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Cold storage sliding door

DC brushless motor controller

AIG-750L-06

Use manual



Please read this manual carefully before operating the controller
and keep it in a safe place for future reference.



Catalogue

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1. Debugging specification:

1.1. Checking the wiring

Firstly, check whether the motor plug and signal line are plugged in properly, and whether the power line and external control signal line such as button are wired correctly. Then move the door to the half-open position, check whether the manual can switch the door normally, confirm that there is no error before debugging.

Note: The motor earth wire must be connected to the controller's grounding mark, otherwise the motor shell will produce high-voltage induced electricity, there is a risk of electric shock, and may also damage the motor.

1.2. Commissioning method

First use instructions:

1) Firstly, pull the door to the centre position and press the remote control or button, the first time is **open the door** (If is **close the door**, immediately press **STOP** button 5 seconds, turn off the screen), once the slow door opener is in place, press the remote control again and the slow door closer is in place and commissioning is complete.



2) Do not perform any operation during the measurement, in case of malfunction press the **STOP** button to stop measurement.

3) When powering up for the first time, it is important to ensure that the slow opening or closing of the door is running in place. It is prohibited to carry out the **anti-pinch** test.

4) Signals are prohibited from being **cut** and extended, and problems arising from this are the responsibility of the customer.



2. Control system specifications:

2.1. Rated parameters

Refrigerator door control box model	AIG-1500P-02Y	
Controller model	AIG-750L-06 (Voice model, touch screen model)	
DC Brushless motor	MT02-WS-200W/50N	
DC Brushless motor	MT02-WS-150W/90N	
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

2.2. Warnings

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

1) Please ask a professional electrician to carry out wiring, debugging, overhaul and other operations, the system can only be delivered after normal operation.

2) Be sure to connect the earth wire, which is located on the right side of the controller and is labelled ground.

3) The cold storage door is not protected against entrapment within 20 cm of the opening and closing positions when the door is normally opened and closed. Please do not enter by force, the user needs to post the precautions in a conspicuous position, and if a personal accident occurs, you need to bear the responsibility.

4) 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.

5) The motor is moisture-proof but not waterproof, do not install directly outdoors or where water droplets may form.



3. Controller operating panel and code pairing instructions:

3.1. Indicator description

The digital tube displays 000 in standby mode , each digital display represents a different state.

The first digit represents the input signal , remote control or wireless button display 100, pull cord display 200, radar display 300, anti-pinch display 400, closed door display 500.

The second digit represents the door stop signal and displays 010 when the door lock is closed, display 020 when emergency stop signal is closed.

The third digital tube represents the operation status of the switching door, displaying 001 when the door is opened and 002 when it is closed.

3.2. Match code description:

(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 receiver module to see the indicator light on and release (about 1 second) , quickly press the remote control or button, indicator light is off match code is completed.

Note:

1) If all the remote controls do not match, it may be a problem with the remote control receiver module, if only one of them does not match, there is a problem with the remote control or the 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:

Press and hold the code pairing button on the receiver module to see the indicator light go out and release it (about 10 seconds), release the button to see the light blink a little, and the code clearing is completed.

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



4. Common function debugging instructions

Function	Operation method (the first digit is the function, the last two digits are the parameter values)
Opening speed (cm/s)	Press MODE button to 1.60, press UP or DOWN to set the speed (1.01-1.99) , then press SET button to save.
Closing speed (cm/sec)	Press MODE button to 2.50, press UP or DOWN to set the speed (2.01-2.99) , then press SET button to save.
Opening torque in position	Press MODE button to 3.30, press UP or DOWN to set torque (3.01-3.99) , then press SET button to save.
Closing torque in position	Press MODE button to 4.40, press UP or DOWN to set torque (4.01-4.99) , then press SET button to save.
Closed door anti-pinch torque	Press MODE button to 5.40, press UP or DOWN to set torque (5.01-5.99) , then press SET button to save.
Delayed closing (sec)	Press MODE button to 6.00, press UP or DOWN to set time (6.00-6.99) , then press SET button to save.
Remote control match coding	Press and hold the code pairing button on the receiver module to see the indicator light on to release (about 1 second), quickly press the remote control or button, the indicator light goes out to complete the code pairing.
Air curtain adjustment	If the air curtain machine works in the closed position and stops in the open position, pull the door to the half-open position, press the STOP button for 5 seconds, and the screen will go out for a while.



