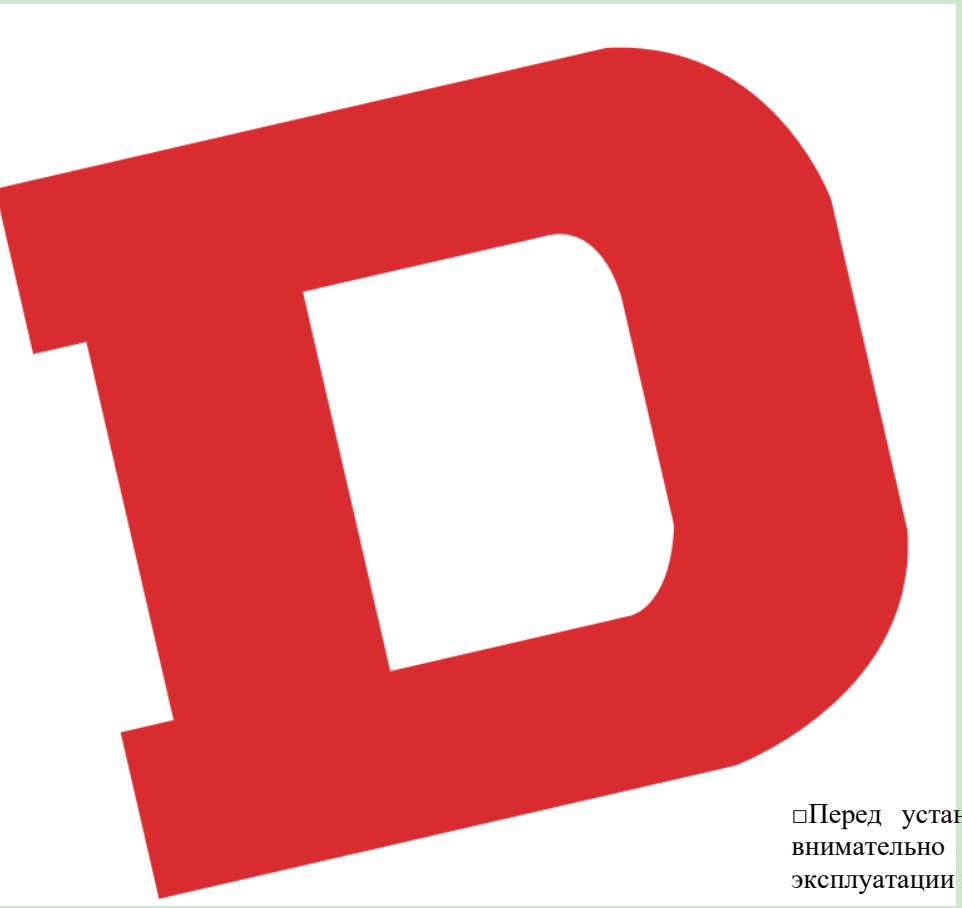
DELIXI
ELECTRIC
德力西电气

JD Series Motor Integrated Protector

User Manual



□Перед установкой и использованием продукции внимательно прочитайте руководство по эксплуатации и храните его в надежном месте.

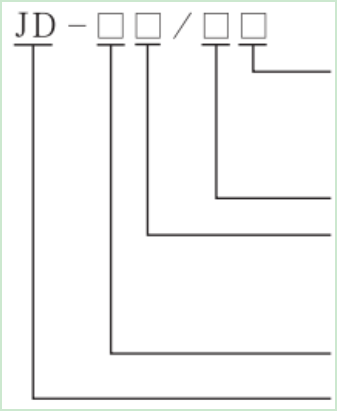
I. Overview

1.1 Scope of Application

JD series motor integrated protector is suitable for AC 50/60Hz and voltage 380V and below power supply circuit to form a motor control circuit together with the switch circuit such as AC contactor. When the main circuit of motor is in the abnormal working state such as phase loss, overload or stall, it can disconnect the electrical contact of switch in time and break the three-phase power supply of motor to protect the motor reliably.

Standard: GB/T14048.4

1.2 Model Definition



Rated control supply voltage Us:
AC220V;
AC380V

Rated current: see table

Common type if not marked;
B: With an alarm
A: Setting current scale calibration

Design No.: see Table

Integrated protector for electric motor

1.3 Normal Working conditions and Installation Conditions

1.3.1 Ambient environment: The altitude does not exceed 2000 meters; The ambient temperature is not higher than +40°C and not lower than -5°C; the voltage change range of the rated control power supply is 85%-110% of the rated voltage; the product is installed in a medium without serious vibration or explosion hazard, and there is no enough gas or dust to cause corrosion to the metal or damage to the insulation in the medium; installed in a place where there is no rain or snow erosion.

