

1. Purpose and Scope of Application

NJXB3 relay is used in AC 50Hz/60Hz three-phase three-wire 380V and three-phase four-wire 220V circuit to control the overvoltage, under-voltage, phase failure, phase sequence, three-phase unbalance and PTC temperature protection. For instance, it is applicable to electronic command and control system, power compensation capacitor, switch panel, air conditioning system and electric motor etc..

This product conforms to IEC 60947-5-1 standards.

2. Model and Its Meaning

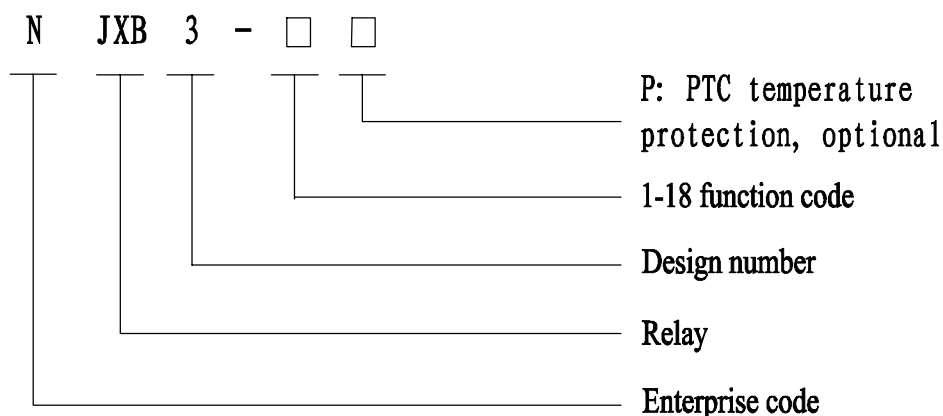


Table 1 Model and Its Functions

Model	Wiring mode	Overvoltage protection	Under-voltage protection	Unbalance protection	Phase sequence protection	Phase failure protection	PTC protection
NJXB3 - 1	Three-phase, three-wire	Adjustable	-	-	-	●	-
NJXB3 - 2		-	Adjustable	-	-	●	-
NJXB3 - 3		Adjustable	Adjustable	-	-	●	-
NJXB3 - 4		Adjustable	Adjustable	-	●	●	-
NJXB3 - 5		Adjustable	Adjustable	Fixed 20%	●	●	○
NJXB3 - 6		Fixed 120%	Fixed 80%	Adjustable	●	●	○
NJXB3 - 7		Adjustable	Adjustable	Adjustable	●	●	○
NJXB3 - 8		-	-	-	-	-	●
NJXB3 - 9		-	-	-	●	●	●
NJXB3 - 10		-	-	-	●	●	-
NJXB3 - 11	Three-phase, four-wire;	Adjustable	-	-	-	●	-
NJXB3 - 12	two-phase,	-	Adjustable	-	-	●	-
NJXB3 - 13	single-phase	Adjustable	Adjustable	-	-	●	-
NJXB3 - 14	Three-phase, four-wire	Adjustable	Adjustable	-	●	●	-
NJXB3 - 15		Adjustable	Adjustable	Fixed 20%	●	●	○
NJXB3 - 16		Fixed 120%	Fixed 80%	Adjustable	●	●	○
NJXB3 - 17		Adjustable	Adjustable	Adjustable	●	●	○
NJXB3 - 18		-	-	-	●	●	○

Note: 1. ○ means this function can be chosen ,or can be selected no; ● means it must have this function ;
 -- means it certainly does not have this function .
 2. if PTC protections function is needed,Add the letter "P" to product model (e.g. NJXB3-5P).

3. Model and Function

See Table 1.

4. Panel Schematic Diagram

Panel Schematic Diagram See Figure 1 for panel.

