

Operating Instructions for ZHRV5 Series Relay

Single-phase voltage control relay

□ Function Features

- Monitors its own supply voltage (True RMS measurement).
- Measuring frequency range: 45Hz-65Hz, DC.
- The relay is 18mm wide.
- Voltage measurement accuracy <1%.
- Control status is indicated by a LED.
- The relays are designed for clip-on mounting on \bar{U} rail.

□ Applications

- Protect electrical equipment and motors from over-voltage and under-voltage.
- Normal/emergency power supply switching.

□ Model and Connotation

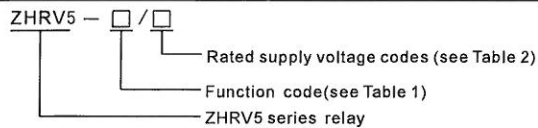


Table 1

| Function code | Overvoltage | Undervoltage |
|---------------|------------------------------------|--------------|
| ZHRV5-01 | Over: undervoltage in windows mode | |
| ZHRV5-02 | ● | ● |

Table 2

| Rated supply voltage code | Rated supply voltage | Supply voltage limits | Range of adjustment |
|---------------------------|----------------------|-----------------------|---------------------|
| D12 | DC 12V | DC 7...20V | DC 9...15V |
| AD48 | AC/DC 24...48V | AC/DC 15...100V | AC/DC 20...80V |
| AD240 | AC/DC 110...240V | AC/DC 50...270V | AC/DC 65...260V |

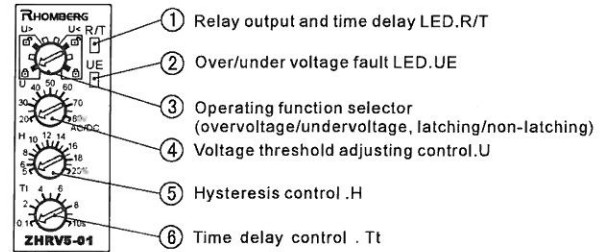
□ Technical Parameters

| | |
|---------------------------|---|
| Rated supply voltage | DC12V, AC/DC24...48V, AC/DC110V...240V, AC220V |
| Rated supply frequency | 50/60Hz ±10%, 0 |
| Hysteresis | ZHRV5-01: 5...20% of threshold setting ZHRV5-02: 3% fixed of threshold setting |
| Time delay | Adjustable 0.1...10s, 10% |
| Measurement error | <1% over the whole range with voltage variation |
| Run up delay at power up | 0.5s time delay |
| Konb setting accuracy | 1% of scale value |
| Reset delay | 1000ms |
| 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 | Ue/Ie: 250V/1.5A |
| Output type | 1 C/O |

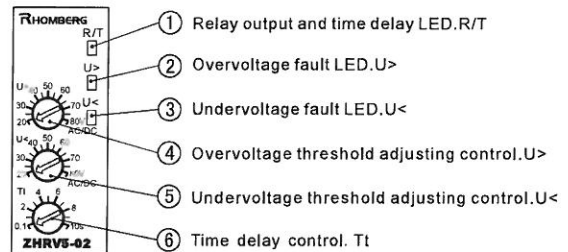
| | |
|---------------------|--|
| Connecting capacity | 0.5mm ² ~2.5mm ² |
| Tightening torques | 0.5Nm |
| Mounting support | 35mm symmetrical DIN rail conforming to EN/IEC 60715 |

□ Panel Diagram

○ ZHRV5-01 panel description:



○ ZHRV5-02 panel description:

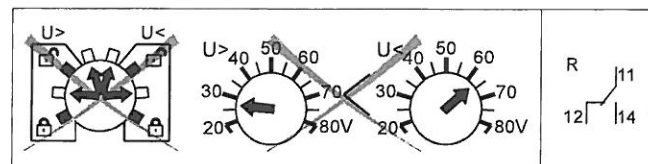
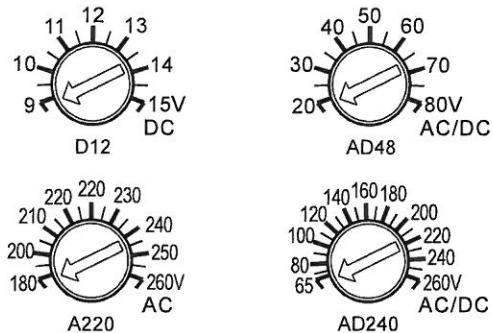


