

Operating Instructions for ZHRV5 Series Relay

3-phase voltage control relay

□ Function Features

- Monitors its own supply voltage(True RMS measurement).
- The relay is only 18mm wide.
- 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 DIN rail.

□ Applications

- Control for over / under voltage.
- Control for protection of persons and equipment against reverse running.
- Normal/emergency power supply switching.
- Protection against the risk of phase failure.

□ Model and Connotation

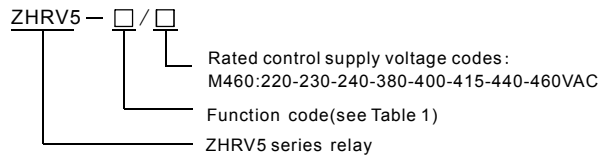


Table 1

Function code	Over-voltage	Under-voltage	Asymmetry	Delay time	Phase sequence	Phase failure
01	2%...20%	-20%...2%	8%	0.1s...10s	●	●
02			8%	2s	●	●

Note: ●the function is available

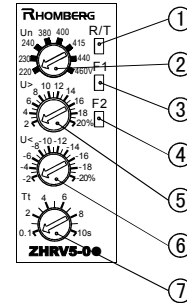
□ Technical Parameters

Rated supply voltage	220...460V AC 3phases
Supply voltage limits	187...529V AC
Control circuit frequency	50/60Hz +/-10%
Voltage range	220-230-240-380-400-415-440-460V(P-P)
Threshold adjustment voltage	2%...20% of U_n selected
Adjustment of asymmetry threshold	5%...15%
Time delay	Adjustable 0.1s...10s, 10%
Measuring range	176...552V
Run up delay at power up	500ms time delay
Hysteresis	2%
Measurement error	<1%over the whole range with voltage variation
Reset delay	1000ms
Knob setting accuracy	1%of scale value
Phase failure sensitivity	0.7 U_n

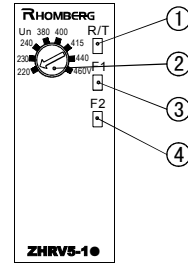
Voltage detection threshold	<165V
Rated insulation voltage	460V
IP degree of protection	IP20
Pollution degree	3
Electrical durability	100000 cycles
Mechanical durability	1000000 cycles
Height above sea level	<=2000m
Operation temperature	-5...40°C
Relative humidity	<=50%(40°C)
Storage temperature	-25...75°C
Conventional heat current	5A
Utilisation category	AC-15
Contact capacity	U_e/I_e :250V/1.5A
Output type	1 C/O
Connecting capacity	0.5mm ² ~2.5mm ²
Tightening torques	0.5Nm
Power consumption	<=1.2VA
Mounting support	35mm symmetrical DIN rail conforming to EN/IEC 60715

□ Panel Diagram

ZHRV5-09



ZHRV5-11



- ① Relay output and time delay LED.R/T
- ② Rated voltage range selection control.
- ③ Function LED.F1
- ④ Function LED.F2
- ⑤ Time delay adjust control.Tt
- ⑥ Overvoltage setting control.U>
- ⑦ Undervoltage setting control.U<

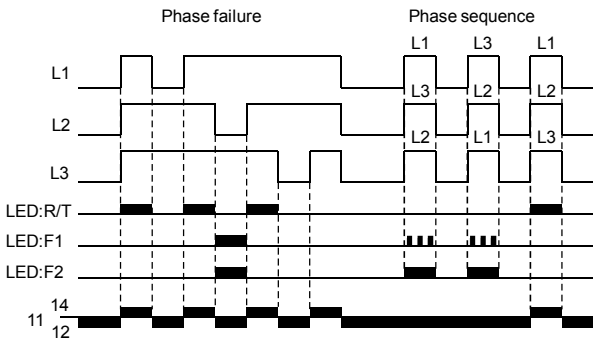
□ Description of Function diagram and LED

