



XJ3-G Series Phase Failure and Phase Sequence Protective Relay

User Instruction



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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 The Purpose of Use

XJ3-G series phase-failure and phase-sequence protective relay ("relay" in short) is mainly used in control circuit with AC frequency of 50Hz/60Hz and rated control power supply voltage up to AC 380V for the protection and control of fault status such as open phase, phase sequence and three-phase voltage imbalance.

2 Main 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	XJ3-G	XJ3-G1
Installation method	Rail mounting , Equipment type	
Indication form	Two-color indicator (green: normal; red: protection)	
Protection function	open-phase, phase sequence, three-phase voltage imbalance	open-phase, phase sequence
Operate time	Phase-failure, phase sequence $\leq 2s$; three-phase voltage imbalance $\leq 5s$	
Number of contacts	1 NO, 1 NC	

Table 3 Main Circuit and Auxiliary Circuit Technical Parameters

No.	Product model	XJ3-G, XJ3-G1
1	Rated control supply voltage U_s (V), frequency (Hz)	AC380V, 50Hz/60Hz
2	Agreed free air heating current I_{th} (A)	5

Table 3 (continued)

No.	Product model	XJ3-G, XJ3-G1	
3	Rated duty	Uninterrupted duty or 8h duty	
4	Rated operating voltage $U_e(V)$	AC240V	AC415V
5	Utilization category and rated operating current $I_e(A)$	AC-15	AC-15
		0.75A	0.47A
6	Rated insulation voltage $U_i(V)$	415V	
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	RT36-00/10A	
11	Size of terminal tightening screw (or nut)	M3.5	
12	Torque of terminal tightening screw (N·m)	0.8	
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)

2.1 Protection Operate Performance

2.1.1 Open-phase protection If there is open phase or phase loss in any of the phases between terminal 1, 2, 3 of the product and the 3-phase power supply, the relay will operate reliably.

2.1.2 Phase sequence protection After phase A, B, C of the 3-phase power supply are connected to terminal 1, 2, 3 of the relay, the relay identifies the phase sequence (positive). When the 3-phase power supply changes from positive sequence to negative sequence, the relay will operate reliably.

2.1.3 3-phase voltage imbalance protection If the voltage imbalance between any phase and the other two phases of the 3-phase power supply

complies with the formula as below, the relay will operate reliably.

$$\frac{U_{\max} - U_{\min}}{U_s} \times 100\% \geq 8\% \sim 13\%$$

Among which:

U_{\max} is the maximum voltage value of the three phases;

U_{\min} is the minimum voltage value of the three phases;

U_s is the rated control supply voltage.

3 Installation

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

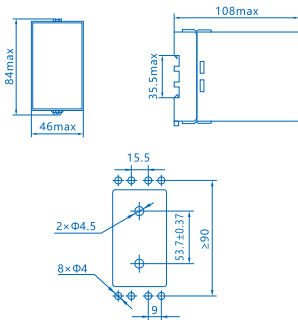


Figure 1 Outline and installation size

3.2 Wiring diagram: see Figure.2.

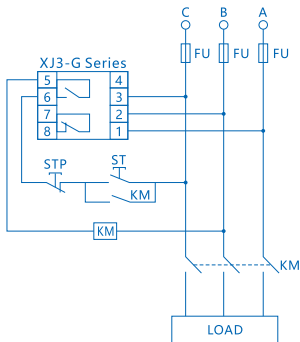


Figure 2 wiring diagram

Notes:

- 1) If the relay is wired into the circuit according to Figure 2, and the load cannot be started, it may be due to the phase sequence identification function of the relay; swap any of the two wires at the relay's input terminal 1, 2, 3, the load will be started as normal, the phase sequence already identified. Later, when you change any phase of the voltage, the relay will fulfill its protection function.

- 2) When the base is installed and used, it must be aligned with the foot position, and the plug boss on the relay should be aligned with the groove of the base. The relay has been locked on the base via clamp; before unplugging the relay, first unfasten the clamp and then unplug the relay slowly.
- 3) In the application circuit, the relay will not fulfill its protection function unless there is open phase between terminal 1, 2, 3 and phase A, B, C of power supply.
- 4) When the product is started, the stability of the grid voltage will be tested first, and the action delay of about 1.5s will be generated. If you care about the delay of the customer, it can be customized.

4 Maintenance

4.1 The terminal of the protector 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 5 Fault Analysis and Troubleshooting

Symptoms	Cause analysis	Troubleshooting method
The indicator is not on.	Whether the contact between wires and terminals is reliable, and the wiring of the power supply terminal is correct	Wire the product securely according to the product manual.
The red indicator is on, the relay does not change over.	Whether the wiring of the relay is correct, the input voltage is normal, and the phase sequence is correct	Check if the input voltage is normal, and the phase sequence is correct; try to swap any of the two wires at the input terminal 1, 2, 3 of the relay.

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.

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XJ3-G Series

Phase Failure and Phase
Sequence Protective Relay

IEC/EN 60947-5-1

JDQ Check 10

Test date: Please see the packing

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Zhejiang Chint Electric Co., Ltd.

Add: No.1, CHINT Road, CHINT Industrial Zone, North Baixiang,
Yueqing, Zhejiang 325603, P.R.China

E-mail: global-sales@chint.com

Website: <http://en.chint.com>