1.3.2 Vertical or horizontal installation.

II. Structural Characteristics and Working Principle

The integrated protector for JD series electric motor designed with small division, high protection precision, reasonable structure, complete function, and convenient operation according to the motor power characteristics. The protector has protection functions for symmetrical faults (such as overload and stall) and for asymmetric fault such as phase loss; this protector adopts current sensing technology and relay output interface, and the entire series is of the core-through type. This protector features with simple structure, reliable action, convenient operation, and low cost.

III. Technical parameters

Technical parameters of JD-5, JD-5B, JD-6:

Parameter \ Model	JD-5 JD-5B	JD-6
Rated operating current Ie range	0.5-5A 2-20A 20-80A 1-80A 1-100A	63-150A 63-400A 100-250A 250-500A
Rated insulation voltage Ui	AC380V	
Rated opearting voltage Ue	AC380V	
Rated control power voltage Us	AC50/60Hz AC220V AC380V	
Usage category	Main circuit AC-3; matched auxiliary contact (body) AC-15	
Housing protection grade	IP40	IP50
Type and qty. of aux. circuits	1 normally-closed	1 normally-open 1 normally-closed
Operating voltage and operating current under the usage category of auxiliary circuit	AC-15 Ue" AC220V Ie: 0.47A	
Rated limit short-circuit current matching SCPD	RT16-00, 6A	
Trip grade	10A	
Overload proteciton characteristics	The actual operating current of motor is 1.05 times rated operating current, the action protection time of protector is greater than or equals to 2h; when the actual operating current rises to 1.2 times, the action protection time of protector is less than 2h; when the acutal operating current rises to 1.5 times, the action protection time of protector is less than 2 minutes; when the actual operating current of motor is 7.2 times rated operating current, the action protection time of protector is greater than 2s, and less than or equals to 10s.	
Phase loss time	Loss of any phase in three phases ≤ 3s	
Contact capacity	AC380V, 3A: AC220V, 5A (resistive)	
Electrical life:	$\geqslant 10 \times 10^4$ times	
Mechanical life	$\geqslant 10 \times 10^4$ times	
Installation method	Device type (with TH35 mounting rail or screw fixed installation used)	

Technical parameters of JD-5A, JD-6A:

