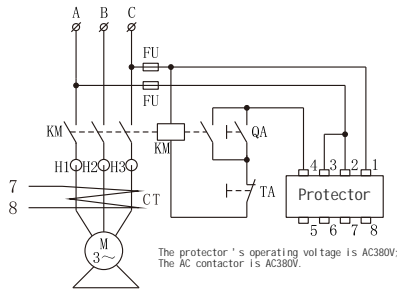
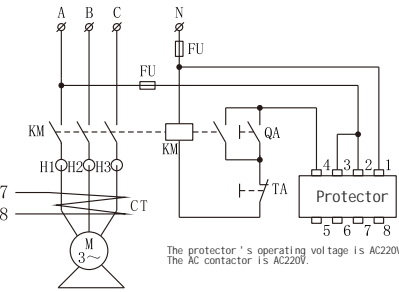


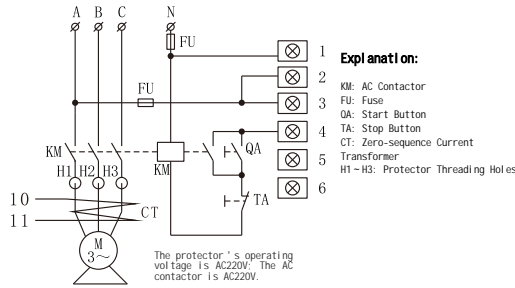
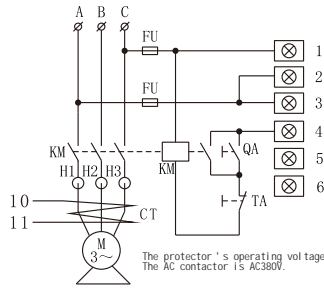
## Application Circuit Examples



HHD1-1A, 1, 1B



HHD1-2, 3, 3A



### Explanation:

- 1 KM: AC Contactor
- 2 FU: Fuse
- 3 QA: Start Button
- 4 TA: Stop Button
- 5 CT: Zero-sequence Current Transformer
- 6 H1-H3: Protector Threading Holes

6

## Instructions for Use

### 1. Installation and Adjustment :

a) Refer to the application circuit examples to connect the protector and the control circuit correctly (it is advisable to fix the protector below the AC contactor, and the three-phase current lines pass through the three guide tubes of the protector in the same direction respectively).

b) Power-on Test: After power-on, the power (red) indicator light is on. Press the test button; the overload indicator (red light) and locked-rotor indicator (red light) will turn on and keep the internal relay of the protector activated. Press the reset button; the internal relay of the protector resets, and the overload indicator (red light) and locked-rotor indicator (red light) go out, indicating that the protector functions normally.

c) Refer to the rated current value marked on the motor nameplate and set the current value directly according to the motor load rate:

1) When the motor load rate is not greater than 100%, set it as the motor's rated current value;

2) When the motor load rate is greater than 100%, set it between 1.05-1.15 times the motor's rated current according to the overload rate and the duration of overload.

d) Start the motor: the power indicator light is on, the overload indicator light is on, other indicator lights are off, and the current display shows the motor's starting current. After the motor starts up and enters the normal operating state, the overload indicator light goes out, and the current display shows the motor's operating current, completing the entire adjustment process.

### 2. Precautions

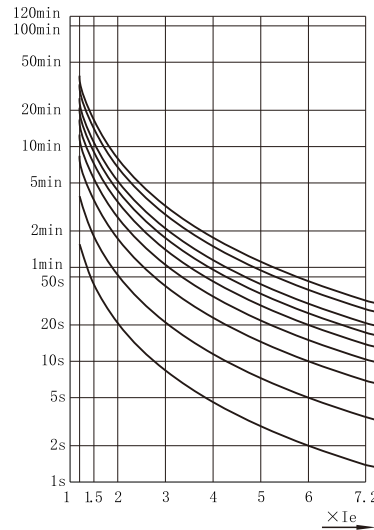
a) The test button is used to check whether the protector's protection function is normal when the motor is stopped. When the motor is running normally, operating this test button is invalid.

b) When the motor runs normally for 1 minute, the digital display turns off. When the motor starts again or any button is pressed, the current display is restored, and it has an energy-saving function; when the motor stops due to a fault, the protector displays the fault current data, and the display will not turn off automatically.

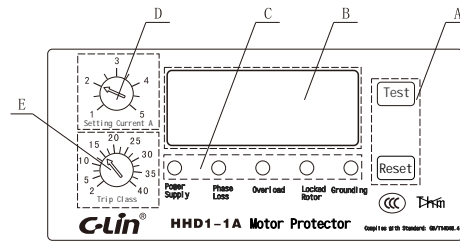
c) After the protector performs a protection action, find out the cause before resetting to prevent damage to the motor.

