-pinch force)	150	80
F019	Closing process anti-clamping torque	FJ02 - FJ80 (The smaller the data, the lower the anti-pinch force)	FJ40	FJ40
F025	Relay 1 output	0: Open process output 1: Output during shutdown	10	10
F026	Relay 2 output	2: Open process and in place output 3: Door lock signal	4	4
F027	Relay 3 output	4: Open-to-position output 5: Off-position output 6: Anti-pinch time output 7: Output when reporting an error 8: Alarm output after door opening timer 9: Output during motor operation 10: Air curtain switching output 13: Library occupied signal output Note: Plus 20 is an inverse logic output	9	9
F029	Restore factory values	1: Restore default factory parameters	0	0
Press Menu→set to F029→Press Confirm→Display 0000→Press Increase→Display 0001→Press Confirm→Screen goes out — Show down display E--c, recovery successful				
F105	Tightening time in place	0.1 - 10 (Second)	3.0	3.0
If the force is too high when the door opens in place, turn it small F105, If you can't get it right, turn it big F105				
F106	Off in place to tighten time	0.1 - 10 (Second) (Failure to close doors increases)	3.0	3.0
If the force is too high when the cold storage door is closed in place, turn it small F106, if it doesn't close, turn it up				



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F106				
F107	Extended closing time	0 - 1200 (Second)	0: No delayed closing	0
Press Menu button→Display F107→Press Confirm button→Display 0000→Press Increase button modify parameters (0 - 1200 (Second) , do not close the door automatically when set to 0000) →Press Confirm button to save→Display F004→Press Menu button→Display 000r, after the setting is completed, the door can be opened and closed automatically.				

5.1. Description of common function adjustments

1) Anti-pinch adjustment: Press the **Anti-pinch** button to display **FJ40** , press again the **anti-pinch** to display **FJ39** , click on the **Anti-pinch** to reduce it by one notch, adjusted to the appropriate gear without operation for three seconds after the automatic exit, the smaller the data anti-pinch the more sensitive.

2) Speed adjustment: Press the **Speed** button to display **Sd00** , then press the **Speed** again to display **Sd09** , press to reduce **Speed** by one notch, the lower the gear, the slower the speed, adjusted to the appropriate gear after three seconds of non-operation automatically exit.

6. Common Troubleshooting

Fault phenomenon		Troubleshooting causes
Display E--c or r--c		The controller's not tuned: Restore the factory value, and then re-commission according to the commissioning method.
Voice horn prompt	Encoder faults	Display E-02 encoder failure, check whether the encoder cable has broken broken place, the nine pins in the plug whether there are broken or bent, replace the encoder can be, if the replacement still display E-02 is a problem with the controller.
	Undervoltage protection	Display E-05 undervoltage protection, the voltage is below 150V for 800ms, or the power cable is too thin (wire diameter cannot be less than 4 sq.ft.)
	Door opening resistance is too large, please check before use	Display E-07 Starting blocked, door too heavy, drop slot too deep or mechanical problem.
	System protection please power off and reboot	Display E-08、 E-09 the process of opening and closing the door is blocked, disconnect and reboot the power again.
		Display E-15、 E-16 motor overspeed and reversal protection, power off and power on again
	Door width self-learning malfunction please re-commission	Display E-18 door width self-learning abnormality, power off and restart the power again.
Short-circuited door	Pull rope switch short-circuit fault the switch indicator light keeps flashing,	



