

NJB1-X
Voltage Protection Relay

User Instruction

Safety Warning

- ① Only professional technicians are allowed for installation and maintenance.
- ② Installation in any damp, condensed-phase environment with inflammable and explosive gas is forbidden.
- ③ When the product is being installed or maintained, the power must be switched off.
- ④ You are prohibited from touching the conductive part when the product is operating.
- ⑤ The product shall be stored, installed and used in accordance with the rated control power supply voltage and specified conditions indicated in the user instructions.
- ⑥ The products shall be properly wired in strict accordance with the wiring diagram.

1 Use Purpose

Used as the phase sequence, phase loss and three-phase voltage unbalance protection component to connect or disconnect the circuit, NJB1-X voltage protection relay (hereinafter referred to as the relay) is applicable to the control circuit with AC frequency of 50Hz/60Hz and rated control power voltage of AC380V~AC480V.

2 Key Technical Parameters

Table 1 Ambient Conditions

Normal use conditions	Ambient temp.: -5°C~+40°C; average value within 24h not exceeding +35°C; altitude not exceeding 2,000m.
Atmospheric conditions	RH shall not exceed 50% when maximum temperature is +40°C; in case of lower temperature, higher RH is allowed. Measures should be taken against occasional condensation due to temperature change.
Installation category	II
Transport and storage conditions	-25°C~+55°C

Table 2 Product Specifications and Main Technical Parameters

Model	NJB1-X	
Installation method	Rail mounting, Equipment type	
Protection function	Phase loss, phase sequence	Three-phase voltage unbalance
Motion time	≤0.1s	0.1s~30s
Unbalance motion (ASY)	Motion value setting range	Unbalance rate: 2%~22%
	Motion value	100% motion at set value
	Unbalance motion condition	Unbalance motion value = rated input voltage × unbalance set value (%) When the difference between the highest phase voltage and the lowest phase voltage is equal to or exceeds the unbalance motion value, the unbalance motion will work
Reset (HYS)	Lag	25% lower than the set motion value, and after delay of 0.5s
	Reset method	Auto reset

Table 3 Main Circuit and Auxiliary Circuit Technical Parameters

No.	Product model	NJB1-X	
1	Rated control supply voltage U_s (V), frequency (Hz)	Three-phase three-wire system: AC380V,AC400V,AC415V, AC480V,50Hz/60Hz Three-phase four-wire system: AC220V,AC230V,AC240V, AC277V,50Hz/60Hz	
2	Allowable fluctuation range of rated control power supply voltage	85% U_s ~110% U_s	
3	Agreed free air heating current I_{th} (A)	3	
4	Rated operating voltage U_e (V)	AC240V	AC415V
5	Use type under rated operating voltage and rated operating current I_e (A)	AC-15	AC-15
		0.75A	0.47A
6	Rated insulation voltage U_i (V)	AC500V	
7	Rated impulse withstand voltage U_{imp} (kV)	4	
8	Enclosure protection class (if applicable)	IP20	
9	Pollution class	Class 3	
10	Type and maximum value of short circuit protection	RT36-00/4A	
11	Size of terminal tightening screw (or nut)	M3	
12	Torque of terminal tightening screw (N·m)	0.5	
13	Electrical life / mechanical life (10,000 times)	10/100	

Table 4 Immunity to Interference

No.	Test type	Test level
1	Electrostatic discharge immunity test	8kV (air discharge)
2	RF electromagnetic field immunity test	10V/m
3	Electrical fast transient/burst immunity test	2kV/5kHz on the power supply side
4	Surge immunity test	1kV (wire to wire)

3 Installation

3.1 Outline and installation size: see Figure 1, unit: mm.

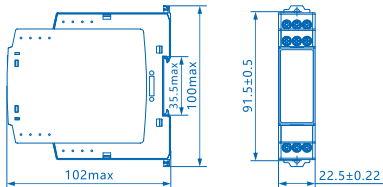


Figure 1 Outline and Installation Size

3.2 Panel diagram: see Figure 2; selection switch position diagram: see Figure 3; working mode setting: see Table 5, Table 6; wiring diagram: see Figure 4; working sequence diagram: see Figure 5.