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## VII. Inverse Time Limit Characteristic Diagram of Overload Protection



## VIII. Operation Interface



**Area A (Function Operation Area):** In static state, press the "Test" button, and the current display will be 10 times the set value. After the product performs protective action, it will be locked. The product can be reused only after pressing the "Reset" button or powering off.

**Area B (Current Display Area):** Displays the maximum current among the three-phase currents during operation.

**Area C (Working Status Indication Area):** The luminous tube indicates the current working status.

**Area D (Setting Current Area):** It is the setting current range of the protector.

**Area E (Trip Class Area):** Select the corresponding trip class according to actual needs, following the principle of "choosing the lower one if available". The trip class code refers to the action time when the operating current is 6 times the setting current. (When you select 2, it represents the entire overload action time curve with code 2. For specific time, see Table 2.)

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d) The protector should be periodically subjected to artificial overload, phase failure and other protection tests to verify whether its functions are normal.

e) Select the power line correctly. If the product is deformed or damaged due to incorrect selection or other reasons, the quality of the product itself cannot be judged.

f) The grounding function is activated after the motor starts, and it is not activated when the motor is not started.

## X. Ordering Information

1. When selecting a protector, the model specification, power supply voltage and quantity should be specified. Example: HHD1-1A, AC220V, 10 pieces, indicating a protector with model HHD1-1A, current specification of 1-5A, power supply of AC220V, and quantity of 10 pieces.

2. To use the grounding protection function, a special zero-sequence current transformer for this product must be purchased.

**C-Lin**

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RECYCLABLE

**C-Lin** 欣灵

使用说明书  
Products Instructions

**HHD1**  
Motor Protector

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

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# I. Overview

The HDD1 series motor protectors (hereinafter referred to as "protectors") are suitable for AC 50Hz power supply circuits with a rated working voltage of AC 380V and below, forming a motor control circuit together with AC contactors and other switching electrical appliances. When the main circuit of the motor is in abnormal working states such as phase failure, three-phase imbalance, overload, locked rotor, and grounding, the contacts of the switching electrical appliances are disconnected in time to cut off the three-phase power supply of the motor, thus protecting the motor quickly and reliably. The protector adopts fault current latching technology. After protection due to a fault, it displays the current value and category at the time of the fault, facilitating users to understand the cause and eliminate the fault. This series of protectors meets the requirements of the GB/T 14048.4 standard.

# II. Normal Working Conditions and Installation Conditions

- Altitude: Not exceeding 2000m.
- Ambient air temperature: -5 ~ +40 , and the average value within 24 hours does not exceed +35 .
- Atmospheric conditions: When the maximum temperature is +40 , the relative humidity of the air does not exceed 50%. Higher relative humidity is allowed at lower temperatures. For example, at +20 , the air humidity can reach 90%. Special measures should be taken for condensation occasionally caused by temperature changes.
- The inclination of the installation surface from the vertical plane is not more than ±5° .
- Pollution degree: 3.
- In places without significant shaking, impact, and vibration.
- Enclosure protection class: IP00.
- Tripping class: 10A class.

# III. Main Technical Parameters

1. Main circuit: Rated insulation voltage  $U_i$ : AC 400V, rated frequency 50Hz. Rated impulse withstand voltage  $U_{imp}$ : 4kV.

①

2. Auxiliary Circuit: Rated insulation voltage  $U_i$ : AC 400V, rated frequency 50Hz. Usage category: AC-15,  $U_e$ : AC380V/3A, AC220V/3A. Rated limited short-circuit current matching SCPD model: RT28-32 , fuse core: 6A.

Table 1

Parameter	HHD1-1A	HHD1-1	HHD1-1B	HHD1-2	HHD1-3	HHD1-3A
	Setting Current Range	1~5A	4~20A	16~80A	20~100A	40~200A
Rated Voltage	AC220V, AC380V 50Hz (optional when ordering; other voltage levels can be customized)					
Overload Action Time	See Table 2					
Phase Failure Action Time	≤6s (when the current of any phase in the three-phase power supply is zero)					
Locked Rotor Action Time	≤6s (when the working current reaches 6.5 times or more of the setting current)					
Grounding Action Detection Time	Customizable. Motor start avoidance time 3.5s (grounding function not activated), delay 0.7s, action time 0.2s					
Grounding Action Value	HHD1-1A, -1, -1B act when grounding current 50mA; HHD1-2, -3, -3A act when grounding current 100mA					
Three-Phase Current Unbalance Protection	Protection action time 6s (when the current difference of any phase and the other two phases reaches 40%-60%)					
Start Avoidance Time	5s (during the start avoidance process, it protects against phase failure, locked rotor, three-phase current unbalance, and grounding)					
Reset Method	Panel button reset and power-off reset					
Contact Capacity	3A AC380V (resistive)					
Installation Method	Device-type and 35mm DIN rail mounting			Device-type		
4-20mA Transmitter Output Formula	Customizable, (three-phase maximum phase current ÷ setting current) × 16 + 4					