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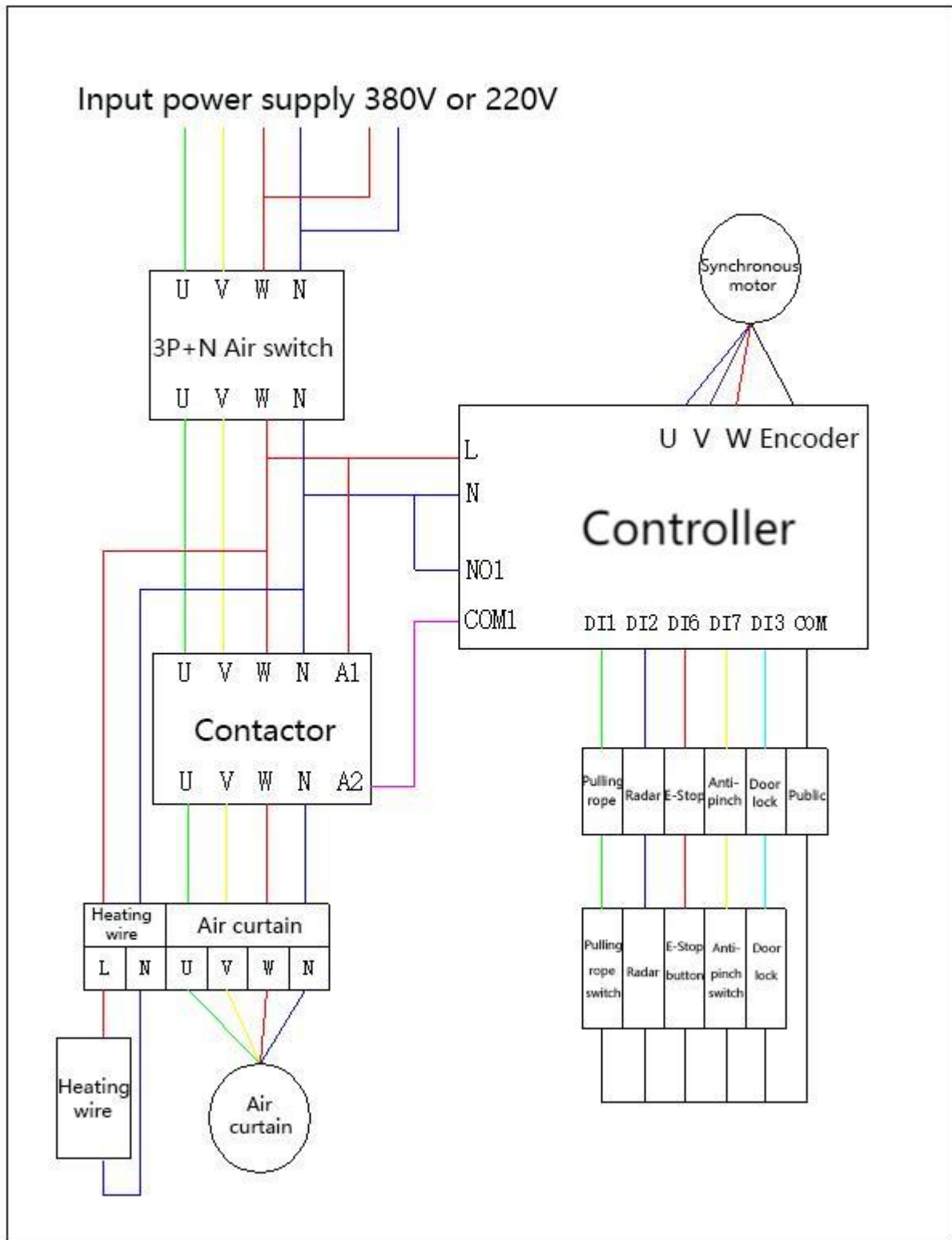
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	opening signal	at this time ,press the remote control, button or pull the pull rope switch door does not move.
	Door locks work	Door lock malfunction, door lock does not open in place or door lock switch contacts are short-circuited.
Display E-01 、 E-99 or 8888 flashing wildly		Software and hardware failure, if the fault code is still displayed after power off and on again, the controller or encoder is faulty, return to the factory for testing.
Controller does not display		1) The power supply voltage is not correct, use a multimeter to measure whether the input voltage is 220V. Note: The input voltage is 220V (Allowable fluctuation $\pm 10\%$) , if you connect it to 380V, it will be damaged. Blown fuses, loose wires or faulty components in the controller. Controller malfunction, return to factory for testing.
Faulty remote control or wireless button is faulty		Press the remote control or button, the receiving module light does not light up, press the code setting instructions to re-code the code. Wireless buttons and remote control batteries are dead, press the remote control when the red light does not light up.
Motor failure		1) The motor will be unplugged, adjust the multimeter to the resistance (range selection 200 Ω), were measured under the motor U and V, U and W, V and W between the resistance is normal (The gear motors is about 20 Ω , direct-drive motors is about 23 Ω), and then set the multimeter to 20M Ω file,whether the resistance value between U and PE, V and PE, W and PE is greater than 5M Ω , if less than 5M Ω , state that the motor leakage, please return to the factory for repair! (2) Motor plug U, V, W, PE four wire order position is fixed, the order is not right motor will not run!
Mechanical breakdown		Manual can not open and close the door properly, push to a certain position is stuck, can not be pushed, please troubleshoot before use.
Leakage circuit breaker tripped		1) Heating wire, air curtain machine or synchronous motor leakage, can be removed to observe whether it still jumps. 2) Leakage circuit breaker quality problems. 3) Input power supply problems, please replace the temporary power test. 4) Controller failure, back to the factory test.



