NO:2021.11

CHINT ELECTRICS

XJ3-D
Phase Failure and Phase Sequence Protective Relay

User Instruction

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Standard: IEC/EN 60947-5-1

⚠ 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

XJ3-D phase failure and phase protective relay (hereinafter referred to as relay) is applicable to control circuits with frequency of AC 50Hz/60Hz and rated control power supply voltage up to AC380V, for protection of phase failure, phase sequence, overvoltage and undervoltage.

2 Key Technical Parameters

Table 1 Ambient Conditions

Normal use conditions	Ambient temp.: -5℃~+40℃; average value within 24h not exceeding +35℃; altitude not exceeding 2,000m.
Atmospheric conditions	RH shall not exceed 50% when maximum temperature is +40℃; 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℃~+55℃

Table 2 Product Specifications and Main Technical Parameters

Model	XJ3-D
Installation method	Rail type, prefabricated
Indication method	Multiple indicators (the corresponding indicator will light up when fault occurs)
Protection functions	Phase failure, phase sequence, overvoltage, undervoltage
Phase failure, phase sequence protection	≤1s
Overvoltage protection	AC380V~AC460V adjustable, operating time: 1.5s~4s adjustable
Undervoltage protection	AC300V~AC380V adjustable, operating time: 2s~9s adjustable
Error	Voltage error: ±3%, delay error: ±10%
Contact number	1 group change-over

Table 3 Technical parameters of main circuit and auxiliary circuit

序号	Product specifications	XJ3-D
1	Rated control power supply voltage Us(V), frequency (Hz)	AC380V, 50Hz/60Hz
2	Agreed free air heating current Ith (A)	3
3	Rated operating voltage Ue(V)	AC415V
4	Utilization category and rated operating current Ie(A)	AC-15 0.47A
5	Rated insulation voltage Ui(V)	AC415V
6	Rated impulse withstand voltage Uimp(kV)	4
7	Rated duty system	Uninterrupted or 8h
8	Enclosure protection class (if applicable)	IP20
9	Pollution class	Class 3
10	Type and max. value of short circuit protection	RT36-00/6A

No.	Product specifications	XJ3-D
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)

2.1 Protection features

2.1.1 Phase failure protection: If phase failure happens to any of the three phases, the phase failure indicator will light up and the protector will act correspondingly.

2.1.2 Phase sequency protection: If any of the phase line is changed after the phase sequence is identified by the protector, no load can be started and the phase failure indicator will light up, the protector will act correspondingly.

2.1.3 Overvoltage protection: If the three-phase voltage exceeds the set overvoltage value, the overvoltage indicator will light up and the protector will act correspondingly.

2.1.4 Undervoltage protection: If the three-phase voltage is lower than the set undervoltage value, the undervoltage indicator will light up and the protector will act correspondingly.

2.1.5 See Figure 1 and Figure 2 for the relation between voltage and acting point when the protector provides overvoltage and undervoltage protection. See curve 1 for single phase over/under-voltage protection, see curve 2 for two-phase over/under-voltage protection, see curve 3 for three-phase over/under-voltage protection.