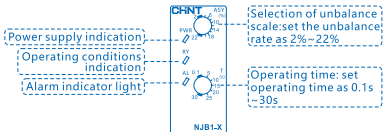


Figure 2 Panel Diagram

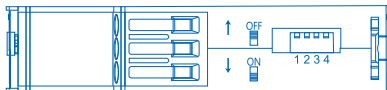


Figure 3 Selection Switch Position Diagram

Table 5 Working Mode Setting 1

		Function		Default
Key 1	Power ON lock time	ON	T1=5s	OFF
		OFF	T1=1s	
Key 2	Wiring mode selection	ON	Three-phase four-wire system mode	OFF
		OFF	Three-phase three-wire system mode	

Table 6 Working Mode Setting 2

Key 3	Key 4	Rated control power supply voltage		Default	
		Three-phase three-wire system	Three-phase four-wire system		
OFF	OFF	AC380V	AC220V	OFF	OFF
ON	OFF	AC400V	AC230V		
OFF	ON	AC415V	AC240V		
ON	ON	AC480V	AC277V		

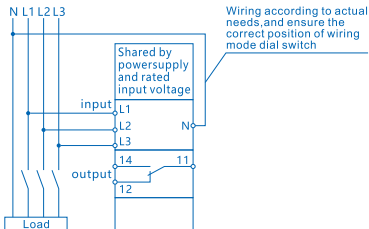


Figure 4 Wiring Diagram

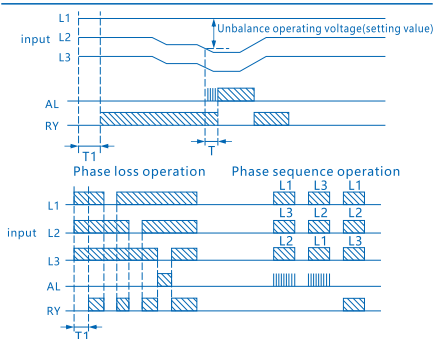


Figure 5 Working Sequence Diagram

Notes:

- 1) The nameplate is a schematic scale, and the protection motion value should be checked during use.
- 2) Turning the knob or changing the state of the setting switch during the protection process will lead to the incorrect delay time of this motion. The setting should be completed in normal operating state or before power is applied.
- 3) T1: Power lock time (1s or 5s); T: motion time (0.1s~30s).
- 4) During use, the time interval from power cut to voltage reapplication must be greater than 1s, otherwise the reset may be unreliable.
- 5) At the time of phase sequence motion protection, the alarm indicator light flashes at an interval of about 1s; In the unbalance motion protection process, the alarm indicator light flashes at an interval of 1s or so, after motion, the alarm indicator light will be normally on.
- 6) The product is compatible with three-phase four-wire and three-phase three-wire wiring modes. After the product is installed, please confirm the position of the wiring mode dial switch is correct, so as to avoid malfunction of the product.
- 7) In the three-phase four wire mode, the phase loss fault of the neutral wire can be measured, but the leakage fault of the neutral wire cannot be detected.

- 8) Phases L1 and L2 are the auxiliary power supplies of the product. In case of phase loss fault of L1 and L2, the normally open contact of the relay is disconnected and all indicator lights are off.
- 9) The power supply input line should not be in the same pipe or twisted with other wires with strong current. If necessary, please use shielded wire which should be as short as possible to avoid interference and affecting the normal operation of the relay.

4 Maintenance

4.1 The terminal of the relay should be tightened on a regular basis.

4.2 Avoid squeezing the product; the product should be stored in a well-ventilated place.

4.3 For equipment that may cause material economic losses or personal safety, safety measures such as secondary circuit protection should be taken.

Table 7 Fault Analysis and Troubleshooting

Symptoms	Cause analysis	Troubleshooting method
The power indicator light is not on after power on	The power supply pin is not wired and the wiring is incorrect or disconnected. The product is not electrified or the control power supply voltage does not match the rated control power supply voltage of the product.	Select the power supply voltage that matches the rated control power supply voltage of the product and connect wires reliably according to the user instructions.
Abnormal operation after power on	The control wiring of the relay is incorrect or disconnected, whether the input voltage is too low, whether the settings of the working mode and the knobs meet the requirements.	Set the working mode and the knobs of the product according to the user instructions, select the power supply voltage corresponding to the rated control power supply voltage set by the product and connect wires reliably.

5 Environmental Protection

In order to protect the environment, the product or product parts should be disposed of according to the industrial waste treatment process, or be sent to the recycling station for assortment, dismantling and recycling according to local regulations.

CHINT

QC PASS

NJB1-X

Voltage Protection Relay

IEC/EN 60947-5-1

JDQ Check 10

Test date: Please see the packing

ZHEJIANG CHINT ELECTRICS CO., LTD.

CHINT

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NJB1-X Voltage Protection Relay User Instruction

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