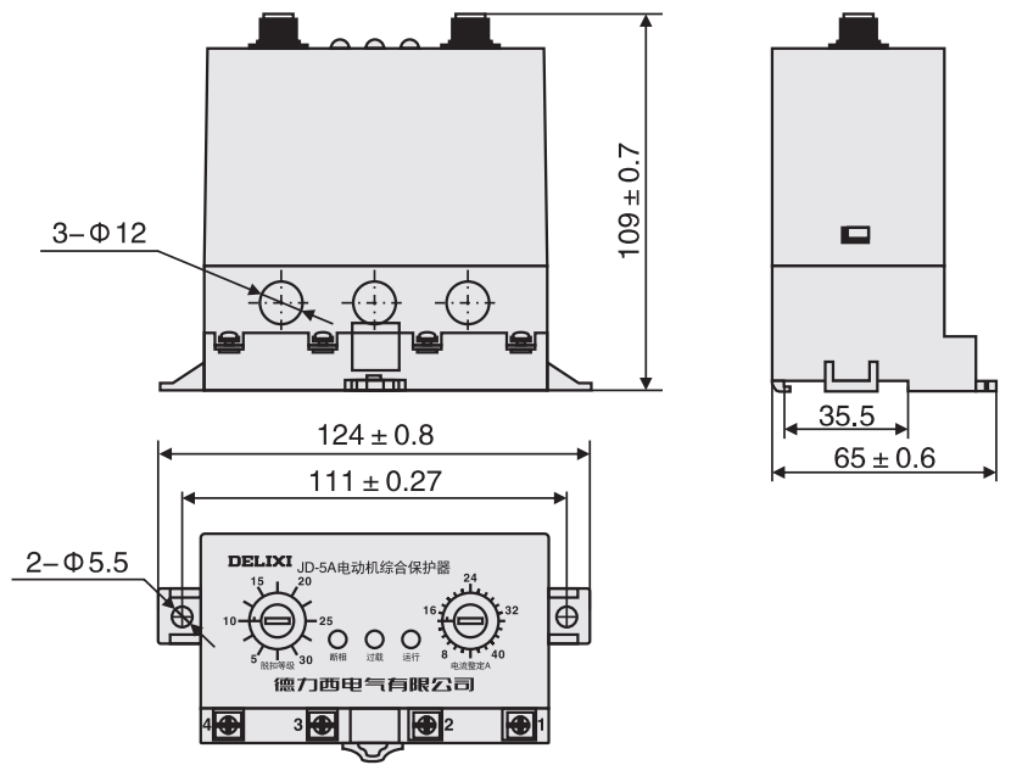
Model / Parameter	JD-5A		JD-6A	
Rated operating current Ie range	0.5A-5A 2A-20A 2A-10A 8A-40A 10A-100A 20A-100		20A-100A (5 and 6 breaking) 100A-400A (5 and 6 making)	
Rated insulation voltage Ui	AC380V			
Rated opearting voltage Ue	AC380V			
Rated control power voltage Us	AC50/60Hz AC220V AC380V			
Usage category	Main circuit AC-3; matched auxiliary contact (body) AC-15			
Housing protection grade	IP40		IP50	
Type and qty. of aux. circuits	1 normally-closed		1 normally-open 1 normally-closed	
Operating voltage and operating current under the usage category of auxiliary circuit	AC-15 Ue: AC220V Ie: 0.47A			
Rated limit short-circuit current matching SCPD	RT16-00, 6A			
Overload time	Trip grade	1.2 times	1.5 times	7.2 times
	10	Tp<2h	Tp≤4min	4<Tp≤10s
Phase loss time	Loss of any phase in three phases ≤ 6s			
Contact capacity	AC380V, 3A: AC220V, 5A (resistive)			
Reset	Power outage reset and not less than 300s			
Electrical life:	⩾10 x 10^4 times			
Mechanical life	⩾10 x 10^4 times			
Installation method	Device type (with TH35 mounting rail or screw fixed installation used)			

Note: 1. When the rated current of the motor is lower 2A for JD-5A, wind the Phase A and Phase C more turns (holes on both sides of protector) to ensure that the core-through current is not below 2A.
2. When the setting current of the protector of JD-6A motor is ranged from 20A to 100A, the pins 5 and 6 of protector are disconnected; when the rated current of motor is greater than 100A, the pins 5 and 6 of protector are connected through a wire, and the setting value shown on the scale dial is 100 to 400A.

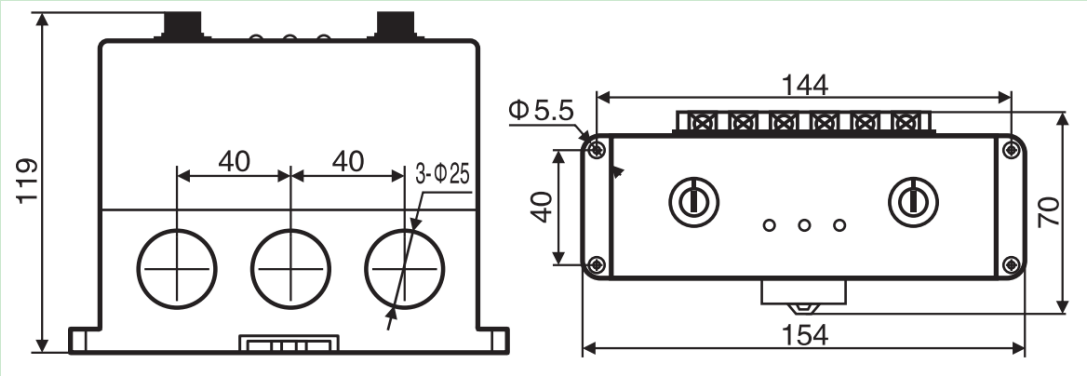
JD-5A, JD-5, JD-5B Performance Difference Table

Model / Function	JD-5A JD-6A	JD-5 JD-5B JD-6
Phase loss proteciton	The working power supply and three-phase current can be turned on asynchronously, suitable for star-delta conversion, with phase loss protection not provided for non-load at the moment of conversion.	The working power supply and three-phase current shall be turned on synchronously, not suitable for star-delta conversion, with phase loss protection provided for non-load at the moment of conversion.
Setting mode	Calbricated scale; static setting is performed according to the rated current of motor for accurate, intuitive and convenient operation.	Setting the current can be performed only when the motor is running without calbricated scale.
Overload characteristics	With motor start timeout protection, and with start time adjustment.	The overload inverse limit range is small, unable to adjust the trip grade.

