

Operating Instructions for ZHRV5 Series Relay

Single-phase voltage control relay

Function Features

- Controls its own supply voltage(True RMS measurement).
- User may select operation mode through knob.
- Measuring frequency range:45Hz-65Hz,DC.
- The relay is only 18mm wide.
- Voltage measurement accuracy <1%.
- Control status is indicated by a LED.
- The relays are designed for clip-on mounting on DIN rail.

Applications

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

Model and Connotation

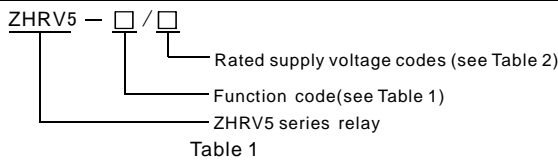


Table 1

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/DC15...100V	AC/DC 20...80V
AD240	AC/DC 110...240V	AC/DC 50...270V	AC/DC 65...260V
A220	AC 220V	AC 160...270V	AC 180...260V

Technical Parameters

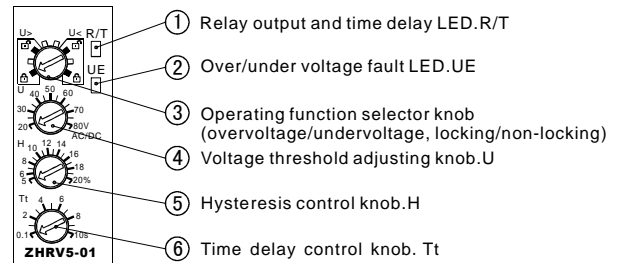
Rated supply voltage	DC12V,AC/DC24...48V,AC/DC110V...240V, AC220V
Rated supply frequency	50/60Hz +-10%,0
Hysteresis	ZHRV5-01:5...20%of threshold setting
	ZHRV5-02:3%fixed of threshold setting
Time delay	Adjustable 0.1...10s,10%
Measurement error	<1%over the whole range with voltage variation
Run up delay 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/CO

Mounting support

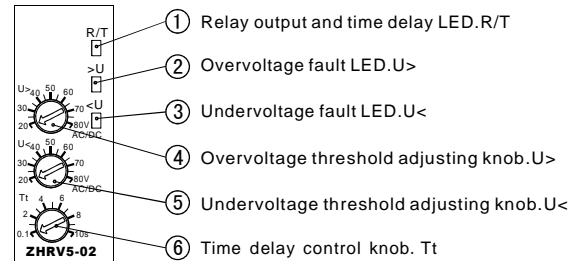
35mm symmetrical DIN rail conforming to EN/IEC 60715

Panel Diagram

ZHRV5-01 panel description:



ZHRV5-02 panel description:

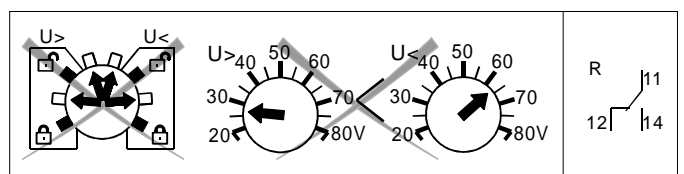
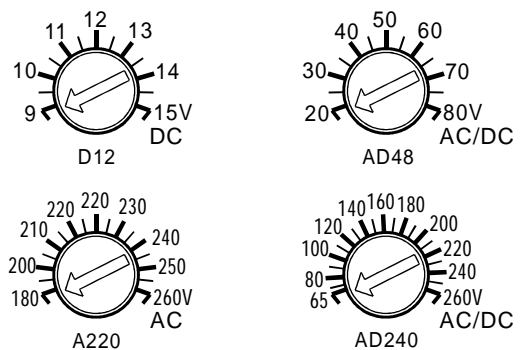


LED functions

Table 3

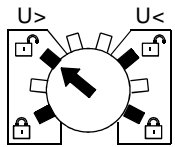
Function	R/T:yellow LED	UE:red LED	U>:red LED	U<:red LED
Setting error				
Output relay energized				
Tripping delay				
Overvoltage				
Undervoltage				

Knob for setting of threshold value

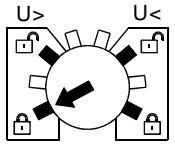
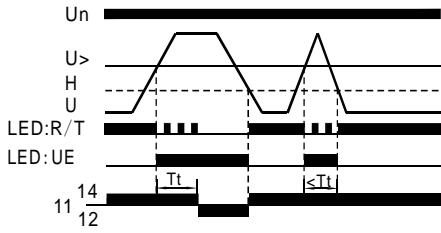