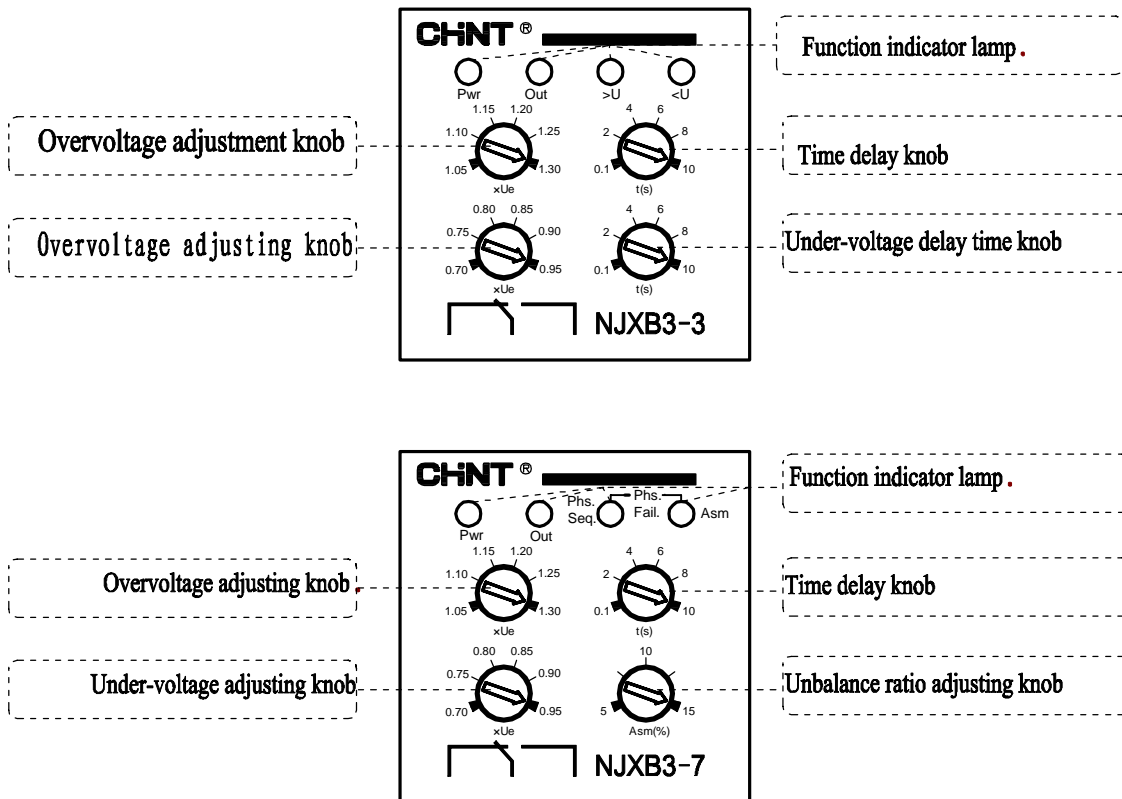


Figure 1. NJXB3 Panel Schematic Diagram

Panel Description:

Function indicator lamp:

- Pwr: power indicator lamp;
- Out: relay operation indicator lamp when there is no fault;
- >U: overvoltage fault indicating lamp;
- <U: under-voltage fault indicating lamp;
- Phs. fail. (phs. seq.): phase sequence and failure indicator lamp;
- U,err: overvoltage/under-voltage fault indicating lamp;
- Phs. fail.: phase failure indicator lamp;
- Asm: voltage unbalance fault indicating lamp.

Knobs:

- Overvoltage adjustment knob: overvoltage value adjustment range is 1.05 ~ 1.30;
- Under-voltage adjustment knob: under-voltage adjustment range is 0.70 ~ 0.95;
- Unbalance ratio adjustment knob: unbalanced voltage value adjustment range is 5% ~ 15%;

d. Time delay adjustment knob: the adjustment range of time delay knob is 0.1s - 10s.

Note: NJXB3-07 and NJXB3-17 overvoltage, under-voltage and unbalance protection time delay adjustment is realized through the same delay adjustment knob.

5. Normal Operation and Installation Conditions

5.1 Normal Working Condition

5.1.1 Ambient Temperature

- a) +40°C max ;
- b) -5°C min ;
- c) Average value for 24 hours does not exceed +35°C.

5.1.2 Height above Sea Level

The installation site shall not be more than 2,000m above seal level.

5.1.3 Atmospheric Condition

5.1.3.1 Humidity

The maximum temperature is +40°C, the relative humidity of air shall not exceed 50% and higher relative humidity is allowable at low temperature. Special measures shall be taken for the occasional condensation due to variation in temperature.

5.1.3.2 Pollution Class

Pollution class: 3

5.2 Installation Condition

5.2.1 Explosion hazard-free media, in which there are no gasses that are capable of corroding metals and damage the insulation and not much conducting dust;

5.2.2 Areas with rain-and-snow-proof equipment and without water vapor

5.2.3 Areas without noticeable shaking, impact and vibration

5.2.4 Installation Class: II.

5.3 Transportation and Storage Conditions: -25°C to +55°C

6. Main Technical Data

6.1 Main Technical Parameters

6.1.1 Rated Operating Voltage

Three-phase, three-wire, AC380V; three-phase, four-wire, AC220V.