IV. Outline and Installation Dimensions



JD-5. JD-5A, JD-5B Outline and Installation Dimension Drawing

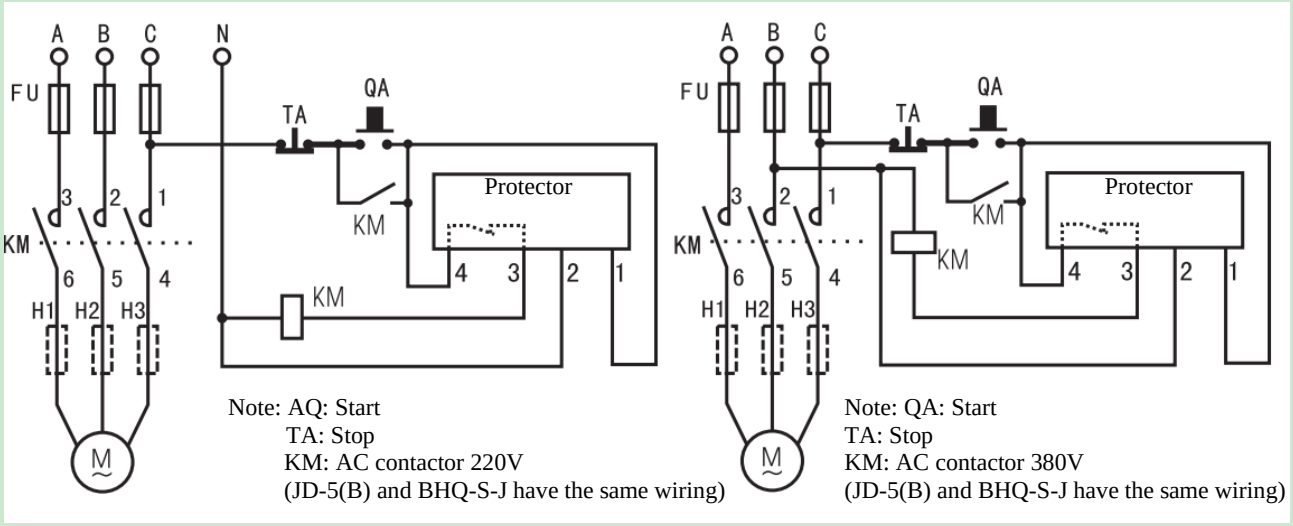


JD-6 Outline and Installation Dimension Drawing

V. Installation and Operation Instructions

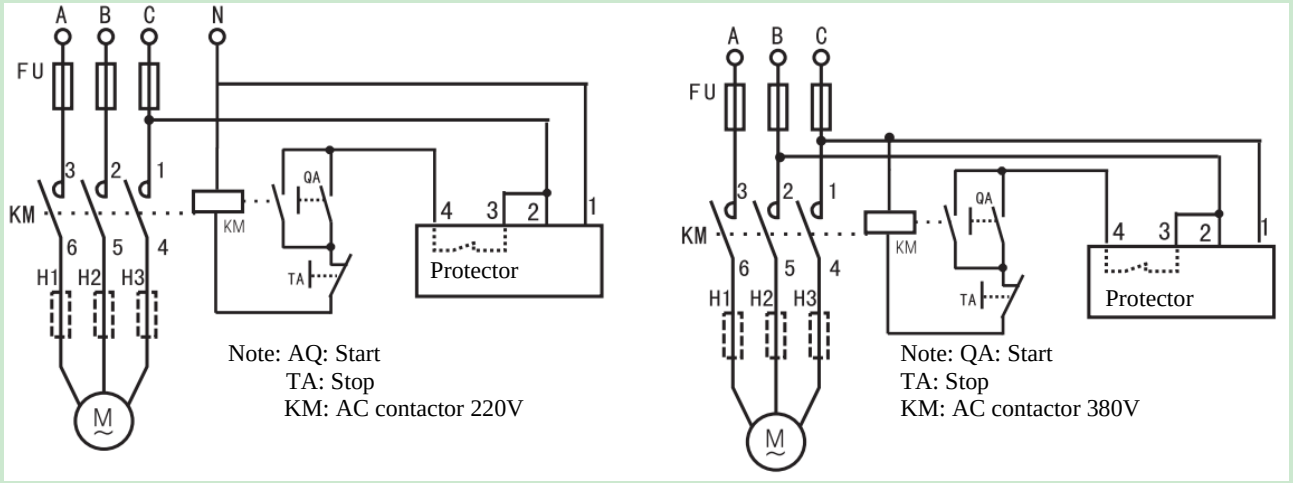
JD-5, JD-5B, and JD-6 installation and operation instructions:

