

ZHRA1

Operating Instructions for ZHRA1 Motor Protector

Function Features

- High-performance microcontroller with strong resistance to interference and high reliability.
- Start time delay interval is set through front control.
- Protection against overload, imbalance, phase failure and rotor locking is available.
- Setting current value (setting accuracy $\leq 5\%$) is set through knob.
- LED indicator lamp indicates fault state.
- Inverse time current protection property available.

- ☐ Model and Connotation

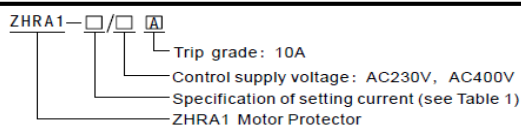
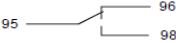


Table 1

Specification of setting current	Applicable motor power
1A...5A	0.5kW...2.5kW
2A...10A	1kW...5kW
6A...30A	3kW...15kW
16A...60A	8kW...40kW
40A...200A	20kW...100kW
80A...400A	40kW...200kW

Note: If special functions are required, please contact us.

☐ Main Technical Parameters

Rated control supply voltage	AC230V、AC400V Allowable fluctuation range: +/-20%
Rated frequency	~50Hz
Current setting accuracy	+/-5%
Rated operating voltage	AC400V
Rated insulation voltage	AC690V
Power consumption	<=1.5VA
Reset mode	Reset upon power off
Type and number of pairs of contacts	
Electrical durability	100000 cycles
Mechanical durability	1000000 cycles
Conventional heat current	5A
Utilisation category	AC-15
Contact capacity	AC-15: Ue/Ie AC240V/1.5A, AC400V/0.95A
Height above sea level	<=2000m
IP degree of protection	IP20
Pollution degree	3
Operation temperature	-5...40℃
Permissible relative humidity	<=50%(40℃)
Storage temperature	-25...75℃

❑ Function Description

1. Inverse time overload protection property (see Table 2, time in second):

Table 2

Cable size Time (s) Trip grade		1.05	1.2	1.5	2	5	6	7.2
10A	No operation within 2h	125	80	45	7.2	5	3.5	
10		250	160	90	14	10	6.9	
20		500	320	180	29	20	14	
30		750	480	270	43	30	21	

2. Phase failure protection: phase failure operating time of any phase is 3s.

3. Unbalance protection: when three-phase current unbalance ratio $\geq 40\%$, the protector would operate within a time period of 5s. Unbalance ratio computing formula is as follows:

$$\text{Unbalance ratio of three-phase current} = \frac{\max_{i=1}^3 |I_i - I_{\text{avg}}|}{I_{\text{avg}}} \times 100\%$$

li:phase current ; lavg: average of 3 phase current

- ☐ Operating Instructions

- 1 **Start delay setting:**
Adjust the start delay (4s recommended) for Motor.
- 2 **Current setting:**
Adjust the setting current of protector to the value that is equal to the rated current value of motor (please refer to the nameplate of motor).
- 3 **Fault indicate:**
When the motor is at fault, the indicator light will show fault state (Table 3). Indicator lamp keeps indicating fault state after the fault protection is activated on the protector. Power-off is needed to reset.

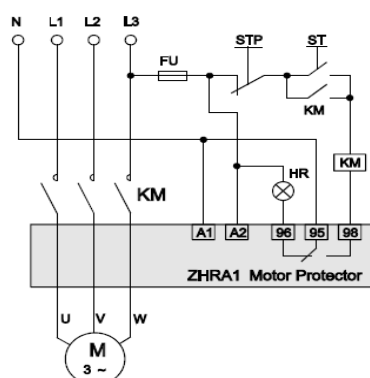
Table 3

Fault type	Indicator lamp	Fault indicator
Overload		
Phase fail		
Three-phase Unbalance		

- ☞ One motor protector can protect only one motor.
- ☞ Overload and phase failure tests should be performed on a regular basis to check the performance of protector. To ensure power utilization safety, tests should be conducted by professionals.
- ☞ If start delay setting is modified during the operation, this modification would take effect only after power-off reset.

