# Relay

## Protection Relay

**NJB1-YW**
Liquid
Floatless Relay

Page I-01

**NJB1-X Relay**
(Three-Phase Unbalance, Phase Sequence, Lack-Phase Protection)

Page I-02

**NJB1-X1 Relay**
(phase sequence, phase failure protection)

Page I-03

**NJB1-Y**
Single-Phase Voltage Relay

Page I-04

**NJB1-S**
Time Delay Relay

Page I-05

**NJBK2**
Motor Protection Relay

Page I-06

**NJBK5**
Motor Controller

Page I-10

**NJBK5-5**
Motor Controller

Page I-13

**NJBK6**
Motor Protection Relay

Page I-16

**NJBK7**
Motor Protection Relay

Page I-19

**NJBK9**
Motor Protection Relay

Page I-23

**NJXB3**
Relay

Page I-27

**NJYB3**
Relay

Page I-30

**JD-5A(NJBK3)**
Integrated Motor Protector

Page I-33

**JD-5**
Integrated Motor Protector

Page I-35

**NJYB1**
Phase-Failure and Phase-Sequence Protection Relay

Page I-38

# Relay

## Protection Relay

**XJ3**
Phase-Failure and Phase-Sequence Protective Relay

Page I-39

## Control Relay

**NJS6**
Time Delay Relay

Page I-41

**NJS2**
Time Delay Relay

Page I-45

**NJS1**
Time Delay Relay

Page I-49

**NTE8**
Time Delay Relay

Page I-51

**JSS48A**
Time Delay Relay

Page I-53

**JSS48B**
Time Delay Relay

Page I-55

**JSZ3**
Time Delay Relay

Page I-56

**JSZ4**
Time Delay Relay

Page I-59

**JSZ6**
Time Delay Relay

Page I-60

**NJJ1**
Counting Relay

Page I-61

**NJJ3**
Counting Relay

Page I-65

**NJJ5-J**
Electronic Counter

Page I-69

**NJJ5-L**
Electronic Time Accumulator

Page I-71

**NJJ6**
Counting Relay

Page I-73

**JDM15G**
Counting Relay

Page I-77

**JDM1-48**
Counting Relay

Page I-80

# Relay

## Control Relay

**JDM3**
Microminiature Electronic Counter

Page I-82

**SC3L**
Microminiature Electronic Time Accumulator

Page I-84

**NKG3**
Time Control Switch

Page I-86

**NKG2**
Time Control Switch

Page I-88

**NKG1**
Time Control Switch

Page I-90

**KG10D**
Microcomputer Time Control Switch

Page I-92

**KG10M**
Microcomputer Time-Controlling Switch

Page I-94

**KG316T**
Microcomputer Time Control Switch

Page I-95

**NJYW1**
Liquid Level Relay

Page I-97

**JYB-714**
Liquid Floatless Relay

Page I-99

**Time Relay**
Socket Series

Page I-101

## General Purpose Relay

**NJX-13FW**
Miniature Power Relay

Page I-103

**JQX-13F**
Miniature High-power Electromagnetic Relay

Page I-106

**JZX-22F**
Miniature Power Relay

Page I-108

**JQX-10F**
Miniature Power Relay

Page I-111

**JTX**
Miniature Power Relay

Page I-113

**JMK**
Miniature Power Relay

Page I-115

# Relay

## General Purpose Relay

**NJMC1**
Pulse Relay

Page I-117

**Power Relay**
Socket Series

Page I-119

# NJB1-YW Floatless Relay

## 1. General

NJB1-YW Floatless Relay is applicable for water level automatic control in industrial facilities & equipments, civil water tower, high cistern, underground conservation pool, etc.
The control of automaitic water supply or drainage may be achieved by a simgle operation of the function switch without modifying the user's connectiong conditons.
This product is not applicable for water level control of flammable and explosive liquid, such as oil, chemical liquid, etc.

## 2. Type designation

N JB 1 - YW/□

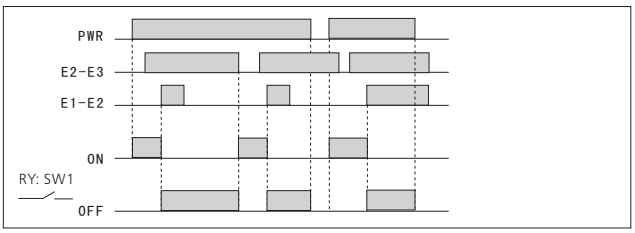
- Rated voltage of control power supply
- Function code: floatless relay
- Design sequence No.
- Relay
- Company code

## 3. Technical data

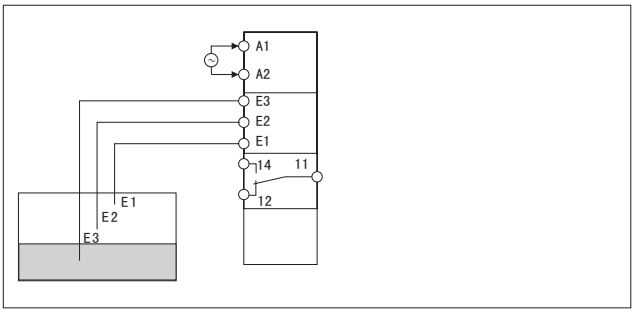
| Type | NJB1-YW |
|---|---|
| Operating mode | Continuous operating |
| Contact number | 1 Switching |
| Operating voltage | AC 50Hz/60Hz 36V, 110V, 220V, 380V, (other voltage may be custom made) |
| Voltage between electrodes | AC9V |
| Power consumption | Max value about 3VA |
| Operation resistance | 5kΩ~100kΩ(adjustable) |
| Resetting resistance | 250kΩmax |
| Response time | 0.1s~10s(adjustable) |
| Cable length | Max length 100m |
| Indication mode | Green LED: power supply indication; red LED:relay operation indication |
| Ambient temperature | -5℃~+40℃ |
| Installation mode | Equipment or Track Type |

## 4. Operation time-sequence diagram and wiring diagram

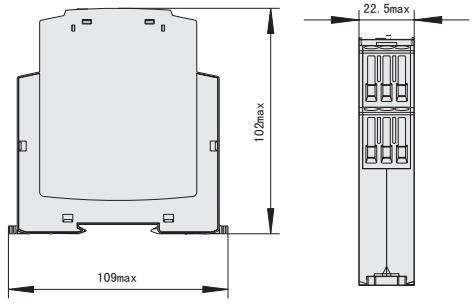
NJB1-YW operation time-sequence diagram




NJB1-YW wiring diagram




## 5. Overall and mounting dimensions (mm)



# NJB1-X Relay (Three-Phase Unbalance, Phase Sequence, Phase Failure Protection)

## 1. General

NJB1-X relay (hereinafter called relay) are applied in AC380V～480V control circuits at a frequency of 50Hz/60Hz as protection elements of phase sequence, phase failuire and phase unbalance,making or breaking circuits.The relay with the true effective value of three phase AC voltatage provides more reliable operating protection. The products meet the requirements of standard IEC 60947-5-1.

## 2. Type designation

N JB 1 - □/□

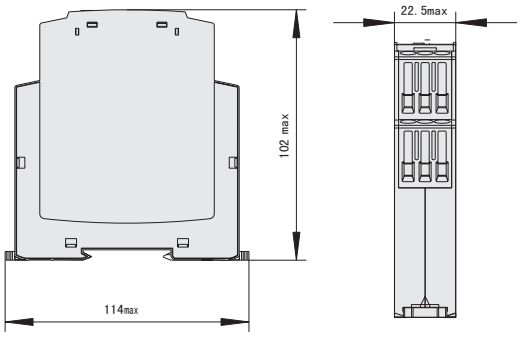
- Rated voltage of control power supply
- Function code: X: Three-Phase Unbalance, Phase Sequence, Phase Failute Protection.
- Design sequence No.
- Relay
- Company code

## 3. Technical data

| Type | NJB1-X |
|---|---|
| Operating voltage | Three-phase, three-line mode: 380, 400, 415, 480VAC<br>Three-phase, four-line mode: 220, 230, 240, 277VAC |
| Three-phase unbalance Operation | Unbalance rate: 2%～22% |
| Unbalance Operation time | 0.1～30s adjustable |
| Contact number | 1 Switching |
| Contact capacity | 3A 230VAC cos Φ＝1 |
| Indication mode | Power supply: green LED, delay output: yellow LED, alarm indication: red LED |
| Ambient temperature | -5℃～+40℃ |
| Installation mode | Equipment type or track type |

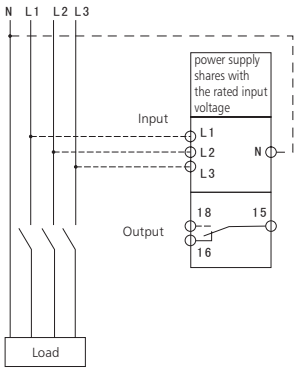
## 4. Overall and mounting dimensions (mm)

NJB1-X




## 5. Wiring diagram

NJB1-X



# NJB1-X1 Relay (Phase Sequence, Phase Failure Protection)

## 1. General

NJB1-X1 relay (phase sequence, phase failure protection) is used as an phase sequence and phase failure protection device in control circuits with an AC voltage of 200V～500V and a frequency of 50Hz to make and break the circuit. It cannot monitor the phase failure of motor load.
The products meet the requirement of standard IEC 60947-5-1

## 2. Type designation

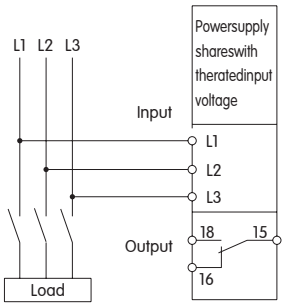
N JB 1 - X1

- Function code: X1: phase sequence, phase failure relay
- Design sequence No.
- Protection and monitoring relay
- Company code

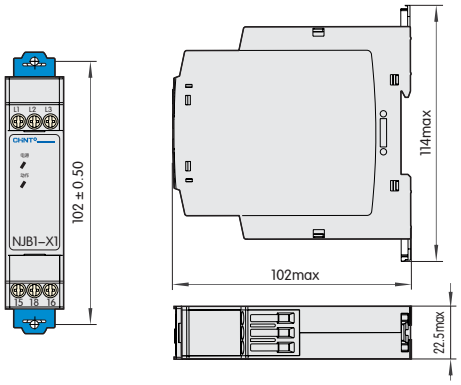
## 3. Operation conditions

3.1 Rated operational voltage: AC 200V～500V
3.2 Operation time: phase sequence, phase failure ≤ 0.1s
3.3 Contact capacity: Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; Ith: 3A
3.4 Mounting type: rail type, installation type
3.5 Power consumption: ≤3VA
3.6 Note: In normal operation, the N/O contact of the relay is closed, the operation indicator is on.

## 4. Wiring diagram




## 5. Overall and mounting dimensions (mm)



# NJB1-Y Single-Phase Voltage Relay

## 1. General

NJB1-Y single phase voltage relays (hereinafter the relay for short) are applied in AC 220V, 110V, 24V, frequency 50Hz (or 60Hz) and DC 24V control circuits as single phase over-voltage protection or under-voltage protection and indication elements, making or breaking circuits as intended operating values and time.
The product are in compliance with requirements of standard IEC 60947-5-1

## 2. Type designation

N JB 1- Y □/□

- Rated voltage of control power supply
- Voltage specification (see table 1)
- Function code
  Y: voltage monitoring
- Design sequence No.
- Relay
- Company code

Design Consequence number

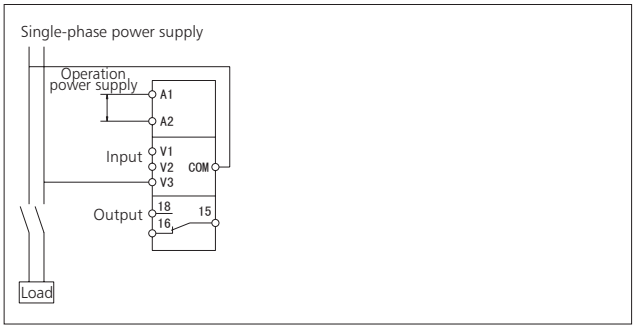
| Model | Rated operation power supply | Rated input voltage |
|---|---|---|
| NJB1-Y1 | DC24V | A: COM AC/DC 6mV~60mV<br>B: COM AC/DC 10mV~100mV<br>C: COM AC/DC 30mV~300mV |
| | AC24V | |
| | AC110V | |
| | AC220V | |
| NJB1-Y2 | DC24V | A: COM AC/DC 1V~10V<br>B: COM AC/DC 3V~30V<br>C: COM AC/DC 15V~150V |
| | AC24V | |
| | AC110V | |
| | AC220V | |
| NJB1-Y3 | DC24V | A: COM AC/DC 20V~200V<br>B: COM AC/DC 30V~300V<br>C: COM AC/DC 60V~600V |
| | AC24V | |
| | AC110V | |
| | AC220V | |

## 3. Technical data

| Type | NJB1-Y |
|---|---|
| Protection mode | Over-voltage protection, under-voltage protection |
| Operating voltage | DC24V; AC220V,<br>AC110V, AC24V, 50/60Hz |
| Operation Setting Range | 10%~100% of max rated input value |
| Operation time | 0.1s~30s adjustable |
| Repeating precision | ±10% of operation value |
| Time error | ±10% of set value |
| Input frequency | 40~500Hz |
| Contact number | 1 Switching |
| Contact capacity | 3A 230VAC cos Φ =1 |
| Mechanical Endurance | ⩽10,000,000 times |
| Electrical Endurance | Making 50,000times, breaking 30,000times |
| Installation mode | Track and Bolts |

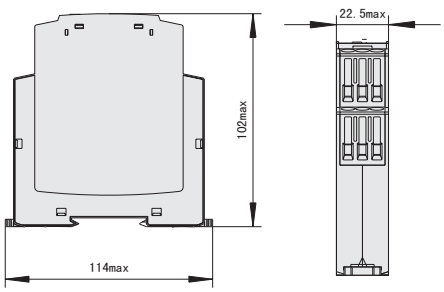
## 4. Wiring diagram

NJB1-Y




## 5. Overall and mounting dimensions (mm)

NJB1-Y



# NJB1-S Time Delay Relay

## 1. General

NJB1-S Series Monitoring Protection Relay is applicable for controlling circuit @ A.C. 50Hz/ 60Hz, up to 380V rated supply voltage and up to D.C.24V supply voltage as monitoring protection element to make or break circuit according to preset value.
NJBI-S time-delay relay is used in controlling circuit as time delay element to make or break circuit according to preset time.

## 2. Type designation

N JB 1 - □/□

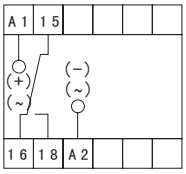
- Rated supply voltage
- Feature code: S: Time-delay relay
- Design sequence No.
- Monitoring protection relay
- Company code

## 3. Technical data

| Type | NJB1-S |
|---|---|
| Operation mode | Delayed ON operation/Interval operation/Recycle operation |
| Contact number | Delay 1 Switching |
| Contact capacity | Ue/Ie:AC-15 220V/0.75A,380V/0.47A,Ith:3A |
| Operating voltage | AC220V AC380V 50Hz/60Hz (other size may be custom made) |
| Electrical Endurance | $1\times10^5$ |
| Mechanical Endurance | $1\times10^6$ |
| Delay precision | 5% |
| Ambient temperature | -5℃~+40℃ |
| Installation mode | Track mouning |
| Delay range | Code name: 2 5 10 20 50 100 (time unit: s/min/h, optional) Range: 0.2~2 0.5~5 1~10 2~20 5~50 10~100 12~120 Note: delay range and time unit may be selected through selection switch |

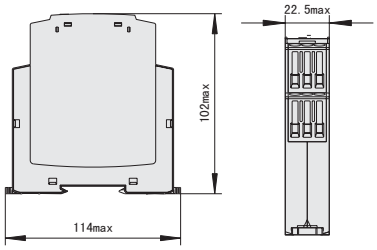
## 4. Wiring diagram

NJB1-S wiring diagram

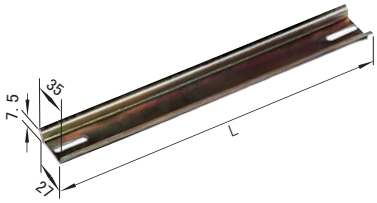



## 5. Overall and mounting dimensions (mm)

NJB1S




NJB1-S

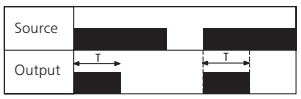



Use TH35-7.5 steel mounting rail for Installation

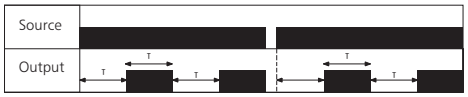
## 6. Timing-sequence diagram

Mode 1: Delayed ON operation

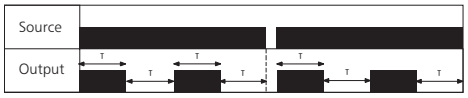

Mode 2: Interval operation




Mode 3: Symmetrical recycling OFF cycle first




Mode 4: Symmetrical recycling ON cycle first




# NJBK2 Motor Protection Relay

## 1. General

NJBK2 series motor protection relay (hereinafter referred to protector as simply) is applicable for overload, locked-rotor, phase-failure, three phase current unbalance, earthing and PTC temperature protection of AC motor @ A.C.50Hz, less than 660V rated operating voltage and 2A ~ 800A rated operating current for its continuous working or discontinuous working.
This product meets the requirements of IEC 60947- 4-1

## 2. Type designation

N JBK 2 - □/□ □

- Supply voltage
- Specification of rated current
- Rated current of the casing
- Design sequence No.
- Motor protection relay
- Company code

## 3. Operation conditions

3.1 Altitude ≤2000m.
3.2 Ambient air temperature -5℃ ~ +40℃, with daily average ≤+35℃.
3.3 Atmospheric condition: when the highest temperature is +40℃, relative humidity of air shall be no more than 50%, higher relative humidity shall be allowable at lower temperature. The max monthly average relative humidity of the most humid month shall be not more than 90% and the lowest monthly average temperature of the same month should be no more than +25 ℃, condensed dew on surface of the product due to the change of the temperature should be taken into account.
3.4 Pollution Level: Level 3.
3.5 Installation Category: Ⅲ.
3.6 Inclination between installation plane and vertical plane shall ≤±5°.
3.7 At places without prominence rock, impact and vibration.
3.8 At places without explosive risk, without gases that may be corrosive to metal or gases that may cause damage to the insulation, and with little conducting dust
3.9 At places where rain & snow proof facilities are equipped with and not being full of steam.

## 4. Technical data

4.1 Main circuit: rated insulation voltage AC690V, rated frequency 50/60Hz.

| Type | Rated current (A) | Setting current range (A) | Suitable motor power (kW) |
|---|---|---|---|
| NJBK2-200/10 | 10 | 2~10 | 1~5 |
| NJBK2-200/50 | 50 | 10~50 | 5~25 |
| NJBK2-200/200 | 200 | 40~200 | 20~100 |
| NJBK2-400/400 | 400 | 160~400 | 80~200 |
| NJBK2-800/800 | 800 | 320~800 | 160~400 |

4.2 Auxiliary circuit: rated insulation voltage AC380V, rated frequency 50Hz/60Hz, Utility classes, rated operating voltage, rated operating current and conventional heating current.

| Utility classes | | AC-15 | |
|---|---|---|---|
| Rated operating voltage (V) | 240 | | 380 |
| Rated operating current (A) | 1.5 | | 0.95 |
| Conventional heating current (A) | | 10 | |

## 5. Design features

5.1 Equipped with functions of overload, locked-rotor, phase-failure, three-phase unbalance, earthing and PTC temperature protection etc.
5.2 Six indicators indicate status of power supply, operation, phase-failure (three phase unbalance), overload, earthing and temperature, respectively. Equipped with function of fault memory.
5.3 four kinds of trip class
5.4 Digital dial-up settings with high precision.
5.5 Three kinds of reset modes: manual reset, remote manual reset and automatic reset

5.6 Installation mode: installation in parts and integral installation. Transformer Installation: bolts installation and Track installation. Relay Installation: Rapid Track installation through meter.
5.7 Equipped with function of six times of current to test [Test by 6 times of the current].

## 6. Protection features

6.1 Operation characteristics under three-phase balanced-load status

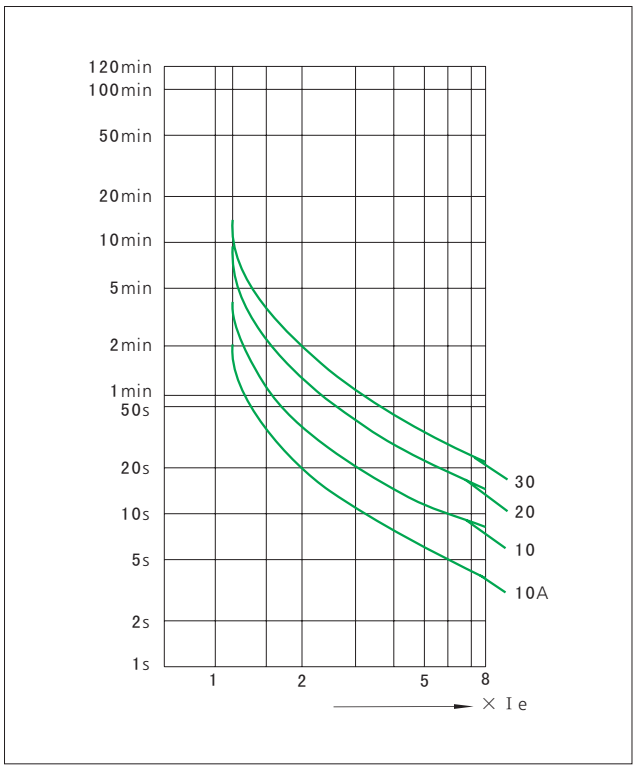
| S.N. | Times of setting current | Trip class | Operation time | Test condition | Ambient temperature℃ |
|---|---|---|---|---|---|
| 1 | 1.05 | 10A | <2h non-tripping | Start from cold status | |
| | | 10 | | | |
| | | 20 | | | |
| | | 30 | | | |
| 2 | 1.2 | 10A | <2h tripping | Start right after Item No.1 | 20±2 |
| | | 10 | | | |
| | | 20 | | | |
| | | 30 | | | |
| 3 | 1.5 | 10A | <2min | Start right after Item No.1 | |
| | | 10 | <4min | | |
| | | 20 | <8min | | |
| | | 30 | <12min | | |
| 4 | 7.2 | 10A | 2s<tp≤10s | Start from cold status | |
| | | 10 | 4s<tp≤10s | | |
| | | 20 | 6s<tp≤20s | | |
| | | 30 | 9s<tp≤30s | | |

6.2 Operation characteristic under phase-failure status

| S.N. | Times of setting current | | Operation time | Test condition | Ambient temperature℃ |
|---|---|---|---|---|---|
| | Any two phases | The third phase | | | |
| 1 | 1.0 | 0.9 | <2h non-tripping | Start from cold status | 20±2 |
| 2 | 0.3~1.0 | <Imax×40% | ≤5s | | |
| 3 | 0.3~1.0 | 0 | ≤5s | | |

6.3 Tripping feature

NJBK2 current-time characteristic curve

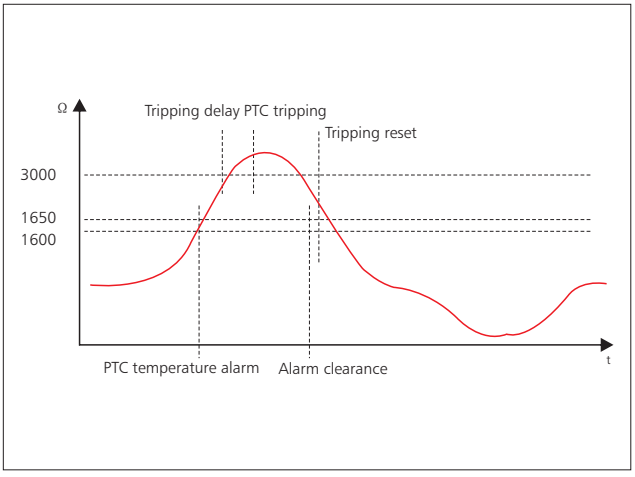



6.4 Performance feature of earthing protection

| Zero sequence current (A) | Operation time (s) |
|---|---|
| ≥0.5 | ≤1 |

6.5 Protection feature of pre-buried PTC thermistor in motor: PTC thermistor protection is carried out by detecting resistance value of thermistor output from PTC detector pre-buried in stator winding or bearing of motor and taking it as protection condition to judge whether motor is overheating, when PTC reaching reacting resistance value, reacting delay<1s.

PTC protection

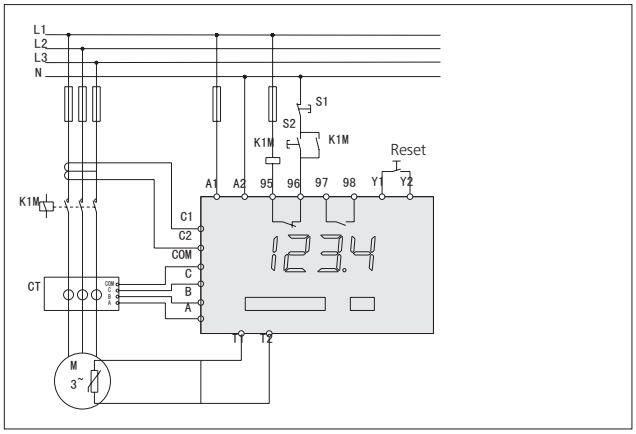


6.6 Reset feature:Manual reset, automatic reset and remote manual reset are available for option Resetting time varies according to different trip class, among the range of 4min to 12min.

## 7. Wiring diagram

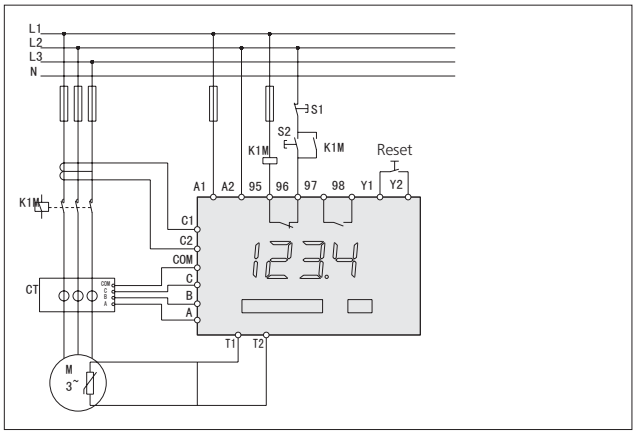
7.1 Wiring diagram for control power supply @ AC220V/AC230V voltage

Wiring diagram for control power supply @ AC220V/AC230V voltage




7.2 Wiring diagram for control power supply @ AC380V/AC400V voltage

Wiring diagram for control power supply @ AC380V/AC400V voltage

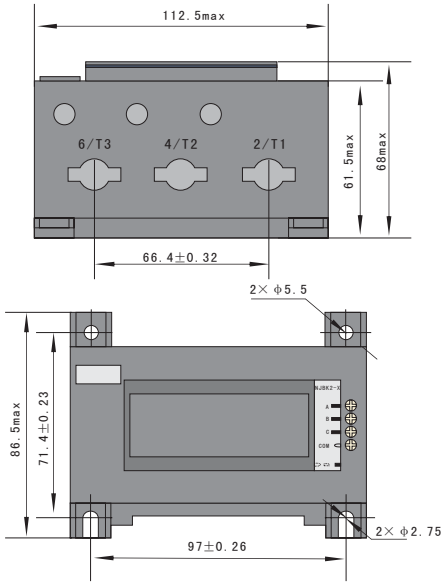



## 8. Accessory instruction

| S.N. | Designation | Quantity | Remarks |
|---|---|---|---|
| 1 | NJBK2-200 conductive bar | 3 | It is suggested to be used when main circuit current is within the range of 80A-200A. |
| 2 | NJBK2 wire holder | 2 | Instrument installation |
| 3 | NJBK2 clamp | 1 | Instrument installation |

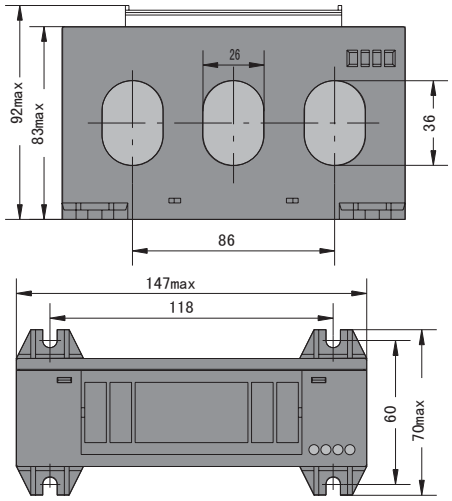
## 9. Overall and mounting dimensions (mm)

9.1 Overall and Amounting dimensions of NJBK2-200 transformer

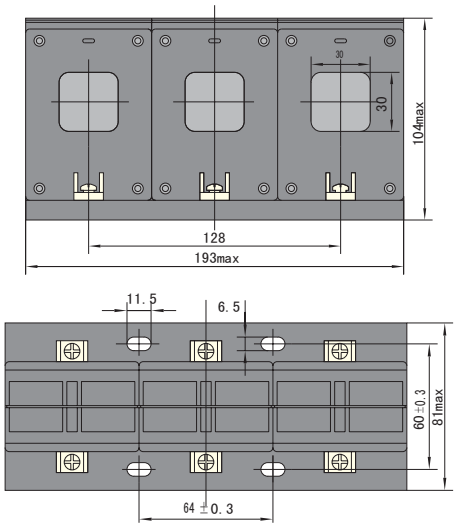



Top view

9.2 Overall and Amounting dimensions of NJBK2-200 macropore transformer

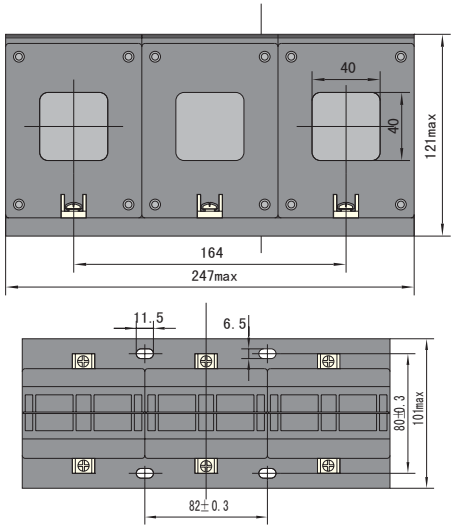



9.3 Overall and Amounting dimensions of NJBK2-400 transformer



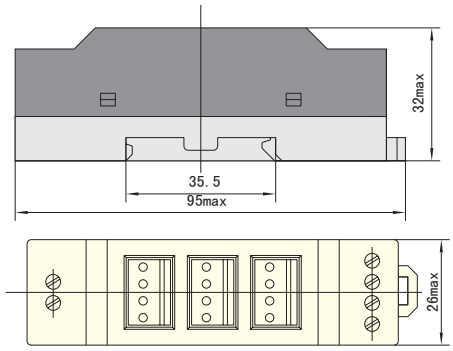

Top view

9.4 Overall and Amounting dimensions of NJBK2-800 transformer



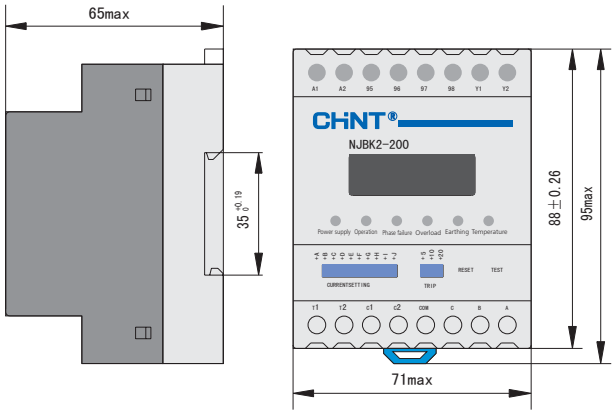

Top view

9.5 Overall and Amounting dimensions of module sample

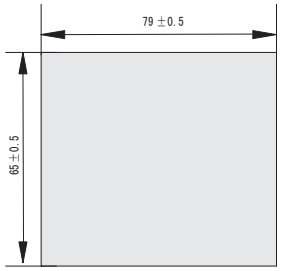



Top view

9.6 Overall and Amounting dimensions of relay of protector




9.7 Overall and Amounting dimensions of relay of protector




## 10. Ordering information

10.1 Designation and specification of protector, select control current and voltage (AC220V, AC230V, AC380V,AC400V), setting current range
(2A~10A, 10A~50A, 40A~200A, 160A~400A, 320A~800A), accessories (NJBK2-20 conductive bar, NJBK2 wire holder, NJBK2 clamp) according to operating requirements.
10.2 Order Quantity.


# NJBK5 Motor Controller

## 1. General

NJBK5 series motor controller (hereinafter referred to as controller) is mainly used in circuits with a frequency of AC 50Hz (or 60Hz), a rated operational voltage of up to 380V and a rated control power of up to 11kW (current up to 22A) to control the direct start and stop of water pumps or motors, provide motors with overload and phase failure protection, and realize automatic liquid level control for civil water towers and reservoirs.

This product is not applicable to the liquid level control of low-conductivity liquids, such as oil, purified water, inflammable and explosive chemical liquids and high-density sewage.

Standards: IEC 60947-4-1.