7. Wiring diagram





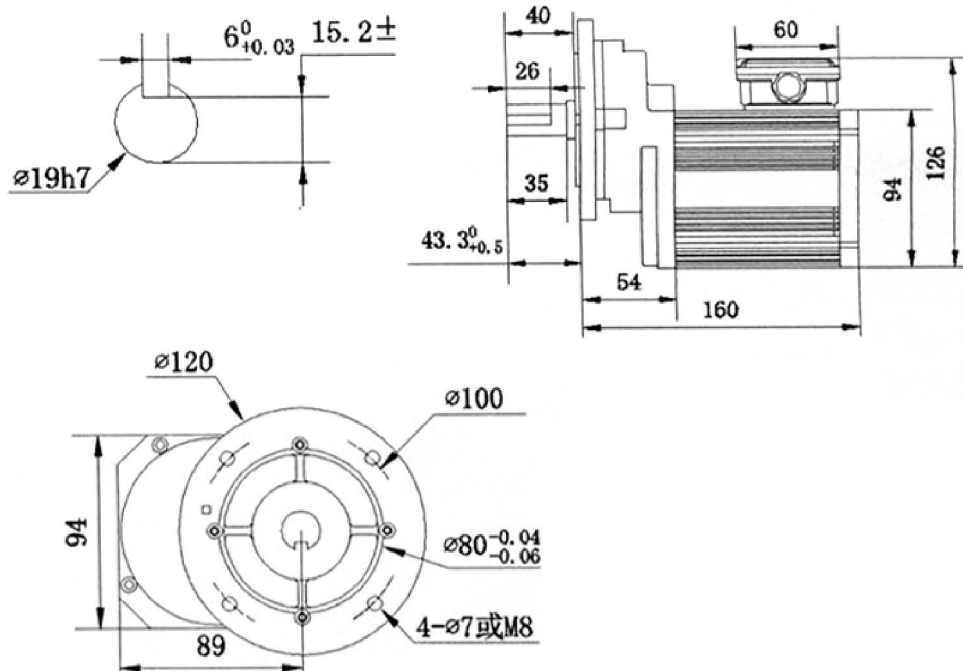
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8. Motor specifications

Motor model	DLG-56S-45	Order number	MT01-JS-45N
Motor name	Three-phase water magnetic gear motor	Pole no	8
Rated power	600W	Phase number	3Ph
Rated voltage	220V±10%	Rated current	4.8A
Maximum current	7A	Phase resistance	At 20 °C
Phase inductance	d-axis ,Q-axis	Rated motor speed	800rpm
Gearbox output shaft speed	125rpm	Reduction gearbox model	GD56
Reduction ratio	1: 6.45	Rated torque	45N.m
Maximum torque	>60N.m	Temperature rise	75°C
Working system	S1	Insulation class	F
Noise	<60dB	Protection grade	IP65



Ambient temperature	-25C - +50C	Relative humidity	≤95%(non-condensing)
Cooling method	1C410		



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