

I. Overview

The HHD5 (XJ) series phase - failure and phase - sequence protection relays (hereinafter referred to as protection relays) are suitable for use in power - supply circuits with AC 50Hz and working voltage 380V, forming a motor control circuit with switching apparatus such as AC contactors. When the main circuit of the motor presents abnormal conditions such as phase - error, phase - failure, and voltage unbalance, it timely disconnects the contacts of the switching apparatus to interrupt the three - phase power supply of the motor, quickly and reliably protecting the motor.

This series of protection relays adopts a voltage - sampling method, which has nothing to do with the motor power, and there is no need for any current - rating setting and adjustment. The whole relay has the advantages of a wide application range, simple and convenient use, stable and reliable performance, etc. This series of protection relays complies with the relevant requirements of GB/T 14048.4.

II. Model Specifications

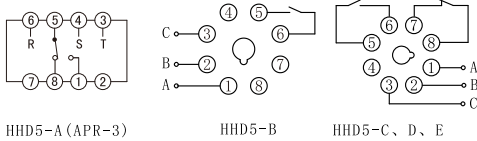
ModelI	Protection Function	Indicator Device	Number of Contacts
HHD5-A (APR-3)	Phase - sequence protection	Working indicator light is on, the product is in working state	One pair of normally open and one pair of normally closed
HHD5-B		None	One pair of normally open
HHD5-C (XJ2)		Working indicator light is on, the product is in working state	One pair of normally open and one pair of normally closed
HHD5-D (XJ3-G)	Phase - failure, phase - sequence and voltage - unbalance protection	The working indicator light is off, and the product is in protection state.	
HHD5-E (XJ5)		Working indicator light is green, the product is in normal operation state; working indicator light is red, the product is in protection state	

III. Main Technical Data

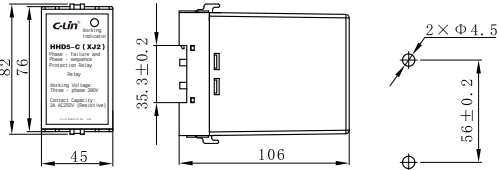
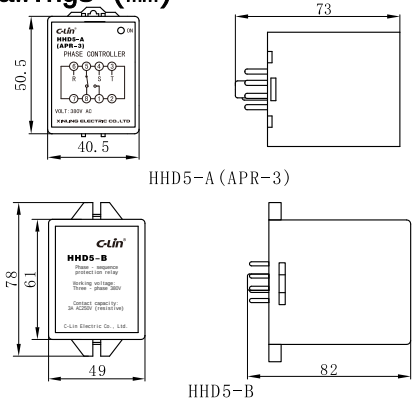
- 1.Working power supply: Three - phase AC380V 50Hz, allowable voltage fluctuation range is (90% - 110%)Ue.
- 2.Phase - failure protection: The voltage sampling signals of HHD5 series products are at the front ends of ①, ②, ③. When any phase of the three - phase power supply is in phase - failure, the protection relay operates reliably to play a role in phase - failure protection (HHD5 - A, HHD5 - B, HHD5 - C (XJ2) products only protect against phase - failure during startup and do not protect against phase - failure during operation).
- 3.Phase - sequence protection: After the phase - sequence of the protection relay is determined, if any phase wire is swapped, the motor will not be able to start, and the protection relay plays a role in phase - sequence protection.
- 4.Voltage unbalance protection: When the asymmetry degree between the voltage of any one phase and the voltages of the other two phases in the three - phase power supply is $\geq 13\%$, the protection relay operates reliably to play a protective role (HHD5 - A, HHD5 - B, HHD5 - C (XJ2) have no such protection function).
- 5.Contact capacity: 3A AC250V (resistive).
- 6.Ambient temperature: - 5°C - 40°C.
- 7.Altitude: $\leq 2000\text{m}$.
- 8.Humidity: When the maximum temperature at the installation site is 40°C, the relative humidity of the air is $\leq 50\%$. At lower temperatures, a higher relative humidity is allowed, for example, up to 90% at 20°C. Special measures should be taken for occasional condensation due to temperature changes.
- 9.Installation method: Panel - mounted, 35mm rail - mounted.

Note: The bases required for the installation of HHD5 - A and HHD5 - B need to be purchased separately by the user. The base model for HHD5 - A is PF083A, and the base model for HHD5 - B is 8PFA.

