RHOMBERG

CE

IEC60947-5-1

Operating Instructions for ZHRV3 Series Relay

3-phase voltage control relay

□ Function Features

- ○ Monitors its own supply voltage(True RMS measurement).
- ○ Over-voltage and under-voltage independent output contacts.
- ○ Loss of neutral.
- ○ Measuring frequency range:45Hz~65Hz.
- ○ Voltage measurement accuracy <1%.
- ○ Control status is indicated by a LED.
- ○ The relays are designed for clip-on mounting on ⊓ rail.

□ Applications

- ○ Control for protection against reverse running.
- ○ Normal/emergency power supply switching.
- ○ Protection against the risk phase failure.

□ Model and Connotation

ZHRV3 — □ □ / □

- Rated control supply voltage codes:M440,M254
  M440:208-220-230-240-380-400-415-440VAC(P-P)
  M254:120-127-132-138-220-230-240-254VAC(P-N)
- Output type:
  Z:2 C/O
- Function code(see Table 1)
- ZHRV3 series relay

Table1

Function code	Over-voltage	Under-voltage	Asymmetry	Tripping delay time	Phase sequence	Phase failure	Reset delay time	Output type
01			5%...15%	0.1s...10s	●	●	0.1s...10s	Z
07	2%...20%	-20%...2%	5%...15%	0.1s...10s	●	●	0.1s...10s	
Note:●the function is available								

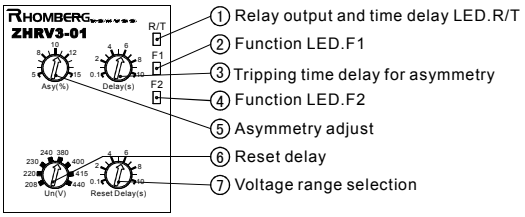
□ Technical Parameters

Rated supply voltage	M440:208...440VAC; M254:120...254VAC
Supply voltage limits	M440:166...528VAC; M254:96...329VAC
Control ciruit frequency	50/60Hz +/-10%
Voltage range	M440:208-220-230-240-380-400-415-440V
	M254:120-127-132-138-220-230-240-254V
Measuring range	M440:166...528V; M254:96...329V
Threshold adjustment voltage	2%...20%of Un selected
Adjustment of asymmetry threshold	5%...15%
Hysteresis	2%
Tripping time delay	Adjustable 0.1s...10s,10%
Reset time delay	Adjustable 0.1s...10s,10%
Measurement error	<1%over the whole range with voltage variation
Konb setting accuracy	1%of scale value
Rated insulation voltage	460V
Phase failure sensitivity	0.7Un
IP degree of protection	IP20
Pollution degree	3
Electrical durability	100000 cycles
Mechanical durability	1000000 cycles
Height above sea level	<=2000m
Voltage detection threshold	<145V

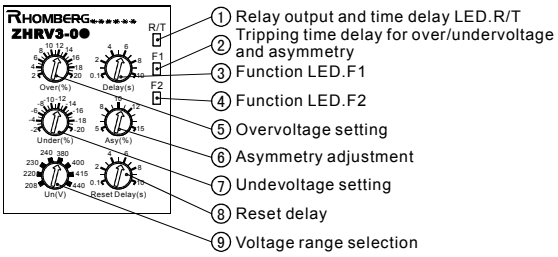
Operation temperature	-5...40℃
Relative humidity	<=50%(40℃)
Storage temperature	-25...75℃
Conventional heat current	5A
Utilisation category	AC-15
Contact capacity	Ue/Ie:250V/1.5A
Connecting capacity	0.5mm^2~2.5mm^2
Tightening torques	0.5Nm
Power consumption	<=1.5VA
Mounting support	35mm symmetrical DIN rail conforming to EN/IEC 60715

□ Panel Diagram

ZHRV3-01



ZHRV3-06/ZHRV3-07



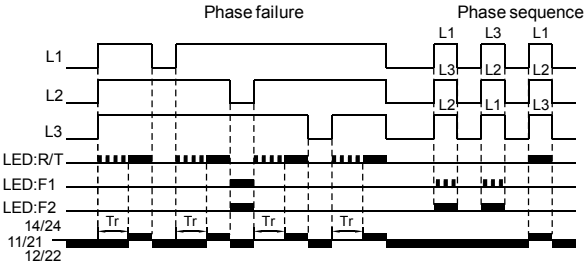
□ Description of Function diagram and LED