6.1.2 Phase Sequence, Phase Loss

Actuation time \leq 1s

6.1.3 Set Value for Overvoltage Protection

a) Actuation value setting range

Knob adjustment is 1.05 ~1.30; fixed value is 1.20; overvoltage operation voltage value = set value

$\times U_e$.

b) Time Delay

Knob adjustment range is 0.1s~10s; fixed value is 2s.

c) Resetting Voltage Value

Three-phase three-wire: resetting voltage value = overvoltage operation value - 6V.

6.1.4 Set Value for Under-voltage

a) Actuation value setting range

Knob adjustment is 0.70~0.95; fixed value is 0.80; under-voltage operation voltage value = set value

$\times U_e$.

b) Time Delay

Knob adjustment range is 0.1s~10s; fixed value is 2s.

c) Resetting Voltage Value

Three-phase three-wire: resetting voltage value = under-voltage operation value - 6V.

6.1.5 Set Value for Three-phase Unbalance Protection

a) Actuation Value Setting Range

Knob adjustment is 5%~15%; fixed value is 20%; unbalance operation voltage value = set value \times Ue.

b) Time Delay

Knob adjustment range is 0.1s~10s; fixed value is 2s.

c) Resetting Voltage Value

Resetting voltage value = unbalance operation value \times 75%.

6.1.6 Set Value for PTC Temperature Protection

a) Actuation Value and Recovery Value

When resistance value $\geq 1.5k\Omega$, the relay will be normally closed and disconnected; when the resistance value $\leq 500\Omega$, the relay will be normally open and connected.

b) Time Delay

Actuation time $\leq 1s$.

6.1.7 Time Delay Error

$\pm 10\%$ of set value; Minimum actuation time is 0.1 s.

6.1.8 Actuation Precision

$\pm 2\%$ of rated operating voltage

6.1.9 Mechanical Life

1×10^6 times

6.1.10 Electrical Life

1×10^5 times.

6.1.11 Contact Capacity

AC250V 6A COS Φ =1.

6.1.12 Installation Mode

Guide rail, assembled.

6.1.13 Power Consumption

≤ 3 VA.

6.2 Auxiliary Circuit Class: AC-15.

6.3 Auxiliary Circuit Parameters: see Table 2.

Table 2 Auxiliary Circuit Parameters .

Contact mode	Rated thermal current I _{th} A	Classification	Rated operating voltage U _e V	Rated operating current I _e A
Rated operating current I _e A	3	AC-15	220	0.75
			380	0.47

6.4 Interference Tolerance:
see Table 3

Table 3 Interference Tolerance

Item	Severity level
Static discharge tolerance	$8 \times (1 \pm 10\%) \text{ kV (air discharge)}$
Electromagnetic radiation tolerance	Test electric field intensity $10 \times (1 \pm 10\%) \text{ V/m}$
Fast Surge tolerance	2 kV power cord, last for 1 min
(impact) tolerance	Open circuit test voltage: $2 \times (1 \pm 10\%) \text{ kV}$

7. Protection Features

7.1 Overvoltage Protection

When the voltage of any phase exceeds the overvoltage responding value, the overvoltage (over/under-voltage) indicator lamp will go on. After the time delay, the actuation indicator lamp will go off, and the relay will be normally open and disconnected (no indication for fixed overvoltage protection). If the peak voltage exceeds $150\% U_e$, the actuation time will be $\leq 1\text{s}$.

When the peak voltage is lower than resetting voltage, the overvoltage (over/under-voltage) indicator lamp will go OFF, the actuation indicator lamp will go ON, and the relay will be normally open and be connected.

7.2 Under-voltage Protection

When the voltage of any phase is lower than the under-voltage responding value, the under-voltage (over/under-voltage) indicator lamp will go ON. After the time delay, the actuation indicator lamp will go OFF, and the relay will be normally open and disconnected (no indication for fixed under-voltage protection).

When the minimum voltage is lower than resetting voltage, the under-voltage (over/under-voltage) indicator lamp will go OFF, the actuation indicator lamp will go ON, and the relay will be normally open and be connected.