## 2. Type designation

NJBK5 - □ □ / □ □

- Company code
- Motor controller
- Design sequence No.
- 10: frame size code
- Function code
  Blank: with liquid level relay
  D: without liquid level relay
- Rated control supply voltage
- Rated operational current

## 3. Operation conditions

3.1 Altitude: the altitude of the mounting location should not exceed 2000m;
3.2 Ambient tempeature: -5℃～+40℃, and the average temperature in 24h should not exceed +35℃；
3.3 Atmospheric conditions: The relative air humidity at the mounting location should not exceed 50% at the maximum temperature of +40℃. The relative humidity may be higher at lower temperatures. Special measures should be taken if condensation occurs on the product occasionally due to temperature variation;
3.4 Pollution degree: 3;
3.5 Mounting category: Ⅲ;
3.6 In places where there is no significant vibration or impact;
3.7 In non-explosive media that do not contain a sufficient amount of gas or dust to cause metal corrosion or insulation failure;
3.8 In places where rain and snow protection is provided;
3.9 The inclination from the vertical plane should not exceed 5°.

## 4 Technical data

4.1 Main data and technical characteristics

| Type | Conventional heating current (A) | Max. rated power (kW) AC-3 380V | Max. rated power (kW) AC-3 220V | Model of matching AC contactor | Model of matching motor protector | Setting current range (A) | Number of turns of protector (turn) |
|---|---|---|---|---|---|---|---|
| NJBK5-10 0.72A~2.4A | 2.4 | 1.1 | 0.55 | CJX2-1210 | JD-8/0.5A~5A | 0.72~2.4 | 5 |
| NJBK5-10D 0.72A~2.4A | | | | | | | |
| NJBK5-10 3.5A~11A | 12 | 5.5 | 3 | CJX2-1210 | JD-8/2A~20A | 3.5~11 | 1 |
| NJBK5-10D 3.5A~11A | | | | | | | |
| NJBK5-10 10A~16A | 16 | 7.5 | 4 | CJX2-1810 | JD-8/2A~20A | 10~16 | 1 |
| NJBK5-10D 10A~16A | | | | | | | |
| NJBK5-10 20A~25A | 25 | 11 | 5.5 | CJX2-2510 | JD-8/20A~80A | 20~25 | 1 |
| NJBK5-10D 20A~25A | | | | | | | |

4.2 Rated control supply voltage Us: AC220V, AC380V.
4.3 Degree of protection of enclosure: IP55.
4.4 Protection characteristics of the controller
4.4.1 Phase failure protection characteristics of the controller: In case of failure of any phase of the three-phase main circuit passing through the center hole of the motor comprehensive protector in the controller, the motor comprehensive protector operates for a period of ⩽5s.
4.4.2 Overload protection characteristics of the controller under balanced three-phase load.

| No. | Setting current multiple | Operation time | | | Starting conditions |
|---|---|---|---|---|---|
| 1 | 1.05 | No operation within 2h | | | Cold state start |
| 2 | 1.2 | Operation within 2h | | | Start after No.1 |
| 3 | 1.5 | Tripping class | 30 | ⩽12min | Start after applying a 1.0 times setting current for 2h |
| 4 | 7.2 | Tripping class | 30 | 9s<Tp≤30s | Cold state start |

4.5 Down-lead distance of liquid level control electrode: 200m max.
4.6 Mounting type: installation type.

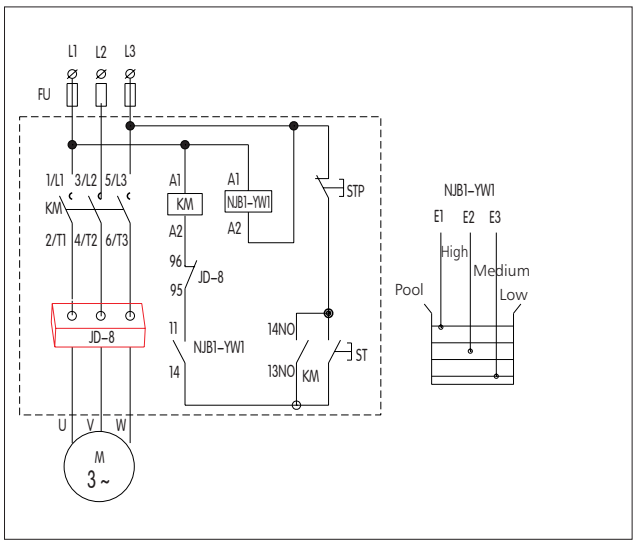
## 5. Features

The controller consists of a CJX2 series AC contactor, a JD-8 series motor comprehensive protector and an NJB1-YW1 liquid level relay in a protective enclosure and is divided into two types, with liquid level relay and without liquid level relay. Products with liquid level relay are used to control the start and stop and automatic pumping and drainage of water pumps and provide overload and phase failure protection. Products without liquid level relay are used to control the start and stop of motors and provide overload and phase failure protection.

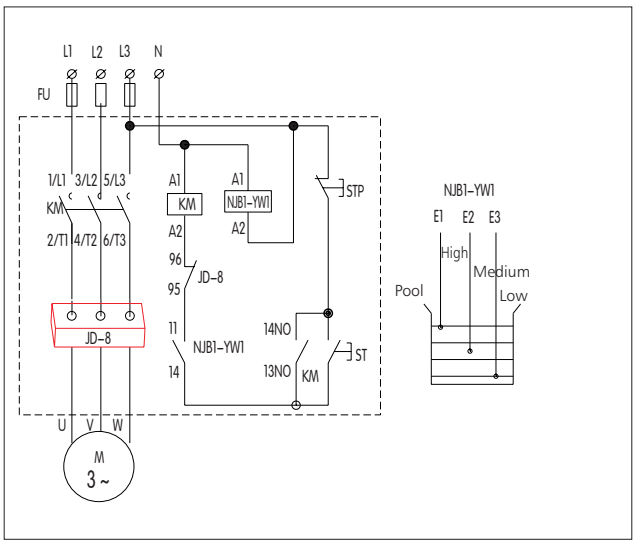
Setting of the motor comprehensive protector in the controller is required before it is connected and put into use.

## 6. Wiring diagram

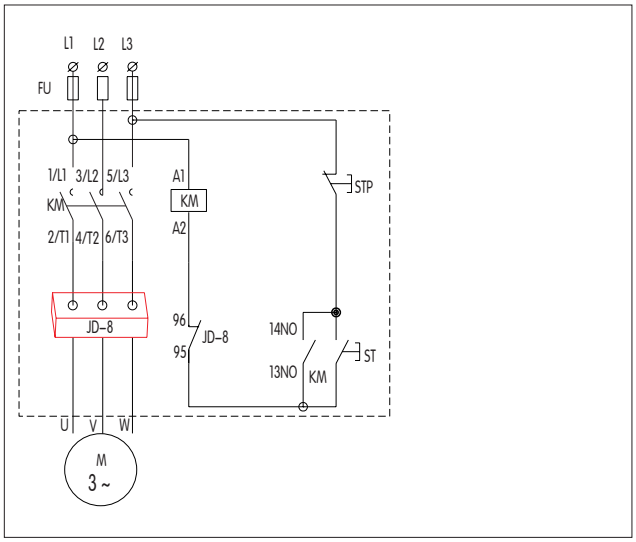
a. Connection diagram of NJBK5-10 in case both the control circuit voltage and the main circuit voltage are AC380V



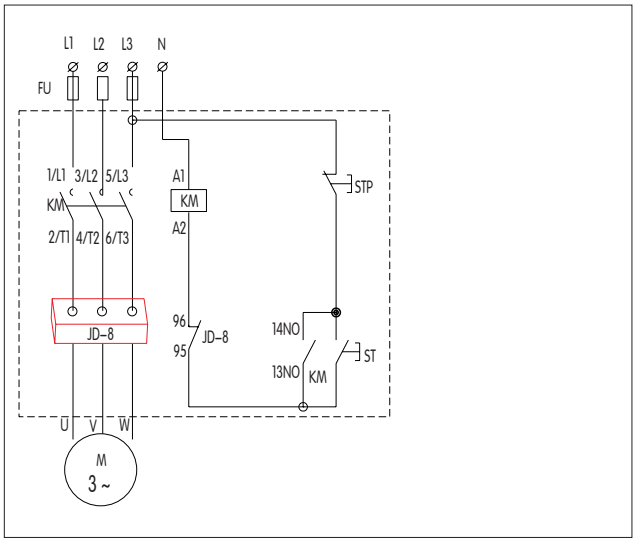

b. Connection diagram of NJBK5-10 in case the main circuit voltage is AC380V and the control circuit voltage is AC220V



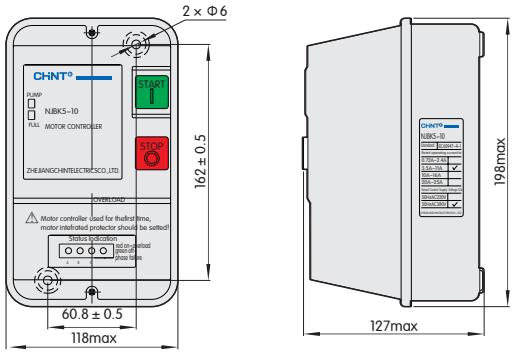
a.Connection diagram of NJBK5-10D in case both the control circuit voltage and the main circuit voltage are AC380V




b.Connection diagram of NJBK5-10D in case the main circuit voltage is AC380V and the control circuit voltage is AC220V




## 7. Overall and mounting dimensions (mm)




# NJBK5-5 Motor Controller

## 1. General

NJBK5-5 motor controller (hereinafter referred to as controller) is mainly used in circuits with a frequency of AC 50Hz/60Hz, a rated operational voltage of up to 220V and a rated control power of up to 2.2kW (current up to 20A) to control the direct start and stop of single-phase water pumps, provide overload and underload protection (pump runaway protection), and realize automatic liquid level control for civil water towers and reservoirs.

This product is not applicable to the liquid level control of oil, purified water, inflammable and explosive chemical liquids, corrosive liquids and high-density sewage.

Standards: IEC 60947-4-1

## 2. Type designation

N JBK 5 - □ / □ □

- Company code
- Motor controller
- Design sequence No.
- 5: frame size code
- Rated operational current
- Rated control supply voltage

## 3. Operation conditions

3.1 Altitude: the altitude of the mounting location should not exceed 2000m;
3.2 Ambient tempeature: -5℃～+40℃, and the average temperature in 24h should not exceed +35℃；
3.3 Atmospheric conditions: The relative air humidity at the mounting location should not exceed 50% at the maximum temperature of +40℃. The relative humidity may be higher at lower temperatures. Special measures should be taken if condensation occurs on the product occasionally due to temperature variation。
3.4 Pollution degree: 3;
3.5 Mounting category: Ⅱ;
3.6 In places where there is no significant vibration or impact;
3.7 In non-explosive media that do not contain a sufficient amount of gas or dust to cause metal corrosion or insulation failure;
3.8 In places where rain and snow protection is provided;
3.9 The inclination from the vertical plane should not exceed 5°.

## 4. Technical data

4.1 Main data and technical characteristics

| Model | Type | Conventional heating current (A) | Setting current range (A) | Rate power | | Rated operational voltage (V) | Rated operational current (A) |
|---|---|---|---|---|---|---|---|
| | | | | kW | HP | | |
| NJBK5-5 | 2A~10A | 20 | 2A~10A | 0.25~1.1 | 1/3~1.5 | AC220 | AC-120 |
| | 4A~20A | | 4A~20A | 0.55~2.2 | 3/4~3 | | |

4.2 Rated control supply voltage Us: AC220V.
4.3 Rated control supply voltage fluctuation range: (85%~110%)Us.
4.4 Degree of protection of enclosure: IP20.
4.5 Operating characteristics
4.5.1 When overload protection is active, the red "Fault" indicator of the controller lights up permanently, and overload protection operates according to tripping class 10, see Table 2.
Table 2 Operating characteristics of overload protection

| No. | Setting current multiple | Operation time | Starting conditions |
|---|---|---|---|
| 1 | 1.05 | No operation within 2h | Cold state start |
| 2 | 1.2 | Operation within 2h | Start after No.1 |
| 3 | 1.5 | ≤4min | Start after applying a 1.0 times setting current for 2h |
| 4 | 7.2 | 4s<Tp≤10s | Cold state start |

4.5.2 Operating characteristics of underload protection (pump runaway protection): When the actual operational current of the pump motor is less than 20%~100% of the rated current of the motor, the red "Fault" indicator of the controller flashes and, after a delay of 60s±10s, the controller stops operation.
4.5.3 Protection return characteristics: After the operation of the overload or underload protection (pump runaway protection) of the controller, the controller restarts automatically after a delay of 30min±3min.
4.5.4 Reset characteristics: power-off reset, the reset time ≤ 1min.
4.6 Down-lead distance of liquid level control electrode: 500m max.
4.7 Requirements for the liquid under control: general domestic water or high-conductivity sewage.
4.8 Mounting type: installation type.

## 5. Structure and principle

The controller consists of four parts, enclosure, base, sealing ring and main control panel. The enclosure has a "Force Start" button, which is used to start the pump motor forcibly to fill the pool when the highest water level has not been reached and becomes invalid when the highest water level has been reached. It also has a "Power" switch, which is used to switch on or off the power supply of the controller (position "I" is on, and position "0" is off).

There are three liquid level detection electrode wires in the controller, E1, E2 and E3, which should be connected and installed in high, medium and low positions in the pool under control by the user. When the water level in the pool is lower than position E3, the controller starts the pump motor to pump water and the yellow "Water Level" indicator on the controller panel flashes, until the water level in the pool reaches position E1. At this time, the yellow "Water Level" indicator on the controller panel lights up permanently and the pump stops pumping.

## 6. Installation and commissioning

6.1 Before installation, read the operating instructions carefully. Then, connect the wires in accordance with the connection diagram. During connection, the live wire and neutral wire of the controller power supply should be distinguished from each other, the three liquid level detection electrodes in the controller, E1, E2 and E3, should be installed in high, medium and low positions in the pool under control by the user, the terminals should be highly conductive.
6.2 Before the controller is put into use, overload setting must be carried out. Otherwise, overload protection will be inactive. Overload setting is accomplished by simply setting the current value on the overload dial of the controller to the rated current of the motor. The underload setting value can generally be 50% of the rated current. The user may also carry out underload setting after detecting the no-load current of the motor and calculating the percentage to the rated current.
6.3 After checking the connection and carrying out overload and underload setting, press the power switch on the controller panel to switch on the power supply and carry out relevant overload and underload tests. The controller may be used only if it operates normally. If a fault occurs, check the connection or the overload and underload setting.

## 7. Wiring diagram

Figure 1 Connection diagram

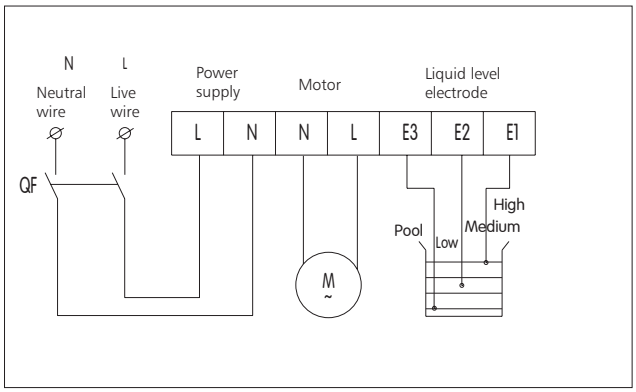
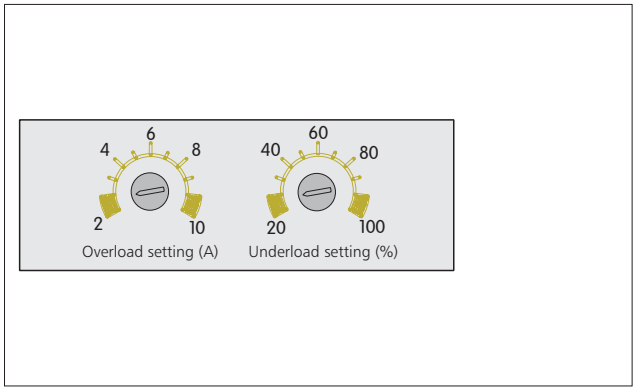
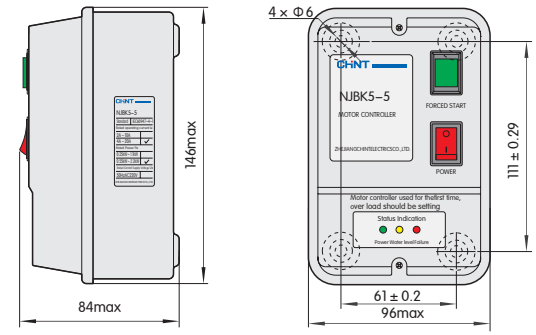



Figure 2 Schematic diagram of setting knob




## 8. Overall and mounting dimentions (mm)



# NJBK6 Series
# Motor Protection Relay

## 1. General

NJBK6 series motor protection relay is used to provide overload, phase failure, three-phase current unbalance and locked rotor protection for AC motors with a frequency of AC 50Hz, a rated insulation voltage of below 690V and a rated operational current of 1A~36A that operate continuously or intermittently.

Standards: IEC 60947-4-1

## 2. Type designation

N JBK 6 - 36 / □ / □ / □

- Type of operation delay
- Rated control supply voltage
- Setting current code
- Frame size
- Design sequence No.
- Motor protection relay
- Company code

## 3. Operation conditions

3.1 Altitude: should not exceed 2000m;
3.2 Ambient tempeature: -5℃~+40℃, and the average temperature in 24h should not exceed +35℃ ;
3.3 Atmospheric conditions: The relative air humidity should not exceed 50% at the maximum temperature of +40℃. The relative humidity may be higher at lower temperatures, for example, the air humidity can be up to 90% at +20℃. Special measures should be taken if condensation occurs on the product occasionally due to temperature variation;
3.4 Pollution degree: 3;
3.5 The inclination between the mounting plane and the vertical plane should not exceed ±5° ;
3.6 In non-explosive media that do not contain a sufficient amount of gas or conductive dust to cause metal corrosion or insulation failure;
3.7 In places with rain and snow protection equipment and not full of vapor;
3.8 In places where there is no significant shake, impact or vibration;
3.9 Mounting category: Ⅲ

## 4. Technical data

4.1 Main data and technical characteristics

| No. | Setting current range | Model of matching contactor | Matching motor power |
|---|---|---|---|
| NJBK6-36/3/□/□ | 1A~3A | CJX2-25/NC1-25 | 0.5kW~1.5kW |
| NJBK6-36/9/□/□ | 3A~9A | CJX2-25/NC1-25 | 1.5kW~4.5kW |
| NJBK6-36/24/□/□ | 8A~24A | CJX2-25/NC1-25 | 4kW~12kW |
| NJBK6-36/36/□/□ | 12A~36A | CJX2-32/NC1-32 | 6kW~18kW |

4.2 Technical data of main circuit
Rated operational current: 1A~36A, rated insulation voltage: 690V, rated frequency: 50Hz;
4.3 Technical data of control circuit
Number of contacts: 1 group of change-over contacts;
Contact capacity: Ue/Ie: AC-15 380V/0.95A, 240V/1.5A; Ith: 5A;
Rated frequency: 50Hz;
4.4 Technical data of auxiliary circuit
Control supply voltage: AC 220×(1±10%)V, AC 380×(1±10%)V;
Rated frequency: 50Hz;
4.5 Operating characteristics
4.5.1 The operating characteristics of overload protection are given in Table 2.

| No. | Setting current multiple | Operation time | Starting conditions | Starting conditions |
|---|---|---|---|---|
| 1 | 1.05 | No operation within 2h | Cold state | +20℃ |
| 2 | 1.2 | Operation within 2h | Hot Start | +20℃ |
| 3 | 1.5 | Operation within 2min | Hot Start | +20℃ |
| 4 | 7.2 | 2s<Tp≤10s | Cold state | +20℃ |

4.5.2 Operating characteristics of phase failure protection
In case of failure of any phase of the three-phase current of the main circuit, the protector operates for a period of ≤5s.
4.5.3 Operating characteristics of three-phase current unbalance protection
When the three-phase current of the main circuit meets the following two formulas, the protector operates for a period of ≤5s.

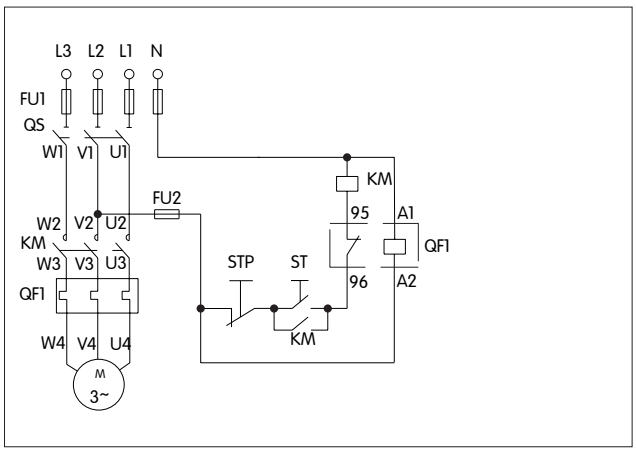
$$\frac{Imax\text{-}Imin}{Iavr}\times 100\%>30\%$$

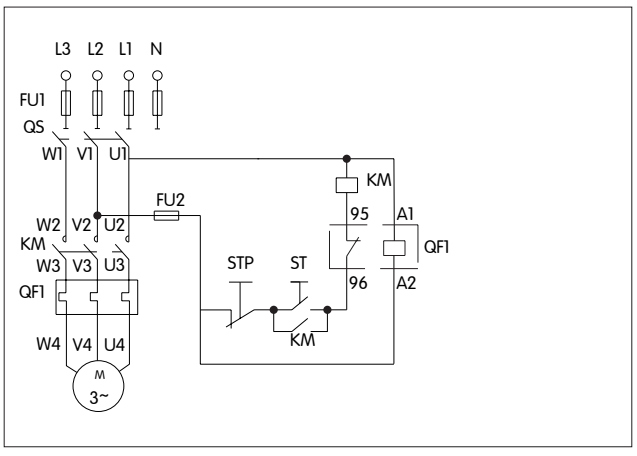
$$Imax\geq 0.5\times Iset$$

where: Imax: Max. current value of the three-phase current;
Imin: Min. current value of the three-phase current;
Iavr: average value of the three-phase current;
Iset: setting current value.
4.5.4 Operating characteristics of locked rotor protection
The locked rotor current is set to 6Ie in the protector. When the current of the main circuit is greater than the locked rotor current, the protector operates for a period
of ≤10s after a delay.
4.6 Reset characteristics
After the operation of the protector, if the control supply voltage is normal, the protector can be reset manually; if the control supply voltage is off, the protector resets immediately.

## 5. Connection diagram

The connection diagrams in case the control supply voltage is AC220V and AC380V are shown in Figure 2 and Figure 3.



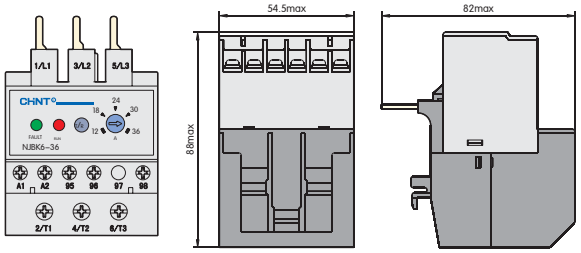
## 6. Installation and commissioning

6.1 Before installation, read the operating instructions carefully. Then, connect the wires in accordance with the connection diagram.
6.1.1 Terminals A1 and A2 are the control power supply input terminals of the protector; 95 and 96 are the output control terminals (N/C), 95 and 98 are N/O contacts.
6.1.2 Plug the protector into the outlet terminal of the contactor and connect the control circuit in accordance with Figure 2 and Figure 3.
6.2 Adjustment of setting current value
Adjust the setting value of the protector using the setting knob with indicating arrow and the setting current value on the label plate according to the rated current marked on the motor nameplate and the load conditions of the motor. Adjust the setting current value of the protector to the scale equal to the rated current value marked on the motor nameplate.
6.3 Commissioning: After checking the connection and setting, switch on the power supply and operate the start button. The motor should run normally and the (green) running indicator on the protector panel should light up. If the red indicator flashes, finely adjust the setting value until the red indicator stops flashing.

## 7. Structure and principle

7.1 Operating principle: The protector detects the current of the main circuit of the motor by means of the current transformer and judge if overload or phase failure has occurred in the motor. In case of overload, it simulates the heat accumulation state of the motor by means of the singlechip and, when the heat accumulation reaches the set limit, disconnects the N/C contact of the built-in electromagnetic relay.
7.2 Structural features
7.2.1 Has phase failure, overload, three-phase current unbalance and locked rotor protection functions.
7.2.2 Has two indicators indicating running and fault states.
7.2.3 Has a setting curent quantified continuously adjustable device.
7.2.4 The main circuit uses plug-in connection for use in combination with the specified model of contactor.

## 8. Overall and mounting dimensions (mm)




## 9. Environmental conditions for the storage of the protector

9.1 Temperature: -25℃～+40℃
9.2 Relative humidity (at 25℃): should not exceed 85%
9.3 Protect from rain and snow
9.4 The guaranteed storage period of the product is 18 months. Products exceeding the storage period must be reinspected before being put into use.

# NJBK7 Motor protection delay

## 1. General

NJBK7 series motor protection relay (hereinafter referred to as protector) is used to provide overload, locked rotor, phase failure, three-phase current unbalance, ground and PTC temperature protection for AC motors with a frequency of AC 50Hz, a rated insulation voltage of up to 690V and a rated operational current of 80A-800A that operate continuously or intermittently. The protector uses flexible Rogowski coil to acquire current and features wide setting current range, high accuracy and convenient installation. The protector has RS485 interface and 4mA-20mA analog transmission interface, permits network communication and can realize remote monitor and control and fault inquiry of motors by means of upper computer. The protector is genenrally used in combination with AC contactor.

Standards: GB 14084.4, IEC 60947-4-1.

## 2. Type designation

N JBK 7 - 800 / □

- Rated control supply voltage (AC220, AC380, AC/DC100V-240V)
- Specification code
- Design sequence No.
- Motor protection relay
- Company code

## 3. Technical data

3.1 Altitude: should not exceed 2000m;
3.2 Ambient tempeature: -5℃～+40℃, and the average temperature in 24h should not exceed +35℃;
3.3 Atmospheric conditions: The relative air humidity should not exceed 50% at the maximum temperature of +40℃. The relative humidity may be higher at lower temperatures, for example, the air humidity can be up to 90% at +20℃. Special measures should be taken if condensation occurs on the product occasionally due to temperature variation;
3.4 Pollution degree: 3;
3.5 The inclination between the mounting plane and the vertical plane should not exceed ±5°;
3.6 In non-explosive media that do not contain a sufficient amount of gas or conductive dust to cause metal corrosion or insulation failure;
3.7 In places with rain and snow protection equipment and not full of vapor;
3.8 In places where there is no significant shake, impact or vibration;
3.9 Mounting category: Ⅲ;
3.10 Degree of protection of enclosure: Ip20.

## 4. Main data and technical characteristics

4.1 Main circuit: rated insulation voltage: AC690V, rated frequency: 50Hz

| Model | Setting current (A) | Setting current range (A) | Matching motor power (kW) |
|---|---|---|---|
| NJBK7-800/□ | 800 | 80~800 | 40~400 |

4.2 Auxiliary circuit: rated insulation voltage: AC380V, rated frequency: 50Hz, data of auxiliary contact

| Usage category | AC-15 | |
|---|---|---|
| Rated operational voltage Ue(V) | 240 | 380 |
| Rated operational current Ie(A) | 1.5 | 0.95 |
| Conventional heating current Ith(A) | 5 | |

4.3 Structural features
4.3.1 Split mounting;
4.3.2 LCD display, key setting;
4.3.3 Has start delay function;
4.3.4 Has fault memory function, permits inquiry of fault record;
4.3.5 Has RS485 interface, supports MODBUS protocol, permits network communication;
4.3.6 Has 4mA-20mA analog output interface;
4.3.7 Has two groups of output contacts, 1Z protection contact and 1H auxiliary contact, and permits autotransformer reduced voltage starting and star-delta starting;
4.3.8 Power consumption: ≤3VA.

## 5. Protection characersitics

5.1 Operating characteristics of overload protection

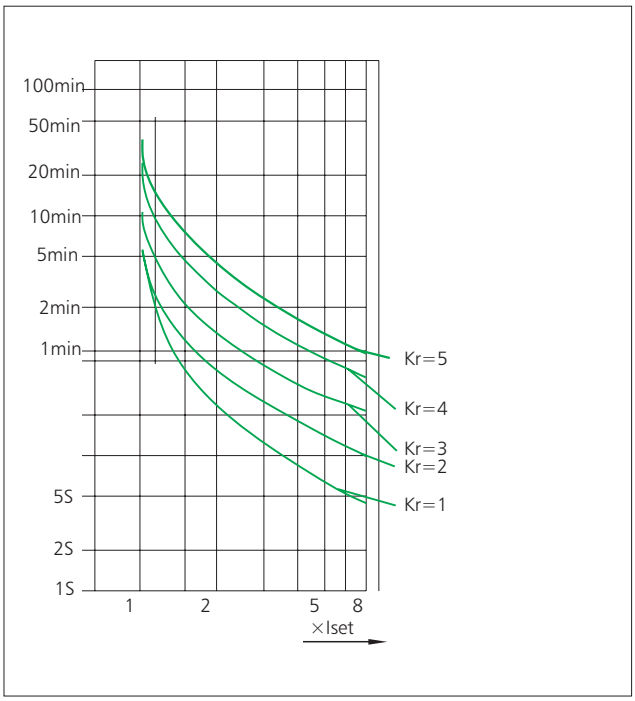
| Overload multiple / Overload curve / Operation time (s) | 1.1 | 1.2 | 1.5 | 2 | 5 | 6 | 7.2 | Note |
|---|---|---|---|---|---|---|---|---|
| Kr=1 | 75 | 63 | 40 | 22 | 3.6 | 2.5 | 1.8 | |
| Kr=2 | 150 | 125 | 80 | 45 | 7.2 | 5 | 3.5 | In conformity with Class 10A |
| Kr=3 | 298 | 250 | 160 | 90 | 14 | 10 | 6.9 | In conformity with Class 10 |
| Kr=4 | 595 | 500 | 320 | 180 | 29 | 20 | 14 | In conformity with Class 20 |
| Kr=5 | 892 | 750 | 480 | 270 | 43 | 30 | 21 | In conformity with Class 30 |

5.2 Operating characteristics of phase failure protection
When the current of any phase of the three-phase current of the main circuit is equal to zero, the protector operates for a period of ≤5s.
5.3 Operating characteristics of three-phase current unbalance protection
When the three-phase current of the main circuit meets the following formula, the protector operates for a period of ≤5s.

$$\frac{Imax-Imin}{Imax} \times 100\% \geq \text{set current unbalance rate}$$

Imax: Max. phase current value
Imin: Min. phase current value
5.4 Operating characteristics of ground protection
When zero sequence current ≥ set ground protection current value, the protector operates for a period of ≤1s.
5.5 Operating characteristics of locked rotor protection
When Max. phase current ≥ setting current value×set locked rotor multiple, the protector operates for a period of ≤ 1s.
5.6 Operating characteristics of temperature protection
The over-temperature protection function of the protector is accomplished by detecting the resistance of the PTC thermistor preembedded in the motor stator widing. When the resistance of the PTC thermistor ≥2.5kΩ, the protector operates for a period of ≤1s.
5.7 Communication: The protector provides RS485 interface and supports MODBUS protocol.