IV. Wiring Diagrams



V. Outline and Opening Dimension Drawings (mm)



HHD5-C (XJ2) 、HHD5-D (XJ3-G) 、
HHD5-E (XJ5) 、XJ4、XJ6

VI. Instructions for Use

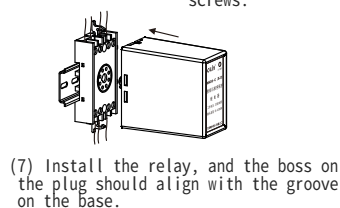
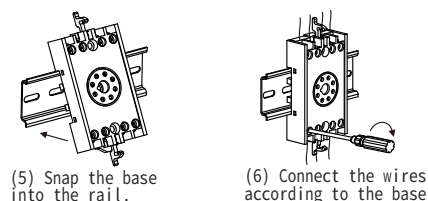
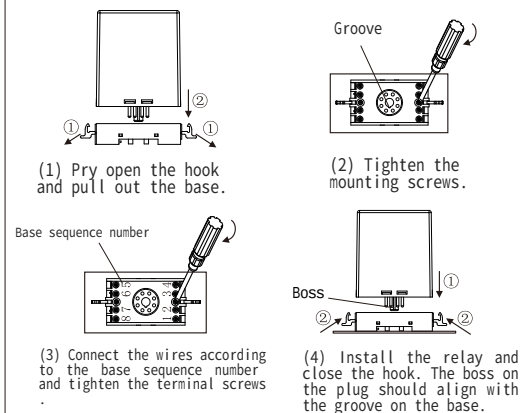
- 1.Refer to the wiring examples in Article 8 for correct wiring. If the motor cannot start, the protection relay has carried out phase - sequence identification. Any two of the three - phase power supplies A, B, and C input to the protection relay need to be swapped, and the motor can start normally. At this time, the phase - sequence of the protection relay has been determined.
- 2.For the HHD5 - A (APR - 3) protection relay, contacts 5 and 1 are open when it is not energized or in protection state; contacts 5 and 1 are closed when it is in normal operation state. For the HHD5 - B protection relay, contacts 5 and 6 are open when it is not energized or in protection state; contacts 5 and 6 are closed when it is in normal operation state. For the HHD5 - C (XJ2), HHD5 - D (XJ3 - G), and HHD5 - E (XJ5) protection relays, contacts 5 and 6 are open and contacts 7 and 8 are closed when they are not energized or in protection state; contacts 5 and 6 are closed and contacts 7 and 8 are open when they are in normal operation state.
- 3.If the power supply at the input end of this series of protection relays is unbalanced

or the voltage value fluctuates too high or too low, it will cause the protection relay to maloperate.
4. This series of protection relays should be used and stored in places free from corrosive gases, severe mold, and dust.

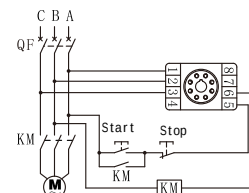
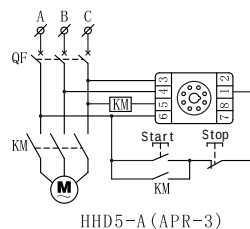
VII. Installation and Removal Methods [Taking HHD5 - C (XJ2) as an Example]

1. Panel - mounted installation: (1) → (2) → (3) → (4)
2. Rail - mounted installation: (1) → (5) → (6) → (7)

Note: The main - circuit power supply must be cut off before installation or removal.



VIII. Application Circuit Examples



HHD5-B、HHD5-C (XJ2)、
HHD5-D (XJ3-G)、HHD5-E (XJ5)、XJ4、XJ6

Note 1: KM is the AC contactor coil, and the two ends of A1 and A2 can be wired according to the example.

Note 2: The voltage of the AC contactor coil selected in the example is AC380V, and attention should be paid to the voltage rating of the selected AC contactor.

IX. Ordering Instructions

It is necessary to specify the product model, voltage class, quantity, and when there are special requirements, they should be stated separately.

For example: HHD5 - C AC380V 100 pieces.

C-lin

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使用说明书
Products Instructions

HHD5 (XJ) Series

Phase - failure and Phase - sequence Protection Relays

Thank you very much for using C-lin brand protection relays.
Please read the instruction manual before use!

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