5. Administrator parameter description

Into the administrator mode instructions: long press the MODE key for five seconds into the administrator menu, the controller displays F01 parameters.

Parameter	Name	Setting range	
F01	Demonstration mode in place residence time	0-10	0
F02	Switching gate command setting	0: Nonstop switch 1: Open door only 2: Start, stop and close	2
F03	Open door high speed velocity	10-900	600
F04	Close door high speed velocity	10-900	400
F05	Door opening starting current	1-150	100
F06	Closing start-up current	1-150	100
F08	Working mode selection	0: Panel click operation 1: External control mode	1
F09	Motor steering setting	0: Positive mounting 1: Reverse mounting	0
F11	Motor holding force release time after switching in place	0-999	3
F12	Maximum speed	1-900	800
F13	Start-up safety distance (No judgement on locked-rotor)	1-30	15
F14	Door opening in place tightening force	1-99	30
F15	Closed in place tightening force	1-99	40
F18	Door opening process current	1-99	70
F19	Closing process current	1-99	40
F20	Door opening anti-pinch judgement time	1-20	4
F21	Closed door anti-pinch determination time	1-20	4



F22	Radar port expansion function	0: Radar 2: Close door 1: Anti-pinch	0
F23	Heating wire conduction time	0-60	45
F24	Heating wire closing time	1-60	45
F25 F26 F27	Relay 1 function setting (below) Relay 2 function setting (top) Relay 3 function setting (empty)	0: Output during door opening 1: Output during closing process 2: Open the door process and open in place output 3: Door lock signal output 4: Open door in place output 5: Closed door in place output 6: Anti-pinch output 7: Output when an error is reported 8: Alarm F99 after door opening timer 9: Output during motor operation 10: Air curtain 11: Access control system (Special program) 12: Heating wire on/off 13: Library occupied signal output Note: Plus 20 is anti-logic	30 24 25
F29	Restore factory settings	1: Recovery of TIGER parameters 2: Recovery of TONGLING parameters	1
F47	Synchronous motor current KP	1-400	200
F48	Synchronous motor current K	1-500	1
F51	Encoder wire count	6-4096	6
F53	Number of motor pole pairs	2-100	10
F55	Motor reduction ratio	10-500	54
F58 F59 F60	Expiry date setting	0-999 (When F58= (F59+F60) *2+3the value of F59 and F60 can be changed, 1means 10 days	9 3 0
F61	Current accumulated working time	0-9999	
F70	The door starts buffer distance	10-900mm	150
F71	Door opening start-up buffer speed	10-900mm/s	200
F72	Open the door to accelerate plus acceleration	100-900mm/s/s/s	300
F73	Door opening acceleration	100-900mm/s/s	300



F74	Door opening speed limit	10-900mm/s	600
F75	Open door deceleration plus acceleration	100-900mm/s/s/s	500
F76	Open door deceleration acceleration	100-900mm/s/s	800
F77	Door opening buffer distance	10-900mm	10
F78	Door opening in place buffer speed	10-900mm/s	100
F79	Open door deceleration distance	10-900mm	100
F80	Buffer distance for door closing activation	10-900mm	150
F81	Shutdown start-up buffer speed	10-900mm/s	200
F82	Close door and accelerate plus acceleration	100-900mm/s/s/s	300
F83	Closed door acceleration acceleration	100-900mm/s/s	300
F84	Closing speed limit	10-900mm/s	400
F85	Closed door deceleration plus acceleration	100-900mm/s/s/s	500
F86	Deceleration acceleration for door closing	100-900mm/s/s	800
F87	Buffer distance for closing the door in place	10-900mm	10
F88	Buffer speed for closing the door in place	10-900mm/s	100
F89	Closing deceleration distance	10-900mm	100
F92	Door lock normally open and normally closed setting	0-1	0
F93	Emergency stop normally open and normally closed settings	0-1	0
F94	Anti-pinch normally open and normally closed setting	0-1	0
F95	Radar delay effective setting	0: All valid 1: The time delay is only valid for radar signals	0



F96	Manual door opening (not available)	0: Close 1: Open	
F97	DI8 Remote control mode setting	0: Switch non-stop 1: Only open the door 2: Start, stop and close	2
F98	Startup error time	1-200 (0.1 second)	50
F99	Door opening timer alarm	1-99	10
P00	Open in position hold current	0-99	0
P01	Off in position hold current	0-99	1
P02	Determination time for locked rotor after the switch is in place	1-99	10
P03	Open into position keep speed	10-200	100
P04	Close in place to keep speed	10-200	100
P05	Open in place to keep time	1-20 (second)	10
P06	Off in place to keep time	1-20 (second)	10
P07	Extended closing time	0-99 (second)	0
P09	Temperature compensation	0-200	100
P10	Measured value of door width	100-9999	320
P12	Power on slow opening and closing speed	20-120	80