Tripping characteristic curve



## 6. Connection diagram

Figure 1 Direct starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V

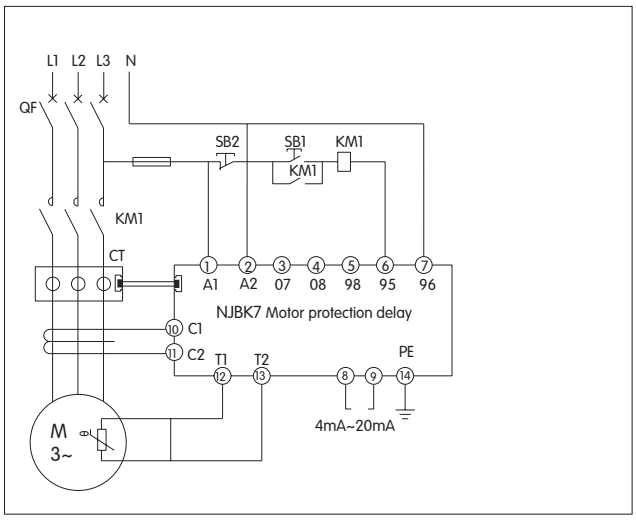



Figure 2 Secondary current direct starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V

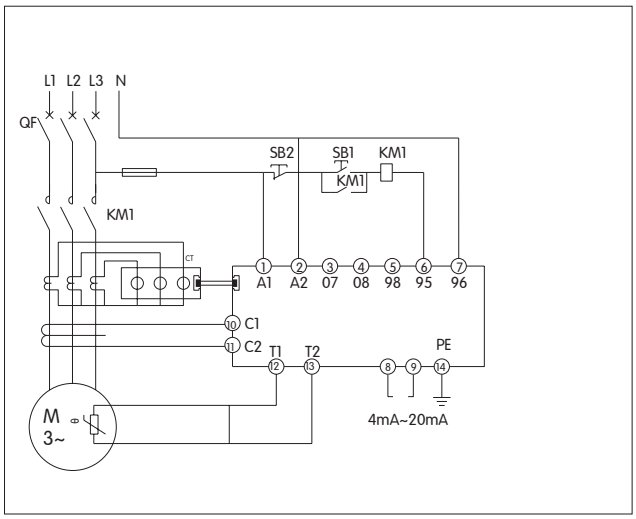



Figure 3 Autotransformer reduced voltage starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V

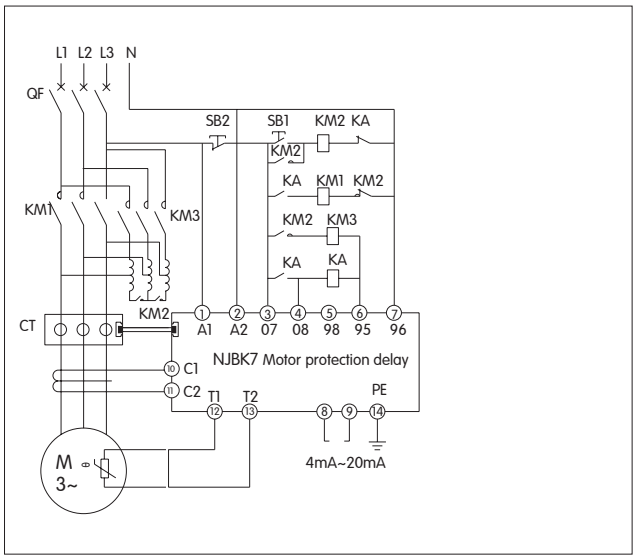
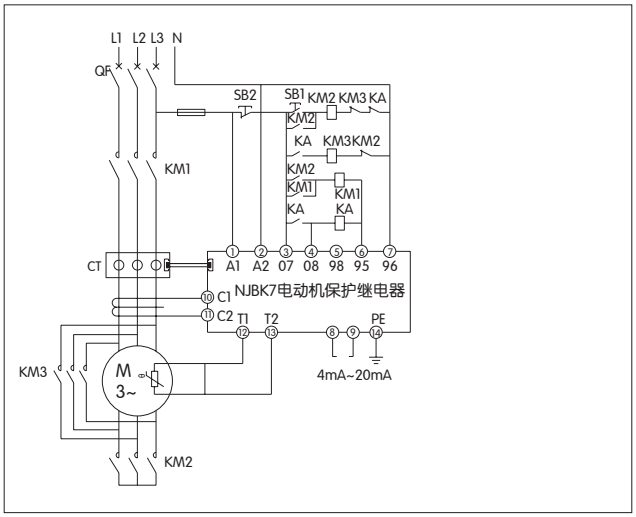
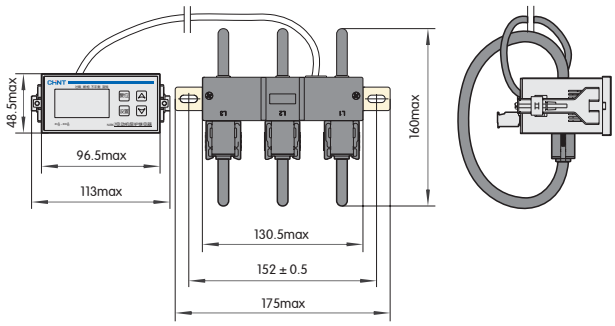



Figure 4 Star-delta starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V




## 7. Overall and mounting dimensions (mm)



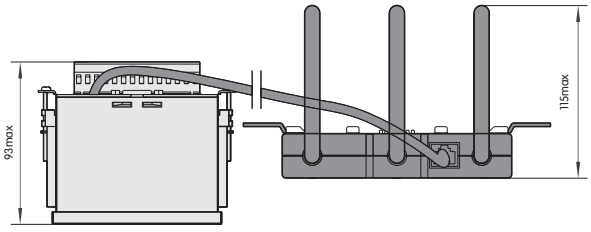



Figure 6 Transformer mounting type 1

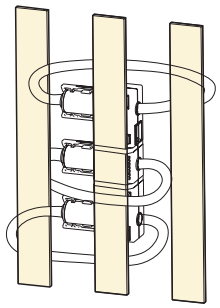


Figure 7 Transformer mounting type 2

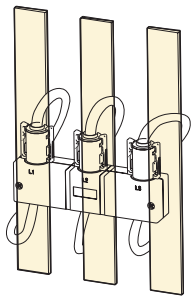
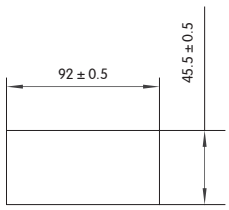


Figure 8 Opening size of the main machine



# NJBK9 Motor protection relay

## 1. General

NJBK9 series motor protection relay (hereinafter referred to as "Pro-tecter") is used for overload protection, locked rotor protection, phase failure protection, three-phase unbalance protection, grounding protection and PTC temperature protection for AC electromotors of a frequency of 50Hz with a rated insulation voltage of up to 690V and a rated operating current of 1A-200A during long-term and discontinuous operation.

This protector is provided with RS485 interface and 4-20mA current loop transmitter interface for network communication and performs remote monitor & control on the motor and fault query through opper computer.

This protecter is usually used to combine with AC contactor.

Standards: IEC 60947-4-1

## 2. Type designation

N JBK 9 - □ □ □/□/□

- Control power supply voltage (AC220V, AC380V, AC/DC100V~240V)
- Rated current: 5, 10, 30, 50, 200
- None: 4mA~20mA analog transformation is not available
  M: 4mA~20mA analog transmission
- None: Communication interface is not available
  T: RS485 communication interface
- Enclosure grade: 50, 200
- Design sequence No.
- Motor protection relay
- Company code

## 3. Operation conditions

3.1 Altitude: should not exceed 2000m;

3.2 Ambient tempeature: -5℃~+40℃, and the average temperature in 24h should not exceed +35℃;

3.3 Atmospheric conditions: The relative air humidity should not exceed 50% at the maximum temperature of +40℃. The relative humidity may be higher at lower temperatures, for example, the air humidity can be up to 90% at +20℃. Special measures should be taken if condensation occurs on the product occasionally due to temperature variation;

3.4 Pollution degree: 3;

3.5 The inclination between the mounting plane and the vertical plane should not exceed ±5°;

3.6 In non-explosive media that do not contain a sufficient amount of gas or conductive dust to cause metal corrosion or insulation failure;

3.7 In places with rain and snow protection equipment and not full of vapor;

3.8 In places where there is no significant shake, impact or vibration;

3.9 Mounting category: Ⅲ;

3.10 Degree of protection of enclosure: IP20.

## 4. Technical data

4.1 Main circuit: rated insulation voltage: AC690V, rated frequency: 50Hz

| Model | Setting current (A) | Setting current range (A) | Matching motor power (kW) |
|---|---|---|---|
| NJBK9-50□□/5/□ | 5 | 1~5 | 0.5~2.5 |
| NJBK9-50□□/10/□ | 10 | 2~10 | 1~5 |
| NJBK9-50□□/30/□ | 30 | 6~30 | 3~15 |
| NJBK9-50□□/50/□ | 50 | 10~50 | 5~25 |
| NJBK9-50□□/200/□ | 200 | 40~200 | 20~100 |

4.2 Auxiliary circuit: rated insulation voltage: AC380V, rated frequency: 50Hz, data of auxiliary contact

| | | |
|---|---|---|
| Usage category | AC-15 | |
| Rated operational voltage Ue(V) | 240 | 380 |
| Rated operational current Ie(A) | 1.5 | 0.95 |
| Conventional heating current Ith(A) | 5 | |

4.3 Product selection table

| Model | Overload | Phase failure | Ground | PTC | Communication | 4mA~20mA | Unbalance | Locked rotor |
|---|---|---|---|---|---|---|---|---|
| NJBK9-50/□/□ | ◆ | ◆ | ◆ | ◆ | | | ◆ | ◆ |
| NJBK9-50T/□/□ | ◆ | ◆ | ◆ | ◆ | ◆ | | ◆ | ◆ |
| NJBK9-50M/□/□ | ◆ | ◆ | ◆ | ◆ | | ◆ | ◆ | ◆ |
| NJBK9-50TM/□/□ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ |
| NJBK9-200/□/□ | ◆ | ◆ | ◆ | ◆ | | | ◆ | ◆ |
| NJBK9-200T/□/□ | ◆ | ◆ | ◆ | ◆ | ◆ | | ◆ | ◆ |
| NJBK9-200M/□/□ | ◆ | ◆ | ◆ | ◆ | | ◆ | ◆ | ◆ |
| NJBK9-200TM/□/□ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ |

4.4 Structural features
4.4.1 Split mounting;
4.4.2 LCD display, key setting;
4.4.3 Has start delay function;
4.4.4 Has fault memory function, permits inquiry of fault record;
4.4.5 Has RS485 interface, supports MODBUS protocol, permits network communication;
4.4.6 With 4mA-20mA analog output interface;
4.4.7 Has two groups of output contacts, 1Z protection contact and 1H auxiliary contact, and permits autotransformer reduced voltage starting and star-delta starting;
4.4.8 Power consumption: ≤3VA.

## 5. Protection characersitics

5.1 Operating characteristics of overload protection

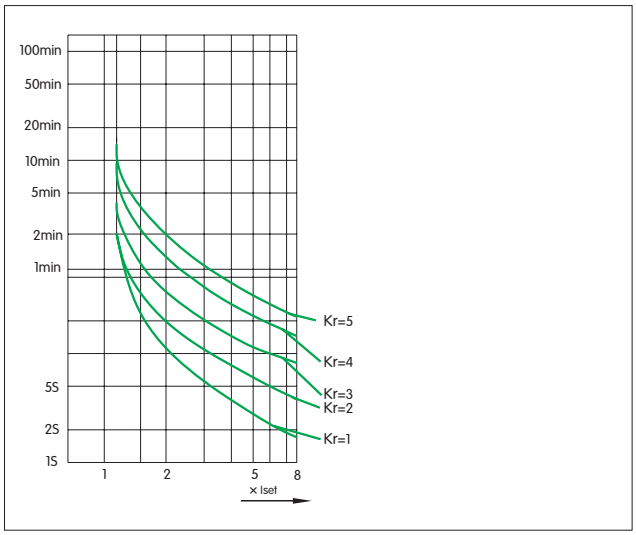
| Overload curve / Operation time (s) \ Overload multiple | 1.1 | 1.2 | 1.5 | 2 | 5 | 6 | 7.2 | Note |
|---|---|---|---|---|---|---|---|---|
| Kr=1 | 75 | 63 | 40 | 22 | 3.6 | 2.5 | 1.8 | |
| Kr=2 | 150 | 125 | 80 | 45 | 7.2 | 5 | 3.5 | In conformity with Class 10A |
| Kr=3 | 298 | 250 | 160 | 90 | 14 | 10 | 6.9 | In conformity with Class 10 |
| Kr=4 | 595 | 500 | 320 | 180 | 29 | 20 | 14 | In conformity with Class 20 |
| Kr=5 | 892 | 750 | 480 | 270 | 43 | 30 | 21 | In conformity with Class 30 |

5.2 Operating characteristics of phase failure protection
When the current of any phase of the three-phase current of the main circuit is equal to zero, the protector operates for a period of ≤5s.
5.3 Operating characteristics of three-phase current unbalance protection
When the three-phase current of the main circuit meets the following formula, the protector operates for a period of ≤5s.

$$\frac{Imax-Imin}{Imax} \times 100\% \geq \text{set current unbalance rate}$$

Imax: Max. phase current value
Imin: Min. phase current value
5.4 Operating characteristics of ground protection
When zero sequence current ≥ set ground protection current value, the protector operates for a period of ≤1s.
5.5 Operating characteristics of locked rotor protection
When Max. phase current ≥ setting current value×set locked rotor multiple, the protector operates for a period of ≤ 1s.
5.6 Operating characteristics of temperature protection
The over-temperature protection function of the protector is accomplished by detecting the resistance of the PTC thermistor preembedded in the motor stator widing. When the resistance of the PTC thermistor ≥2.5kΩ, the protector operates for a period of ≤1s.
5.7 Communication: The protector provides RS485 interface and supports MODBUS protocol.

Tripping characteristic curve




## 6. Connection diagram

Figure 1 Direct starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V

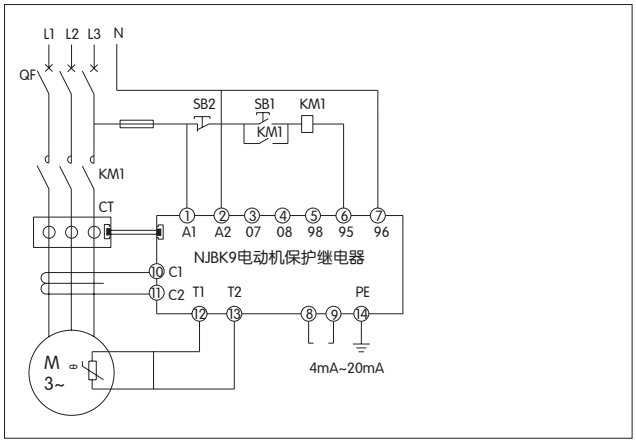



Figure 2 Secondary current direct starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V

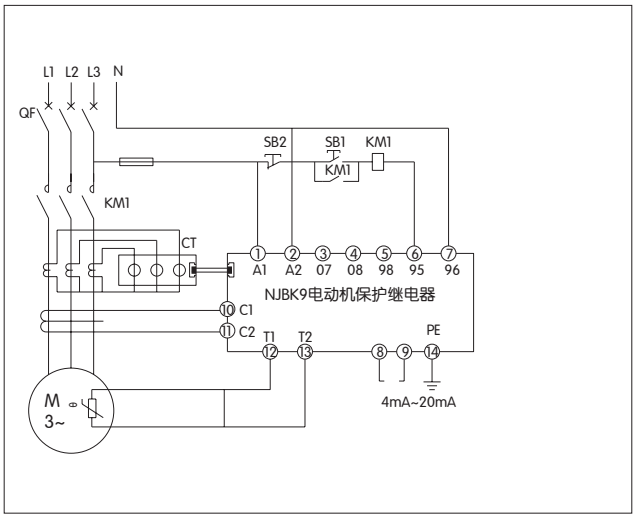



Figure 3 Autotransformer reduced voltage starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V

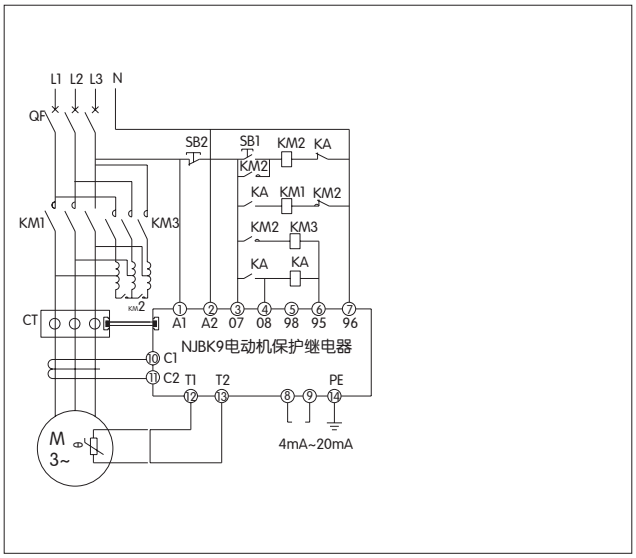
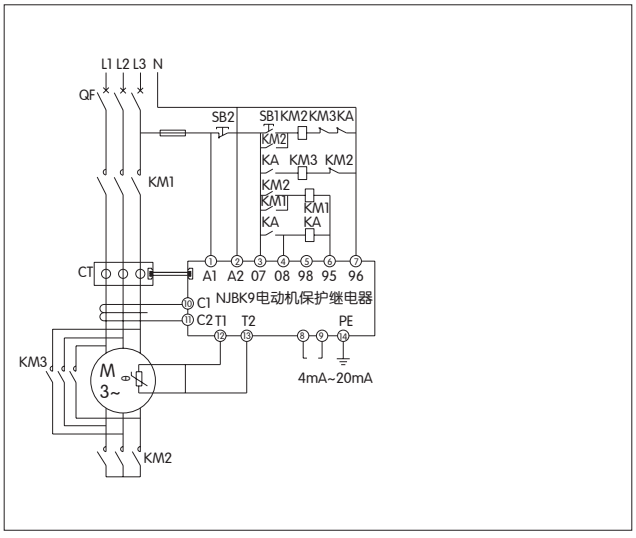
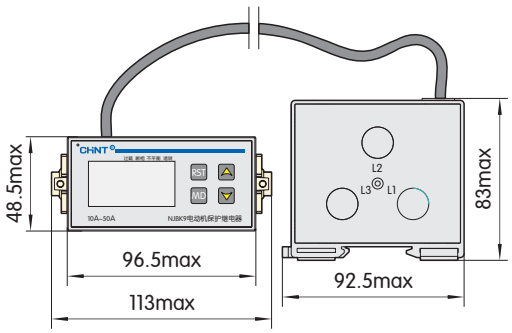


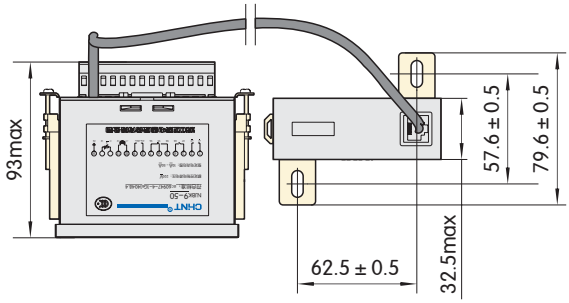

Figure 4 Star-delta starting connection diagram in case the control supply voltage is 220V and the rated operational voltage is 220V



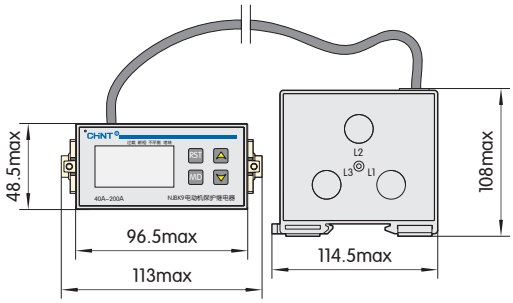
## 7. Overall and mounting dimensions (mm)

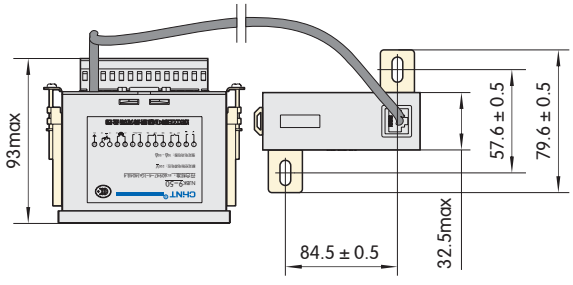
NJBK9-50 overall mounting dimensions



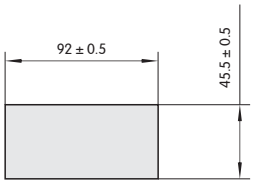




NJBK9-200 overall mounting dimensions




Opening size of the main machine




# NJXB3 Relay

## 1. General

NJXB3 relay is used as an overvoltage, undervoltage, phase failure, phase sequence, three-phase voltage unbalance and PTC temperature protection device in three-phase three-wire control circuits with an AC voltage of 380V and a frequency of 50Hz and three-phase four-wire control circuits with an AC voltage of 220V and a frequency of 50Hz to make and break the circuit.

## 2. Type designation

N J XB 3 - □ □

- Company code
- Relay
- Phase protection
- Design sequence No.
- 1～18 function code (see Table 1)
- P: PTC temperature protection, optional.

| Model | Three-phase three-wire | Three-phase four-wire | Single-phase/ two-phase | Overvoltage protection | Undervoltage protection | Unbalance protection | Phase sequence protection | Phase failure protection | PTC temperature protection |
|---|---|---|---|---|---|---|---|---|---|
| NJXB3-1 | ● | | | ● | | | | ● | |
| NJXB3-2 | ● | | | | ● | | | ● | |
| NJXB3-3 | ● | | | ● | ● | | | ● | |
| NJXB3-4 | ● | | | ● | ● | | ● | ● | |
| NJXB3-5 | ● | | | ● | ● | Fixed | ● | ● | ○ |
| NJXB3-6 | ● | | | Fixed | Fixed | ● | ● | ● | ○ |
| NJXB3-7 | ● | | | ● | ● | ● | ● | ● | ○ |
| NJXB3-8 | ● | | | | | | | | ● |
| NJXB3-9 | ● | | | | | | ● | ● | ● |
| NJXB3-10 | ● | | | | | | ● | ● | |
| NJXB3-11 | | ● | ● | ● | | | | ● | |
| NJXB3-12 | | ● | ● | | ● | | | ● | |
| NJXB3-13 | | ● | ● | ● | ● | | | ● | |
| NJXB3-14 | | ● | | ● | ● | | ● | ● | |
| NJXB3-15 | | ● | | ● | ● | Fixed | ● | ● | ○ |
| NJXB3-16 | | ● | | Fixed | Fixed | ● | ● | ● | ○ |
| NJXB3-17 | | ● | | ● | ● | ● | ● | ● | ○ |
| NJXB3-18 | | ● | | | | | ● | ● | ○ |

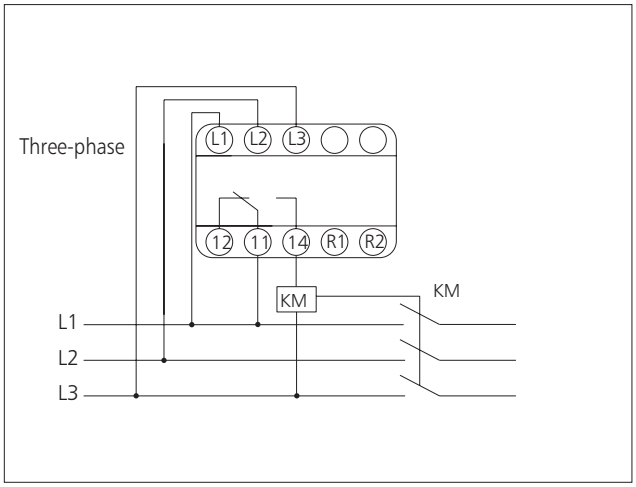
Note: ● denotes available functions, ○ denotes optional functions.

## 3. Technical data

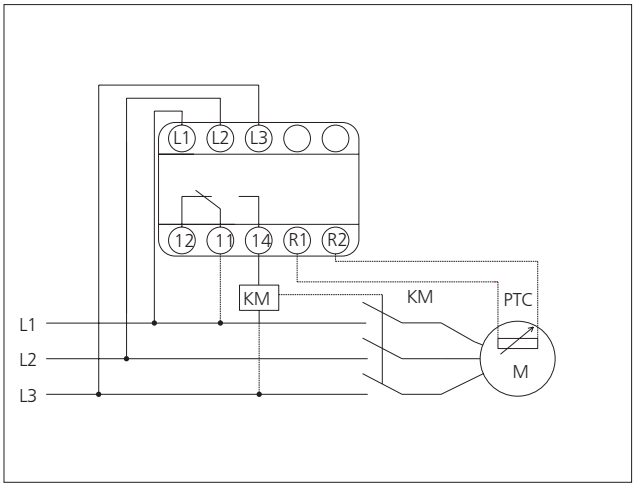
| Model | Protection function | Protection operation time | Rated operational voltage | Contact capacity | Contact form | Usage category | Conventional heating current (Ith) | Electrical life | Mechanical life |
|---|---|---|---|---|---|---|---|---|---|
| NJXB3 | Overvoltage | 0.1s~10s | Three-phase three-wire system: AC 380V 50Hz | Resistive load: AC250V 6A cosφ=1 Inductive load: AC250V 1A cosφ=0.4 | 1 N/O, 1 N/C | AC-15 | 3A | $10^5$ | $10^6$ |
| | Undervoltage | | | | | | | | |
| | Three-phase voltage unbalance | | | | | | | | |
| | Phase failure, phase sequence | ⩽1s | Three-phase four-wire system: AC 220V 50Hz | | | | | | |
| | PTC temperature protection | | | | | | | | |

## 4. Wiring diagram

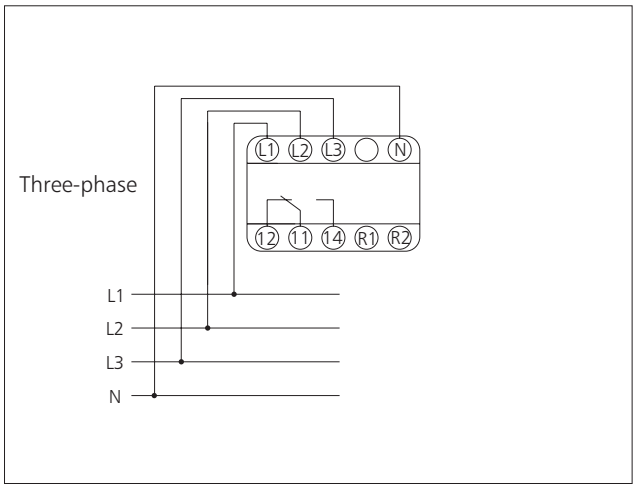
NJXB3-01, NIXB3-02, NJXB3-03, NJXB3-04, NJXB3-10
Wiring diagram



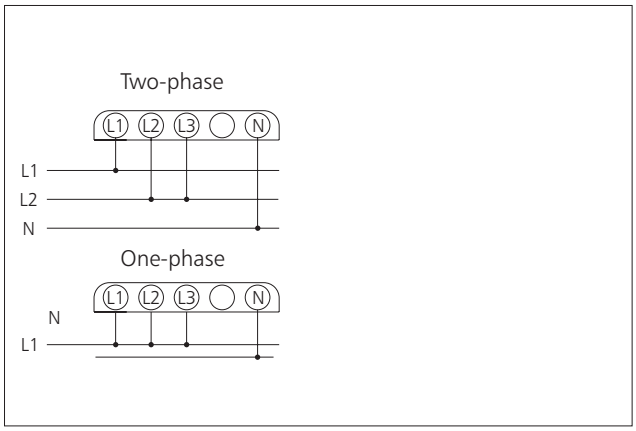

NJXB3-05(P), NJXB3-06(P), NJXB3-07(P),NJXB3-08(P), NJXB3-09
Wiring diagram



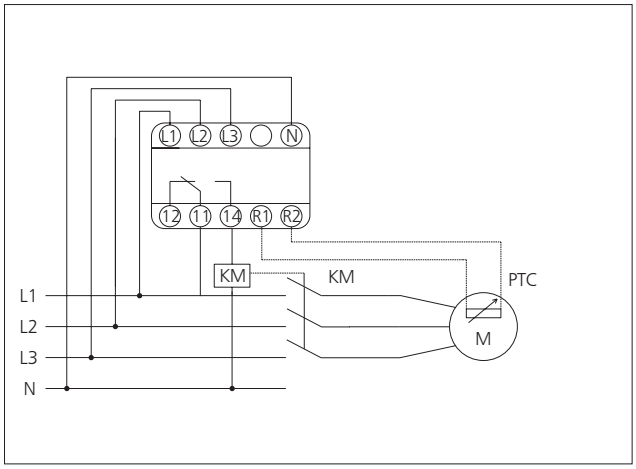
NJXB3-11, NJXB3-12, NJXB3-13 Wiring diagram



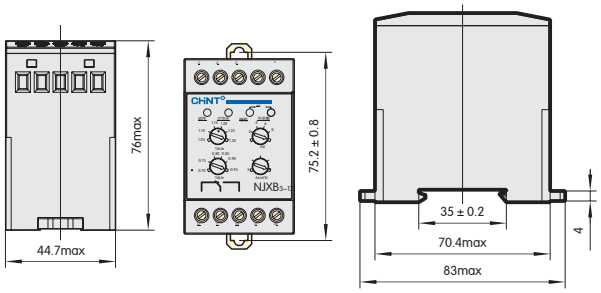

NJXB3 Wiring diagram




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




## 5. Overall and mounting dimensions (mm)




## 6. Installation and use

6.1 Connect the wires correctly in accordance with the connection diagram.
6.2 If the relay is of rail mounting type, use TH35-7.5 mounting rail.
6.3 If the relay is of installation mounting type, remove the limiter.


## 2. Type designation

N JYB 3 - □

- N: Company code
- JYB: Relay
- 3: Design sequence No.
- □: 1~16 function code

# NJYB3 Relay

### 1. General

NJYB3 relay is used to provide overvoltage, undervoltage, phase failure, phase sequence and three-phase unbalance control in three-phase three-wire 380V circuits and three-phase four-wire 220V circuits with a frequency of AC 50Hz. For example, it is used for power control systems, air conditioning systems and motors.

This relay is a voltage protection relay. After detecting the voltage signal, the relay processes the input signal, judges if there is an overvoltage, undervoltage, phase failure, error-phase or unbalance and controls the operation accurately and stably by means of the built-in microprocessor.

### 3. Technical data

| Model | Protection function | Protection operation time | Rated operational voltage | Contact capacity | Contact form | Usage category | Conventional heating current (Ith) | Electrical life | Mechanical life |
|---|---|---|---|---|---|---|---|---|---|
| NJYB3 | Overvoltage | 0.1s~10s | Three-phase three-wire system: AC 380V 50Hz | Resistive load: AC250V 6A cosφ=1 Inductive load: AC250V 1A cosφ=0.4 | 1 N/O, 1 N/C | AC-15 | 3A | $10^5$ | $10^6$ |
| | Undervoltage | | | | | | | | |
| | Three-phase voltage unbalance | | | | | | | | |
| | Phase failure, phase sequence | ≤1s | Three-phase four-wire system: AC 220V 50Hz | | | | | | |

| Model | Three-phase three-wire | Three-phase four-wire | Single-phase/ two-phase | Overvoltage protection | Undervoltage protection | Unbalance protection | Phase sequence protection | Phase failure protection |
|---|---|---|---|---|---|---|---|---|
| NJYB3-1 | ● | | | | | | ● | ● |
| NJYB3-2 | ● | | | ● | | | | ● |
| NJYB3-3 | ● | | | | ● | | | ● |
| NJYB3-4 | ● | | | ● | ● | | | ● |
| NJYB3-5 | ● | | | ● | ● | | ● | ● |
| NJYB3-6 | ● | | | ● | ● | Fixed | ● | ● |
| NJYB3-7 | ● | | | Fixed | Fixed | ● | ● | ● |
| NJYB3-8 | ● | | | ● | ● | ● | ● | ● |
| NJYB3-9 | | ● | ● | ● | | | | ● |
| NJYB3-10 | | ● | ● | | ● | | | ● |
| NJYB3-11 | | ● | ● | ● | ● | | | ● |
| NJYB3-12 | | ● | | ● | ● | | ● | ● |
| NJYB3-13 | | ● | | ● | ● | Fixed | ● | ● |
| NJYB3-14 | | ● | | Fixed | Fixed | ● | ● | ● |
| NJYB3-15 | | ● | | ● | ● | ● | ● | ● |
| NJYB3-16 | | ● | | | | | ● | ● |

Note: ● denotes available functions, ○ denotes optional functions.

Basic data of auxuliary circuit

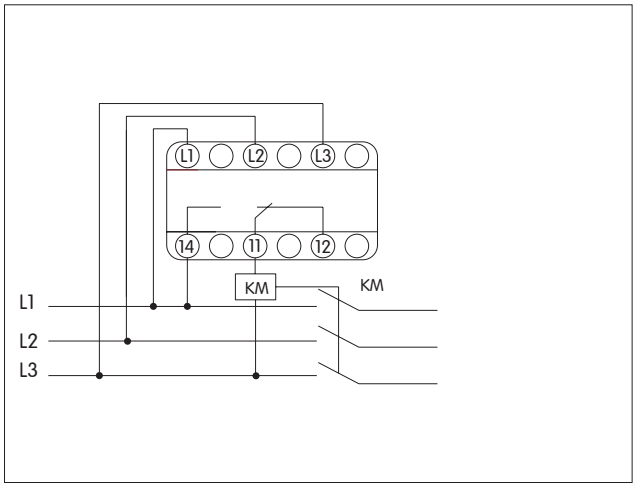
| Contact form | Conventional heating current Ith (A) | Usage category | Rated operational voltage Ue(V) | Rated operational current Ue(A) |
|---|---|---|---|---|
| 1 group of change-over contacts | 3 | AC-15 | 220 | 0.75 |
| | | | 380 | 0.47 |

Immunity

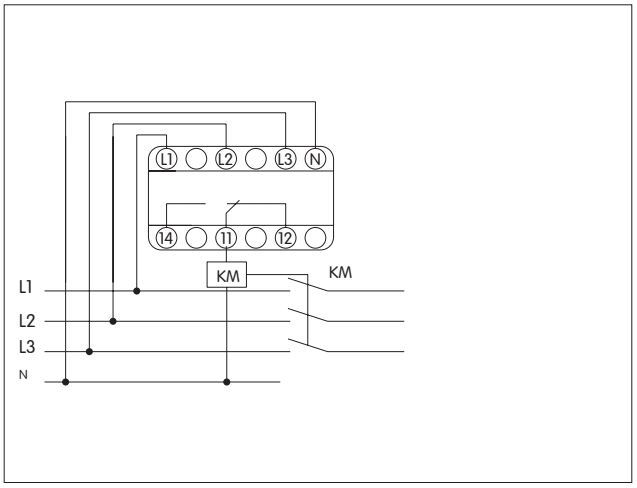
| Item | Severity level |
|---|---|
| Electrostatic discharge immunity | 8×(1±10%)kV (air discharge) |
| Radiated electromagnetic field immunity | Test electric field strength: 10×(1±10%)V/m |
| Fast transient immunity | For power line, 2×(1±10%)kV, duration: 1min |
| Surge (impact) immunity | Open circuit test voltage: 2×(1±10%)kV |

## 4. Wiring diagram

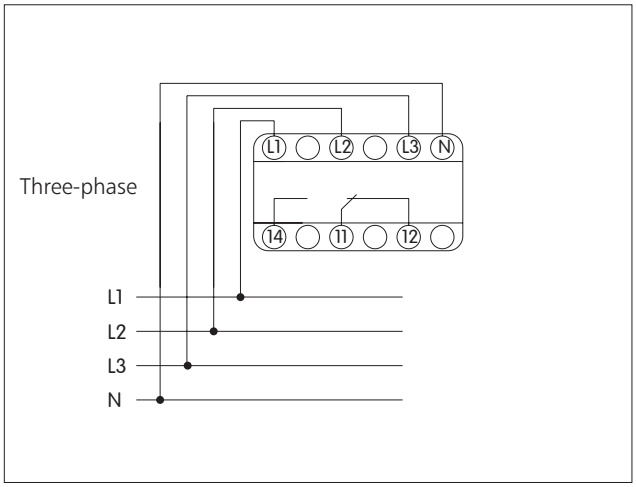
NJYB3-01, NJYB3-02, NJYB3-03, NJYB3-04, NJYB3-05, NJYB3-06,NJYB3-07, NJYB3-08 Wiring diagram

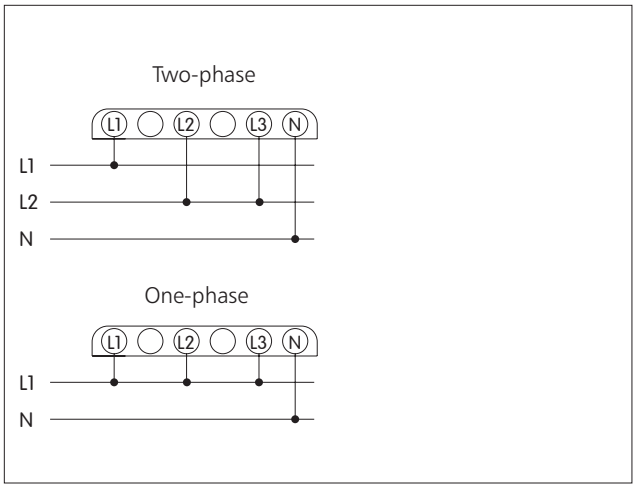



NJYB3-12, NJYB3-13, NJYB3-14, NJYB3-15, NJYB3-16 Wiring diagram

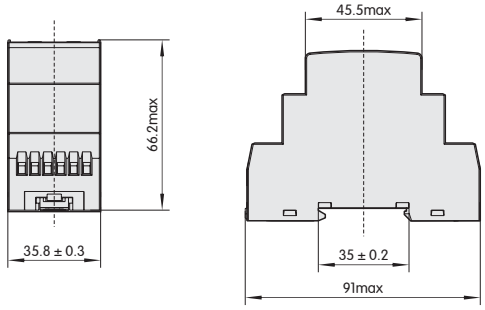


NJYB3-9, NJYB3-10, NJYB3-11 Wiring diagram




## 5. Overall and mounting dimensions (mm)




# JD-5A(NJBK3) Integrated Motor Protector

## 1. General

JD-5A(NJBK3)Integrated Motor Protector (hereinafter referred to as protector) is applicable for overload, phase-failure and three-phase current unbalance protection of AC motor @ A.C.50Hz, less than AC400V rated operating voltage and 1A~400A rated operating
current for its continuous working or discontinuous working. Protector and AC contactor are generally used cooperatively.
This product meets the requirements of IEC 60947-4-1.

