

CHINT

Please read this manual before install and use it

In conformity with IEC 60947-5-1

NUYB1

Voltage Protection Relay

Instruction Manual



1. Scope

This instruction manual specifies the model and its annotation, normal operating condition and installation condition, technical parameters, wiring diagram and the operation and use of NUYB1 voltage protection relay (hereinafter referred to as "VPR" hereinafter).

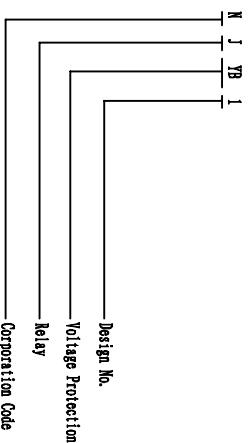
This product is used in AC 50Hz three-phase four-wire 220V circuit to control the over-voltage, under-voltage, phase failure, phase sequence.

This VPR is a micro-processor based high-tech appliances that features failure protection, failure memory, voltage display and fixed/inverse time lag functions. This VPR performs the sampling of voltage signal using analog signal sampling circuit and measures the relationship between the current voltage value and the sequence of three phases using micro processor which checks if failure occurs in accordance with user settings. In case of no failure, the micro processor keeps the NC contact opened and the NO contact closed. In the case of failure, the micro processor calculates the delay time of fixed/inverse time lag. When the delay time is used up, the NC contact of relay is closed, and the NO contact is opened. However, in case the user opens the analog action DONB or analog test function DIP, the micro processor will not perform failure diagnosis but actuate/release the relay to be driven.

This product complies Chinese National Standard GB14048.5 LV Switchgear and Control Gear -

Section 5-1: Appliance and switching element in control circuit - Appliance for electromechanical control circuit.

2. Model and its meanings



3. Normal working conditions and installation conditions

3.1 Normal working conditions

3.1.1 Ambient air temperature: -5°C ~ +40°C, and the average temperature within 24 hours shall not exceed +35°C.

3.1.2 Altitude: no greater than 2000m;

3.1.3 Humidity

The relative humidity shall not exceed 50% when the ambient temperature is +40°C. Higher relative humidity (e.g. 90% at +20°C) is allowable at lower temperature. Measures shall be taken for the condensation on product surface as a result of temperature change.

3.1.3.2 Pollution Level

The pollution level is of Class 3.

3.2 Installation Condition

3.2.1 Installation Method

Installation method: mounted on 35mm C-rail.

3.2.2 Installation Location

The equipment shall be installed in an area without significant vibration and shock.

4. Technical Parameters

4.1 Basic Parameters

4.1.1 Over-voltage protection: (1.0-1.3) U_n; under-voltage protection: (0.7-1.0) U_n.

4.1.2 Failure protection time: (0.1-9.9)s.

4.1.3 Dielectric strength: no electrical breakdown and flick occurs at AC (50Hz) 2,000V for 1s.

4.1.4 Insulation resistance: ≥100MΩ (20°C, HR 90%)

4.1.5 Contact capacity: AC-15 220V 3A.

4.1.6 Electric life: the electric life shall not be less than 100 thousand times in case the operating load is lower than rated load.

4.2 Outside Dimensions and Installation Dimensions of VPR

Figure 1 shows the outside dimensions and installation dimensions of VPR.

4.3 Action Characteristics

See Table 1 for the action characteristics in the case of failure.

Table 1 VPR action characteristics in the case of failure

No.	Failure Type	Action time		Ambient temperature
		Fixed time lag	Inverse time lag	
1	Over-voltage protection	(0.1-9.9)s	$T_f = (I_{on}/I_r)^3 \times T_n$	Room temperature
2	Under-voltage protection	(0.1-9.9)s	$T_f = (I_r/I_{un})^3 \times T_n$	
3	Open phase protection		<0.1s	
4	Phase sequence protection		<0.1s	