6. Description of monitoring parameters:

Into the monitoring parameter description: Long press the MODE key for five seconds into the administrator menu, the controller displays F01 parameters, continue to press the MODE key displays N01

No.	Monitoring Projects	Clarification
N01	Synchronised display of output frequency	Brushless display speed
N02	Output current	
N03	Door position	
N04	Door position encoder value	
N05	Encoder value in open position	Reduce the display by 10 times



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N06	Off-position encoder value	Reduce the display by 10 times
N07		
N08	Encoder output status	
N09	Error record 1	Latest faults
N10	Error record 2	
N11	Error record 3	
N12	Error record 4	
N13	Input signal	
N14	Output signal	
N15	Busbar voltage	
N16	Software version	
N17	Synchronised display of AI2 sample values	Brushless display temperature
N18	Synchronised display of AI1 sample values	Brushless display of temperature11 sampling values
N19	EEPROM password	0: Normal 1: Protected
N20	Cryptographic chip code	0: Normal 1: Protected
N21	Current runtime	Unit hour
N22	Number of runs (0-999 times)	Unit times
N23	Number of runs (1K-999K times)	Unit thousand times
N24	Number of runs (100W-999W times)	Unit million times

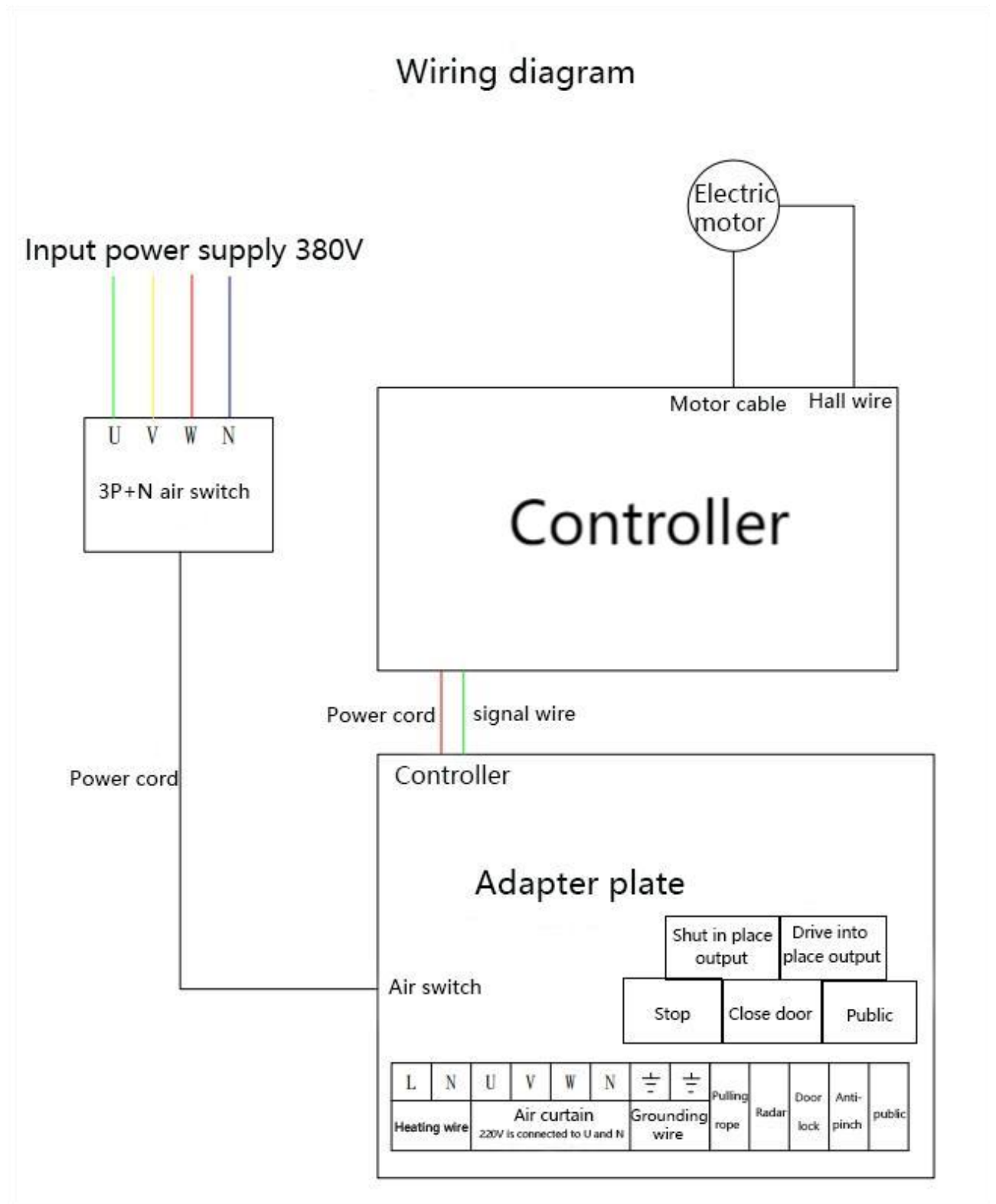


7. Description of common faults

Fault phenomenon	Reason for failure
E02: Hall Failure	Motor hall fault, check the plug is loose or not, Prohibit the private extension of the motor line, special circumstances must be extended, the extension line should be shielded wire, motor and Hall line should be connected with four-core five-core wires and separately, can not be used with multi-core wires and together,if the resulting problems are not covered by the warranty!