## 2. Type designation

JD– 5 □ / □ □ □

- Supply voltage
- Code of trip class
- Code of setting current
- Derived code
- Design consequence number
- Integrated motor protector

## 3. Operation conditions

3.1 Altitude ≤2000m.
3.2 Ambient temperature Range:-15℃～ +55℃, with daily average≤+50℃.
3.3 Atmospheric condition: when the highest temperature is +40℃, relative humidity of air shall be no more than 50%, higher relative humidity shall be allowable at lower temperature, for instance air humidity may reach 90% at +20℃. As for dews, which contigently appear due to change of temperature, special steps should be taken
3.4 Pollution Level: Level 3.
3.5 Inclination between installation plane and vertical plane shall≤±5°.
3.6 At places without explosive risk, without gases that may be corrosive to metal or gases that may cause damage to the insulation, and with little conducting dust.
3.7 At places where rain & snow proof facilities are equipped with and not being full of steam.
3.8 At places without prominence rock, impact and vibration.
3.9 Installation Category: Ⅲ.

## 4. Technical data

Table 1

| Type | Setting current range (A) | Voltage of control power supply (Supply Voltage) (V) | Suitable motor power (kW) |
|---|---|---|---|
| JD-5A/80 | 1~5 | 220V, 230V, 380V, 400V | 0.5~2.5 |
| JD-5A/80 | 5~20 | 220V, 230V, 380V, 400V | 2.5~10 |
| JD-5A/80 | 20~80 | 220V, 230V, 380V, 400V | 10~40 |
| JD-5A/400 | 80~200 | 220V, 230V, 380V, 400V | 40~100 |
| JD-5A/400 | 160~400 | 220V, 230V, 380V, 400V | 80~200 |

Control circuit: rated insulation voltage AC380V, rated frequency 50Hz, contact parameters refer to Table 2.

Table 2

| Use type | | AC-15 | |
|---|---|---|---|
| Rated operating voltage (V) | 240 | | 380 |
| Rated operating current (A) | 1.5 | | 0.95 |
| Conventional thermal current (A) | | 5 | |

## 5. Design features

5.1 Three-phase electronic type, trip class is level 10A, 10, 20 and 30.
5.2 Equipped with function of phase-failure, overload and three-phase unbalance protection.
5.3 Digital dial-up setting with high precision
5.4 Digital current display.
5.5 Three indicators indicate normal, overload and phase-failure (three-phase current unbalance) status respectively.
5.6 Main circuit adopts feed-through wiring.
5.7 Installation mode: bolts

## 6. Protection features

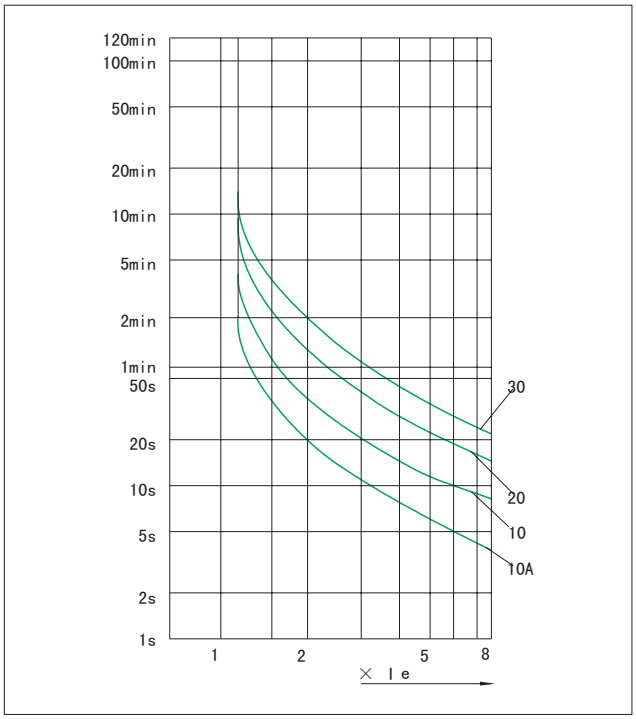
6.1 Operation characteristics under phases balanced-load status (see Table 3)
6.2 Operation characteristic under phase-failure status
Operation characteristic under phase-failure status should meet the requirement: operation time of protector ≤5s

$$\frac{Imax-Imin}{Imax} \times 100\% > 40\%$$

Where:
Imax---max current value among three phase current;
Imin---min current value among three phase current.

6.3 Tripping feature

Figure 1



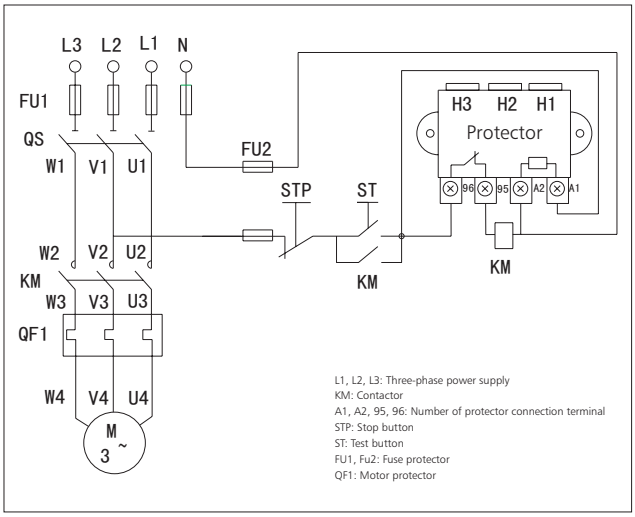

| S.N. | I/In | Trip class | Operation time | Test condition | Ambient temperature |
|---|---|---|---|---|---|
| 1 | 1.05 | 10A | <2h non-tripping | start from cold status | |
| | | 10 | | | |
| | | 20 | | | |
| | | 30 | | | |
| 2 | 1.2 | 10A | <2h tripping | Right after item No.1 | 20±2 |
| | | 10 | | | |
| | | 20 | | | |
| | | 30 | | | |
| 3 | 1.5 | 10A | <2min | Start after putting one time of setting current through main circuit for 2h | |
| | | 10 | <4min | | |
| | | 20 | <8min | | |
| | | 30 | <12min | | |
| 4 | 7.2 | 10A | 2s<Tp≤10s | start from cold status | |
| | | 10 | 4s<Tp≤10s | | |
| | | 20 | 6s<Tp≤20s | | |
| | | 30 | 8s<Tp≤30s | | |

6.4 Reset mode: De-energizing reset

## 7. Wiring diagram

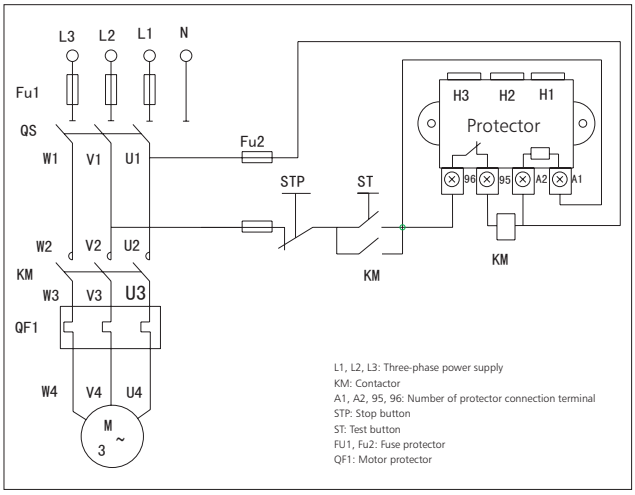
7.1 See Figure 2 for wiring diagram of control power supply @ AC220V/AC230V voltage.

Figure 2



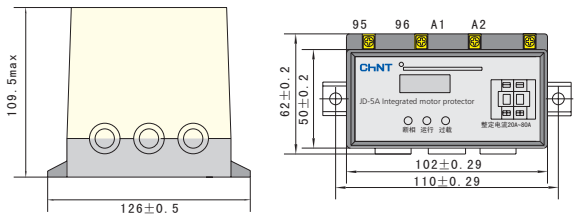

7.2 See Figure 3 for wiring diagram of control power supply @ AC380V/AC400V voltage.

Figure 3

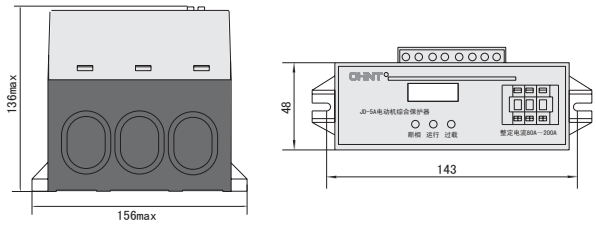



## 8. Overall and mounting dimensions (mm)

JD-5/80




JD-5/400




## 9. Ordering information

9.1 Designation and type-specification of protector, select controlling current and voltage (AC220V, AC230V, AC380V, AC400V ), setting current range (1A~5A, 5A~20A, 20A~80A, 80A~200A, 160A~400A), Trip class (10A, 10, 20, 30) according to operating requirements. Trip class in routine order is level 10.

9.2 Order Quantity.


# JD-5 Motor Integrated Protector

## 1. General

JD-5 Motor Integrated Protector (hereinafter referred to as protector) is applicable for overload and phase-failure protection of AC motor @ A.C.50Hz, less than AC400V rated operating voltage and 0.5A~400A rated operating current for its continuous working or discontinuous working. Protector and AC contactor are generally used cooperatively.
This product meets the requirements of GB 14048.4 and IEC 60947- 4-1.

## 2. Type designation

JD− □ / □□□

- Rated control power voltage
- Release grade code
- Rated current code
- Design sequence No.
- Motor Integrated Protector

## 3. Operation conditions

3.1 Altitude ≤2000m.
3.2 Ambient temperature Range: -5℃ ~ +40℃, with daily average ≤ +35℃.
3.3 Atmospheric condition: when the highest temperature is +40℃, the relative humidity of air shall be no more than 50%, higher relative humidity shall be allowable at lower temperature, for instance air humidity may reach 90% at +20 ℃. As for dews, which contigently appear due to change of temperature, special steps should be taken.
3.4 Pollution Level: Level 3.
3.5 Inclination between installation plane and vertical plane shall ≤±5°.
3.6 In the media without explosive risk, and no gases that may be corrosive to metal and damage insulation in the media together with at places where much conducting dust being in existence.
3.7 At places where rain & snow proof facilities are equipped with and not being full of steam.
3.8 At places without prominence rock, impact and vibration.
3.9 Installation Category: Ⅲ.

## 4. Technical data

4.1 Rated insulation voltage AC690V, rated frequency 50Hz, rated operating current 0.5A ~ 400A.

Table 1

| Type | Setting current range (A) | Voltage of control power supply (Supply Voltage) (V) | Suitable motor power (kW) |
|---|---|---|---|
| JD-5/80 | 0.5~5 | 220V, 230V, 380V, 400V | 0.25~2.5 |
| JD-5/80 | 2~20 | 220V, 230V, 380V, 400V | 1~10 |
| JD-5/80 | 20~80 | 220V, 230V, 380V, 400V | 10~40 |
| JD-5/400 | 80~200 | 220V, 230V, 380V, 400V | 40~100 |
| JD-5/400 | 160~400 | 220V, 230V, 380V, 400V | 80~200 |

4.2 Control circuit: rated insulation voltage Ac380v, rated frequency 50Hz, contact parameters refer to Table 2.

Table 2

| Use type | | AC-15 | |
|---|---|---|---|
| Rated operating voltage (V) | 220 | | 380 |
| Rated operating current (A) | 1.5 | | 0.95 |
| Conventional thermal current (A) | | 5 | |

## 5. Design features

5.1 Three-phase electronic type, tripping grade (trip class): 10A.
5.2 Equipped with function of phase-failure and overload protection.
5.3 Equipped with continuously adjustable device for setting current.
5.4 Three indicators indicate normal, overload and phase-failure status respectively.
5.5 Main circuit adopts feed through wiring.
5.6 Installation mode: use bolts for installation.

## 6. Protection features

6.1 Operation characteristics under three-phase balanced-load status (see Table 3)

Table 3

| S.N. | I/In | operating time | Test Condition | Ambient temperature |
|---|---|---|---|---|
| 1 | 1.05 | <2h non-tripping | Cold Status | +20℃ |
| 2 | 1.20 | <2h tripping | Hot Status | |
| 3 | 1.50 | <2 min tripping | | |
| 4 | 7.20 | 2s<Tp≤10s | Cold Status | |

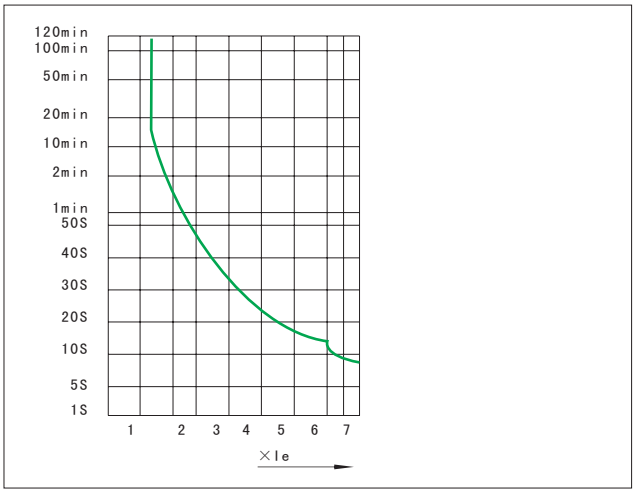
6.2 Operation characteristic under phase-failure status (see Table 4)

Table 4

| S.N. | Multiple of setting current | | operating time | Test Condition | Ambient temperature |
|---|---|---|---|---|---|
| | Any two phases | The Third phases | | | |
| 1 | 1.0 | 0.9 | <2h non-tripping | Cold Status | +20℃ |
| 2 | 1.15 | 0 | ≤5s | Hot Status | |

6.3 Tripping feature

Figure 1

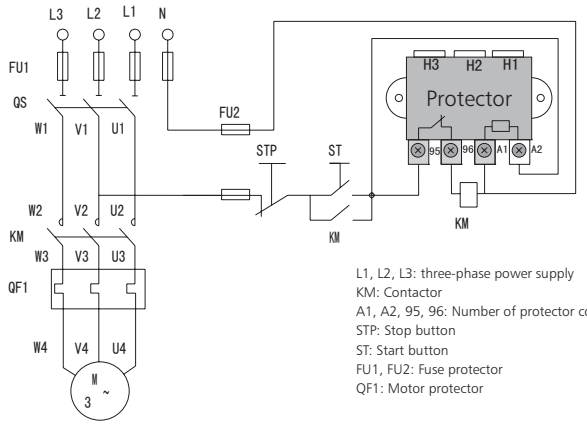



6.4 Reset mode: de-energizing reset

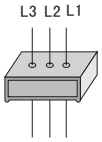
## 7. Wiring diagram

7.1 Wiring diagram for control power supply @ AC220V/AC230V voltage

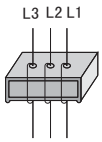
Wiring diagram for control power supply @ AC230V voltage




L1, L2, L3: three-phase power supply
KM: Contactor
A1, A2, 95, 96: Number of protector connection terminal
STP: Stop button
ST: Start button
FU1, FU2: Fuse protector
QF1: Motor protector



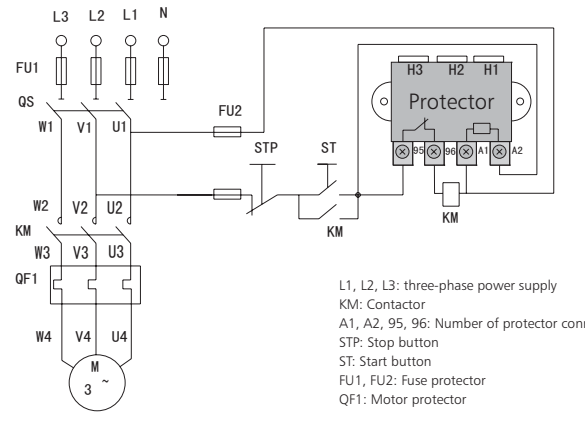

Circles of the cable: once (more than 3A)



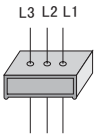

Circles of the cable: twice every phase (less than 3A)

7.2 Wiring diagram for control power supply @ AC380V/AC400V voltage

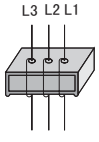
Wiring diagram for control power supply @ AC400V voltage




L1, L2, L3: three-phase power supply
KM: Contactor
A1, A2, 95, 96: Number of protector connection terminal
STP: Stop button
ST: Start button
FU1, FU2: Fuse protector
QF1: Motor protector




Circles of the cable: once (more than 3A)

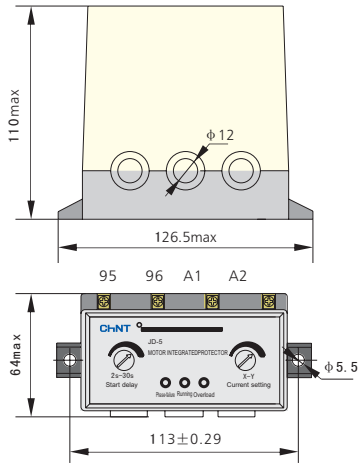



Circles of the cable: twice every phase (less than 3A)

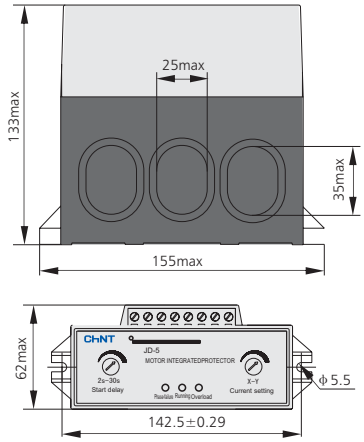
I

## 8. Overall and mounting dimensions (mm)

JD-5/80




JD-5/400




## 9. Ordering instructions

9.1 Designation, type and specification of protector, select controlling current and voltage (AC220V, AC230V, AC380V, AC400V ), setting current range (0.5A～5A, 2A～20A, 20A～80A, 80A～200A 160A～400A, etc) according to operating requirements.
9.2 Order Quantity.


# NJYB1 Phase-Failure and Phase-Sequence Protection Relay

## 1. General

This product is applicable in operating console of facilities for motor protection, circuit protection and controlling large size motor. It can detect fault state as overvoltage, undervoltage, phase-failure and phase-sequence through advanced electronic circuit check, and provide reliable protection.

## 2. Type designation

2.1 Model and meaning

N J YB 1

- 1 — Design No.
- YB — Voltage protection
- J — Corporation Code
- N — Relay

2.2 Technical parameters

2.2.1 Fundamental parameter

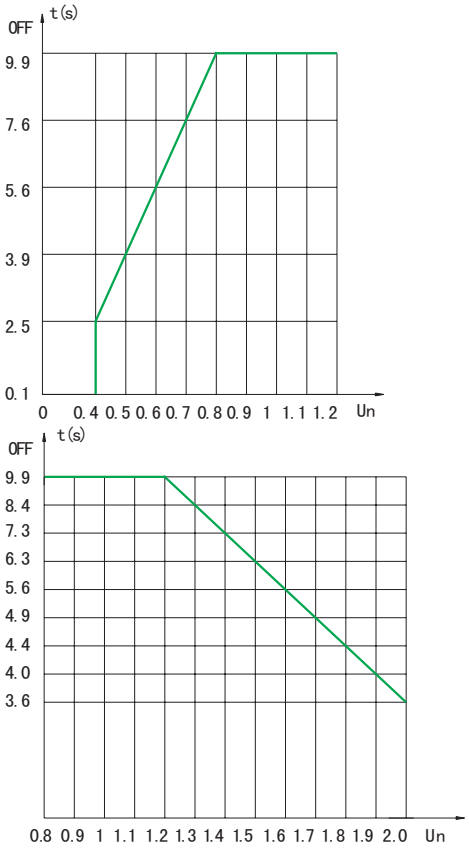
a. Overvoltage protection: (1.0-1.3) Ue; undervoltage protection: (0.7-1.0) Ue.
b. Fault protection time: 0.1 9.9S.
c. Dielectric strength: there is no breakdown and flicker appeared for alternating current (50Hz) lasting a period of time of 1 s. under 2000V.
d. Insulation resistance: >100M (relative humidity at 20℃ is 90%).
e. Contact capacity: AC-15 220V 1A.
f. Contact resistance: 0.03Ω.
g. Contact life: life should ⩾100, 000times.
h. Ambient temperature: -10℃～ +50 ℃.
i. Ambient humidity: ⩽8% (20℃～+5℃).
j. Installation mode: 35mmIC guide rail installation

2.3 Performance feature

| S.N. | Fault type | Reacting time | | Ambient air humidity |
|---|---|---|---|---|
| | | Specified time | Inverse time | |
| 1 | Overvoltage protection | 0.1～9.9s | $Tr = (Uon/Ur)^2 \times Tn$ | Room temperature |
| 2 | Undervoltage protection | 0.1～9.9s | $Tr = (Ur/Uun)^2 \times Tn$ | |
| 3 | Phase-Failure protection | ⩽0.1s | | |
| 4 | Phase-sequence protection | ⩽0.1s | | |

2.4 Time -voltage feature of voltage protector

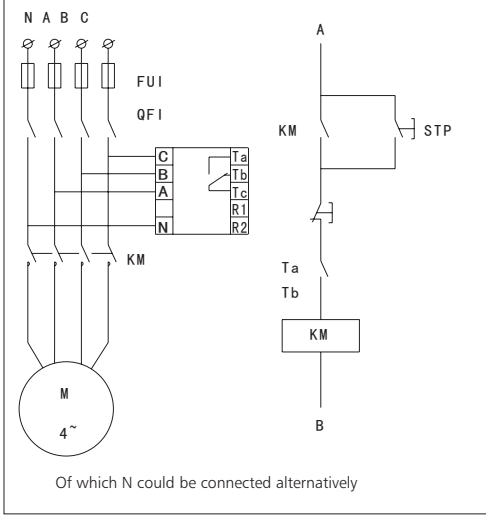
Time-voltage feature of voltage protector




Note: 0.8Un is the preset normal voltage protection range, when delaying, it is 9.9s.

## 3. Wiring diagram

Wiring diagram for voltage protector




Of which N could be connected alternatively


# XJ3 Phase-Failure and Phase-Sequence Protective Relay

## 1. General

XJ3 series phase failure and phase sequence protection relay is used to provide overvoltage, undervoltage and phase failure protection in three-phase AC circuits and phase sequence protection in irreversible transmission devices and features reliable performance, wide application and convenient use.

The protector starts to function when it is connected to the power control circuit in accordance with the drawing. When the fuse of any phase of the three-phase circuit is open or when there is a phase failure in the power supply circuit, the XJ3 operates immediately to control the contact to cut off the power supply of the AC contactor coil of the main circuit so that the main contact of the AC contactor operates to provide the load with phase failure protection.

When the phases of a three-phase irreversible device with predetermined phase sequence are connected incorrectly due to maintenance or change of the power supply circuit, the XJ3 series will identify the phase sequence, stop supplying power to the power supply circuit and achieve the goal of protecting the device.

## 2. Type designation

XJ 3 −□/□

- Rated power supply voltage
- Remodel (derived model)
  - G: monochrome luminotron fault indication type;
  - S: two-color luminotron fault indication type;
  - D: multifunction protection, multimode indication type
- Design sequence No.
- Phase-failure and phase-sequence protective relay

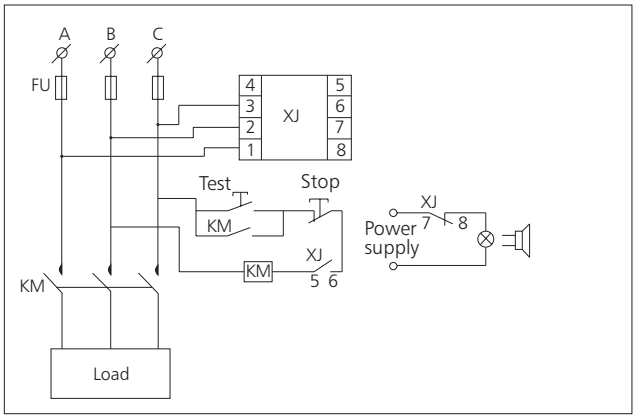
## 3. Technical data

| Type | XJ3-G | XJ3-S | XJ3-D |
|---|---|---|---|
| Protection function | Phase-failure Phase-sequence error & Three phase voltage unbalance≥8%~13% | | Overvoltage Undervoltage Phase-failure Phase-sequence error |
| Overvoltage protection | | | AC 380V: 380V~460V 1.5s~4s (adjustable) 300V~380V 2s~9s(adjustable) AC 400V: 320V~400V 1.5s~4s (adjustable) 400V~480V 2s~9s(adjustable) |
| Undervoltage protection | | | |
| Operating voltage | AC 380V 50Hz/60Hz, Allowable fluctuating range±10% | | |
| Contact number | 1 normally open & 1 normally close | | 1 group changeover |
| Contact capacity | 5A 230VAC cos Φ =1 | | 3A 230VAC cos Φ =1 |
| Phase-failure and phase-sequence protection | Reacting time≤2s | | |
| Electrical life | $1\times10^5$ | | |
| Mechanical life | $1\times10^6$ | | |
| Ambient temperature | -5℃~40℃ | | |
| Ambient humidity | -5℃~40℃ | | |
| Installation mode | Equipment type or Track type | | 35mm Track installation or punching installation |

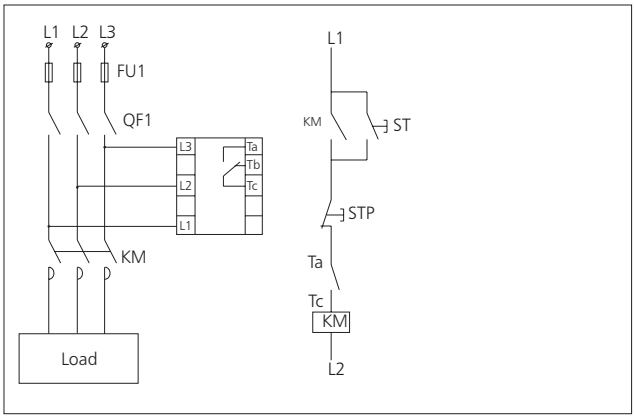
Note: in the example diagram for application circuit, protective relay can provide protection only under the condition of phase-failure occurring at terminal 1, 2, 3 and among three phase of power supply A, B, C.

## 4. Wiring diagram

XJ3-G, S wiring diagram

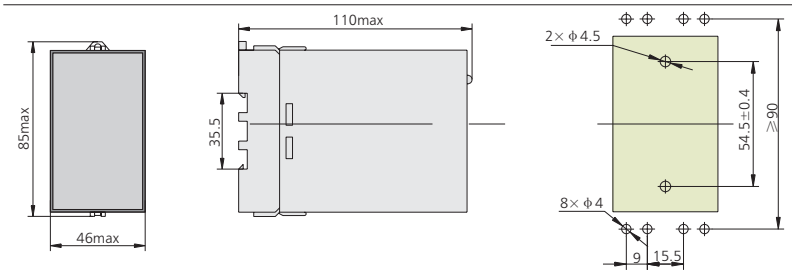



XJ3-D wiring diagram

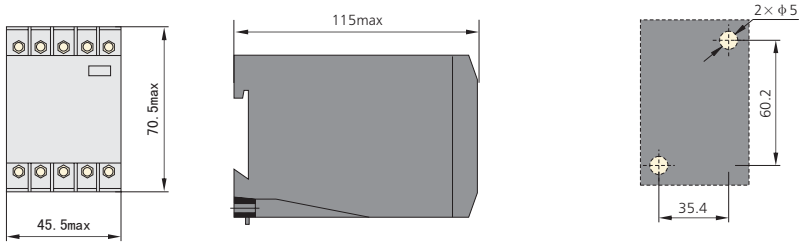



## 5. Overall and mounting dimensions (mm)

XJ3-G, S profile and installation dimension




XJ3-D profile and installation dimension




# NJS6 Time Delay Relay

## 1. General

NJS6 series time delay relay (hereinafter referred to as relay) is used as a time control element in control circuits with an AC voltage of 240V or below and a frequency of 50Hz and control circuits with a DC voltage of 240V or below to make and break the circuit according to the schedule.