○ LED functions

Table 3

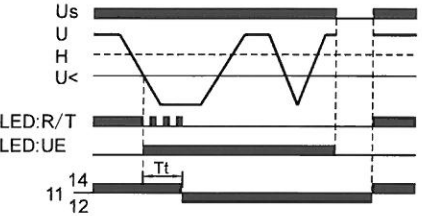
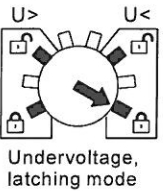
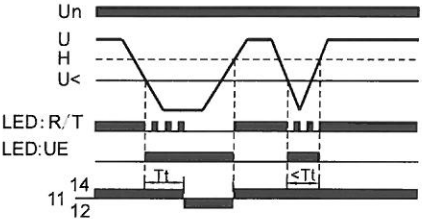
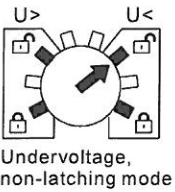
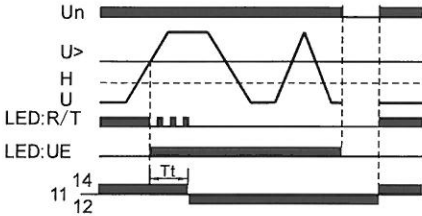
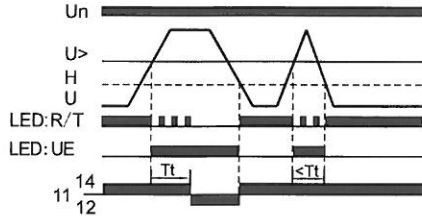
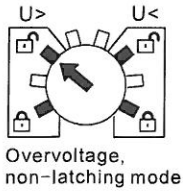
| Function | R/T: yellow LED | UE: red LED | U>: red LED | U<: red LED |
|------------------------|-----------------|-------------|-------------|-------------|
| Setting error | | | | |
| Output relay energized | | | | |
| Tripping delay | | | | |
| Overvoltage | | | | |
| Undervoltage | | | | |

○ Control for setting of threshold value

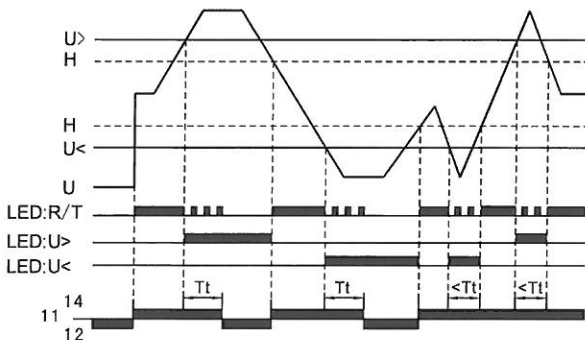


□ Function Diagrams

○ ZHRV5-01



○ ZHRV5-02



U> :Overvoltage threshold
 U< :Undervoltage threshold
 H :Hysteresis
 U :Controlled signal
 Tt :Delay on threshold crossing

□ Operating Instructions

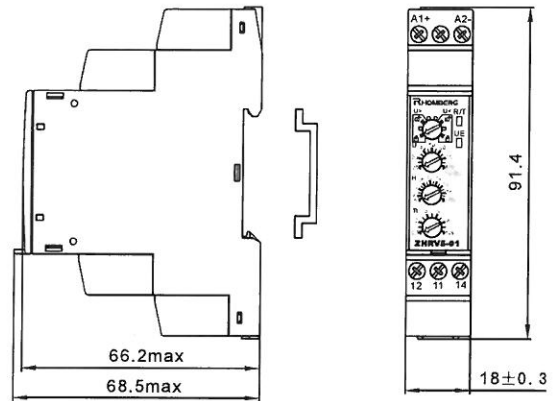
○ ZHRV5-01

1. Select operating function ;the relay takes a reading of operating functions after power-on. In case of setting error, LED will flash. Normal operation will be resumed if controls reset correctly through resetting after power-off. If the operating function is changed after power-on, all LED indicators would flash while the relay operates based on original operating functions; the LED would resume the normal indication after the original setting is recovered.
2. Adjust the Voltage threshold to set protection threshold value.
3. Adjust the hysteresis control ;hysteresis is 5%...20% of threshold value.
4. When measured voltage exceeds the set threshold value of voltage, R/T LED would flash and the UE LED would go ON. When fault time exceeds the set time delay (0.1s...10s) interval, output relay would be disconnected and R/T LED would go OFF.
5. When "over-voltage, non-latching" mode is activated, if the operating voltage is less than the difference between voltage threshold value and lagged value, the output relay would be actuated and the R/T LED would go ON. When "under-voltage, non-latching" mode is activated, if the operating voltage is more than the sum of voltage threshold value and lagged value, the output relay would be actuated and the R/T LED would go ON.
6. In case of "latching" mode, the operating voltage exceeds threshold value and output relay would keep an off-state. The power must be turned off before resetting the relay.

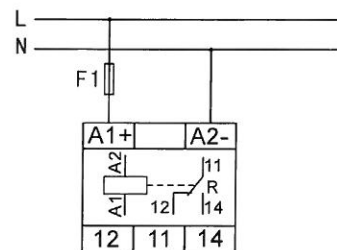
○ ZHRV5-02

1. Adjust the overvoltage and undervoltage threshold value . The set over-voltage threshold value must be larger than under-voltage threshold value. Otherwise, all LEDs would flash and the output relay would be disconnected.
 2. Fixed Hysteresis is 5%.
 3. When measured voltage exceeds the threshold value, R/T LED would flash and the U> (U<) LED would go ON. When fault time exceeds the set time delay (0.1s...10s) interval, output relay would be disconnected and R/T LED would go OFF.
 4. When operating voltage is lower than the difference between overvoltage threshold value and lagged value or higher than the sum of undervoltage and lagged value, the output relay would be actuated and the R/T LED would go ON.
- Note: hysteresis = set threshold value * set hysteresis value.

□ 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.