7.3 Three-phase Unbalance Protection

Unbalanced voltage value = peak voltage value - minimum voltage value

When the unbalanced voltage is greater than unbalanced responding value, the unbalance indicator lamp will go ON. After the time delay, the actuation indicator lamp will go OFF, and the relay will be normally open and disconnected (no indication for fixed unbalance protection).

When the unbalanced voltage is lower than resetting voltage, the unbalance indicator lamp will go OFF, and actuation indicator lamp will go ON, and the relay is normally open and connected.

7.4 PTC Temperature Protection

When the connected resistance of R1 and R2 is greater than responding value, the actuation indicator lamp will go OFF, and the relay will be normally open and disconnected.

When the connected resistance is lower than recovery value, the actuation indicator lamp will go ON, and the relay will be normally open and connected.

7.5 Phase Sequence Protection

L1-L2-L3 is positive sequence, and L1-L3-L2 is negative sequence. If phase error (phase sequence) occurs, the indicator lamp will go ON, and the relay will be normally open and disconnected.

Exchange L2 with L3 during phase error protection to return to normal.

7.6 Phase Loss Protection

Phase-loss protection will be triggered if one phase is failure and the voltage of any phase is lower than 50%Ue.

Phase-loss protection will be return to normal if none phase is failure and the voltage of any phase is greater than 50%Ue.

8. Overall Dimensions and Wiring Mode

8.1 See Figure 2 for the overall dimensions of relay NJXB3.

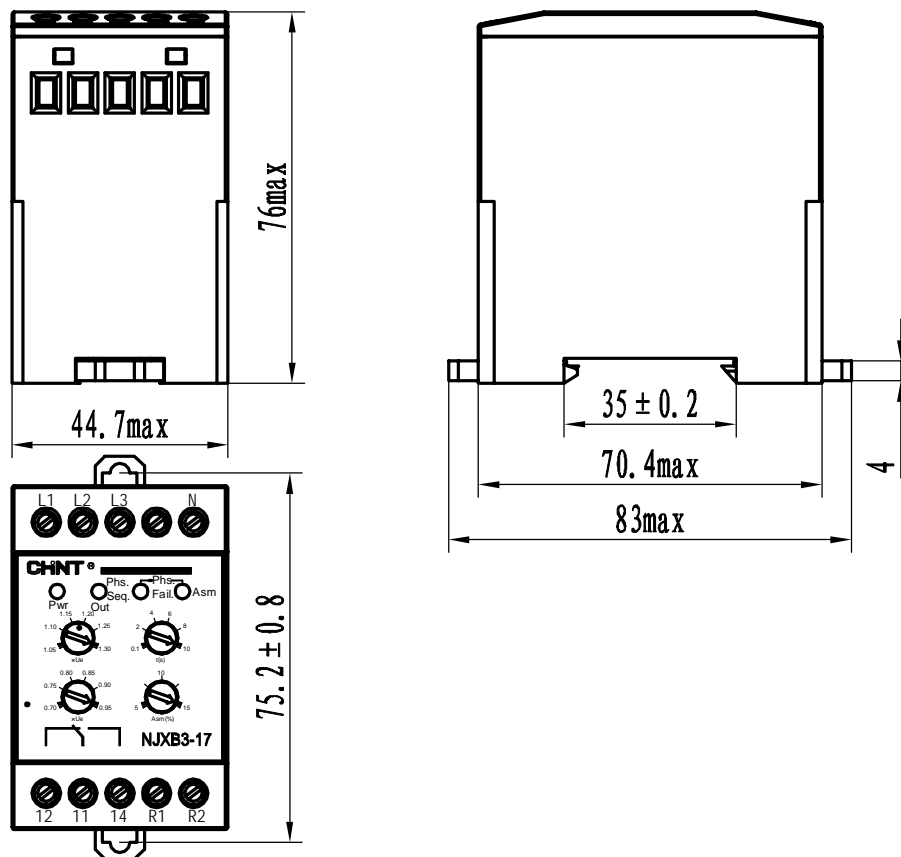
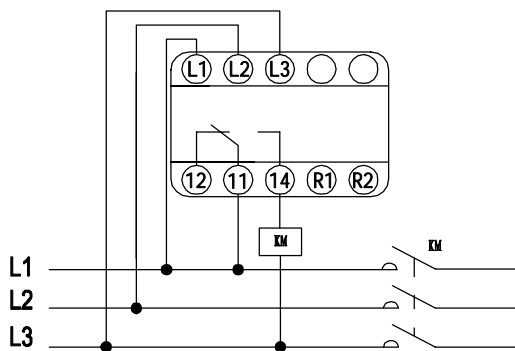
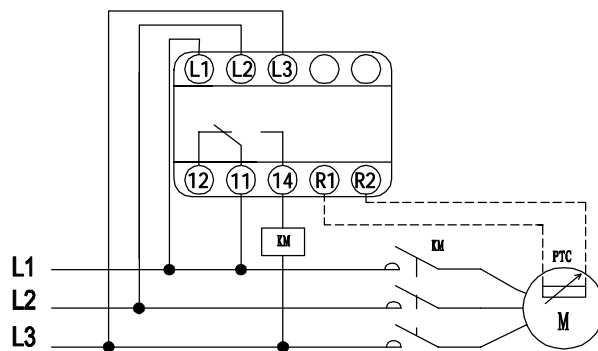