- Wiring Diagram

Wiring diagram for direct start (used with AC230V contactor)



BRANCH CONTACT DETAILS

Johannesburg	010 202 3300
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Cape Town	021 510 0710
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Riverhorse	031 492 4800

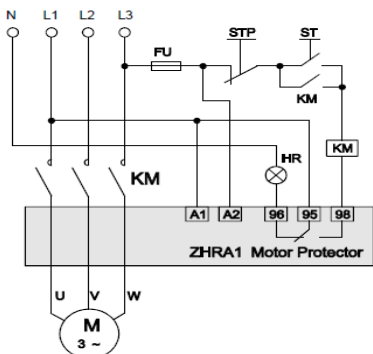
NATIONAL CALL CENTRE

Sales	010 202 3400
Technical	010 202 3500

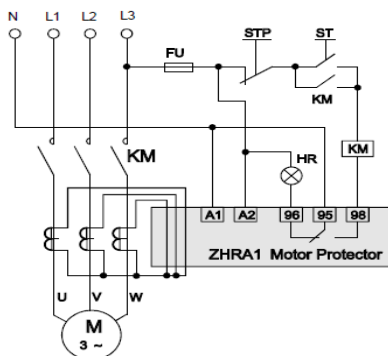
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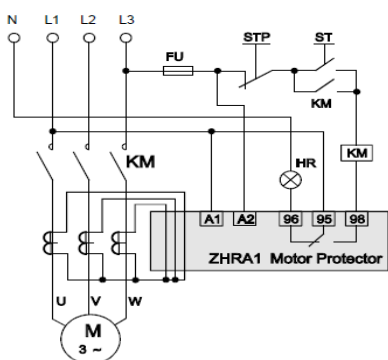
Wiring diagram for direct start (used with AC400V contactor)



Secondary current wiring diagram (used with AC230V contactor)

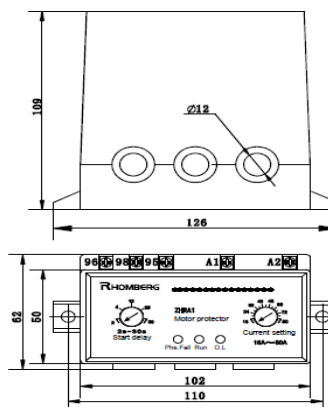


Secondary current wiring diagram (used with AC400V contactor)

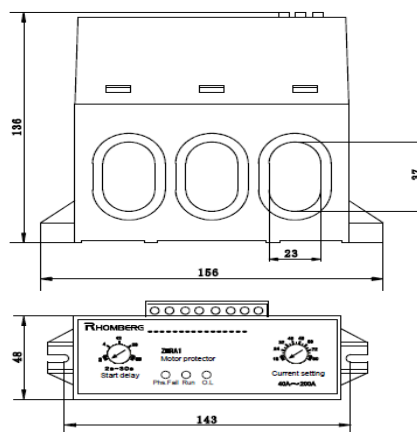


□ Diagram of Overall Dimensions

Overall dimensions of ZHRA1-1A...5A, ZHRA1-2A...10A, ZHRA1-5A...30A and ZHRA1-16A...80A



Overall dimensions of ZHRA1-40A...200A, ZHRA1-80A...400A



Warning

1. This product shall be installed, operated and maintained by professional personnel.
2. Whether or not the product functions normally, user shall not dismantle or repair the said product without permission, and we shall not assume any responsibility for accident as a result thereof.
3. Please refer to the wiring diagram in Operation Instructions for installation.
4. Never place power input line in the same conduit with other wires with heavy current. Please use shielded wire if necessary.
5. Do not use this product in areas with dust, corrosive gases and with exposure to direct sunlight and rain.
6. Never use this product in medium with explosion hazard and with gases that may corrode metals and destroy the insulation.
7. Please store and use this product at rated supply voltage and stated temperature, height above sea level and humidity.
8. Failure to follow these instructions can result in, serious injury, or equipment damage.
9. The warranty period of this product shall be 18 months under normal use.

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