## □ Function Diagrams

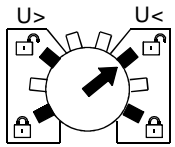
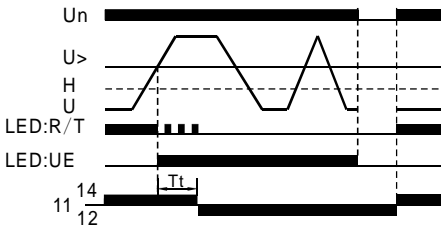
### ○ ZHRV5-01



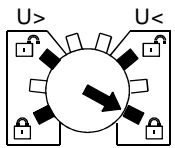
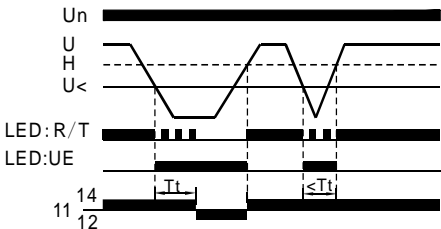
Overvoltage, non-locking mode



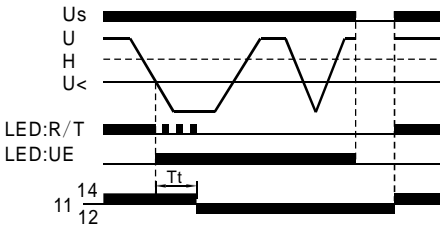
Overvoltage, locking mode



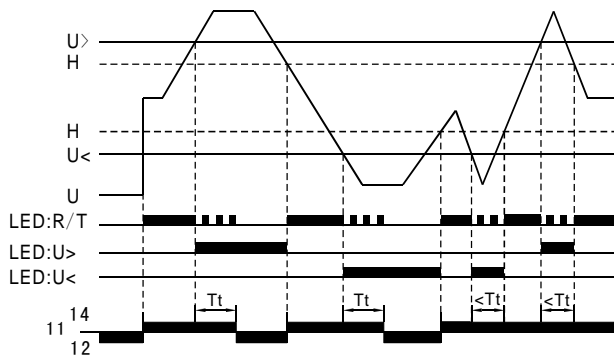
Undervoltage, non-locking mode



Undervoltage, locking mode



### ○ ZHRV5-02



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

## □ Operating Instructions

### ○ ZHRV5-01

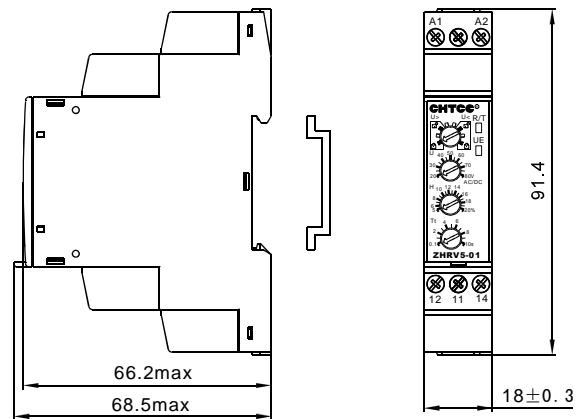
- Select operating function selector knob ;the relay takes a reading of operating functions after power-on.In case of knob setting error, LED will flash at the same time, which indicate the setting error. Normal operation will be resumed through resetting after power-off. If the operating function is 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.
- Regulate the Voltage threshold adjusting knob to set protection threshold value.
- Regulate the hysteresis control knob;hysteresis is 5%...20%of threshold value.
- When measured volte 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.
- When "over-voltage, non-locking" 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-locking" 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.
- In case of "locking" 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

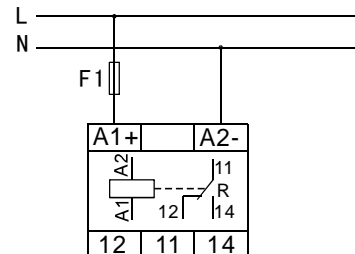
- Regulate the overvoltage and undervoltage threshold adjusting knob threshold value . The set overvoltage threshold value must be larger than undervoltage threshold value. Otherwise, all LEDs would flash and the output relay would be disconnected.
- Fixed Hysteresis is 5%.
- When measured voltage exceeds 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.
- 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

- This product shall be installed, operated and maintained by professional personnel.
- 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 the accident as a result thereof.
- Please refer to the wiring diagram in Operation Instructions when arranging wires.
- Never place power input line in the same conduit with other wires with heavy current. Please use shielded wire if necessary so as not to bring about interference that may influence the normal operation of relay.
- Do not use this product in areas with dust, corrosive gases and with exposure to direct sunlight and rain.
- Never use this product in medium with explosion hazard and with gases that may corrode metals and destroy the insulation, and do not use this product in a space with conductive dust.
- Please store and use this product at rated supply voltage and stated temperature, height above sea level and humidity.
- Failure to follow these instructions can result in death, serious injury, or equipment damage.
- The warranty period of this product shall be 18 months under normal use.