1. Please read the user manual carefully and connect the wire correctly according to the wiring diagram.
2. Terminals 1 and 2 are the working power input terminals of the protector; JD-5 and JD-5B: 3 and 4 are normally closed contacts at the output control terminal; JD-6: 5 and 6 are the normally closed contacts at the output control terminal, and 4 and 5 is the normally open contacts at the output control terminal. For wiring method, refer to the wiring diagram; the three wires of output terminal of AC contactor pass through three white wire holes H1, H2, and H3 of the protector respectively to connect with the inlet wires of motor. (Refer to the wiring diagram).
3. Turn the two adjusting knobs on the protector panel clockwise to the maximum, and turn on the power supply after confirming that the wire is connected properly. Press the Start button and run the motor (the green light is on and the phase loss yellow light is not on, and the overload red/green light is on when normal operation). When the product is running normally, turn the current adjusting knob counterclockwise until the overload indicator flickers, and then fine adjust it clockwise to the critical position where the overload lamp does not flicker; observe it for about 3 minutes. During this period, the current or motor and load are normal, and the overload indicator does not flicker, and then turn the delay button back counter clockwise to the position greater than the motor start time (longer is preferred).
4. When the motor works normally, the overload light is not on, and the motor is applied with load manually, and at this time, the overload lamp will flicker, so the entire debugging process is completed.



