

## I. Purpose

The HHD11 series phase - failure, phase - sequence, three - phase imbalance and over - undervoltage protection relays (hereinafter referred to as protection relays) are applicable to power - supply circuits with AC 50Hz and a voltage of 380V. They form a motor - control circuit with switching apparatus such as AC contactors. When abnormal conditions such as phase - failure, phase - reversal, voltage imbalance, overvoltage and undervoltage occur in the main circuit of the motor, the contacts of the switching apparatus are promptly opened to cut off the three - phase power supply of the motor, quickly and reliably protecting the motor. The protection relay adopts a voltage - sampling method, which is independent of the motor's power rating and requires no setting or adjustment of any current rating. The whole machine has the advantages of a wide application range, simple and convenient use, stable and reliable performance.

This series of protection relays complies with the relevant requirements of GB/T 14048.5.

## II. Model Specifications

Model	Protection Function	Indicator Function	Contact Form
HHD11-A	Phase - sequence protection	Operation indication, phase - sequence protection indication	One set of normally open and normally closed contacts
HHD11-B	Phase - failure protection, three - phase voltage - imbalance protection, phase - sequence protection	Operation indication, phase - failure protection indication, phase - sequence protection indication	
HHD11-C	Overvoltage protection, undervoltage protection, phase - failure protection, three - phase voltage - imbalance protection, phase - sequence protection	Operation indication, phase - failure protection indication, phase - sequence protection indication, undervoltage protection indication, overvoltage protection indication	
HHD11-D	Overvoltage protection (adjustable), undervoltage protection (adjustable), phase - failure protection, three - phase voltage - imbalance protection, phase - sequence protection	Operation indication, phase - failure and reversal protection indication, over - and under - voltage protection indication	

①

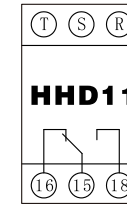
## III. Main Technical Data

- Working power supply (control power supply voltage): three - phase 380V 50Hz, allowable fluctuation range is (85% - 110%) Ue.
- Phase - failure protection: at the front - end of the voltage -sampling signals R, S, T of the product, if any phase in the three - phase power supply is phase - failed, the protection relay can operate reliably, playing the role of phase - failure protection.
- Phase - sequence protection: after the phase - sequence of the protection relay is identified, if any one phase - wire is swapped, the motor will fail to start, and the protection relay plays the role of phase - sequence protection.
- Voltage - imbalance protection: when the voltage imbalance between any two phases in the three - phase power supply reaches 50V - 75V, the protection relay can operate reliably, playing the protective role.
- HHD11 - C overvoltage protection: 445V - 465V (non - adjustable), delay 3s - 5s (non - adjustable); HHD11 - D overvoltage protection: 400V - 460V (adjustable on the panel), delay 1s - 10s (adjustable on the panel).
- HHD11 - C undervoltage protection: 290V - 310V (non - adjustable), delay 3s - 5s (non - adjustable); HHD11 - D undervoltage protection: 300V - 360V (adjustable on the panel), delay 1s - 10s (adjustable on the panel).
- Phase - failure protection action time: 3s - 5s.
- Phase - sequence protection action time 0.2s.
- Contact capacity: 3A AC250V (resistive) (usage category AC - 15).
- Ambient temperature: - 5 - -40 .
- Pollution degree: 3.
- Altitude: 2000m.
- Humidity: when the maximum temperature at the installation site is 40 , the relative humidity of the air 50%; at lower temperatures, a higher relative humidity is permissible, such as 90% at 20 . Special measures should be taken for occasional condensation due to temperature changes.
- Installation methods: panel - mounted, rail -mounted.
- Conventional heating current Ith: 3A.
- Rated insulation voltage Ui: 400V.

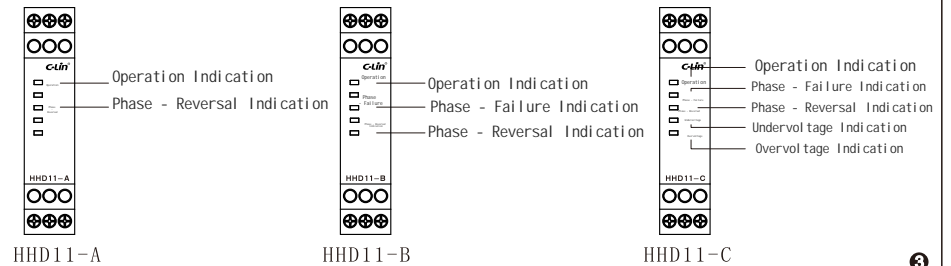
②

17. Rated impulse withstand voltage Uimp: 4KV.

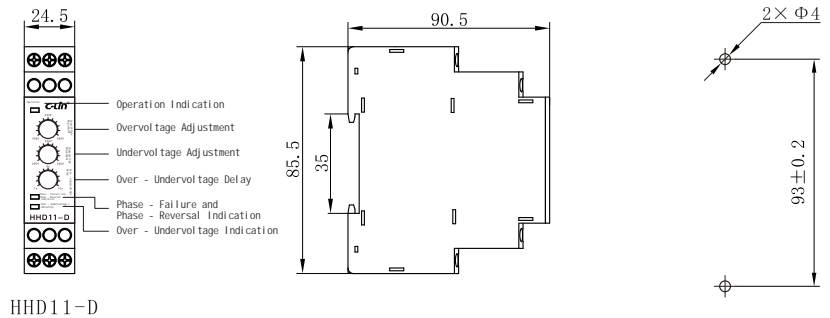
## IV. Wiring Diagram



## V. Outline and Cutout Dimensions Diagram (mm)



③



HHD11-D

## VI. Instructions for Use

### 1. Wiring and Precautions

Refer to the circuit example in Article 8. Connecting the protection relay into the power - supply control circuit can provide protection. Phase - failure at the front - end of the three - phase (R, S, T) voltage sampling of the protection relay from the three - phase power grid is protected, while phase - failure at the rear - end is not.