## 2. Type designation

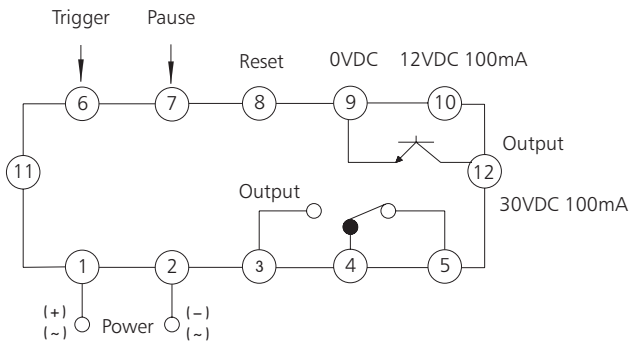
N JS 6 / □

- Rated control supply voltage
- Design sequence No.
- Time delay relay
- Company code

## 3. Technical data

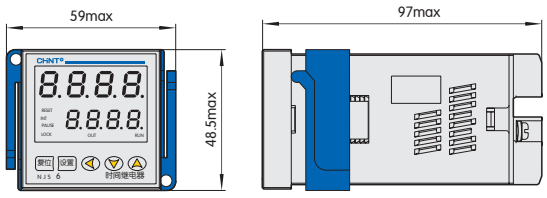
| Mode | NJS6 |
|---|---|
| Operating mode | On-delay (OND, OND1), trigger delay (OND2), On-off repetitive delay (FLY), interval delay (INT, INT1), optional |
| Number of contacts | Delay 1 change-over |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; DC-13 220V/0.27A; Ith:5A |
| Solid state output | NPN solid state delay 1 ouptut |
| Solid state output capacity | Max 30VDC Max 100mA |
| Operational voltage | AC/DC100～240V 50Hz DC24V |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Delay accuracy | Start timing from power on: ±0.01%±0.05s, start timing from signal ON: ±0.01%±0.03s |
| Timing mode | Addition or subtraction timing mode, optional |
| Contact output time | The output contacts have automatic reset function.<br>The contact ouptut time is 10, 50, 100, 200, 500, 1000, 2000, 5000 or Hold, optional. (in ms) |
| Ambient temperature | -5℃～+40℃ |
| Mounting type | Panel type |
| Delay range | For single product, 99.99s/999.9s/9999s/99min59s/999.9min/9999min/99h99min/9999h, optional |

## 4. Wiring diagram

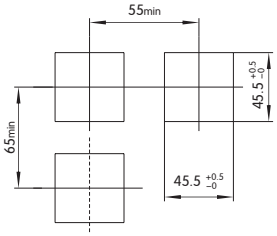



## 5. Overall and mounting dimensions (mm)

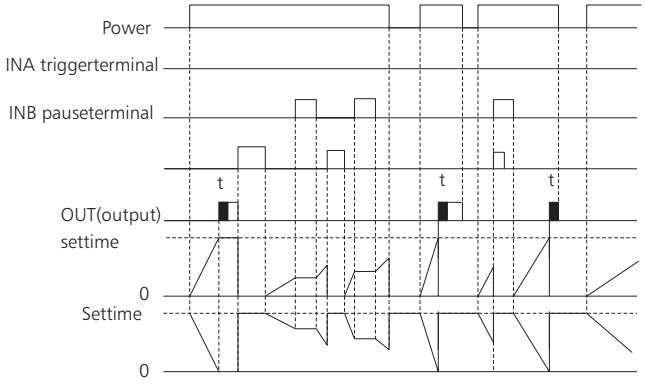
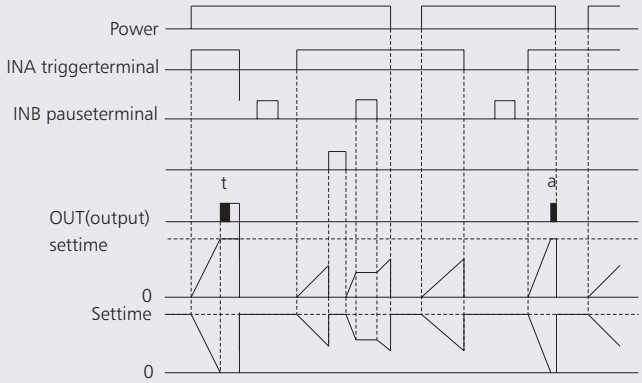
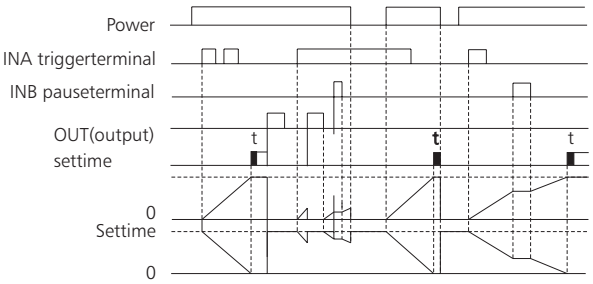
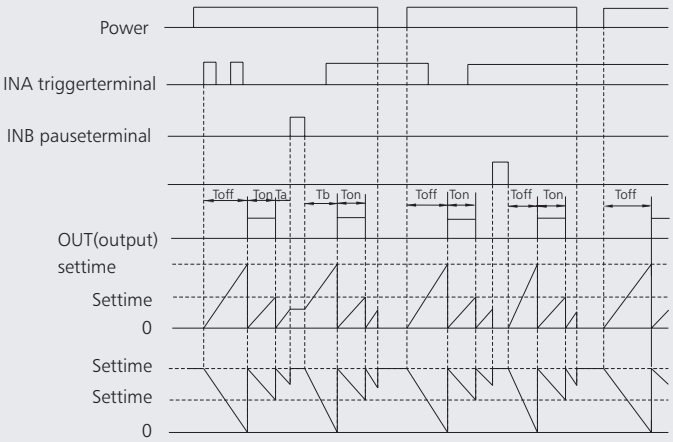
Profile and installation dimension

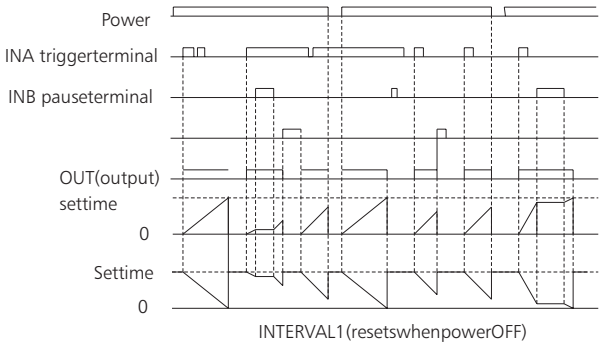
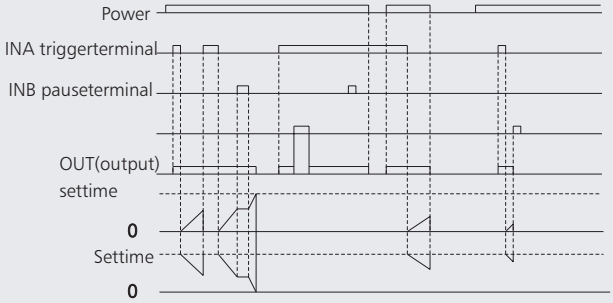
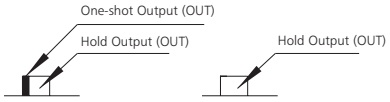



Opening size



**6. Profile and installation dimension**

| Output mode | Timing-sequence diagram |
|---|---|
| On delay ond |  POWER ON DELAY(countingresetswhenpowerOFF) |
| On delay ond.1 |  POWER ON DELAY(countingcontinueswhenpowerOFF) |
| Trigger delay ond.2 |  SIGNAL ON DELAY1(resetswhenpowerOFF) |
| Loop delay FLY |  FLICKER(resetswhenpowerOFF) |

| Output mode | Timing-sequence diagram |
|---|---|
| Interval delay 1 nt |  INTERVAL1(resetswhenpowerOFF) |
| Interval delay 1 nt.1 |  SIGNAL OFF DELAY(resetswhenpowerOFF) |
| Note |  |


# NJS2 Time Delay Relay

## 1. Application scope

NJS2 Series Time Relay is applicable for controlling circuit @ A.C. 50Hz/60Hz, up to 240V rated supply voltage and up to D.C. 240V rated supply voltage as delay element to make or break circuit according to preset time.

## 2. Model and meaning

N JS 2 / □

- Rated control supply voltage
- Design S.N.
- Time-delay relay
- Enterprise feature code

Note: this product is applicable for wide range operating voltage, for instance, operating voltage within AC/DC100V～240V means it can operate normally within the voltage range of AC/DC 100V to 240V.

## 3. Technical data

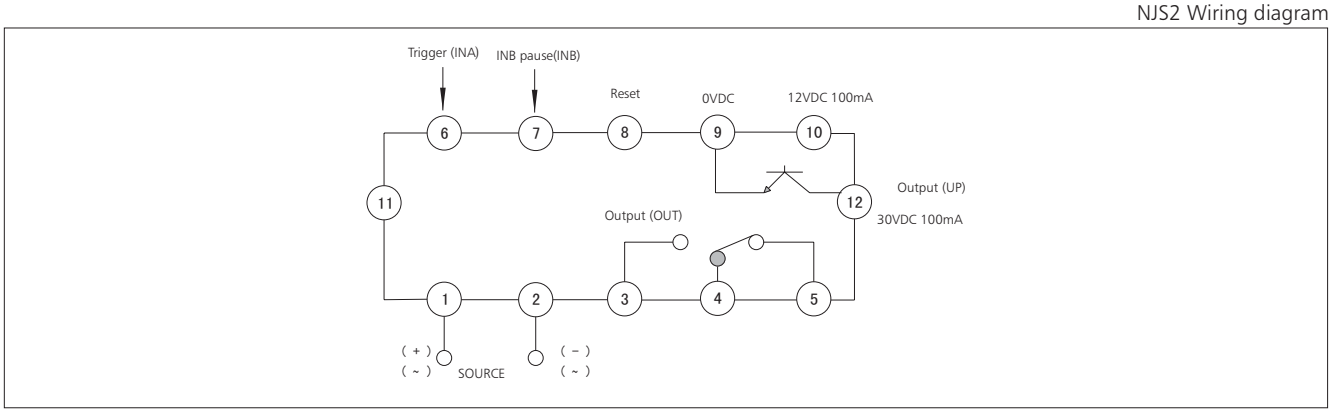
| Operating mode | (power) on delay (OND, OND1), trigger-delay (OND2), reciprocate-delay (FLY), interval-delay (INT, INT1) are available for option |
|---|---|
| Contact number | Delay 1 changeover |
| Contact capacity | Ue/Ie:AC-15 220V/0.75A; DC-13 220V/0.27A; Ith:5A |
| Solid-state output | NPN solid-state delay 1 output |
| Solid-state output capacity | Max 30VDC max 100mA |
| Operating voltage | AC36V, AC/DC100V～240V 50Hz/60Hz |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Delay precision | Power supply ON start timing: ≤±0.01%±50ms Signal ON start timing: ≤±0.01%±30ms |
| Timing mode | Plus & minus timing mode are available for option |
| Contact output time | Contact output is equipped with function of automatic reset, contact output time 10, 50, 100, 200, 500, 1000, 2000, 5000, and Hlod are available for option (unit: ms) |
| Ambient temperature | -5℃～+40℃ |
| Installation mode | Panel type |

Delay range

| Type | 99.99s, 999.9s, 9999s, 99min59s, 999.9min, 9999min, 99h59min, 9999h are optional for each product |
|---|---|

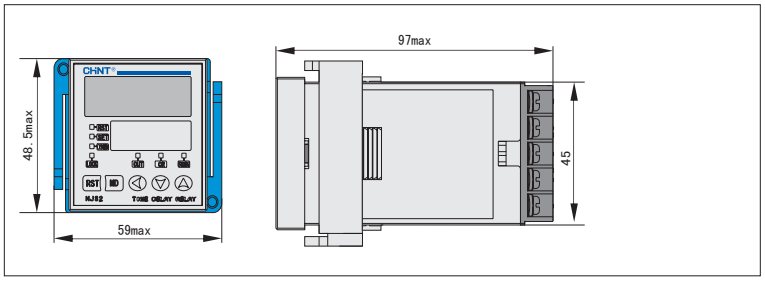
## 4. Wiring diagram

NJS2 Wiring diagram

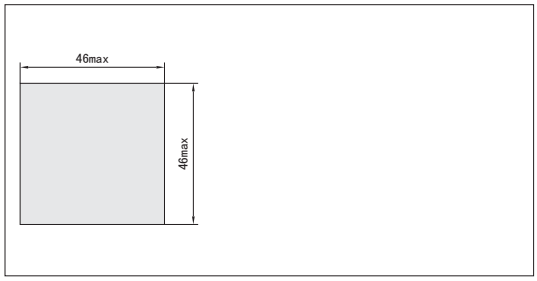



## 5. Overall and mounting dimensions (mm)

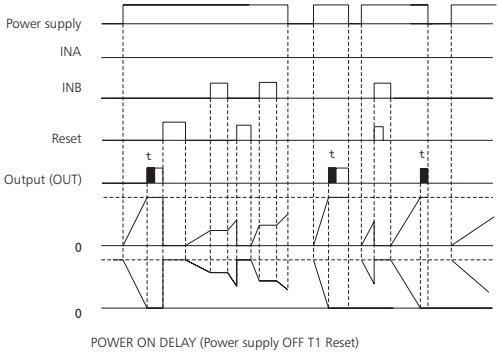
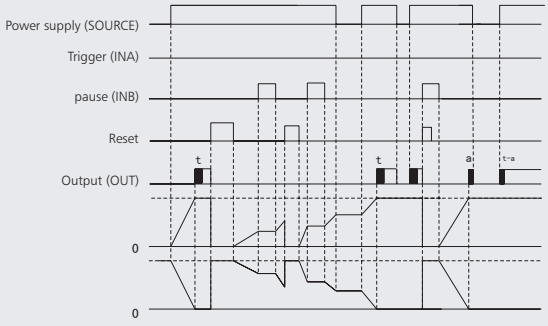
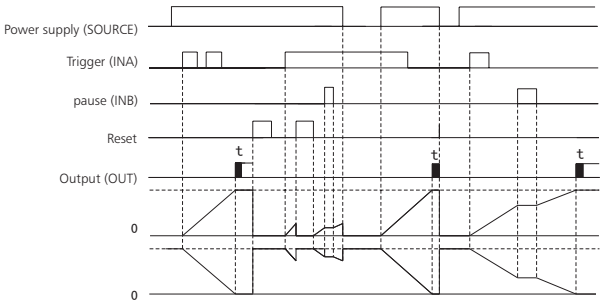
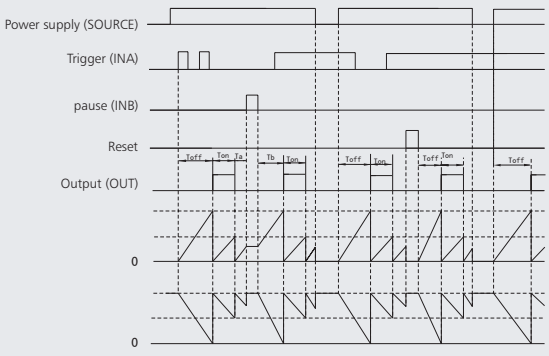
Profile and installation dimension

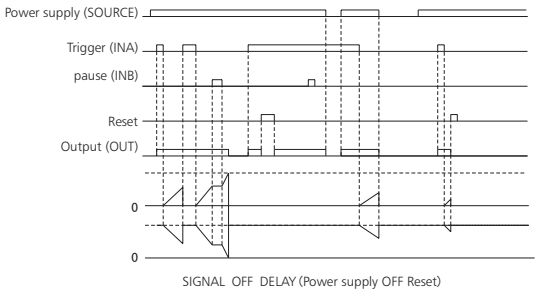
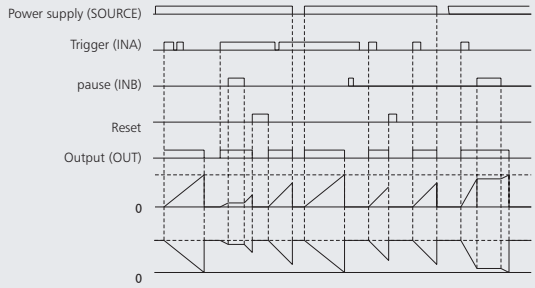
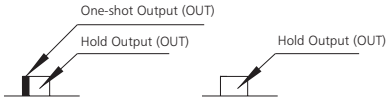



Opening size



## 6. Profile and installation dimension

| Output mode | Timing-sequence diagram |
|---|---|
| (power) on delay ond |  POWER ON DELAY (Power supply OFF T1 Reset) |
| (power) on delay ond.1 |  POWER ON DELAY (Power supply OFF T1 Reset) |
| Trigger-delay ond2 |  SIGNAL ON DELAY1 (Power supply OFF Reset) |
| Circulation-delay FLY |  FLICKER (Power supply OFF Reset) |

| Output mode | Timing-sequence diagram |
|---|---|
| Interval-delay 1 nt.1 |  SIGNAL OFF DELAY (Power supply OFF Reset) |
| Interval-delay 1 nt |  INTERVAL1 (Power supply OFF Reset) |
| Note |  |


# NJS1 Time Delay Relay

## 1. General

NJS1 Series Time-Delay Relay is applicable for controlling circuit @ A.C. 50Hz/60Hz, up to 380V rated voltage or up to D.C.220V rated voltage as delay element to make or break circuit according to preset time.

## 2. Type designation

NJS— 1 □□ / □□

- Rated control supply voltage
- Contact mode
  Nil: means delay one group changeover, equipped with function of external reset and pause;
  2Z: means delay two group changeover;
  11: means delay two group changeover, equipped with function of external reset and pause;
  H: means delay one group changeover, instantaneous one group changeover.
- Operating mode:
  No marking: means Power on delay type;
  S: means circulation-delay type;
- Code of installation shell frame
  No marking: 48×48 installation profile.
- Design sequence No.
- Time delay relay
- Company code

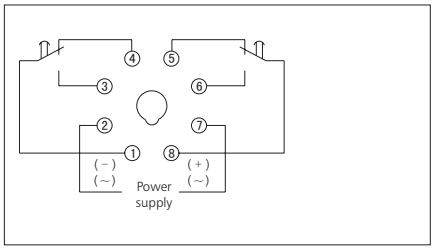
Note: this product is applicable for wide range operating voltage, for instance, operating voltage within AC/DC24V～48V means it can operate normally within the voltage range of AC/DC 24V to 48V.

## 3. Technical data

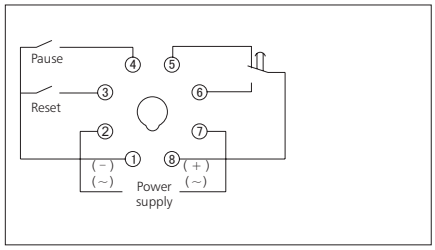
| Type | NJS1 | NJS1-2Z | NJS1-11 | NJS1-H | NJS1-S |
|---|---|---|---|---|---|
| Operating mode | power on delay | power on delay | power on delay | power on delay | Circulation-delay |
| Contact number | Delay 1 changeover | Delay 2 changeover | Delay 2 changeover | Delay 1 changeover Instantaneous 1 changeover | Delay 1 changeover |
| Contact capacity | Ue/Ie:AC-15 220V/0.75A,380V/0.47A; DC-13 220V/0.27A; Ith:5A | | | | |
| Turn-on (Power) on delay type Delay range | Time-base code | 0.01s 0.1s s 10s $\frac{m}{s}$ 0.1m m $\frac{h}{m}$ 0.1h h | | | |
| | Setting range | 0.01S~99.99s 0.1S~999.9s 1S~9999s 10S~99990s 1S~99min99s 0.1min~999.9min 1min~9999min 1min~99h99min 0.1h~999.9h 1h~9999h | | | |
| Circulation-delay type Delay range | Time-base code | 0.1s 1s 0.1min 1min 0.1h 1h 10h | | | |
| | Setting range | 0.1S~9.9s S~99s 0.1min~9.9min 1min~99min 0.1h~9.9h 1h~99h 10h~990h | | | |
| Operating voltage | AC/DC: 24~48V,100V~240V, AC220V, AC380V | | | | |
| Repeat pause function | Have | N/A | Have | N/A | Have |
| Electrical life | $1\times10^5$ | | | | |
| Mechanical life | $1\times10^6$ | | | | |
| Delay precision | ≤1% | | | | |
| Ambient temperature | -5℃~+40℃ | | | | |
| Power consumption | ≤3VA | | | | |
| Installation mode | Panel type, Device type | | | | |
| Matched pedestal | Panel type CZS08S, CZS11S, CZS08G, CZS11G, Device type CZS08C, CZS11C | | | | |

## 4. Wiring diagram

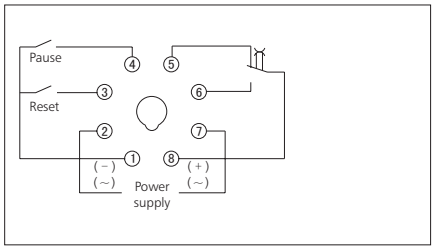
NJS1-2Z Wiring diagram



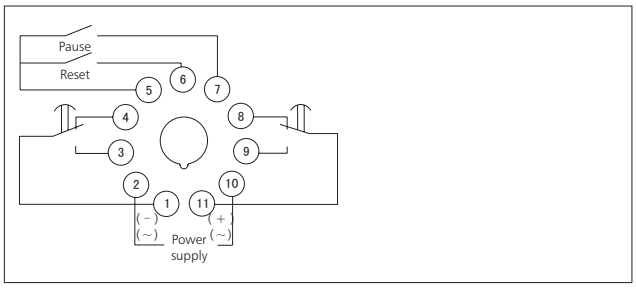

NJS1 Wiring diagram



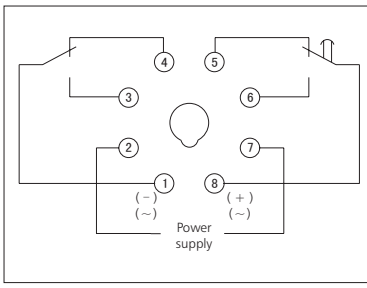

NJS1-S Wiring diagram




NJS1-11 Wiring diagram

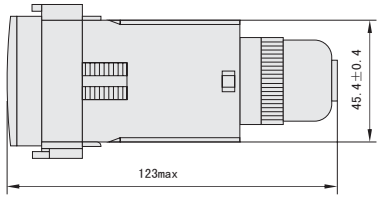


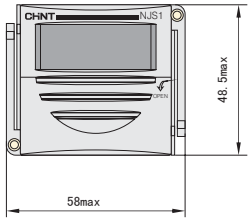

NJS1-H Wiring diagram



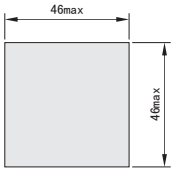

## 5. Overall and mounting dimensions (mm)

Profile and installation dimension




Opening size




# NTE8 Time Delay Relay

## 1. General

NTE8 Series time delay relay is applicable for controlling circuit @AC 50Hz/60Hz, up to 230V rated voltage or up to DC 24V rated voltage as delay element to make or break circuit according to preset time.
This product meets the requirements of IEC60947-5-1.

## 2. Type designation

N TE— 8 □ □

- Operating mode: A: control-off delay; B: (power) on delay
- Delay range
- Design serial number
- Timedelay relay
- Company code

## 3. Technical data

| Type | NTE8 |
|---|---|
| Operating mode | Control-off delay/(power) on delay |
| Delay range | 0.1s~10s、10s~120s、30s~480s |
| Number of contacts | Delay 1 N/O |
| Contact capacity | Ue/Ie:AC-15 230V/1A; DC-13 30V/1A; Ith:5A |
| Operational voltage | AC230V、AC24V、DC24V |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Ambient temperature | -5℃~+40℃ |
| Mounting type | Rail type |

Figure 2 NTE8-□A Relay wiring diagram

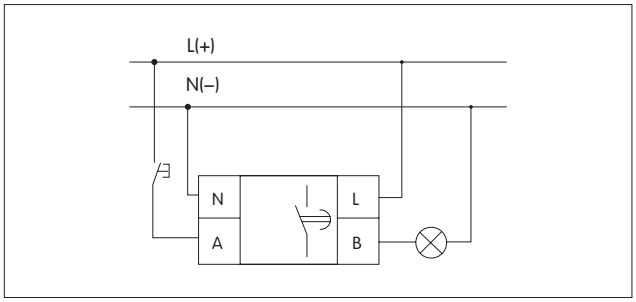
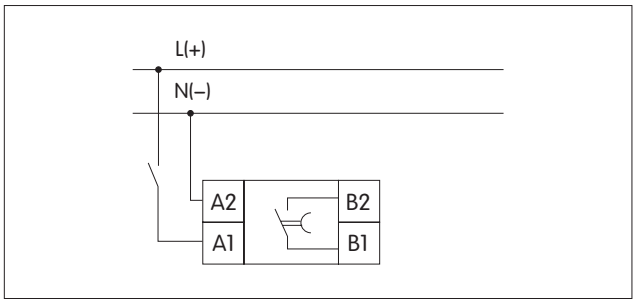
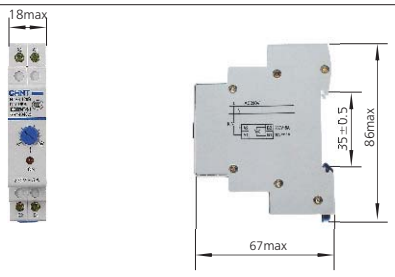



Figure 3 NTE8-□B Relay wiring diagram




## 4. Overall and mounting dimentions (mm)





Adopt TH35-7.5 sectional steel guide rail for installation


# JSS48A Time Delay Relay

## 1. General

JSS48A Time Delay Relay is applicable for controlling circuit @ A.C.
50Hz/60Hz, up to 380V rated control supply voltage and up to D.C. 240V rated control supply voltage as delay element to make/break circuit according to preset value.

## 2. Type designation

JSS 48 A — □ / □

- Rated control supply voltage
- Feature code
  - Nil: means 8-pin power delay one group changeover, equipped with function of reset, pause (multi-range delay)
  - 2Z: means 8-pin power delay two group changeover (multi-range delay)
  - 11: means 11-pin power delay two group changeover, equipped with function of reset, pause (multi-range delay)
  - S: means 8-pin circulation-delay one group changeover, equipped with function of reset, pause (multi-range delay)
  - P: means 8-pin indicator type power delay two group changeover (multi-range delay)
  - P2: means 2 digit dial-up setting, indicator type 8-pin power delay two group changeover (single delay)
  - P3: means 3 digit dial-up setting, indicator type 8-pin power delay two group changeover (single delay)
  - P4: means 4 digit dial-up setting, indicator type 8-pin power delay two group changeover (single delay)
  - G2: means 2 digit dial-up setting, 8-pin power delay two group changeover (single delay)
  - G3: means 3 digit dial-up setting, 8-pin power delay two group changeover (single delay)
  - G4: means 4 digit dial-up setting, 8-pin power delay two group changeover (single delay)
- Derived code
- Design sequence No.
- Time delay relay

Note: This product is applicable for wide range of operating voltage, for instance, operating voltage within AC/DC24V~48V means it can operate normally within the voltage range of AC/DC 24V to 48V.

## 3. Technical data

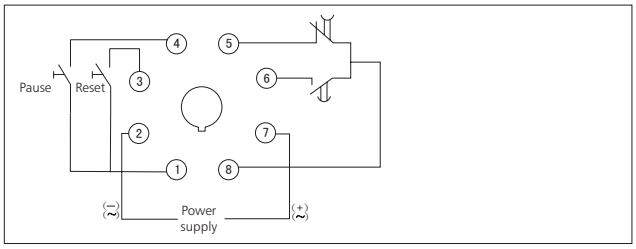
3.1 Main specifications see Table

| Type | JSS48A | JSS48A-2Z | JSS48A-11 | JSS48A-G | JSS48A-P | JSS48A-S |
|---|---|---|---|---|---|---|
| Operating mode | Power on delay | Power on delay | Power on delay | Power on delay | Power on delay | Circulation-delay |
| Contact number | Delay 1 changerover | Delay 2 changerover | Delay 2 changerover | Delay 2 changerover | Delay 2 changerover | Delay 1 changerover |
| Contact capacity | Ue/Ie:AC-15 220V/0.75A,380V/0.47A; DC-13 220V/0.27A; Ith:5A | | | | | |
| Operating voltage | AC/DC: 24V~48V, 100V~240V, AC220V, AC380V, 50Hz/60Hz | | | | | |
| Electrical Endurance | $1\times10^5$ | | | | | |
| Mechanical Endurance | $1\times10^6$ | | | | | |
| Delay precision | ≤1% | | | | | |
| Ambient temperature | -5℃~+40℃ | | | | | |
| Power consumption | ≤3VA | | | | | |
| Installation mode | Panel type | | | | | |

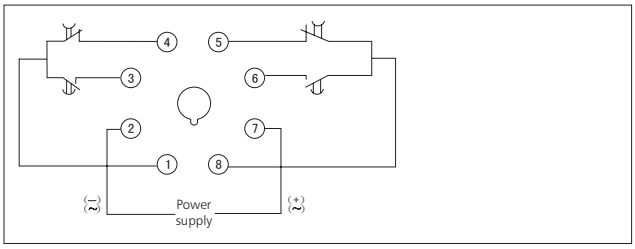
| Type | Delay range |
|---|---|
| JSS48A | 1s~99min99s, 1min~99h99min, 0.01s~99.99s |
| JSS48A-11 | |
| JSS48A-2Z | |
| JSS48A-S | 1s~99s, 1min~99min, 1h~99h |
| JSS48A-G2 | 0.1s~9.9s, 1s~99s, 0.1min~9.9min, 1min~99min |
| JSS48A-P2 | |
| JSS48A-G3 | 0.01s~9.99s, 0.1s~99.9s, 1s~999s, 0.1min~99.9min, 1min~999min |
| JSS48A-P3 | |
| JSS48A-G4 | 0.01s~99.99s, 0.1s~999.9s, 1s~9999s, 0.1min~999.9min, 1min~9999min, 0.1h~999.9h |
| JSS48A-P4 | |

## 4. Wiring diagram

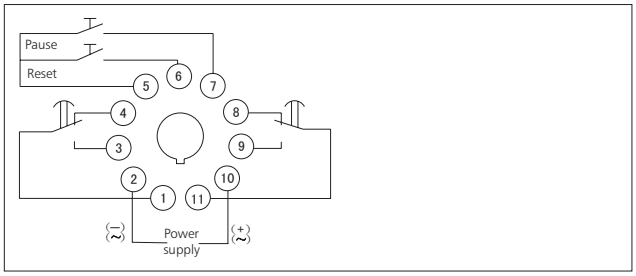
JSS48A Wiring diagram



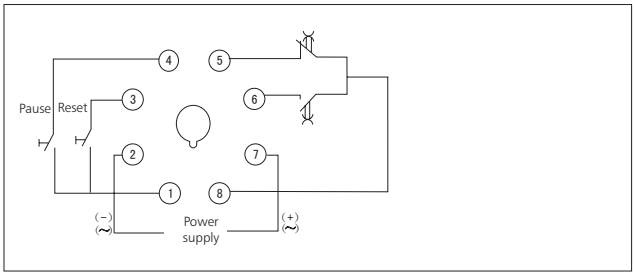

JSS48A-2Z, JSS48A-G, JSS48A-P Wiring diagram




JSS48A-11 Wiring diagram

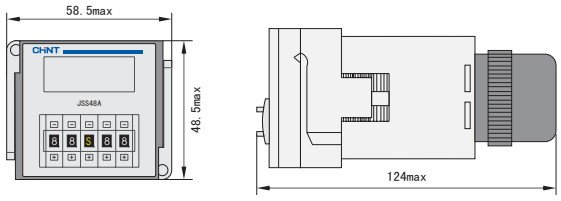



JSS48A-S Wiring diagram

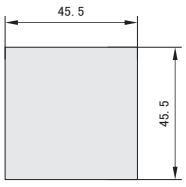



## 5. Overall and mounting dimensions (mm)

Profile and installation dimension




Opening size




# JSS48B Time Delay Relay

## 1. General

JSS48B Time Delay Relay is applicable for controlling circuit @ A.C. 50Hz/60Hz, up to 380V rated supply voltage and up to D.C. 240V rated supply voltage as delay element to make or break circuit according to preset time.

## 2. Type designation

JSS 48 B

- Derived code
- Design sequence No.
- Time Delay Relay

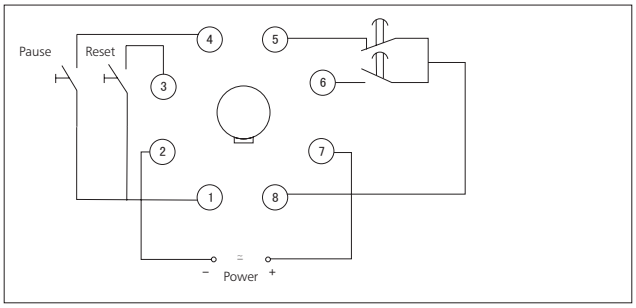
Note: this product is applicable for wide range operating voltage, for instance, operating voltage within AC/DC24V~48V means it can operate normally within the voltage range of AC/DC 24V to 48V.

## 3. Technical data

| Type | JSS48B |
|---|---|
| Operating mode | Power on delay |
| Contact number | Delay 1 Switching |
| Operating voltage | AC/DC: 24V~48V, 100V~240V, AC220V AC380V 50Hz/60Hz |
| Electrical Endurance | $1\times10^5$ |
| Mechanical Endurance | $1\times10^6$ |
| Delay precision | ±0.05%±50ms |
| Ambient temperature | -5℃~+40℃ |
| Delay range | 0.01s~99.99s 1s~99min59s 1min~99h59min |
| Installation mode | Panel type |

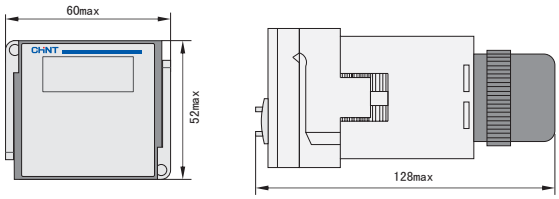
## 4. Wiring diagram

JSS48B Wiring diagram

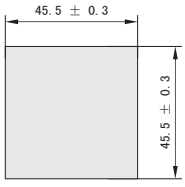



## 5. Overall and mounting dimensions (mm)

Profile and installation dimension of JSS48B series products




Opening size




# JSZ3 Time Delay Relay

## 1. General

JSZ3 Time Delay Relay is applicable for automatic control system, such as machine automatic control, and complete equipment automatic control, etc.