○ LED functions

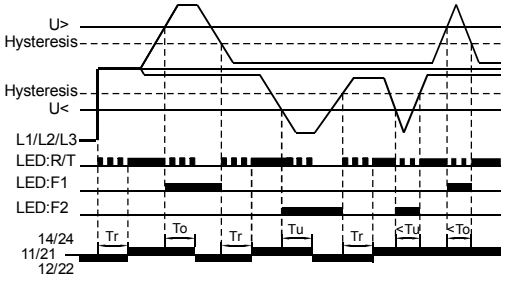
Table 2

Function	R/T:yellow LED	F1:red LED	F2:red LED
Setting error			
Output relay energized			
Tripping delay			
Reset delay			
Phase failure			
Phase sequence			
Asymmetry			
Overvoltage			
Undervoltage			

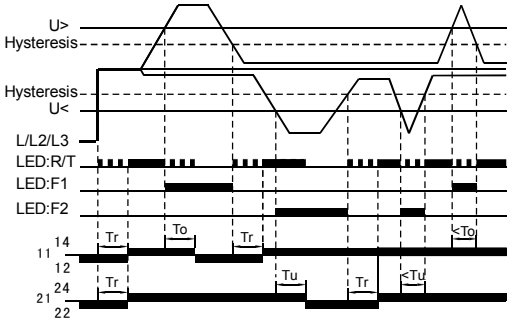
○ Phase failure and phase equence function diagram



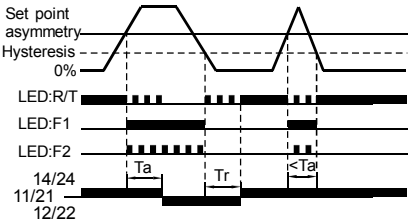
○ Overvoltage and undervoltage function diagram(2C/O)



○ Overvoltage and undervoltage function diagram(1C/O+1C/O,ZHRV3-04C)



○ Asymmetry function diagram

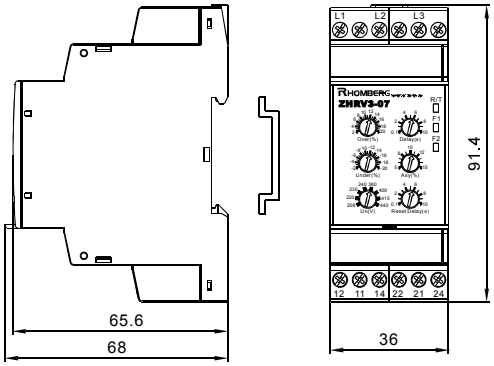


To:Overvoltage threshold tripping delay.
Tu:Undervoltage threshold tripping delay.
Ta:Asymmetry threshold tripping delay.
Tr:Reset delay time.

□ Operating Instructions

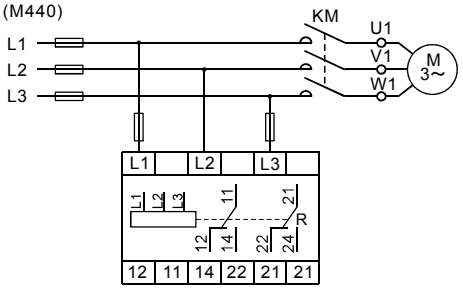
1.Set the voltage range .
The position of this knob is only taken into account on energisation of the device. If the switch position is changed while the device is operating, all the LEDs flash, but the product continues to operate normally with the vol tage selected at the time of energisation preceding the change of position.
The LED's return to their normal state if the switch is returned to the origin al position selected prior to the last energisation.
2.After the relay is powered on, the output relay will not close until the reset delay time elapses.
3.In case of voltage failure, the relay would be disconnected at the expiration of set time delay interval.
4.If the relay detects voltage failure during energisation, the output re lay would be kept in off-state.
5.The measured voltage U<Un∗70% indicates open phase fault.
6.In 3 phase 3 wires system(M440) phase fault at power input terminals L1 and L3, the function LED would not illuminate.
In 3 phase 4 wires system(M254) phase fault at power input terminals L1 and L3, the function LED would not illuminate.

□ Overall Dimensions

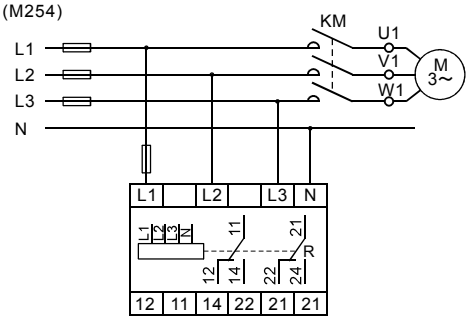


□ Wiring Diagram

○ P-P (M440)

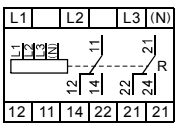


○ P-N(M254)



○ Output type

2 C/O



⚠ Warning

1. This product shall be installed, operated and maintained by qualified 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 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.