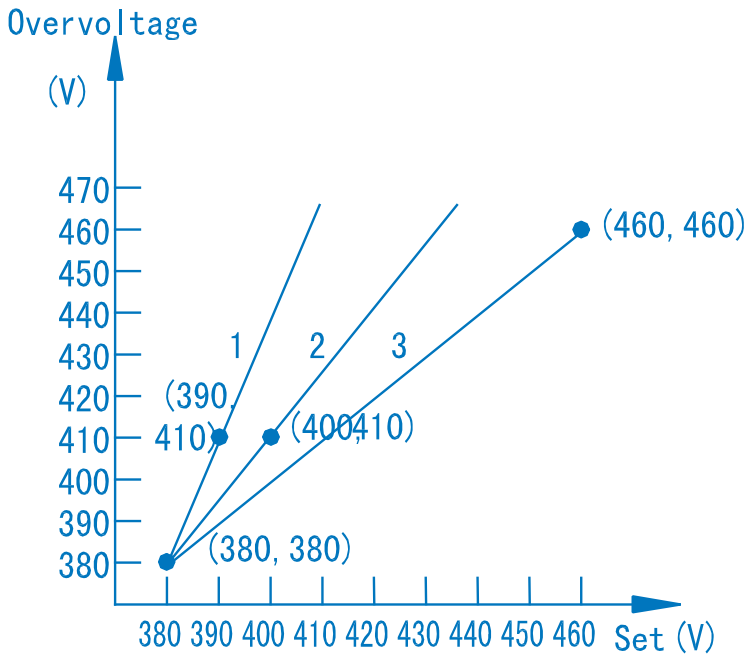


Figure 1 Overvoltage acting curve

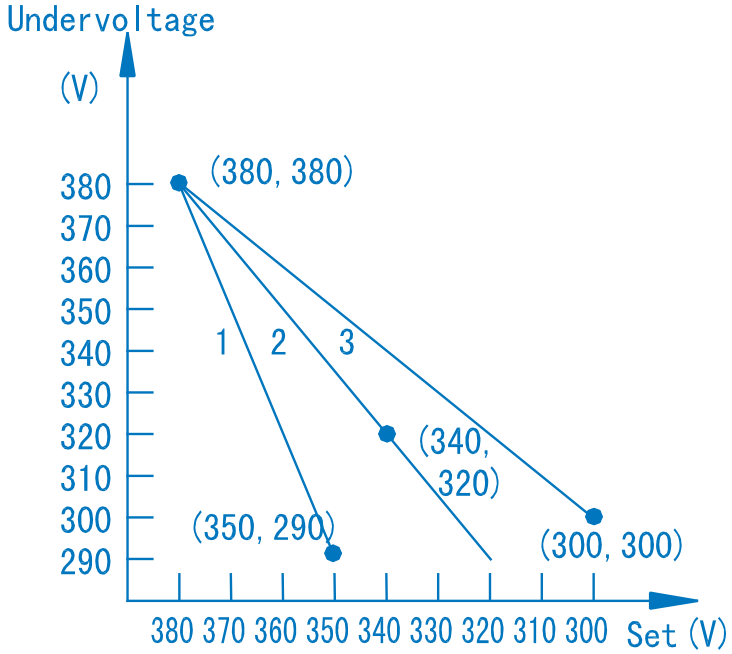


Figure 2 Undervoltage acting curve

3 Installation

3.1 Outline and installation dimensions: see Figure 3, unit: mm.

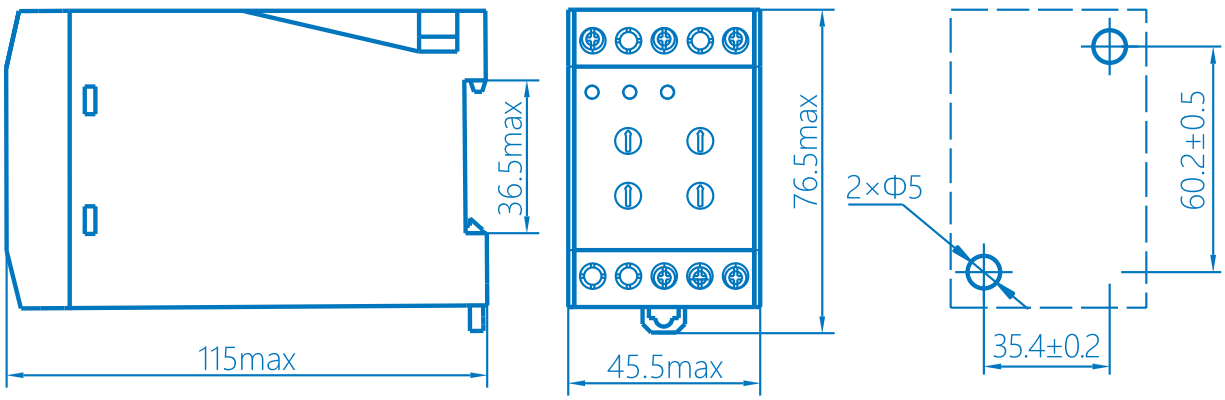
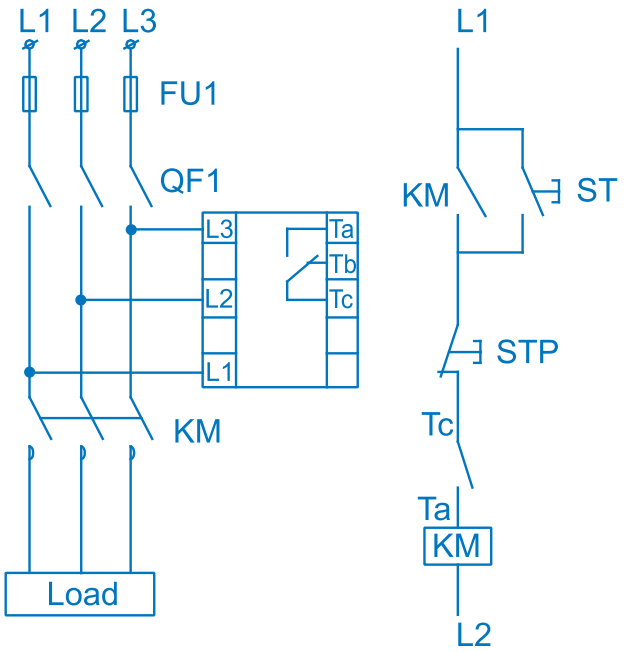


Figure 3 Outline and installation dimensions

3.2 Wiring diagram: see Figure 4.



L1, L2, L3 – three-phase power supply
FU1 – Fuse
QF1 – Knife switch
KM – AC contactor
ST – Start button
STP – Stop button

Figure 4 Product wiring diagram

3.3 Product panel drawing: see Figure 5; before starting the product, set overvoltage value, overvoltage delay, undervoltage value and undervoltage delay first.