○ LED functions

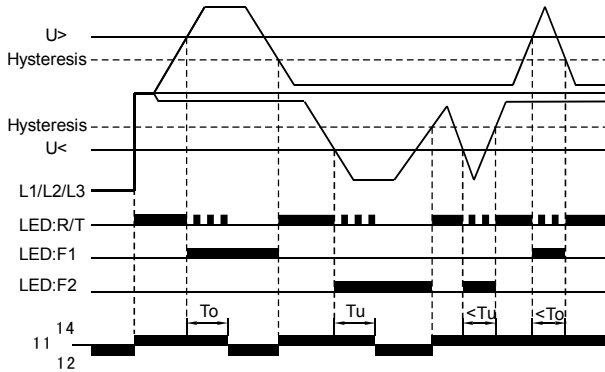
Table 2

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

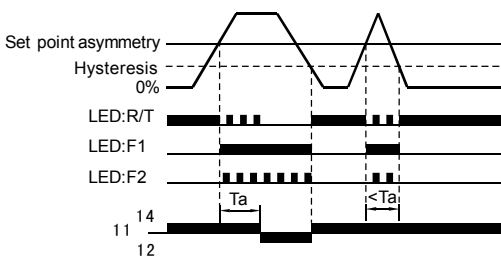
○ Phase failure and phase sequence function diagram



○ Overvoltage and undervoltage function diagram



○ Asymmetry function diagram



To: Overvoltage threshold tripping delay.
 Tu: Undervoltage threshold tripping delay.
 Ta: Asymmetry threshold tripping delay.

□ 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 voltage 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. Set operation threshold value.

3. Set the time delay interval to 0.1s...10s so as to prevent operation in case of transient fault.

4. In case of voltage failure, the relay would be disconnected at the expiration of set time delay interval.

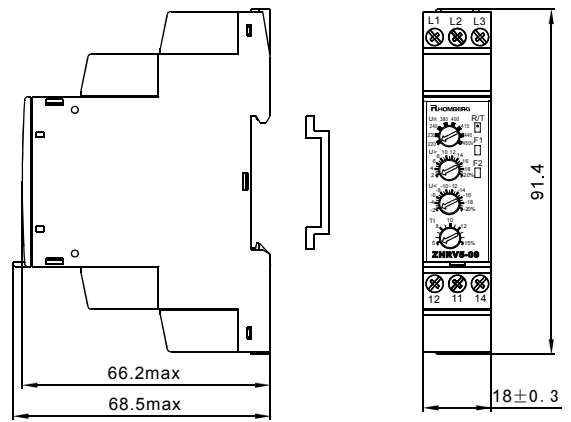
5. If the relay detects voltage failure during electrification, the output relay would be kept in off-state.

6. The measured voltage $U < U_n * 70\%$ indicates open phase fault, and the minimum open phase voltage is 165V.

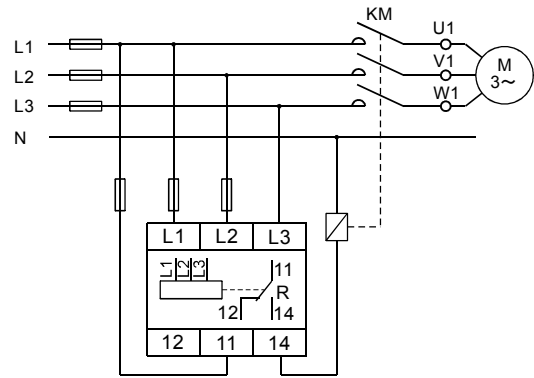
7. When ZHRV5-03 phase sequence is correct, the output relay would close and the R/T LED would go ON at input voltage ($> 176V$); when ZHRV5-03 detects phase sequence error and the failure of one or more phases, the output relay would be disconnected, and the R/T LED go OUT.

8. In case of open phase fault at power input terminals L1 and L2, the function LED would not illuminate.

□ Overall Dimensions



□ Wiring Diagram



⚠ 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.