## 2. Type designation

JS Z 3 □ — □

- Adopt A, B, C, D, E, F, G to represent delay rang code (applicable for multi-range type)
- A: basic type power on delay, multi-range type)
- B: multi-function (multi-delay mode, with starting control), multi-range type
- C: instantaneously operation type power on delay, multi-range type
- F: turn-off power off delay type
- H: instantaneously operation type power on delay, single-range type
- Y: delta start-delay type power on delay
- K: control off-delay
- R: repeat circulation-delay type power on delay
- -2, 3: power on delay, single-range type
- Design sequence No.
- Integrative type
- Time Delay Relay

## 3.Technical data

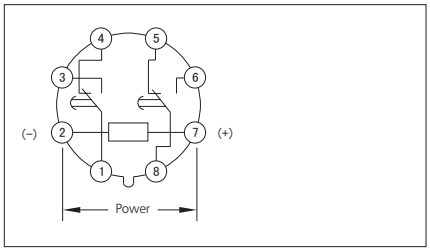
| Type | JSZ3A | JSZ3C | JSZ3F | JSZ3K | JSZ3Y | JSZ3R |
|---|---|---|---|---|---|---|
| Operating mode | power on delay | JSZ3C power on delay with instantaneously operation contact | power off delay | Signal breaking-delay | Delta start-delay | Reciprocating circulation-delay |
| Delay range | A: 0.05-0.5s/5s/30s/3min | | 0.1-1s<br>0.5-5s<br>1-10s<br>2.5-30s<br>5-60s<br>10-180s | 0.1-1s<br>0.5-5s<br>1-10s<br>2.5-30s<br>5-60s<br>10-180s | | |
| | B: 0.1-1s/10s/60s/6min | | | | 0.1-1s | 0.5-6s/60s |
| | C: 0.5-5s/50s/5min/30min | | | | 0.5-5s | 1-10s/10min |
| | D: 1-10s/100s/10min/60min | | | | 1-10s | 2.5-30s/30min |
| | E: 5-60s/10min/60min/6h | | | | 2.5-30s | 5-60s/60min |
| | F: 0.25-2min/2min/2h/12h | | | | 5-60s | |
| | G: 0.5-4min/40min/4h/24h | | | | | |
| Set mode | Potentiometer | | | | | |
| Operating voltage | AC50Hz/60Hz, 36V, 110V, 127V, AC220V AC230V AC380V AC400V DC24V | | AC50Hz/60Hz, 36V, 110V, 127V AC220V AC230V AC380V AC400V DC24V | AC50Hz/60Hz AC110V AC220V AC230V AC380V AC400V DC24V | AC110V/220V 50Hz/60Hz AC220V AC230V AC380V AC400V DC24V | AC110V/220V 50Hz/60Hz AC220V AC230V AC380V AC400V DC24V |
| Delay precision | ⩽10% | | ⩽10% | ⩽10% | ⩽10% | ⩽10% |
| Contact number | Delay 2 switching, delay 1 changeover, instantaneous switching | | Delay 1 switching or delay 2 switching | Delay 1 switching | Delay Delta 1 switching | Delay 1 switching |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; DC-13 220V/0.27A;Ith:5A | | | | | |
| Electrical Endurance | $1\times10^5$ | | | | | |
| Mechanical Endurance | $1\times10^6$ | | | | | |
| Ambient temperature | -5℃～+40℃ | | | | | |
| Installation mode | Panel type, Equipment type | | | | | |
| Matched pedestal | Panel type: FM8858, FM8858X,<br>Equipment type, CZS08X, CZS08X-E | | | | | |

Continued

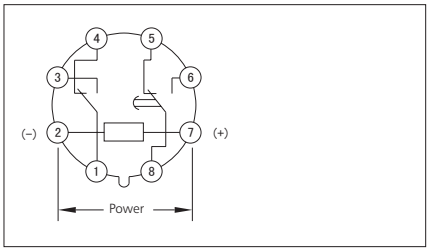
| Type | JSZS-2 | JSZ3-3 |
|---|---|---|
| Operating mode | power on delay | |
| Delay range | 0.1-1s, 0.5-5s, 1-10s<br>3-30s, 6-60s, 0.3-3min,<br>0.5-5min, 1-10min,<br>1.5-15min, 3-30min<br>0.1-1h | |
| Set mode | Potentiometer | |
| Operating voltage | AC50Hz/60Hz 36V, 110V, 127V, 220V, 230V, 380V, 400V DC24V(other voltage could be custom made) | |
| Delay precision | ⩽10% | |
| Contact number | Delay 2 switching | Delay 1 switching, instantaneously operation 1 switching |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; DC-13 220V/0.27A;Ith:5A | |
| Electrical Endurance | $1\times10^5$ | |
| Mechanical Endurance | $1\times10^6$ | |
| Ambient temperature | -5℃～+40℃ | |
| Installation mode | Panel type, Equipment type, Track type | |
| Matched pedestal | Panel type: FM8858, FM8858X;<br>Equipment type: CZS08X | |

## 4. Wiring diagram

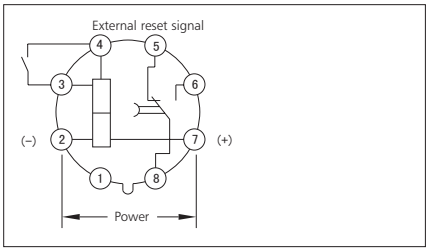
JSZ3A



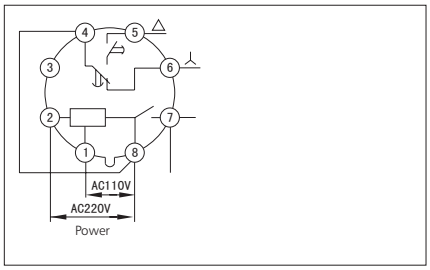

JSZ3C



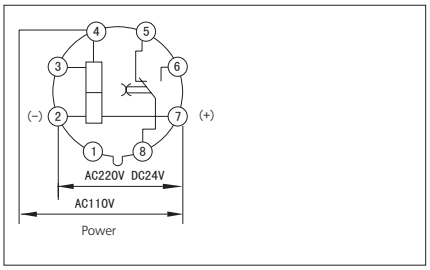

JSZ3F



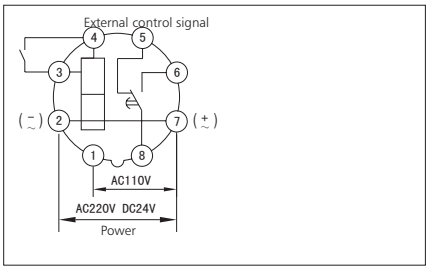

JSZ3Y



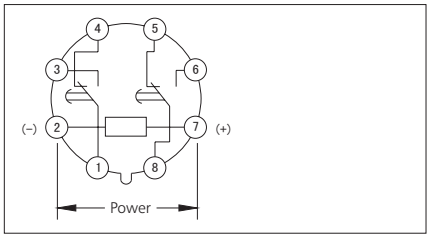

JSZ3R



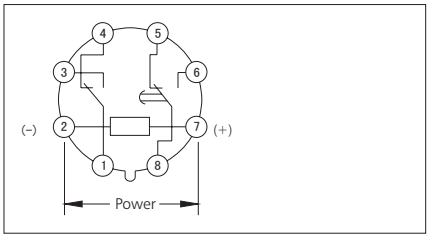

JSZ3K




JSZ3-2

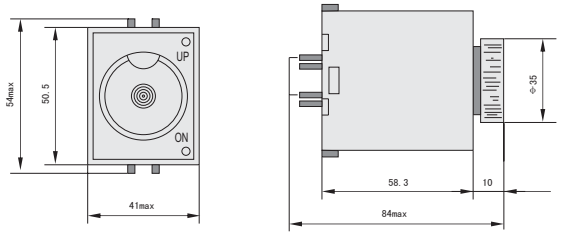



JSZ3-3

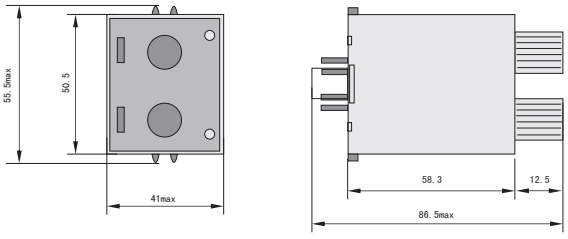



## 5. Overall and mounting dimensions (mm)

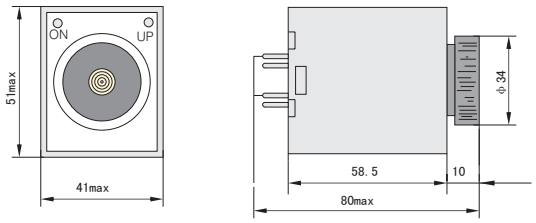
JSZ3A-C, F, K, Y Profile and installation dimension



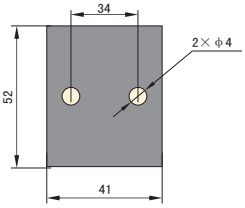

JSZ3R Profile and installation dimension




JSZ3-2, 3, Profile and installation dimension




Opening size




# JSZ4 Time Relay

## 1. Type designation

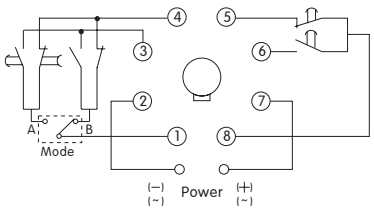
JS Z 4-□ □/□ □

- Rated control supply voltage (V)
- Delay range and code
- Delay type: A: multi-position type
- Mounting type: N: installation type; Y: panel type
- Design sequence No.
- Comprehensive type
- Time relay

## 2. Technical data

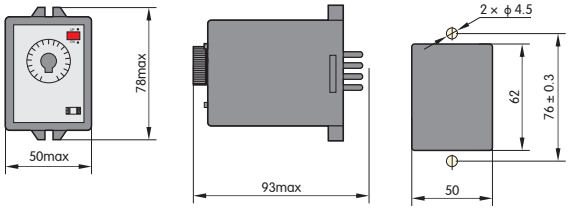
| Model | JSZ4-YA | JSZ4-NA |
|---|---|---|
| Operating mode | On-delay or on-delay with instantaneous acting | |
| Number of contacts | Delay 2 change-over or delay<br>1 change-over, instantaneous<br>1 change-over (optional by switch) | |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A;<br>DC-13 220V/0.27A; Ith:5A | |
| Delay range | A: 1s/10s/1min/10min<br>B: 3s/30s/3min/30min<br>C: 6s/60s/6min/60min<br>D: 1min/10min/1h/10h<br>E: 3min/30min/3h/30h<br>F: 6min/60min/6h/60h | |
| Operational voltage | AC50Hz 36V, 110V, 220V, 380V DC24V<br>(Other voltages available upon request) | |
| Electrical life | $1\times10^5$ | |
| Mechanical life | $1\times10^6$ | |
| Delay accuracy | ≤10% | |
| Ambient temperature | -5℃~+40℃ | |
| Mounting type | Panel type | Installation type |

## 3. Wiring diagram

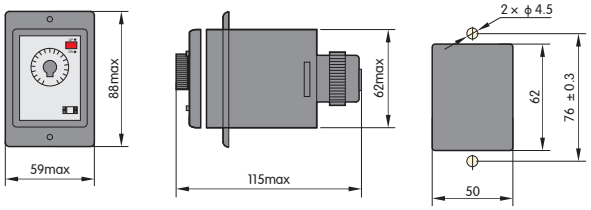



## 4. Overall and mounting dimensions (mm)

JSZ4-NA




JSZ4-YA




# JSZ6 Time Delay Relay

## 1. General

JSZ6 Time Delay Relay is applicable for automatic control system, such as machine tool automatic control, complete equipment automatic control. Etc.

## 2. Type designation

JS Z 6 — □

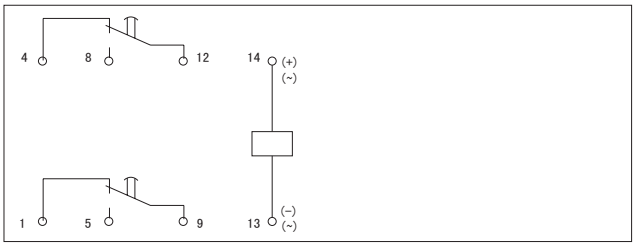
- 2: Delay 2 changeover; 4: Delay 4 changeover
- Design sequence No.
- Integrated type
- Time delay Relay

## 3. Technical data

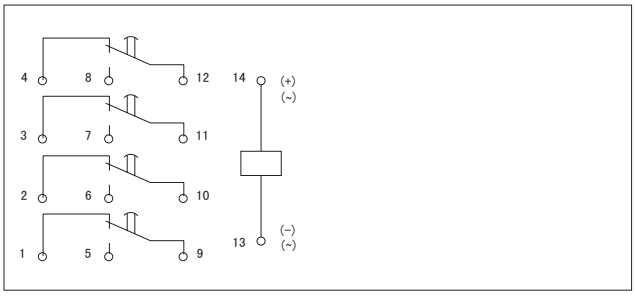
| Type | JSZ6-2 | JSZ6-4 |
|---|---|---|
| Operating mode | power on delay | power on delay |
| Contact number | Delay 2 changeover | Delay 4 changeover |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A,380V/0.47A; DC-13 220V/0.27A; Ith:5A | |
| Delay range | 0.1-1s, 5-5s, 1-10s, 2.5-30s, 5-60s,15-180s, 1-10min, 2.5-30min, 5-60min, | |
| Operating voltage | AC50Hz/60Hz 36V, 110V, 127V, AC220V, DC24V | |
| Electrical life | $1\times10^5$ | |
| Mechanical life | $1\times10^6$ | |
| Set mode | Potentiometer | |
| Repeat precision | ≤10% | |
| Ambient temperature | -5℃～+40℃ | |
| Interchangeability | Can interchange with H3Y series for use | |

## 4. Wiring diagram

JSZ6-2

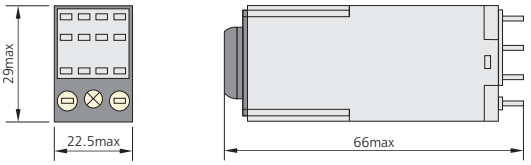



JSZ6-4

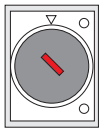



## 5. Overall and mounting dimensions (mm)

JSZ6 Profile and installation dimension




Opening size




# NJJ1 Counting Relay

## 1. General

NJJ1 Counting Relay is applicable for controlling circuit @ A.C. 50Hz/60Hz, 240V rated voltage of control power supply and D.C. 240V rated voltage of control power supply as counting or counting control element.

## 2. Type designation

N JJ 1 — □

- Rated voltage of control power
- Design squence No.
- Counting relay
- Enterprise symbol

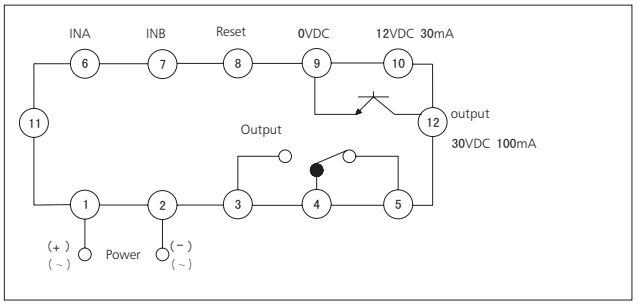
Note: this product is applicable for wide range of operating voltage, for instance, operating voltage within AC/DC100V～240V means it can operate normally within the voltage range of AC/DC 100V to 240V.

## 3. Technical data

| Operating mode | 85%-110% of rated voltage AC50Hz/60Hz AC/DC100V-240V, DC24V |
|---|---|
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Output mode | 1group changeover contact, open-collector output (30VDC 100mA Max) |
| Contact capacity | Ue/Ie:AC-15 220V/0.75A; DC-13 220V/0.27A; Ith:5A |
| Number of counting digits | At CR mode: 4-digit counting relay (4-digit red LED is count value, 4 digit green LED is preset value) |
| | At CT mode: 8 digit reversible summation counter (green LED is low 4-digit, red is high 4-digit) |
| Counting speed | 1 time/s, 30 times/s, 1000times/s are provided for selection |
| Counting mode | Plus, minus, plus minus inverse A, plus minus inverse B, plus minus inverse C |
| Input signal | Contact input, sensor input (NPN type/ PNP type are provided for selection) |
| Magnitude setting | With magnitude setting, range 0.01～9.99 |
| Output mode | N, F, C, R, K, P, Q, A |
| Output time | Settable output time 0.01s～9.99s (when output mode is C, R, K, P, Q, A) |
| Ambient temperature | -5℃～+40℃ |
| Power consumption | ≤3W |
| Installation mode | Panel type |
| External dimension | W58×H48×L197 mm |
| Current failure memory | >10 years |

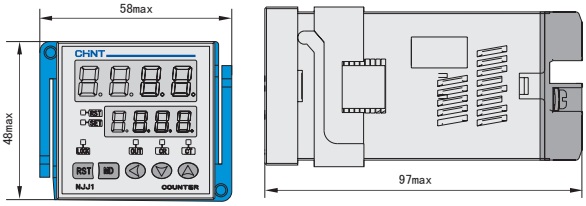
## 4. Wiring diagram

Count wiring diagram

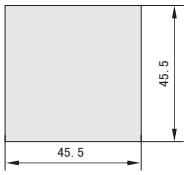



## 5. Overall and mounting dimensions (mm)

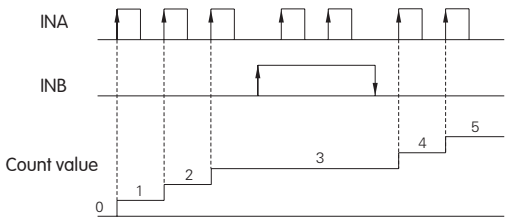
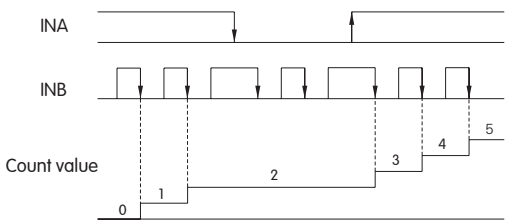
External dimension

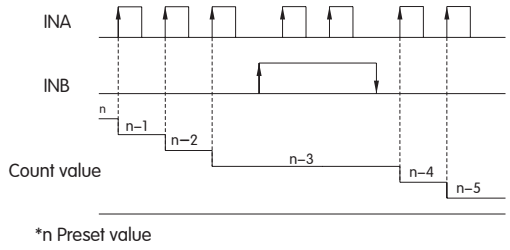
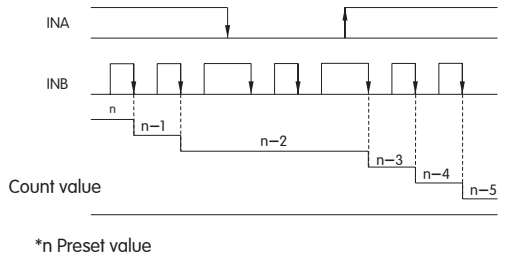
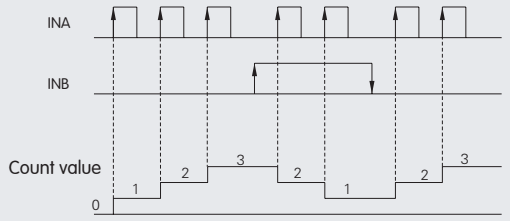
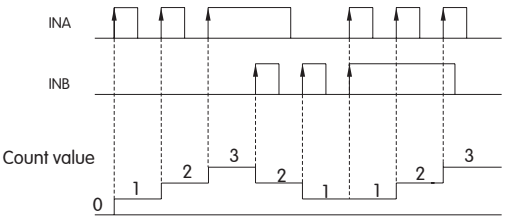
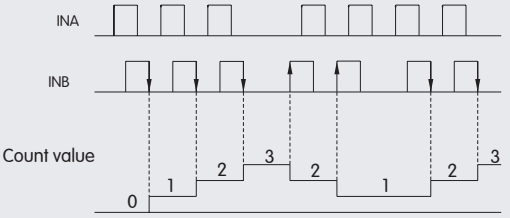



Opening size

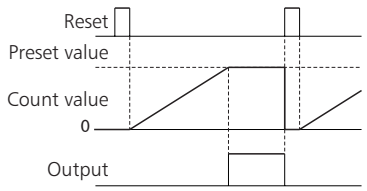
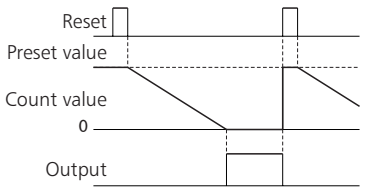
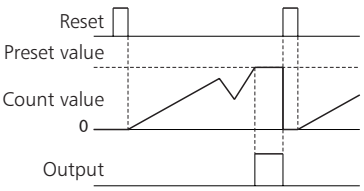
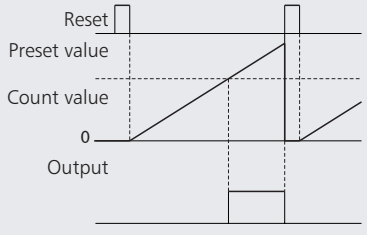
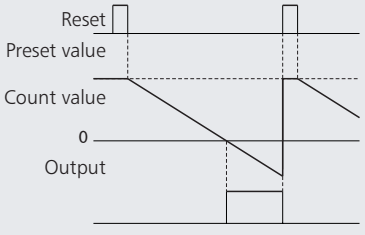
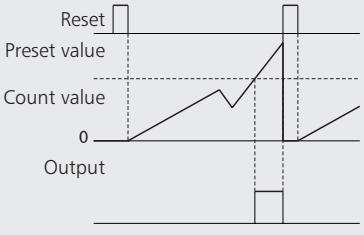


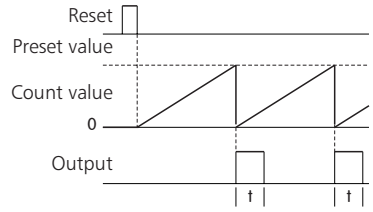
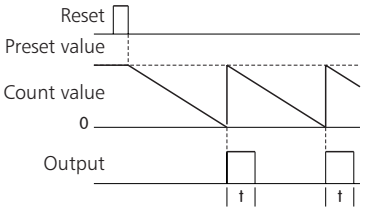
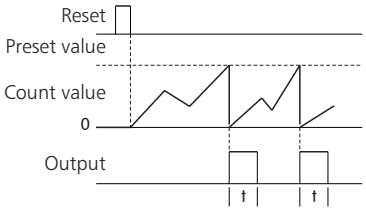
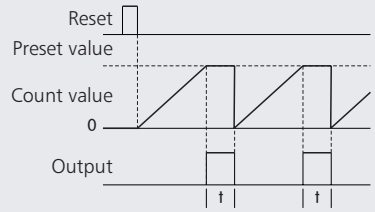
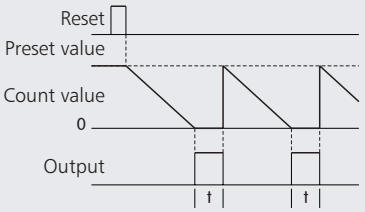
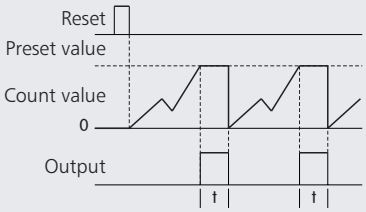
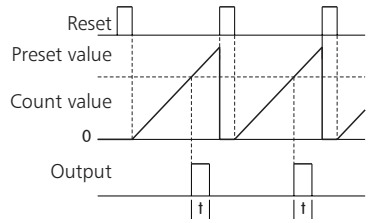
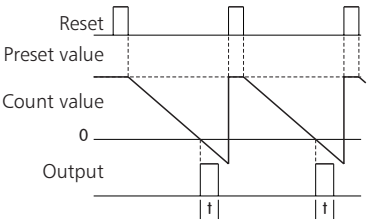
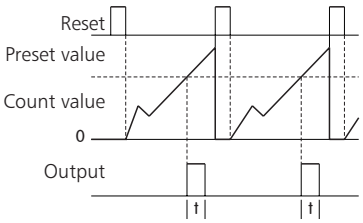
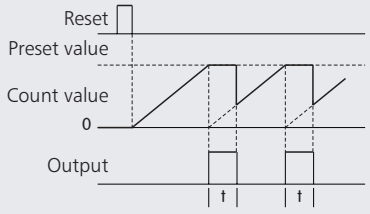
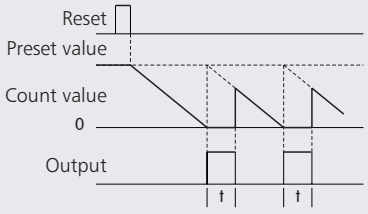
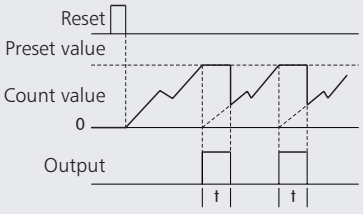
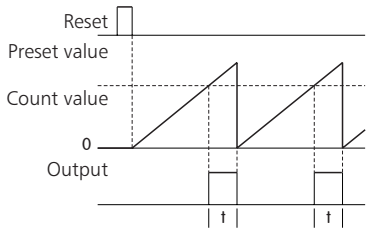
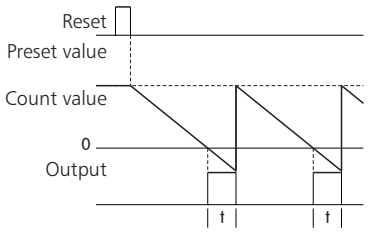
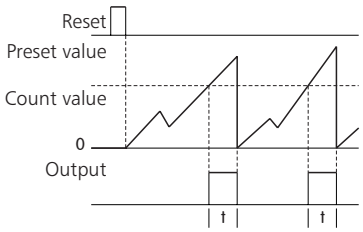
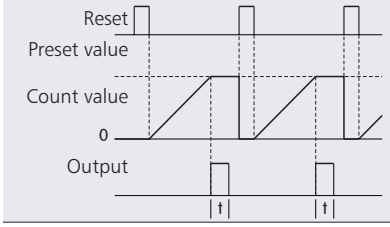
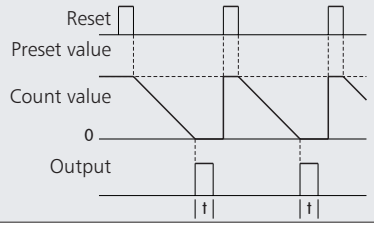
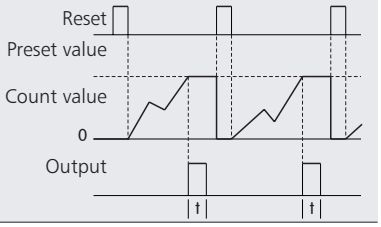

## 6. Sequence diagram of counting mode

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| ⊔ Addition counting mode |  | Count at INA rising edge, stop counting at INB input. |
| |  | Count at INB input falling edge at INA input. |

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| d Subtraction counting mode |  | Count at INA rising edge, stop counting at INB input. |
| |  | Count at INB input falling edge at INA input. |
| Ud-R Reversible counting mode A |  | Reversible counting mode A: Addition counting at INA input, subtraction counting when INB input is active. |
| Ud-b Reversible counting mode B |  | Reversible counting mode B: Addition counting at INA input, subtraction counting at INB input. |
| Ud-C Reversible counting mode C |  | Reversible counting mode C: Automatic recognition of positive and reverse rotations, addition and subtraction counting. |

## 7. Sequence diagram of output mode

| Output mode | U Plus counting mode | d Minus counting mode | Inverse counting mode A, B, C |
|---|---|---|---|
| n (N) |  |  |  |
| F (F) |  |  |  |

| Output mode | Plus counting mode | Minus counting mode | Inverse counting mode A, B, C |
|---|---|---|---|
| C |  |  |  |
| R |  |  |  |
| K |  |  |  |
| P |  |  |  |
| Q |  |  |  |
| A |  |  |  |

Note: t is the output time, which can be set by the user.


# NJJ3 Counting Relay

## 1. General

NJJ3 Counting Relay is applicable for controlling circuit @ A.C. 50Hz/60Hz, 240V rated voltage of control power supply and D.C. 240V rated voltage of control power supply as counting or counting control element.

## 2. Type designation

N JJ 3 / □

- Rated voltage of control power
- Design sequence No.
- Counting relay
- Enterprise symbol

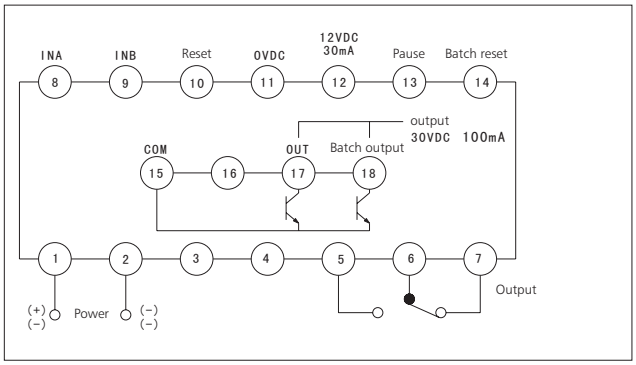
Note: this product is applicable for wide range of operating voltage, for instance, operating voltage within AC/DC100V~240V means it can operate normally within the voltage range of AC/DC 100V to 240V.

## 3. Technical data

| Operating mode | 85%-110% of rated voltage AC50Hz/60Hz AC/DC100V-240V, DC24V |
|---|---|
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Output mode | 1group changeover contact, open-collector output (30VDC 100mA Max), batch process output |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; DC-13 220V/0.27A; Ith:5A |
| Number of counting digits | 6-digit counting relay (6-digit red LED is count value, 6-digit green LED is preset value) |
| Counting speed | 1 time/s, 30 times/s, 1000times/s are provided for selection |
| Counting mode | Plus, minus, plus minus inverse A, plus minus inverse B, plus minus inverse C |
| Batch process | Settable range 0～999999 |
| Input signal | Contact input, sensor input (NPN type/ PNP type are provided for selection) |
| Magnitude setting | With magnitude setting, range 0.001～99.999 |
| Output mode | N, F, C, R, K, P, Q, A |
| Output time | Settable output time 0.01s～9.99s (when output mode is C, R, K, P, Q, A) |
| Ambient temperature | -5℃～+40℃ |
| Power consumption | 3W |
| Installation mode | Panel type |
| External dimension | W88×H72×L97 mm |
| Current failure memory | >10 years |

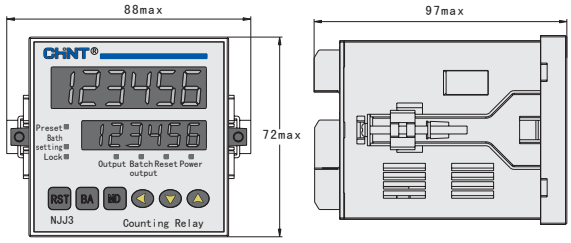
## 4. Wiring diagram

Count wiring diagram

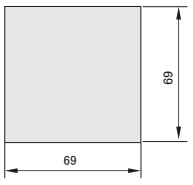



## 5. Overall and mounting dimensions (mm)

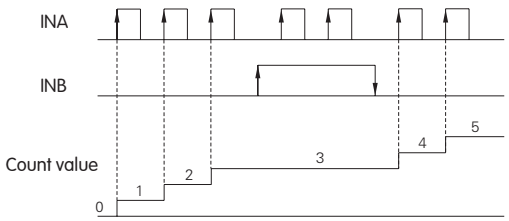
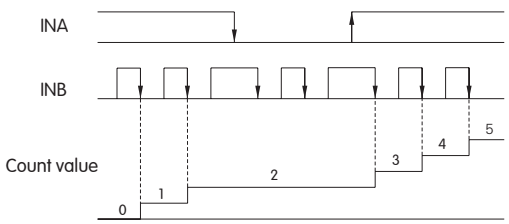
External dimension

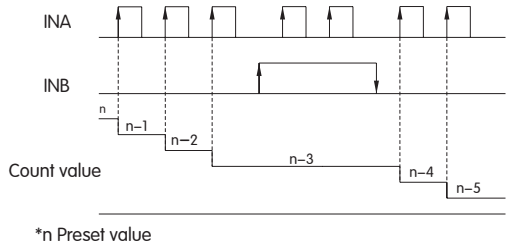
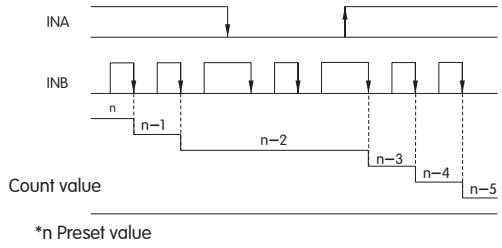
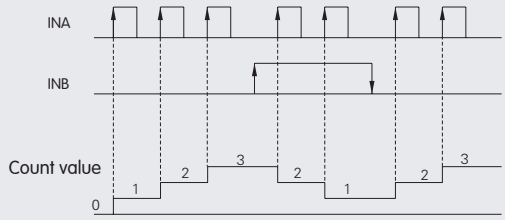
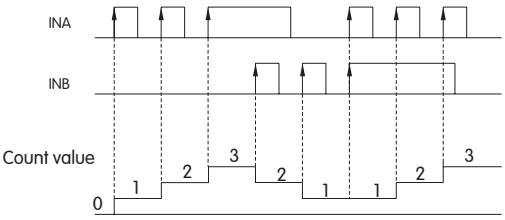
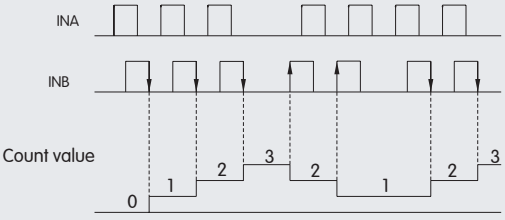



Opening size

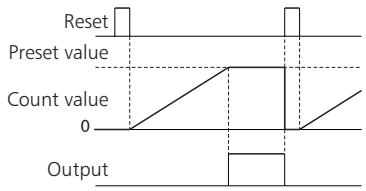
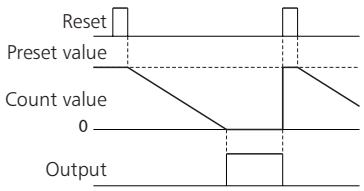
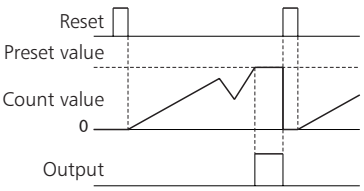
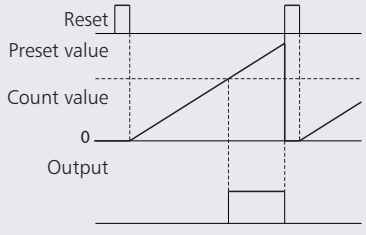
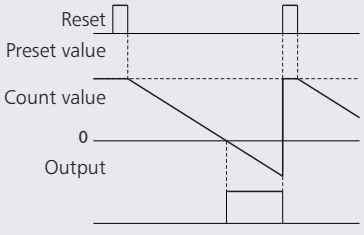
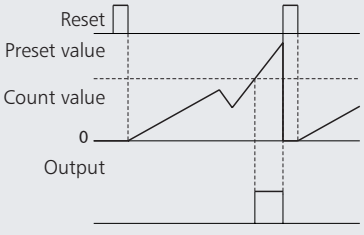