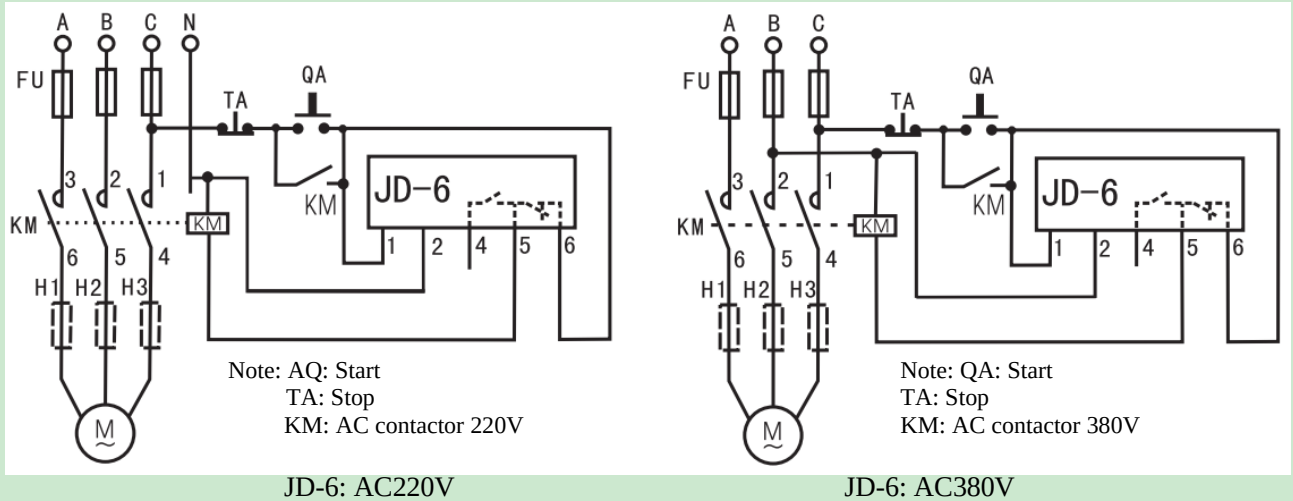
JD-5, JD-5B: AC220V
Wiring diagram

JD-5, JD-5B: AC380V
Wiring diagram



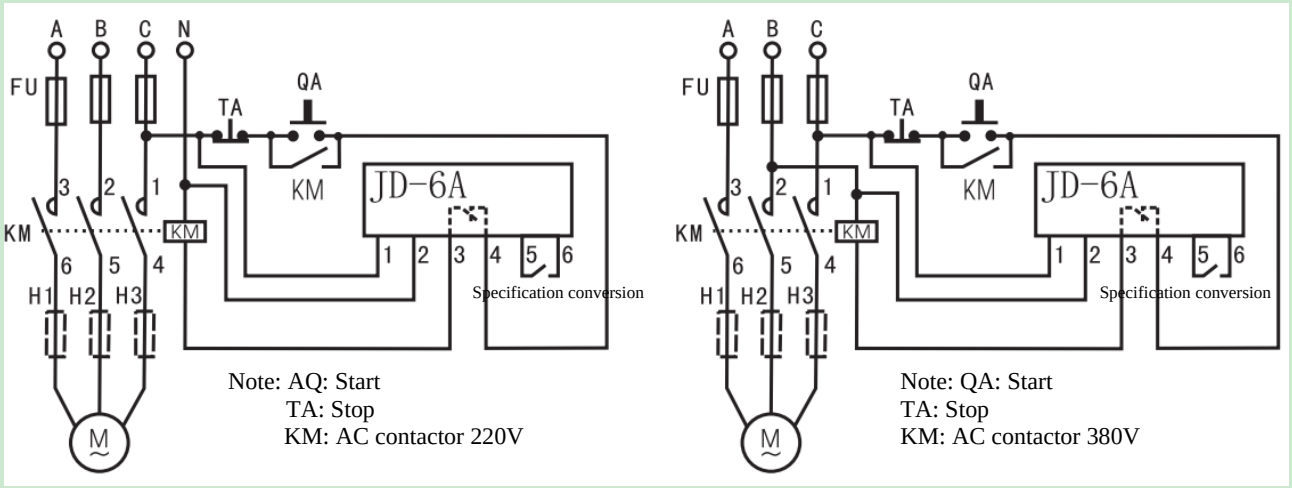
JD-5A: AC220V
Wiring diagram

JD-5A: AC380V
Wiring diagram



JD-6: AC220V
Wiring diagram

JD-6: AC380V
Wiring diagram



JD-6A: AC220V Wiring diagram

JD-6A: AC380V Wiring diagram

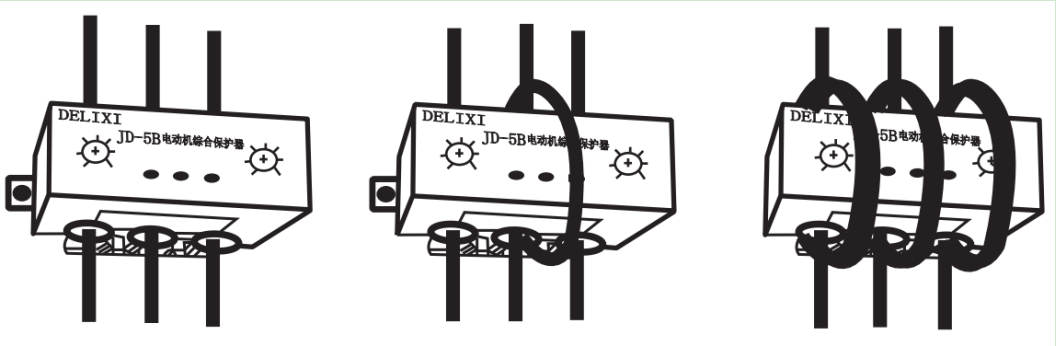
VI. Precautions

JD-5A:

1. Correct wire according to the wiring diagram.
2. Adjust the current setting potentiometer to align the pointer with the corresponding calibration scale according to the rated current marked on the nameplate of the motor.
3. Start the motor, and the overload indicator is on. After startup, the overload indicator shall be off during normal operation, so the adjustment process is completed.

JD-5 and JD-5B:

1. When debugging the current knob, it shall be carried out when a change of the rated working voltage is less than ±5%.
2. For motors with a line current of less than 6A, the three-phase power line should be wound onto the white wire hole of the protection by considering that the non-load line current of motor is smaller. Technical characteristics should be met.
3. Due to the internal structure relationship, the overcurrent adjustment scale is not linear, and the actual debugging shall prevail.
4. Regularly check the performance of the protector, such as phase loss test and overload test.
5. It is strictly forbidden to increase the reading on the current potentiometer of the protector when the current and motor or load are not normal, otherwise the motor may be easily burnt.