E05: Undervoltage protection	Grid fluctuates too much, joints are not tightened or power cords are too thin (Wire diameter shall not be less than 4 sq. ft.)
E07: Boot failure	The door is too heavy, the drop slot is too deep, or there is a mechanical problem with the door jamming.
E15、16: Overspeed and Reversal	Motor overspeed or reversal
E18: Gate width learning fault	Check whether the wire sequence of the motor and hall is correct, whether the plug is plugged in, whether the motor ground is connected to the controller ground, whether the door is stuck manually push not move.
E01、99: Software and hardware failure	If the fault code is still displayed after power off and on again, the controller is faulty, return to the factory for testing.
Controller does not display	1) Power supply voltage is not correct, use a multimeter to measure whether the input voltage is 220V (allowed to fluctuate $\pm 10\%$), if connect to 380V could be damaged. 2) Controller faults such as blown fuses or faulty components in the controller, return to the factory for testing.
Motor fault	The motor will be unplugged, the multimeter is set to the resistance file, respectively, measure the motor's UV, UW, VW resistance value, the normal resistance value is 13Ω .
Leakage circuit breaker tripped	1) Heating wire, air curtain machine leakage, can be removed to observe whether it still jumps. 2) Leakage protection or breaker quality problems caused by moisture in leakage breakers 3) Controller malfunction, return to factory for testing.