### 2. Phase - sequence and Phase - failure Protection

If the motor fails to start, swap any two phases of the three - phase (R, S, T) power supply input to the protection relay, then press the start button again. If the motor starts normally, the phase - sequence of the protection relay is identified. If the phase - sequence changes hereafter, the protection relay will function to protect. If the motor still does not start, check the three - phase circuit for phase - failure.

### 3. Overvoltage and Undervoltage Value Setting (for HHD11 - D only)

④

The voltage scale value on the protector panel is an indicative scale. If the user wants to set it accurately, please adjust the potentiometer knob before formal use, subject to the actual measurement value. The "overvoltage value" setting knob is set slightly lower than the maximum upper limit of the allowable operating voltage of the protected equipment, and the "undervoltage value" setting knob can be set slightly higher than the minimum lower limit of the allowable operating voltage of the protected equipment.

#### 4. Over - and Under - voltage Delay Value Setting (for HHD11 - D only)

"Overvoltage delay" and "undervoltage delay" refer to the time from when the working voltage exceeds the set overvoltage value or is lower than the set undervoltage value to the protective action of the protection relay, with a delay range of 1s - 10s.

#### 5. Contact and Indicator Light Status

When the protection relay is de - energized, its contacts 15 and 16 are closed, and 15 and 18 are open; in normal operation, its contacts 15 and 16 are open, 15 and 18 are closed, and the operation indicator light is on; in protection state, its contacts 15 and 16 are closed, 15 and 18 are open, the operation indicator light is off, and other indicator lights indicate the fault category.

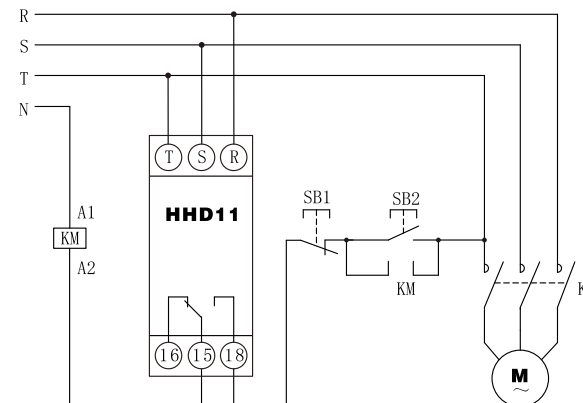
## VII. Installation and Dismantling Methods

1. Rail - mounted installation: (1) (2) (3) (4)
2. Rail - mounted dismantling: (5) (6)
3. Panel - mounted installation: (1) (7) (8)
4. Panel - mounted dismantling: (9) (10)

Note: The main circuit power supply must be cut off before installation or dismantling

6

## VIII. Example of Application Circuit



Note 1: KM is an AC 220V contactor, (A1, A2) are its coil terminals.

Note 2: M is an AC motor.

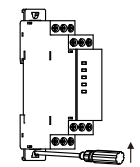
Note 3: SB1 and SB2 are stop and start buttons respectively.

## IX. Ordering Instructions

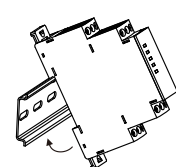
Please specify the product model, voltage class, quantity, and any special requirements should be noted separately.

For example: HHD11 - A AC380V, 100 pieces.

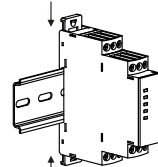
7



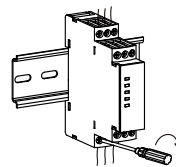
(1) Prise open the rail clamp.



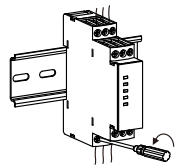
(2) Clip the product onto the rail.



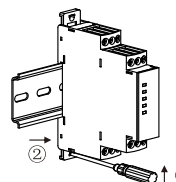
(3) Close the rail clamp.



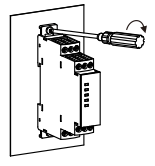
(4) Connect the wires according to the product terminal markings and tighten the terminal screws.



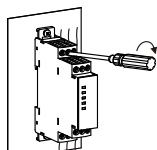
(5) Loosen the terminal screws and remove the wires.



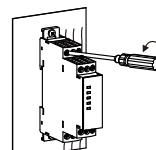
(6) Prise open the rail clamp and remove the product.



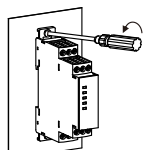
(7) Tighten the mounting screws.



(8) Connect the wires according to the product terminal markings and tighten the terminal screws.



(9) Loosen the terminal screws and remove the wires.



(10) Loosen the mounting screws and remove the product.

6



**C-Lin®**  
欣灵电气股份有限公司  
XINLING ELECTRICAL CO., LTD.

地址: 浙江省乐清经济开发区纬十九路328号  
电话: 0577-6273 5555 传真: 0577-6272 2963  
官网: www.c-lin.cn E-mail: xl@xinling.com  
技术咨询: 400-8236-775



国家高新技术企业 浙江著名商标

**C-Lin 欣灵**

使用说明书  
Products Instructions

**HHD11 Series**

Phase - failure, Phase - sequence, Three - phase Imbalance and Over - undervoltage Protector

Thank you very much for using C-Lin brand protector. Please read the instruction manual before using the product!

07A047P1