6A and above
First wire winding

3A~6A, H2
Second wire winding

1A~3A,
H1, H2, H3
Third wire winding

JD-5 and JD-5B wire winding diagram

JD-6A:

1. Correct wire according to the wiring diagram.
2. Adjust the current setting potentiometer to align the pointer with the corresponding calibration scale according to the rated current on the nameplate of the motor. Wind the wires three turns for 2A and below current A and C phases.
3. Start the motor, and the overload indicator is on. After startup, the overload indicator shall be off during normal operation, and the adjustment process is completed.

JD-6:

1. When debugging the current knob, it shall be carried out when a change of the rated working voltage is less than ±5%.
2. For motors with a line current of less than 63A, the three-phase power line should be wound onto the white wire hole of the protection by considering that the non-load line current of motor is smaller. Technical characteristics should be met.
3. Due to the internal structure relationship, the overcurrent adjustment scale is not linear, and the actual debugging shall prevail.
4. Regularly check the performance of the protector, such as phase loss test and overload test.
5. It is strictly forbidden to increase the reading on the current potentiometer of the protector when the current and motor or load are not normal, otherwise the motor may be easily burnt.
6. For equipment that may cause major economic losses or personal safety, make sure that the technical characteristics and performance values have sufficient margin in design, and safety measures such as double circuit protection should be adopted.

VII. Common Faults and Solutions

1. If the motor stops during normal operation, carefully check the motor for phase loss or overload; first check whether the motor temperature is very high, and this may be overload stop due to temperature rise; if there is no temperature rise, the line phase loss may occur, causing trip, and check whether the three-phase power supply works normally, whether the moving and fixed contacts of AC contactor have good contact, whether three power lines of motor are loose; if the motor still fails to start when all are in the normal state, carefully check whether the connecting screws of self-lock contacts of AC contactor and of normally-closed contacts of protector are loose, and then start and run the motor only after all faults are eliminated. Do not start the motor mandatorily if any fault is not solved to prevent accidents.
2. The protector, motor and load switch (such as contactor) shall be used together, and their power supplies are connected simultaneously. If failed to connect the power supply simultaneously, the phase loss failure of protector will occur, and the motor cannot start normally.
3. In case of failure of product, first disconnect the power supply, and find out the fault cause; operate the product according to the installation instruction after checking the line works normally.
4. For product with poor quality, please contact the local dealer or our company.

VIII. Transportation and Storage

The product is not affected by rain or snow during storage and transportation, and cannot be extruded, and should be put in well-vented place during storage; the relative humidity does not exceed 90% at (25°C± 5°C). The lower limit of temperature is -25°C and the upper limit is +55°C.

IX. Unpacking and Inspection

Unpack the outer paper carton and check that there is a user manual in the packing box.

V. Ordering Notice

JD-5 and JD-5B products have the exactly same performance except that the JD-5B has one more failure alarm buzzer compared with the JD-5. JD-5 current is 1-80A; 0.5-5A; 2-20A; 20-80A; the JD-5A current is 2-10A; 8-40A; 20-100A;

The JD-6 current is 63-400A, 63-150A, 100-250A, 200-500A; when selecting the model, note that the power of motor is consistent with that of the protector.

When ordering, please specify the model and specification of the product. If you have special requirements, please contact the manufacturer.

XI. Company Commitment

Under the condition that users follow the use and storage conditions and the product are well sealed, within 24 months from the production date, our company will provide repair and replacement service free of charge for any damage or abnormal operation due to poor manufacture quality. A paid repair will be provided if the warranty period expires. For any damage due to one of the following situations, a paid repair will be given even if within the warranty period:

(1) Improper operation, maintenance, or storage;
(2) Modified without permission or improper repair;
(3) Damage due to falling off or caused during installation after purchase;
(4) Force majeure such as earthquakes, fires, lightning strikes, abnormal voltages, and secondary disasters;
(5) The electrical life of the product exceeds 100,000 times; the mechanical life is more than one million times.

If you have any question, please contact the dealer or our company’s customer service department.

Customer service hotline: 400-826-8008

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Certificate

DELIXI ELECTRIC LTD

Name: Motor Integrated Protector

Model: JD Series

This product complies with the GB/T 14048.4 standard, and passes the inspection and is allowed to be shipped.

Inspector: Check 01

Production date: See label on inner box

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The first edition of this manual was issued on August 2021.