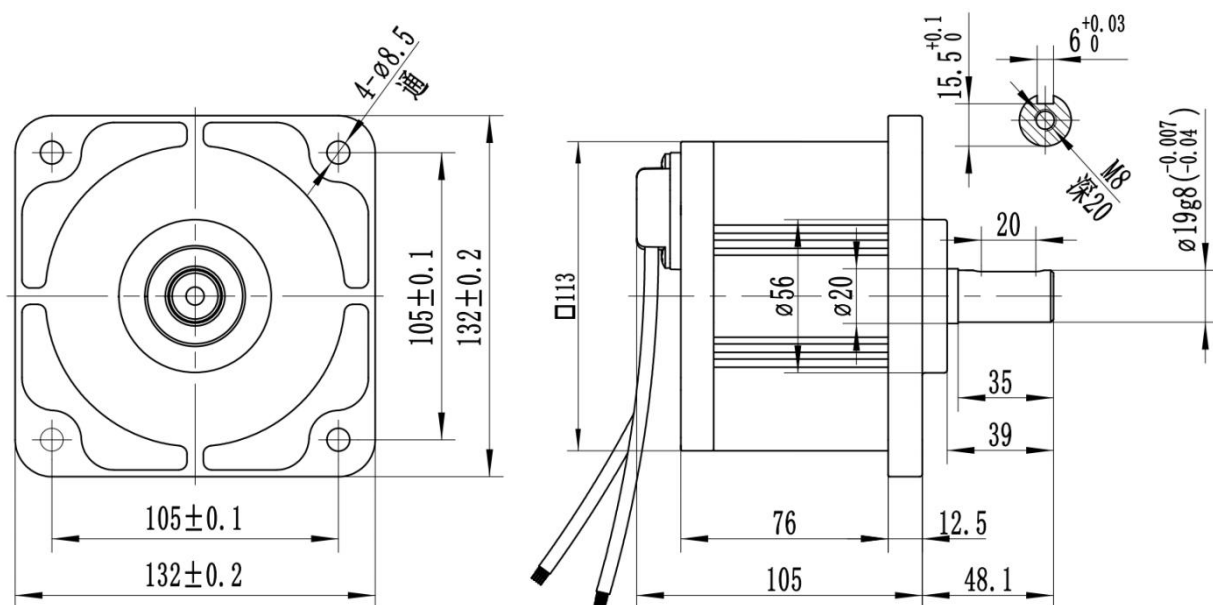


8. Wiring diagram



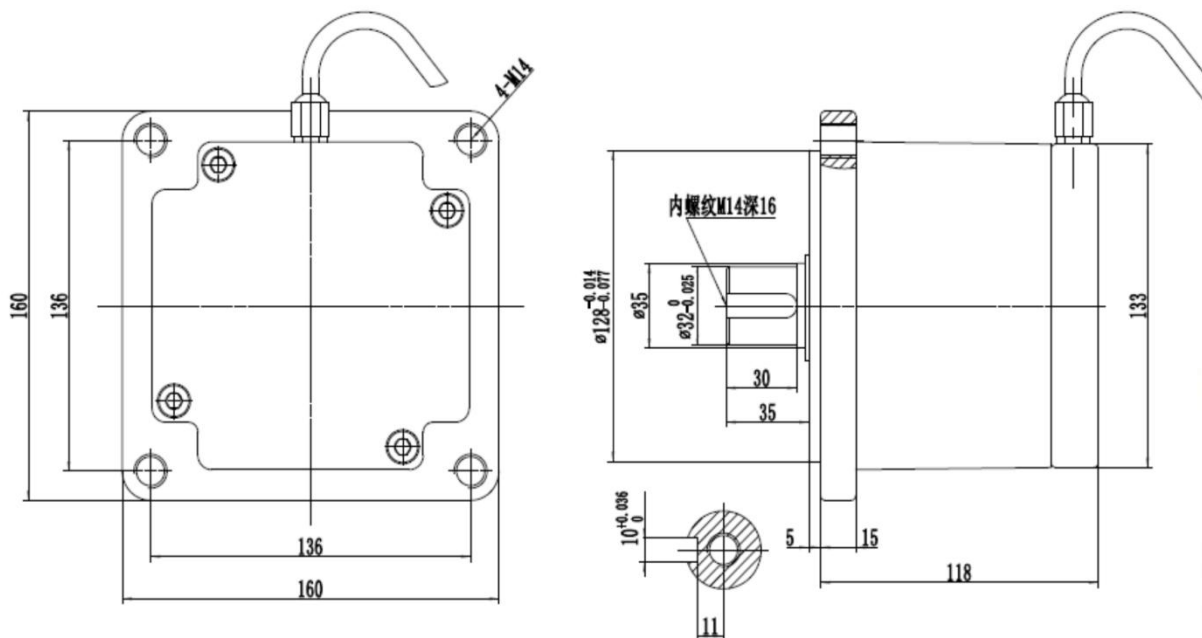
9. Motor specifications

Motor Model	MT02-WS-50N	Driving type	DC brushless
Rated Voltage	AC220V	Rated Power	200 W
No load current	<0.5 A	Max speed	210±10 rpm
Rated Torque	14 Nm	Max Torque	≥50 Nm
Rated Current	2 A	Max efficiency	≥82%
Pole no	20	Insulation Grade	B
Waterproof level	IP65	Working Temp	-30°C~60°C
Cable specification	4×0.5mm ² +5×0.3mm ²	Weight	3.5Kg
Cable length	350 mm (client can definable)	Duty	S3-40%





Motor Model	MT02-WS-90N	Driving type	DC brushless
Rated Voltage	AC220V	Rated Power	150 W
Current w/o loading	0.2 A	Speed w/o loading	85 RPM
Rated Torque	30 N.M	Max Torque	90N.m
Rated Current	1.2 A	Rated efficiency	84%
Rated speed	65	Limited current	3A
Insulation Grade	B	Working Temp	-20°C~50°C
Pole no.	20	Cable specification	4×0.5mm ² +5×0.3mm ²
Waterproof level	IPX4	Weight	6KG
Cable length	4M		





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