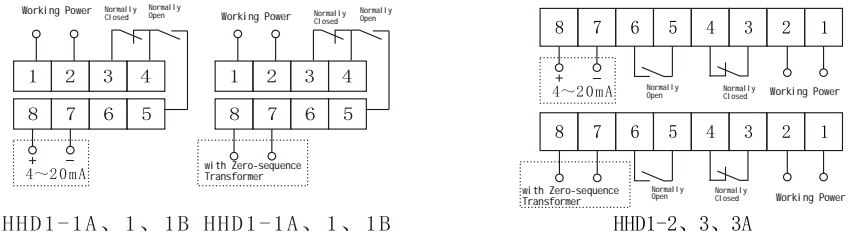
②

Table 2

Trip Class	Action Time								
	1.05 times	1.2 times	1.5 times	2 times	3 times	4 times	5 times	6 times	7.2 times
0"	No Trip	≤2s	≤2s	≤2s	≤2s	≤2s	≤2s	≤2s	≤2s
2	Within 2 hours, no trip	≤75s	≤32s	≤16s	≤8s	≤5s	≤3s	≤2s	≤2s
5 (10A)		≤180s	≤80s	≤38s	≤19s	≤12s	≤8s	≤4s	≤3s
10		≤350s	≤150s	≤80s	≤40s	≤22s	≤13s	≤8s	≤3s
15		≤500s	≤240s	≤120s	≤60s	≤33s	≤18s	≤12s	≤3s
20		≤700s	≤300s	≤160s	≤80s	≤44s	≤24s	≤15s	≤3s
25		≤850s	≤390s	≤200s	≤100s	≤55s	≤30s	≤18s	≤3s
30		≤1000s	≤470s	≤240s	≤120s	≤70s	≤36s	≤21s	≤3s
35		≤1200s	≤550s	≤280s	≤140s	≤80s	≤42s	≤24s	≤3s
40		≤1400s	≤620s	≤310s	≤155s	≤90s	≤48s	≤27s	≤3s

represents the definite time limit. When the operating current is greater than or equal to 1.1 times the rated current, the operating time is ≤2s. The definite time limit function can be customized.

# . Wiring Diagram



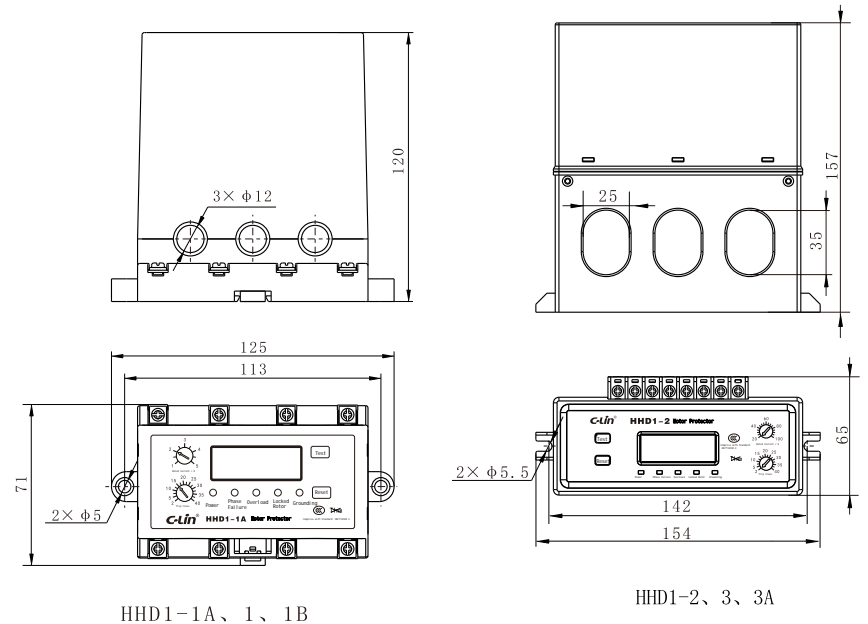
HDD1-1A, 1B HDD1-1A, 1B

HDD1-2, 3, 3A

Note: The "Zero-sequence Transformer" and "4-20mA current transmission output" in the dashed box are optional functions (you can choose one). They are not included in conventional products.

③

# . Outline and Installation Dimensions (mm)



HDD1-1A, 1, 1B

HDD1-2, 3, 3A

④