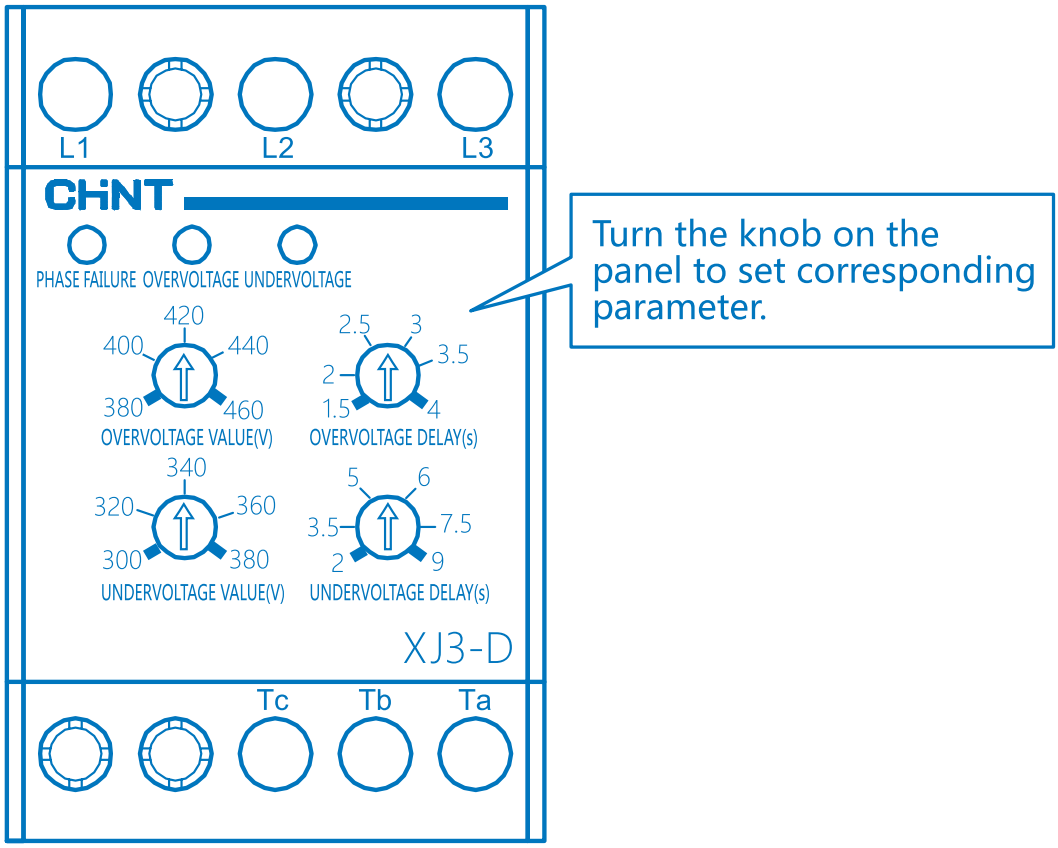


Figure 5 XJ3-D panel drawing

Note: If the relay is connected according to Figure 4 but load cannot be started, it might be because the phase sequence of the relay has already been identified. User only needs to switch the lines of any two of the relay terminals (L1, L2, L3) to start the load and the phase sequence will be identified. From now on, if the power supply of any phase is changed, the relay will provide protection accordingly. The auxiliary power of the product: L1, L3 phase, When these two phases are broken, the indicators will be all off, and the NO contact of the relay will become disconnected.

4 Maintenance

4.1 Check and tighten the wiring terminals of the relay on a regular basis.
4.2 Prevent the product from being crushed. 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 Analysis and Troubleshooting of Faults

Symptoms	Cause analysis	Troubleshooting method
The overvoltage indicator lights up.	Overvoltage fault occurs to the relay.	First, check if the voltage is too high. If the voltage is normal, adjust the overvoltage knob on the panel to proper value.
The undervoltage indicator lights up.	Undervoltage fault occurs to the relay.	First, check if the voltage is too low. If the voltage is normal, adjust the undervoltage knob on the panel to proper value.
The phase failure indicator lights up. The relay does not switch.	Relay connection is wrong; input voltage is abnormal; phase sequency is wrong.	Check if the input voltage is normal and the phase sequence is correct. Try to switch the ines of any two of the relay terminals (L1, L2, L3).
The phase failure indicator lights up after a period of normal operation, but the measured voltage is normal.	Abnormal grid waveform or grid frequency.	1) Check if generator set is used to supply power. Generator set can cause unstable power frequency due to its unstable rotation speed; decrease the load of generator set properly, if the problem still exists, we suggest to replace with other suitable product; 2) Check if there is harmonic in the grid.

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

XJ3-D
Phase Failure and Phase Sequence Protective Relay
IEC/EN 60947-5-1

JDQ Check 10

Test date: Please see The packing

ZHEJIANG CHINT ELECTRICS CO., LTD.

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