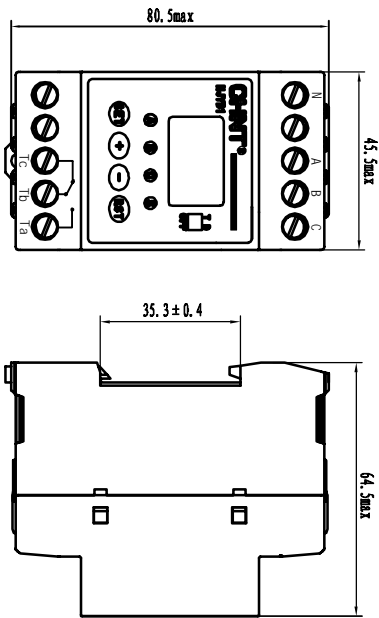
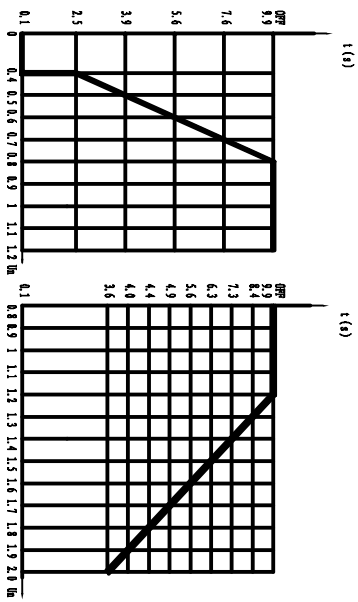


Figure 1. Outside dimensions and installation dimensions of NJTBI VPR

4.4 VPR's time-voltage characteristic

The time-voltage characteristic of VPR is shown in Figure 2.



Note: 0.8Uc-1.2Uc is the normal set range of voltage, and the delayed time is set as 9.9s.

Figure 2. Time-voltage characteristic of VPR

5. Wiring Diagram

See Figure 3 for the wiring diagram of STP.

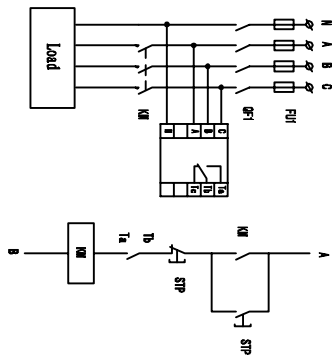


Figure 3. Electrical wiring method of NJTBI STP

6. Operation and Application

The operation and application of surge voltage protector is shown in Figure 4.

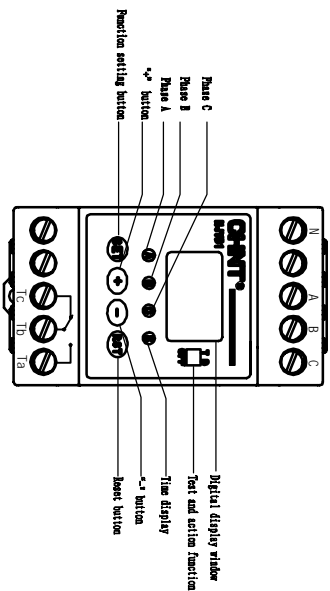


Figure 4. Operation diagram of voltage protection relay

6.1 Overvoltage value, under-voltage value, delay time and fixed/variable time lag protection function setting
Press the setting key, there would appear setting modes of overvoltage value, under-voltage value, delay time, fixed time lag/inverse time lag. Press buttons "+" and "-" to set the value when setting the over-voltage/under-voltage and delay time modes. Press buttons "+" and "-" to switch between fixed/inverse time lag, and the indicator will display "F-OLV-1" correspondingly; press the setting button for automatic storage and quit after the setting of all the items is completed. The blank screen of about 0.1s during the storage is a normal phenomenon.

6.2 Indicator lamp information

The indicators for phases A, B and C are double-color LEDs. The illumination of green lamp indicates normal phase voltage, and the illumination of red lamp means failure. In current status, the maximum voltages at the three phases are displayed as a default, and the indicator lamp of corresponding phase is illuminated; press buttons "+" and "-" to display the previous failure status; wait for 4 seconds or press the reset button to exit in the failure memory status. During the overvoltage setting, the green lamps at phases A, B and C are kept ON synchronously; during the delay time setting, the time indicator lamp S goes on; in case phase sequence error is detected during the electrification, the protector would perform sequence failure protective actions instantaneously, and the indicator displays "ERR" while the red lamps of the three phases go on synchronously; after the phase sequence failure is eliminated, the protectors will be reset one by one so as to re-detect the phase sequence status. The switching display of failure voltage/time is performed after overvoltage under-voltage actions or open phase action.

6.3 Setting of toggle switch

Turn the toggle switch on panel to position D, the protector would get into the analog action status. In this case, failure protection is not available and the relay is kept normally opened.