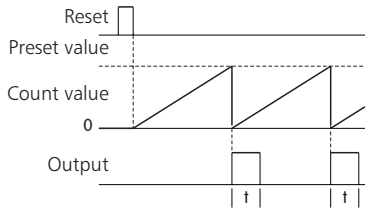
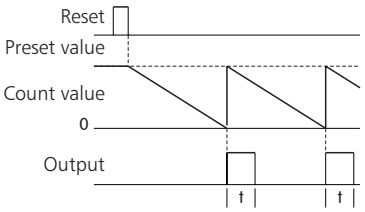
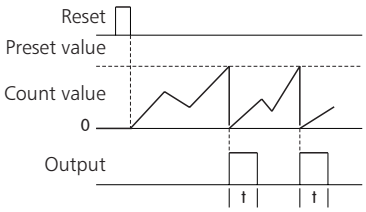
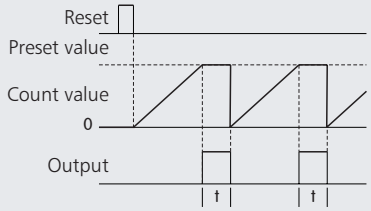
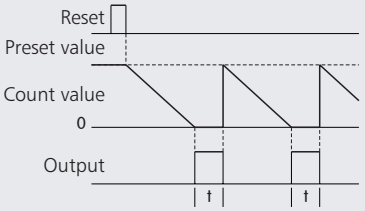
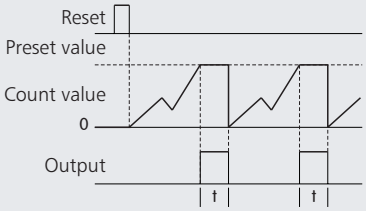
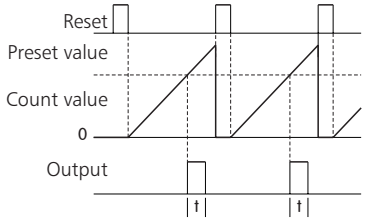
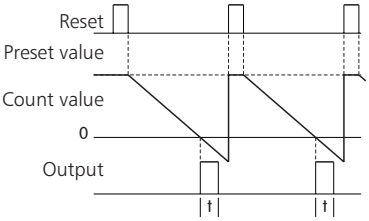
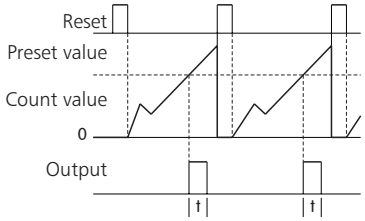
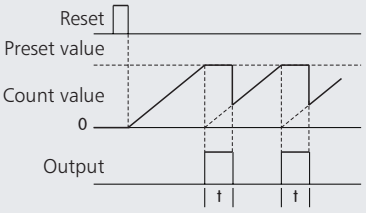
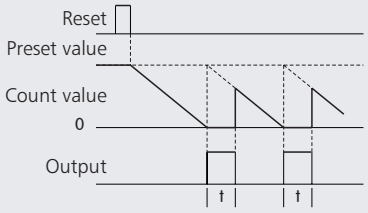
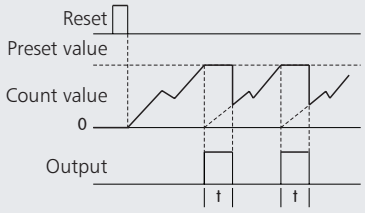
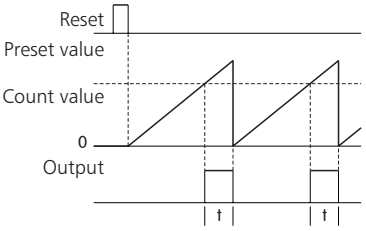
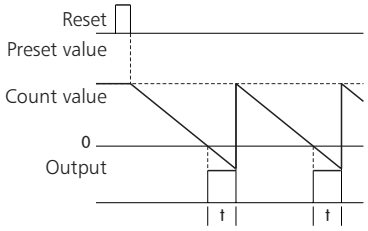
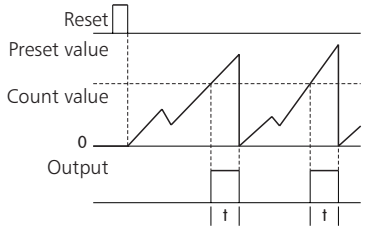
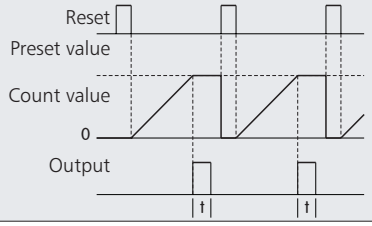
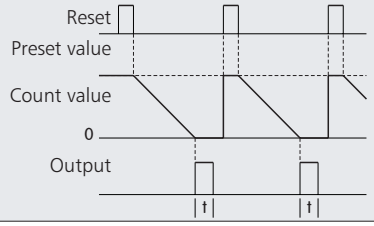
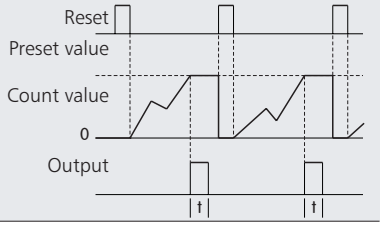

## 6. Sequence diagram of counting mode

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| ⊔ Addition counting mode |  | Count at INA rising edge, stop counting at INB input. |
| |  | Count at INB input falling edge at INA input. |

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| d Subtraction counting mode |  | Count at INA rising edge, stop counting at INB input. |
| |  | Count at INB input falling edge at INA input. |
| Ud-A Reversible counting mode A |  | Reversible counting mode A: Addition counting at INA input, subtraction counting when INB input is active. |
| Ud-b Reversible counting mode B |  | Reversible counting mode B: Addition counting at INA input, subtraction counting at INB input. |
| Ud-C Reversible counting mode C |  | Reversible counting mode C: Automatic recognition of positive and reverse rotations, addition and subtraction counting. |

## 7. Sequence diagram of output mode

| Output mode | U Plus counting mode | d Minus counting mode | Inverse counting mode A, B, C |
|---|---|---|---|
| n (N) |  |  |  |
| F (F) |  |  |  |

| Output mode | Plus counting mode | Minus counting mode | Inverse counting mode A, B, C |
|---|---|---|---|
| C (C) |  |  |  |
| R (R) |  |  |  |
| K (K) |  |  |  |
| P (P) |  |  |  |
| Q (Q) |  |  |  |
| A (A) |  |  |  |



Note: t is the output time, which can be set by the user.


# NJJ5-J Electronic Counter

## 1. General

This product adopts microminiature design and is applicable for counting in various circuits.

## 2. Type designation

NJJ5—J □ □/□

- Rated operational voltage
- Nil: normal type; E: with extended panel type
- L: low speed type 10 times/s
- H: high speed type 1000 times/s
- J: counter L: time accumulator
- Product series model

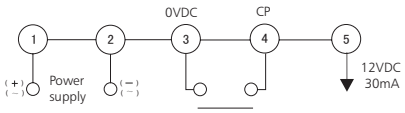
Note: this product is applicable for wide range operating voltage, for instance, operating voltage within AC/DC100V～240V means it can operate normally within the voltage range of AC/DC 100V to 240V.

## 3. Technical data

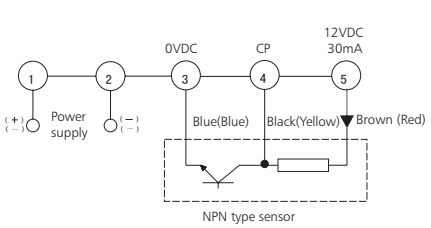
| Operating voltage | 85%-110% of rated voltage AC50Hz/60Hz AC/DC100V-240V, DC24V |
|---|---|
| Counting range | 0～999999 |
| Counting speed | 10 times/s or 1000 times/s |
| Input signal | Contact input, relay input (NPN type) |
| Reset mode | Panel button reset, external terminal reset |
| Reset min pulse width | 20ms |
| Counting error | ±1 time |
| Current failure memory | >10 years |
| Power consumption | About 1.5VA |
| Installation mode | Panel type |
| Ambient temperature | -5℃～+40℃ |

## 4. Wiring diagram

NJJ5-J contact signal input

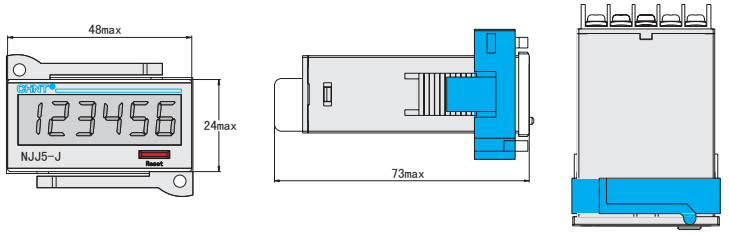



NJJ5-J sensor signal input

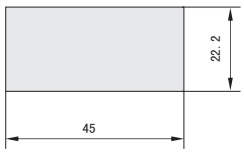


## 5. Overall dimensions

Profile and installation dimension

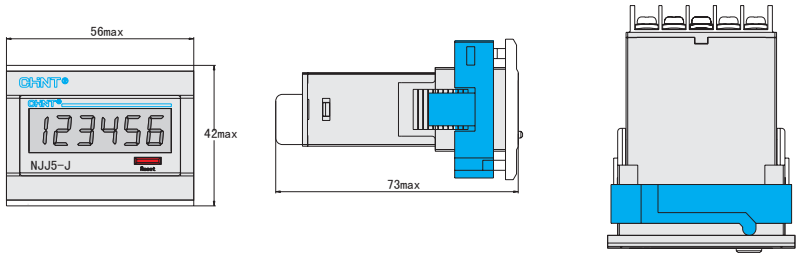



Opening size

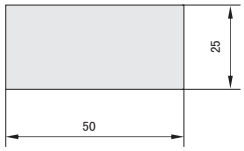



## 6. Extended panel type

Profile and installation dimension of extended panel type

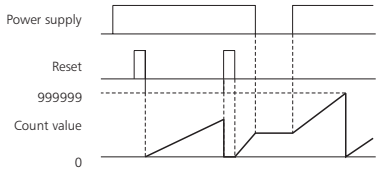



Opening size of extended panel type




## 7. Operating timing-sequence diagram

NJJ5-J operating timing-sequence diagram




# NJJ5-L Electronic Time Accumulator

## 1. General

This product adopts microminiature design and is applicable for accumulating time in various circuits.

## 2. Type designation

NJJ5－L □ □/□

- Rated operational voltage
- Nil: normal type; E: with extended panel type
- 1: 99999.9h
  2:99h59min59s
  3:9999h59min
  4:9999day23h
- J: counter L: time accumulator
- Product series model

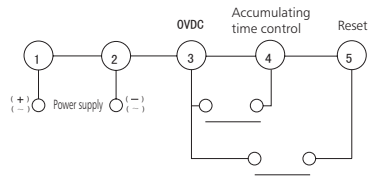
Note: This product is applicable for wide range operating voltage, for instance, operating voltage within AC/DC100V～240V means it can operate normally within the voltage range of AC/DC 100V to 240V.

## 3. Technical data

| Operating voltage | 85%-110% of rated voltage AC50Hz/60Hz AC/DC100V-240V, DC24V |
|---|---|
| Accumulating time range | 99999.9h, 99h59min59s, 9999h59min, 9999day23h |
| Resetting mode | Panel button resetting, external terminal resetting |
| Resetting min pulse width | 20ms |
| Accumulative error | ≤0.02% |
| Current failure memory | ＞ 10 years |
| Power consumption | 1.5VA approx. |
| Installation mode | Panel type |
| Ambient temperature | -5℃ ～+40℃ |

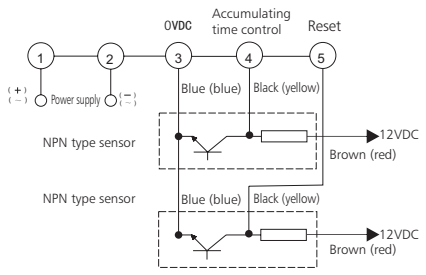
## 4. Wiring diagram

NJJ5-L contact signal input



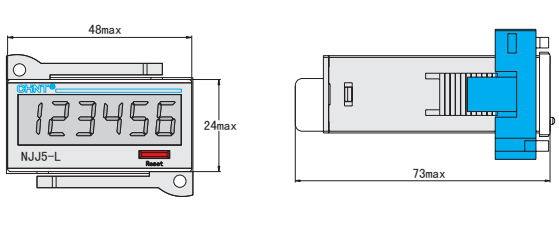

Note: If is required to accumulate time as making, please short connect a and 4.

NJJ5-L sensor signal input

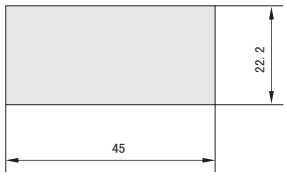


## 5. Overall and mounting dimensions (mm)

Profile and installation dimension

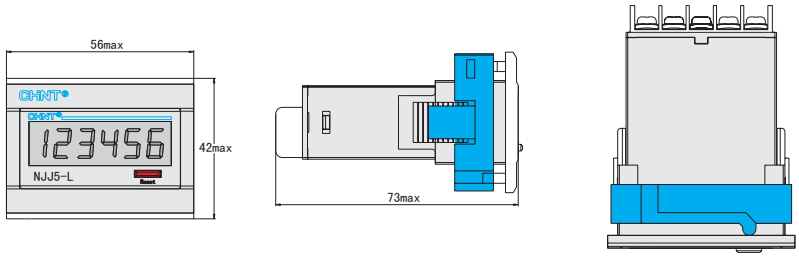



Opening size

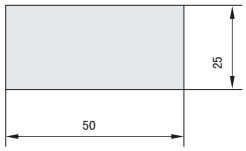



## 6. Extended panel type

Profile and installation dimension of extended panel type

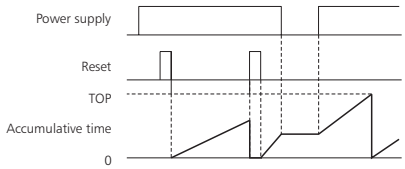



Opening size of extended panel type




## 7. Operating timing-sequence diagram

NJJ5-L operating timing-sequence diagram



# NJJ6 Counting Relay

## 1. General

NJJ6 counting relay is used to provide counting and counting control in control circuits with an AC frequency of 50Hz and a rated control voltage of up to 240V and control circuits with a DC rated control supply voltage of up to 240V.

## 2. Type designation

N JJ 6 /□

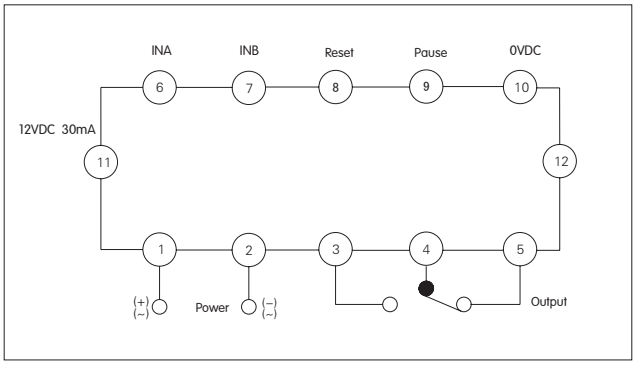
- Rated control supply voltage
- Design sequence No.
- Counting relay
- Company feature code

Note: Some models of this product apply to a wide range of operational voltage. For example, an operational voltage of AC/DC100V～240V means that it can operate normally within the voltage range of AC or DC 100V to 240V.

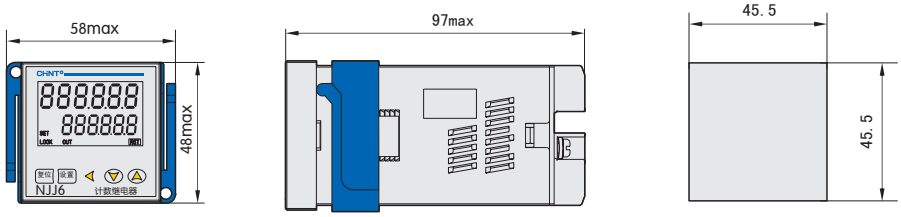
## 3. Technical data

| | |
|---|---|
| Operational voltage | 85%-110% of rated voltage AC50Hz AC/DC100V-240V, DC24V |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Output mode | 1 group of change-over contacts |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; DC-13 220V/0.27A; Ith:0.5A |
| Counting digits | 6-digit counting relay (the upper 6-digit LCD is the count value, the lower 6-digit LCD is the preset value) |
| Counting rate | 1 time/second, 30 times/second, 1000 times/second (can be set) |
| Counting mode | Addition, subtraction, reversible A, reversible B, reversible C |
| Input signal | Contact input, sensor input (NPN type/PNP type can be set) |
| Value setting | Can be set within the range 0.001～99.999 |
| Output mode | N, F, C, R, K, P, Q, A |
| Output time | The output time can be set within 0.01s～9.99s (under output mode C, R, K, P ,Q or A) |
| Ambient temperature | -5℃～+40℃ |
| Power consumption | 3VA |
| Mounting type | Panel type |
| Overall dimensions | W58×H48×L97mm |
| Opening size | W45.5×H45.5mm |
| Power-off memory | More than 10 years (can be set) |

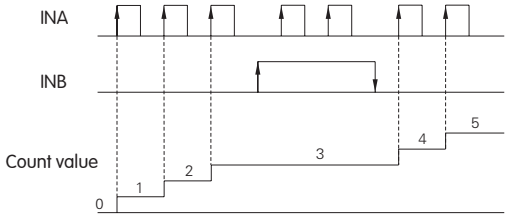
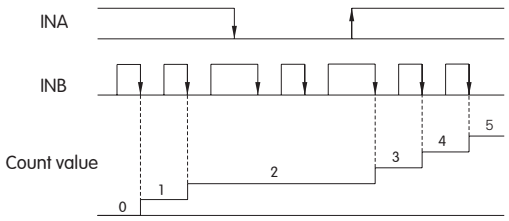
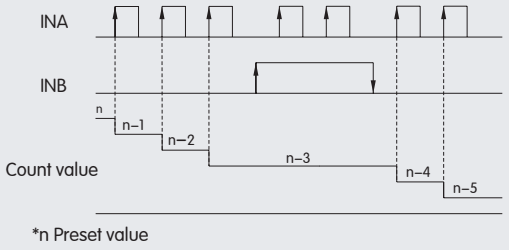
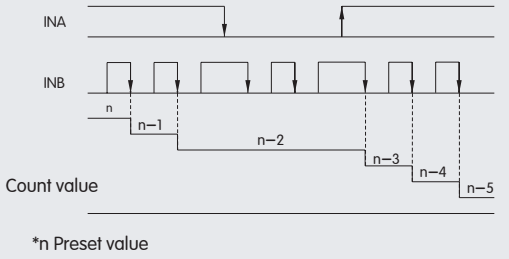
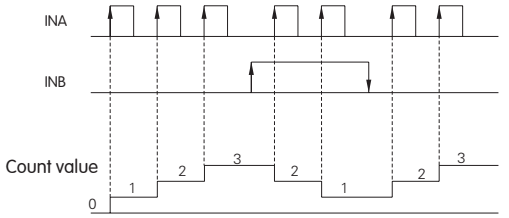
## 4. Wiring diagram

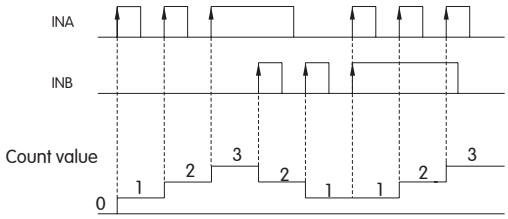
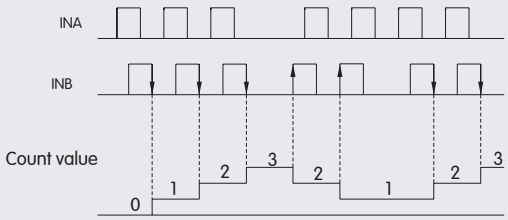


## 5. Overall and mounting dimensions (mm)

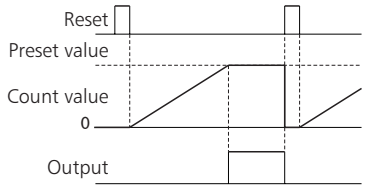
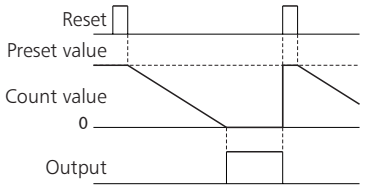
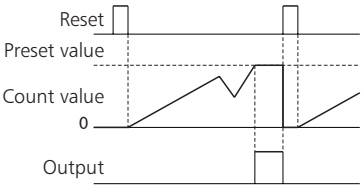
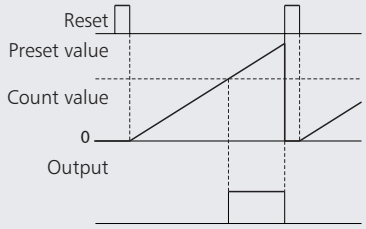
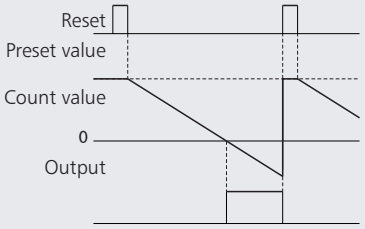
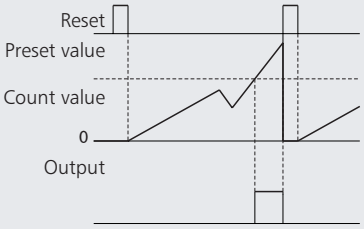
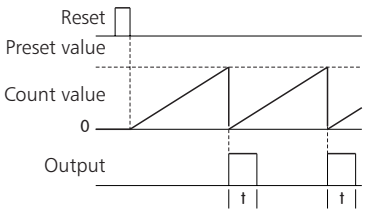
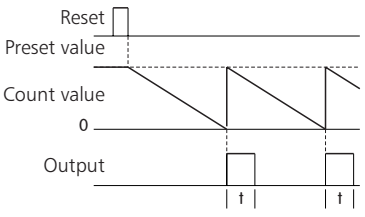
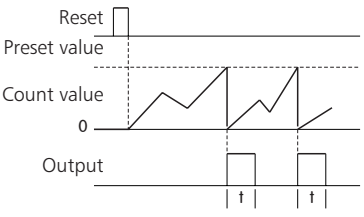
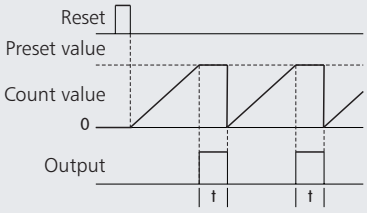
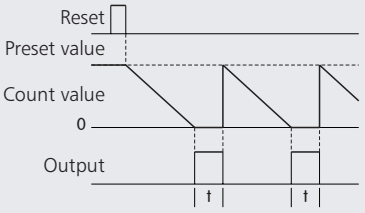
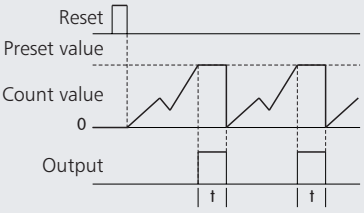


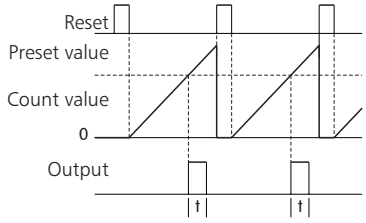
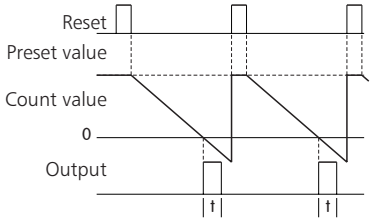
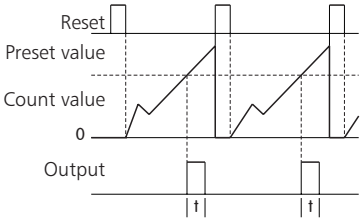
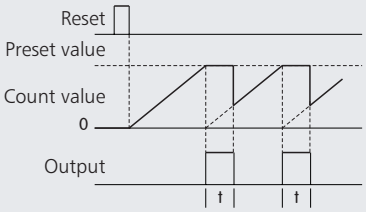
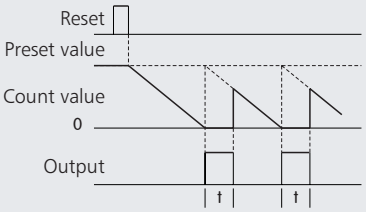
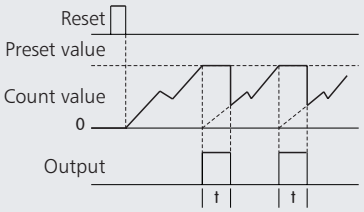
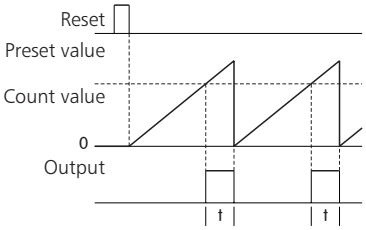
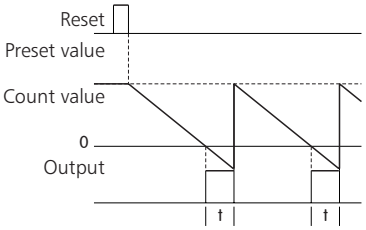
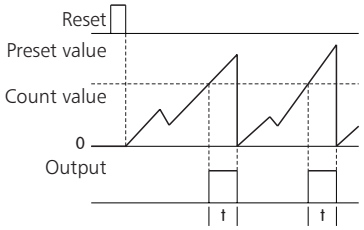
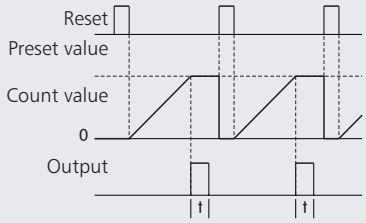
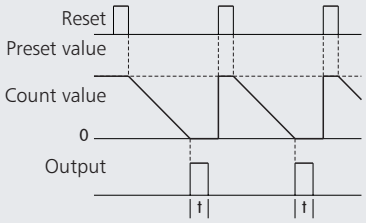
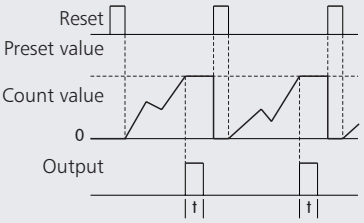

## 6. Sequence diagram of counting mode

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| U Addition counting mode |  | Count at INA rising edge, stop counting at INB input. |
| |  | Count at INB input falling edge at INA input. |
| d Subtraction counting mode |  | Count at INA rising edge, stop counting at INB input. |
| |  | Count at INB input falling edge at INA input. |
| Ud-R Reversible counting mode A |  | Reversible counting mode A: Addition counting at INA input, subtraction counting when INB input is active. |

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| Ud-b Reversible counting mode B |  | Reversible counting mode B: Addition counting at INA input, subtraction counting at INB input. |
| Ud-C Reversible counting mode C |  | Reversible counting mode C: Automatic recognition of positive and reverse rotations, addition and subtraction counting. |

## 7. Sequence diagram of output mode

| Output mode | U Plus counting mode | d Minus counting mode | Inverse counting mode A, B, C |
|---|---|---|---|
| n (N) |  |  |  |
| F (F) |  |  |  |
| C (C) |  |  |  |
| r (R) |  |  |  |

| Output mode | U Plus counting mode | d Minus counting mode | Inverse counting mode A, B, C |
|---|---|---|---|
| K (K) |  |  |  |
| P (P) |  |  |  |
| Q (Q) |  |  |  |
| A (A) |  |  |  |



Note: t is the output time, which can be set by the user.

# JDM15G Counting Relay

## 1. General

JDM15G counting relay is used as a counting or counting control element in control circuits with an AC frequency of 50Hz and a rated control supply voltage of up to 240V and control circuits with a DC rated control supply voltage of up to 240V.

## 2. Type designation

JDM 15 G / □

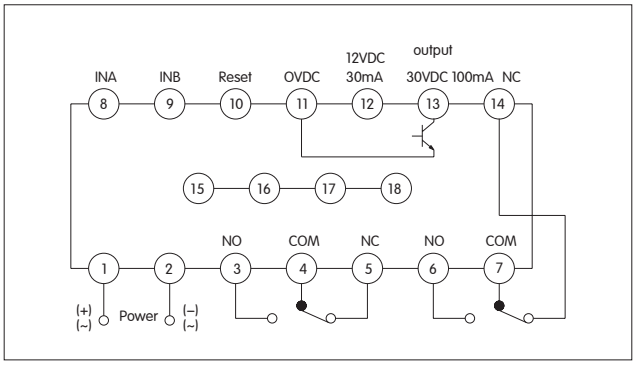
- Rated control supply voltage
- Derivative code
- Design sequence No.
- Counting relay

Note: Some models of this product apply to a wide range of operational voltage. For example, an operational voltage of AC/DC100V~!240V means that it can operate normally within the voltage range of AC or DC 100V to 240V.

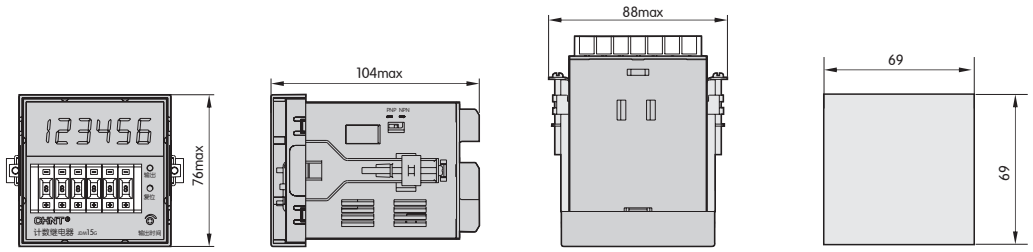
## 3. Technical data

| Operational voltage | 85%-110% of rated voltage AC50Hz AC/DC100V-240V |
|---|---|
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Output mode | 2 groups of change-over contacts, open collector output (30VDC 100mA max) |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; DC-13 220V/0.27A; Ith:0.5A |
| Counting digits | 6-digit counting relay |
| Counting rate | 30 times/second, 1000 times/second, can be set by the user |
| Counting mode | Addition, addition×10, addition×100, subtraction, reversible A, reversible B, reversible C |
| Input signal | Contact input, sensor input (NPN type/PNP type can be set) |
| Output mode | N, F, C, R |
| Output time | The output time can be set within 0.01s~9.99s (under output mode C or R) |
| Ambient temperature | -5℃~+40℃ |
| Power consumption | ≤3VA |
| Mounting type | Panel type |
| Overall dimensions | W88×H76×L104mm |
| Opening size | W69×H69mm |
| Power-off memory | More than 10 years (can be set) |

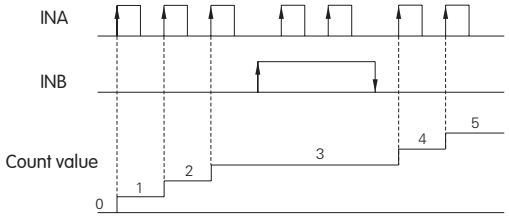
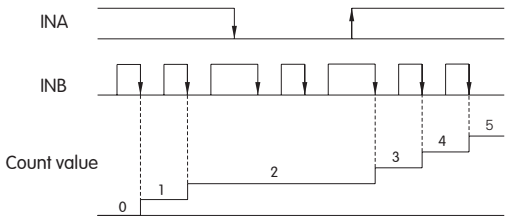
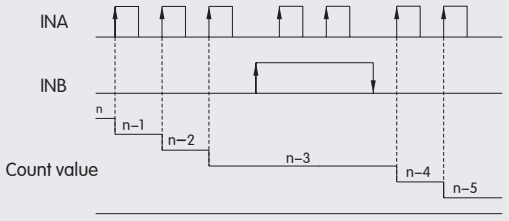
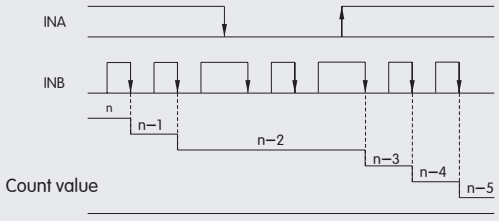
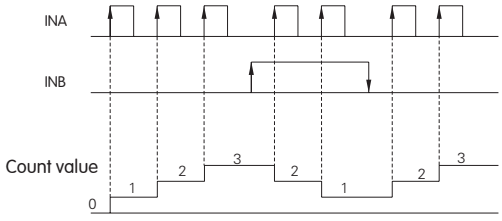
## 4. Wiring diagram

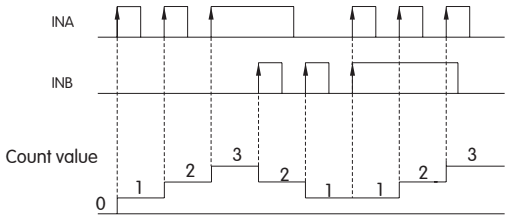
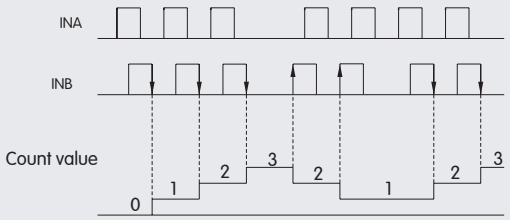


## 5. Overall and mounting dimensions (mm)

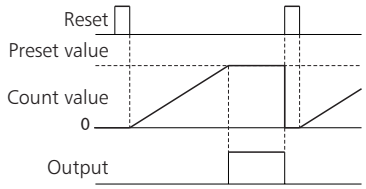
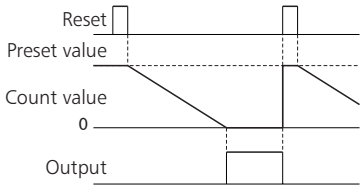
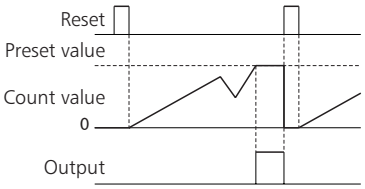
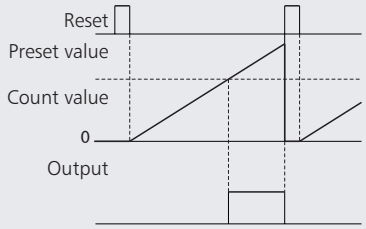
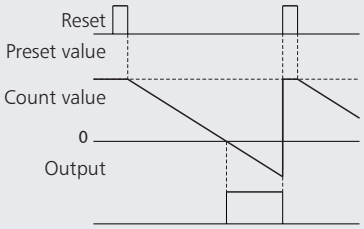
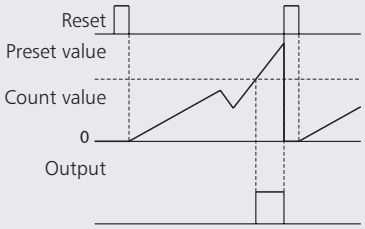
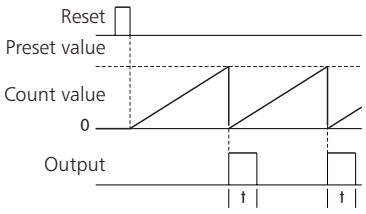
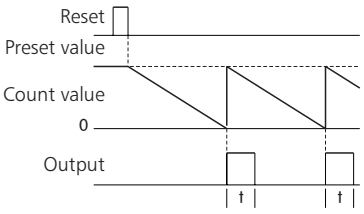
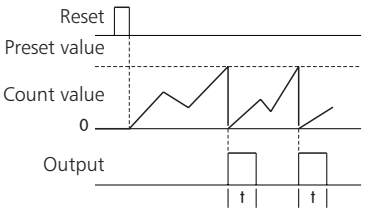
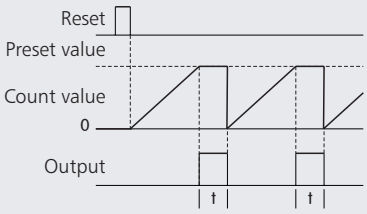
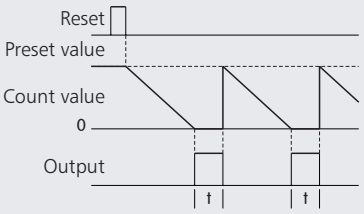
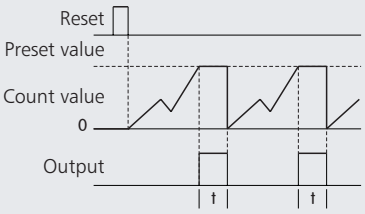



## 6. Sequence diagram of counting mode

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| U Addition counting mode |  | Count at INA rising edge, stop counting at INB input. |
| |  | Count at INB input falling edge at INA input. |
| d Subtraction counting mode |  <br>*n Preset value | Count at INA rising edge, stop counting at INB input. |
| |  <br>*n Preset value | Count at INB input falling edge at INA input. |
| Ud-R Reversible counting mode A |  | Reversible counting mode A: Addition counting at INA input, subtraction counting when INB input is active. |

| Counting mode | Timing-sequence diagram | Remark |
|---|---|---|
| Ud-b Reversible counting mode B |  | Reversible counting mode B: Addition counting at INA input, subtraction counting at INB input. |
| Ud-C Reversible counting mode C |  | Reversible counting mode C: Automatic recognition of positive and reverse rotations, addition and subtraction counting. |

## 7. Sequence diagram of output mode

| Output mode | U Plus counting mode | d Minus counting mode | Inverse counting mode A, B, C |
|---|---|---|---|
| n (N) |  |  |  |
| F (F) |  |  |  |
| C (C) |  |  |  |
| r (R) |  |  |  |

Note: t is the output time, which can be set by the user.