Figure 2. Overall Dimensions of NJXB3

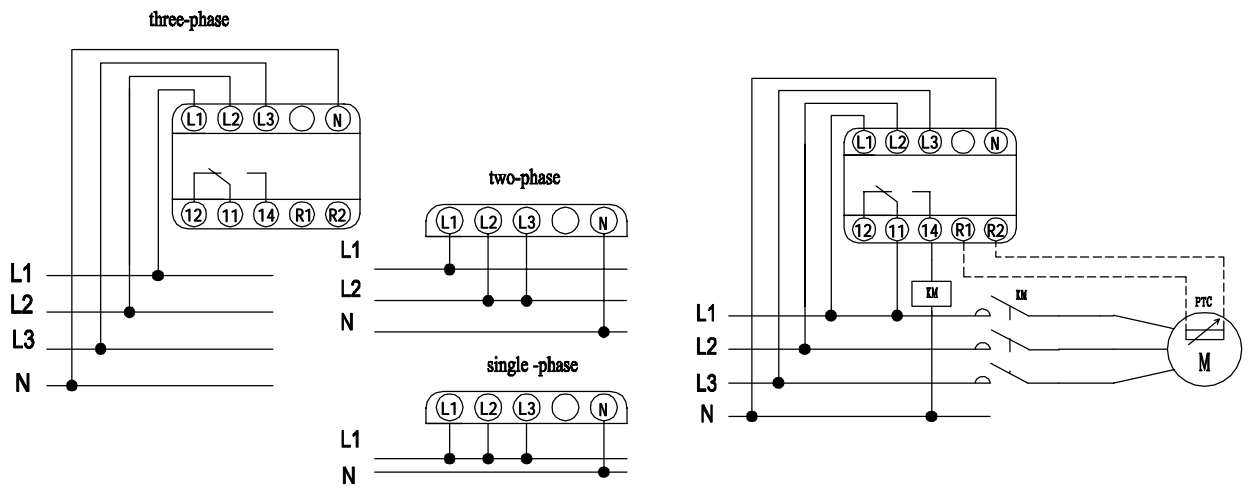
8.2 See Figure 3 for the Wiring Diagram of Relay NJXB3



NJXB3-1, NIXB3-2, NJXB3-3,
NJXB3-4, NJXB3-10 Wiring Diagram



NJXB3-5(P), NJXB3-6(P), NJXB3-7(P)
NJXB3-8(P), NJXB3-9 Wiring Diagram



NJXB3-11, NJXB3-12, NJXB3-13,
Wiring Diagram

NJXB3-14, NJXB3-15(P), NJXB3-16(P)
NJXB3-17(P), NJXB3-18 Wiring Diagram

Figure 3. Wiring Diagram of NJXB3

9. Installation, Operations and Maintenance.

9.1 Connect the wires correctly according to wiring diagram..

9.2 When the relay is installed through "guide-rail", the TH35-7.5 steel rail shall be used.

10 Precautions.

10.1 When the relay operates normally, the normally open contact will be closed, and the relay will be normally closed and disconnected. In this case, the actuation indicator lamp will go ON.

10.2 Power input cable shall not be placed together with other wires with strong current or be stranded with them. If necessary, shield cable shall be used. The connection of shield cable must be short so as not to generate interference that may influence the normal operation of relay.

10.3 Do not install the relay in the areas that are exposed to dust, corrosive gas, direct sunlight and rain water.

10.4 Please store and use this relay at the rated voltage and stated temperature, height above sea level and humidity.