# JDM1-48 Counting Relay

## 1. General

JDM1 series counting relay is used as a counting or counting control element in control circuits with an AC frequency of 50Hz and a rated control supply voltage of up to 380V and control circuits with a DC rated control supply voltage of up to 240V.

## 2. Type designation

JDM 1 - 48 □ □ □ / □

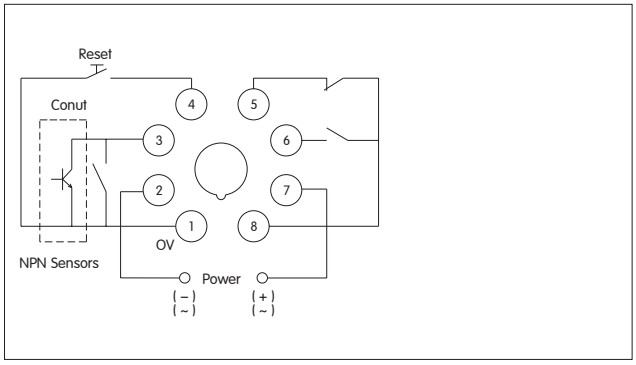
- Rated control supply voltage (AC/DC24V~48V, AC/DC100V~240V, AC220V, AC380V)
- Blank: without power-off memory, M: with power-off memory
- Number of terminals: 8: 8 pins, 11: 11 pins (with 12V output for the sensor)
- Counting rate: L: low speed type, 30 times/second H: high speed type, 200 times/second
- Feature code: 6, 9, 14, 48
- Design sequence No.
- Counting relay

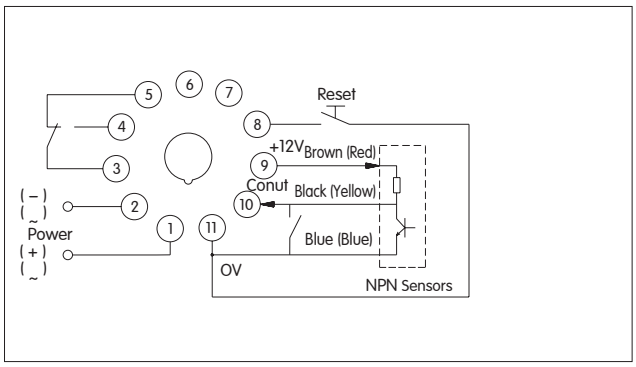
Note: Some models of this product apply to a wide range of operational voltage. For example, an operational voltage of AC/DC24V~48V means that it can operate normally within the voltage range of AC or DC 24V to 48V.

## 3. Technical data

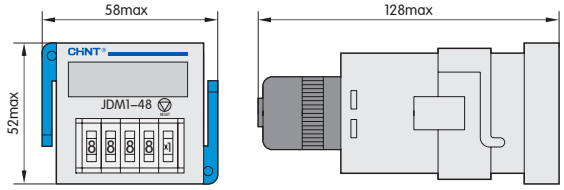
| Operational voltage | 85%-110% of rated voltage AC50Hz AC/DC100V-240V |
|---|---|
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Output mode | 1 group of change-over contacts |
| Contact capacity | Ue/Ie: AC-15 220V/0.75A, 380V/0.47A; DC-13 220V/0.27A; Ith:3A |
| Counting digits | 4-digit counting relay |
| Counting rate | 30 times/second or 200 times/second |
| Counting mode | Addition, addition ×10, addition ×100 (subtraction counting available upon request) |
| Input signal | Contact input, NPN type sensor input (PNP type available upon request) |
| Output mode | N |
| Ambient temperature | -5℃~+40℃ |
| Power consumption | ≤3VA |
| Mounting type | Panel type (with socket for rail mounting) |
| Overall dimensions | W58×H52×L128mm |
| Opening size | W45.5×H45.5mm |
| Power-off memory | More than 10 years (power-off memory type) |

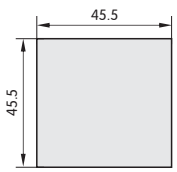
## 4. Wiring diagram



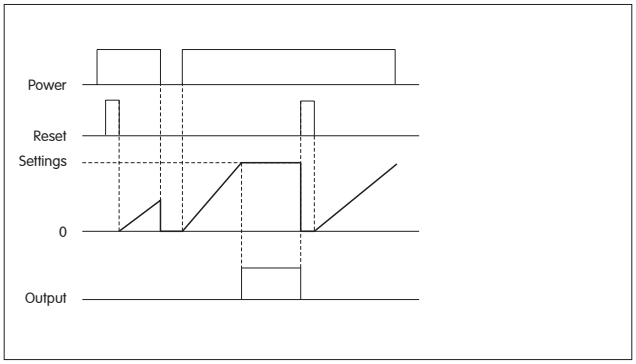

## 5. Overall and mounting dimensions (mm)



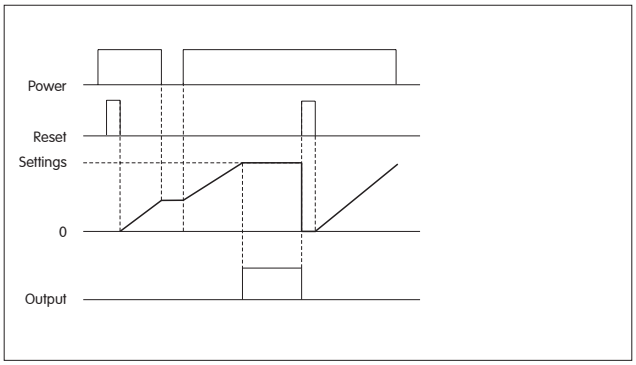




## 6. Sequence diagram of counting mode

JDM1-48 Timing Chart (No blackout memory)




JDM1-48 Timing Chart (With power and memory)




# JDM3 Microminiature Electronic Counter

## 1. General

JDM3 microminiature electronic counter has built-in lithium battery and small overall dimensions and is used to provide counting in various types of circuits.

## 2. Type designation

JDM 3 - □ □ □

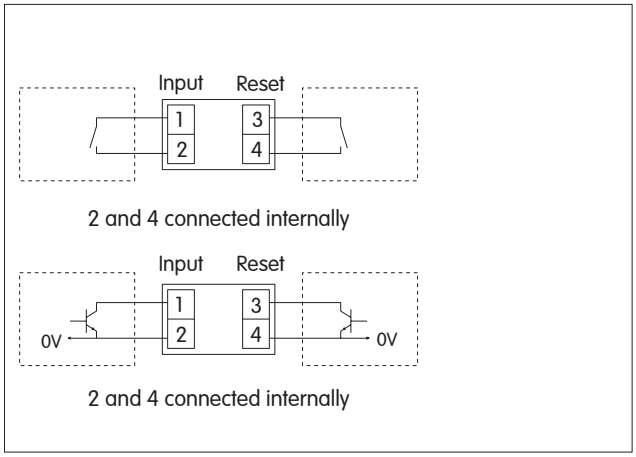
- Counter
- Design sequence No.
- Counting digits: 6: 6-digit counting; 8: 8-digit counting.
- Blank: without voltage input; V: DC voltage input; A: AC voltage input.
- L：low speed counting, 10 times/second; H: high speed counting, 200 times/second.

## 3. Technical data

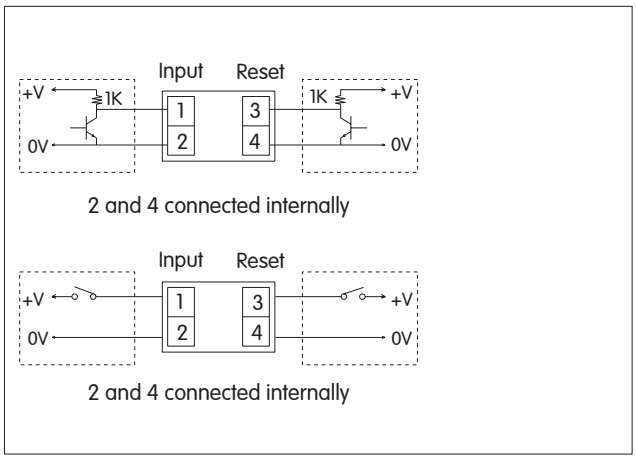
| Power supply | Internal power supply |
|---|---|
| Battery life | Approximately 6 years (25℃) |
| Display mode | LCD display, zero elimination type (zero display type available upon request) |
| Output mode | Without output |
| Counting digits | 6-digit counter or 8-digit counter |
| Counting rate | 10 times/second or 200 times/second |
| Counting mode | Addition counting |
| Without voltage input | Maximum contact on resistance: ≤10kΩ (counting ON) Minimum contact off resistance: ≥500kΩ (counting OFF) Maximum input residual voltage: 0.5V |
| DC voltage input | L：DC0V-2V H：4V-30V (H active) (input impedance: ≥4.7kΩ) |
| AC voltage input | AC/DC 24V～240V |
| Reset mode | Panel push-button reset (6-digit), external terminal reset (6-digit, 8-digit) |
| Minimum reset pulse width | ≥0.2s |
| Counting error | ≤±1 time |
| Ambient temperature | -5℃～+40℃ |
| Mounting type | Panel type |
| Overall dimensions | W48×H24×L52.9mm |
| Opening size | W45×H22.5mm |

## 4. Wiring diagram

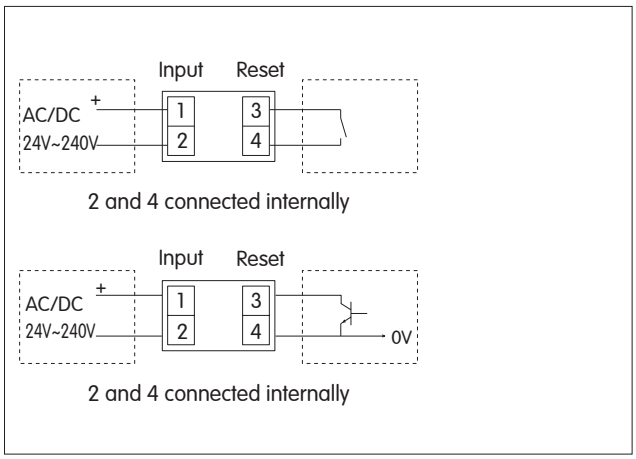
JDM3 (without voltage input)



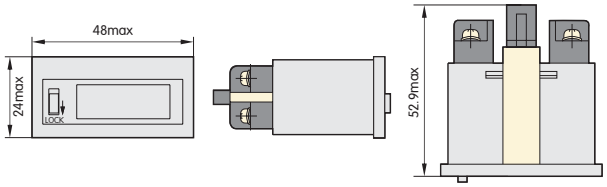

JDM3 (DC voltage input)

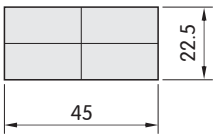



JDM3 (AC voltage input)




## 5. Overall and mounting dimensions (mm)




# SC3L Microminiature Electronic Time Accumulator

## 1. General

SC3L microminiature electronic time accumulator has built-in lithium battery and small overall dimensions and is used to provide time accumulation in various types of circuits.

## 2. Type designation

S C 3 L - □ □

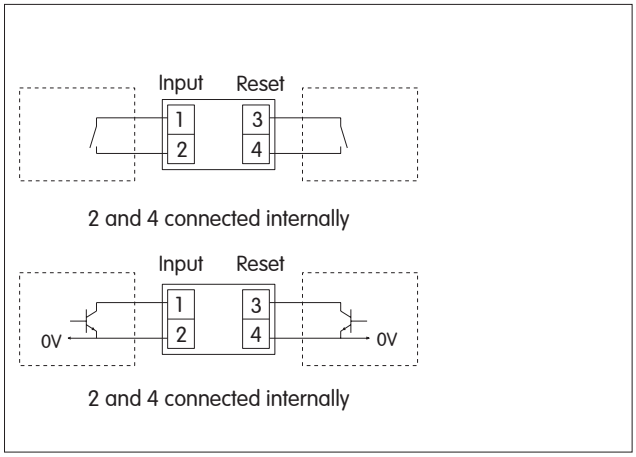
- Input signal: Blank: without voltage input; V: DC voltage input; A: AC voltage input
- Time accumulation range : 1: 99999.9h; 2: 99h59min59s; 3: 9999h59min; 4: 9999day23h; 5: 9999h59min59s; 6: 999999h59min59s;
- Time accumulator
- Design sequence No.
- LCD display
- Electronic type

## 3. Technical data

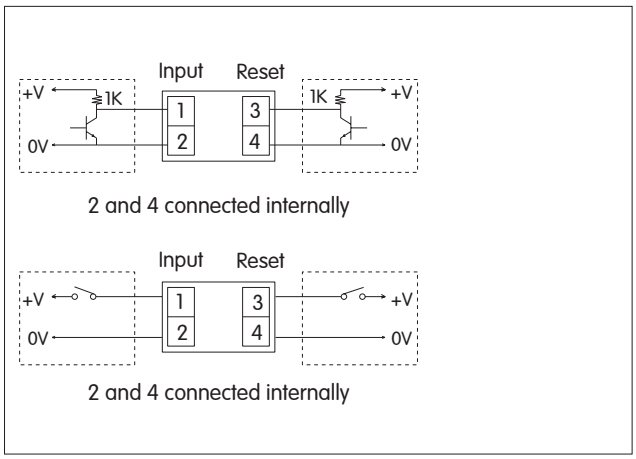
| Power supply | Internal power supply |
|---|---|
| Battery life | Approximately 6 years (25℃) |
| Display mode | LCD display, zero elimination type (zero display type available upon request) |
| Output mode | Without output |
| Time accumulation range | 1: 99999.9h; 2: 99h59min59s; 3: 9999h59min; 4: 9999day23h; 5: 9999h59min59s; 6: 999999h59min59s; |
| Without voltage input | Maximum contact on resistance: ≤10kΩ (time accumulation ON); minimum contact off resistance: ≥500kΩ (time accumulation OFF) 0.5V Maximum input residual voltage: 0.5V |
| DC voltage input | L：DC0V-2V H：4V-30V (H active) (input impedance : ≥4.7kΩ) |
| AC voltage input | AC/DC 24V~240V |
| Reset mode | Panel push-button reset (6-digit), external terminal reset (6-digit & 8-digit) |
| Minimum reset pulse width | ≥0.2s |
| Time accumulation error | ≤0.01% |
| Ambient temperature | -5℃~+40℃ |
| Mounting type | Panel type |
| Overall dimensions | W48×H24×L52.9mm |
| Opening size | W45×H22.5mm |

## 4. Wiring diagram

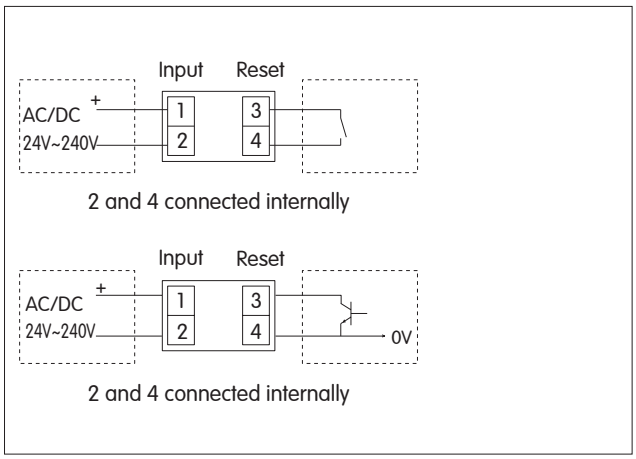
SC3L (without voltage input)



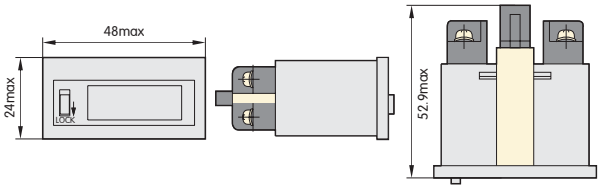

SC3L (DC voltage input)

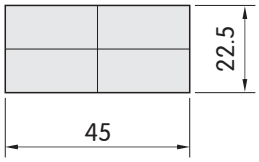



SC3L (AC voltage input)




## 5. Overall dimensions



# NKG3 Time Control Switch

## 1. General

NKG3 time control switch (hereinafter referred to as time control switch) is used in automatic control circuits with a frequency of AC 50Hz, a rated control supply voltage of up to 220V and a rated operational current of 3A to provide timed on-off control for street lamps, advertising lamps and similar equipment.

## 2. Type designation

N K G 3-□ □

- Programmable number (number of switch-on and off)
  Qithout: 8-group (8 switch-on and 8 switch-off)
  4-group (4 switch-on and 4 switch-off)
- Number of control circuit
  Without: control circuit one
  2: control circuit two
- Design sequence No.
- Time switch
- Company code

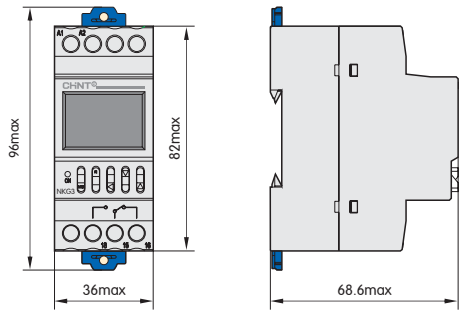
## 3. Technical data

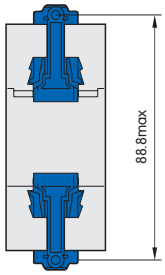
| Rated control supply voltage | AC(50Hz) 220V |
|---|---|
| Conventional heating current | 16A |
| Usage category of auxiliary circuit | AC-15 |
| Rated operational current (Ie) | AC-15 220V 3A |
| Timing error | ≤2 seconds/day |
| Time control range | 1min～168h |
| Mechanical life | ≥30 thousand times |
| Electrical life | ≥10 thousand times |
| Mounting type | Installation type, rail type |
| Immunity | See Table 2 |

| Item | Severity level |
|---|---|
| Electrostatic discharge immunity | ±8×(1±10%)kV (air discharge) |
| Radiated electromagnetic field immunity | Test electric field strength: 10×(1±10%)V/m |
| Fast transient immunity | For power line, 2kV, for I/O signal and control circuits, 1kV, duration: 1min |
| Surge (impact) immunity | Open circuit test voltage: 2×(1±10%)kV |

## 4. Overall and mounting dimensions (mm)

4.1 Profile and installation dimension



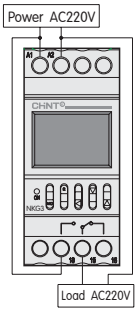




4.2 Connection mode

4.2.1 Direct control mode

If the electrical apparatus under control is single-phase supplied and has an operational current not greater than the rated value of the switch, direct control mode can be used, as shown in Figure 1. For lamp loads with a large starting impulse current, AC contactor expansion control mode should be used.

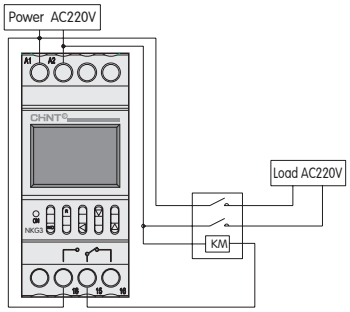
Figure 1 Connection diagram of single-phase direct control




4.2.2 Single expansion mode

If the electrical apparatus under control is single-phase supplied and has an operational current greater than the rated value of the switch, AC contactor expansion control mode should be used, as shown in Figure 2.

Figure 2 Connection diagram of single-phase expansion control (contactor coil: 220V)

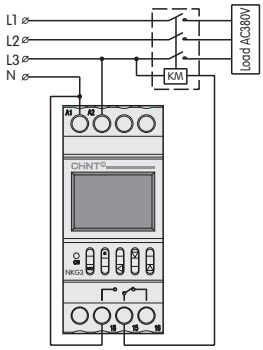



4.2.3 Three-phase operating mode

If the electrical apparatus under control is three-phase supplied, an external AC contactor is required.

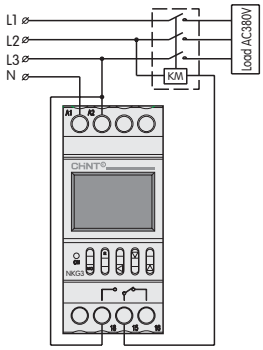
a. If the coil voltage of the control contactor is AC220V 50Hz, the connection mode shown in Figure 4 should be used.

Figure 4 Connection diagram of three-phase control (contactor coil: 220V)




b. If the coil voltage of the control contactor is AC380V 50Hz, the connection mode shown in Figure 5 should be used.

Figure 5 Connection diagram of three-phase control (contactor coil: 380V)



# NKG2 Time Control Switch

## 1. General

NKG2 time control switch (hereinafter referred to as time control switch) is used in automatic control circuits with a frequency of AC 50Hz, a rated control supply voltage of up to 220V and a rated operational current of 0.75A to provide timed on-off control for street lamps, advertising lamps and similar equipment.

## 2. Type designation

N K G 2 □

- Rated control supply voltage
- Design sequence No.
- Time control switch
- Company code

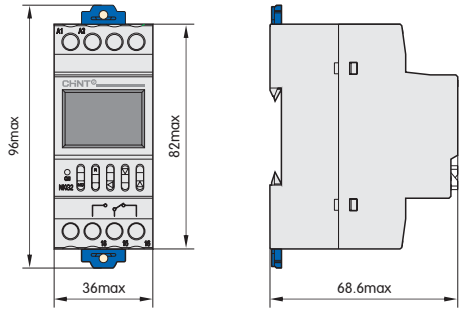
## 3. Technical data

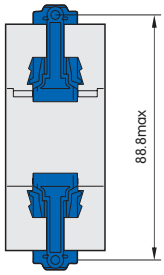
| Rated control supply voltage | AC(50Hz) 220V |
|---|---|
| Conventional heating current | 5A |
| Usage category of auxiliary circuit | AC-15 |
| Rated operational current (Ie) | AC-15 220V 0.75A |
| Timing error | ≤2 seconds/day |
| Time control range | 1s~168h |
| Mechanical life | ≥30 thousand times |
| Electrical life | ≥10 thousand times |
| Mounting type | Installation type, rail type |
| Immunity | See Table 2 |

| Item | Severity level |
|---|---|
| Electrostatic discharge immunity | ±8×(1±10%)kV (air discharge) |
| Radiated electromagnetic field immunity | Test electric field strength: 10×(1±10%)V/m |
| Fast transient immunity | For power line, 2kV, for I/O signal and control circuits, 1kV, duration: 1min |
| Surge (impact) immunity | Open circuit test voltage: 2×(1±10%)kV |

## 4. Overall and mounting dimensions (mm)

4.1 Profile and installation dimension



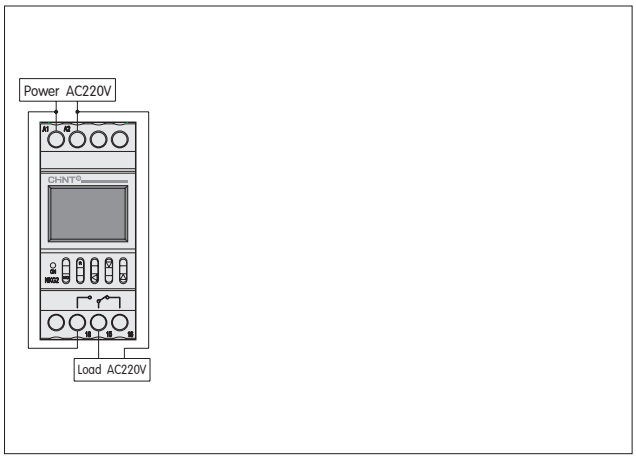




4.2 Connection mode

4.2.1 Direct control mode

If the electrical apparatus under control is single-phase supplied and has an operational current not greater than the rated value of the switch, direct control mode can be used, as shown in Figure 1. For lamp loads with a large starting impulse current, AC contactor expansion control mode should be used.

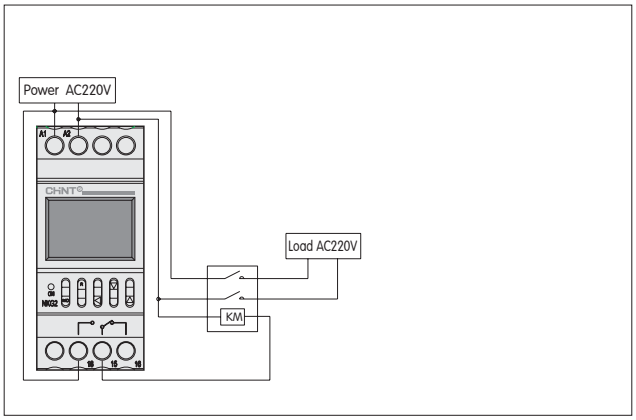
Figure 1 Connection diagram of single-phase direct control




4.2.2 Single expansion mode

If the electrical apparatus under control is single-phase supplied and has an operational current greater than the rated value of the switch, AC contactor expansion control mode should be used, as shown in Figure 2.

Figure 2 Connection diagram of single-phase expansion control (contactor coil: 220V)

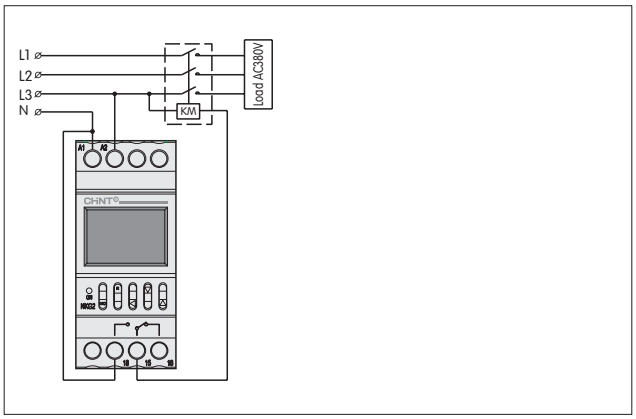



4.2.3 Three-phase operating mode

If the electrical apparatus under control is three-phase supplied, an external AC contactor is required.

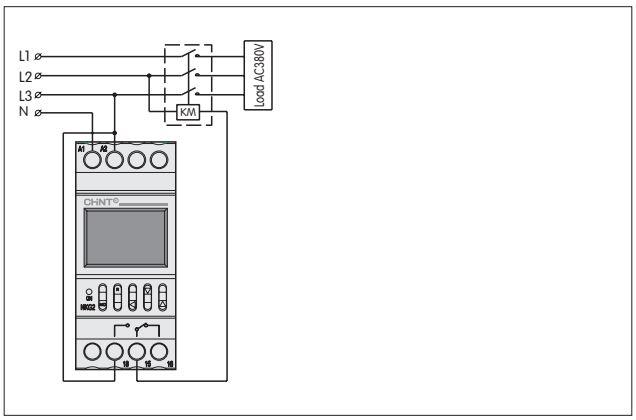
a. If the coil voltage of the control contactor is AC220V 50Hz, the connection mode shown in Figure 4 should be used.

Figure 4 Connection diagram of three-phase control (contactor coil: 220V)




b. If the coil voltage of the control contactor is AC380V 50Hz, the connection mode shown in Figure 5 should be used.

Figure 5 Connection diagram of three-phase control (contactor coil: 380V)




# NKG1 Time Switch

## 1. General

NKG1 Time Switch is control element with time as control unit and can automatically turn on or turn off power supply of various consumer equipments according to preset time by user. The controlled objects are circuit equipments and household appliances such as street lamps, neon lamps, advertising lamps, manufacturing equipments, broadcast & television equipments, etc., which requires turning on and off at definite time.

## 2. Technical data

| Operating mode | Time automatic control |
|---|---|
| Rated operating current | AC-15 3A |
| Rated operating voltage | AC220V 50Hz/60Hz |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Times of ON/OFF | 16 opens & 16 closes |
| Battery | AA size battery (replaceable) |
| Timing error | ≤2s/day |
| Ambient temperature | -25℃~+40℃ |
| Installation mode | Guide rail type, wall-mounted type, unit style |
| External dimension | 117.57×72.43×45.32 |

## 3. Wiring diagram

3.1 Wiring for direct control mode: direct control mode can be used for electrical apparatus which is single-phase power supply and its power consumption doesn't exceed rated value of this switch. See Figure 1 for wiring method;
3.2 Wiring for single-phase dilatancy mode: it is required a AC contactor with larger capacity than electrical apparatus power consumption for dilatancy when the controlled electrical apparatus is single-phase power supply, whereas its power consumption exceeds rated value of this switch. See Figure 2 for wiring method;
3.1.3 Wiring for three-phase operation mode: if the controlled electrical apparatus is three-phase power supply, it is required to externally connect three-phase AC contactor.
a. See Figure 3 for wiring, control contactor @ AC220V coil voltage, 50Hz;
b. See Figure 4 for wiring, control contactor @ AC380V coil voltage, 50Hz

Figure 1

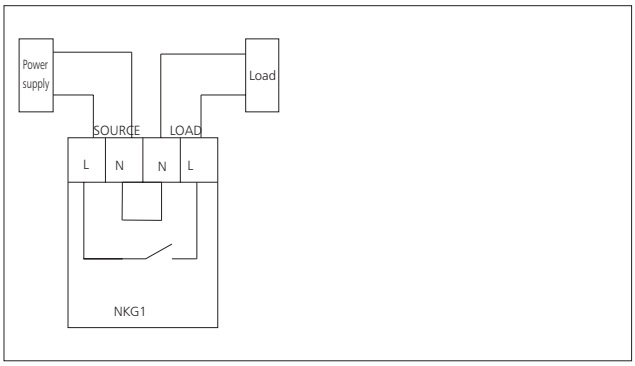



Figure 2

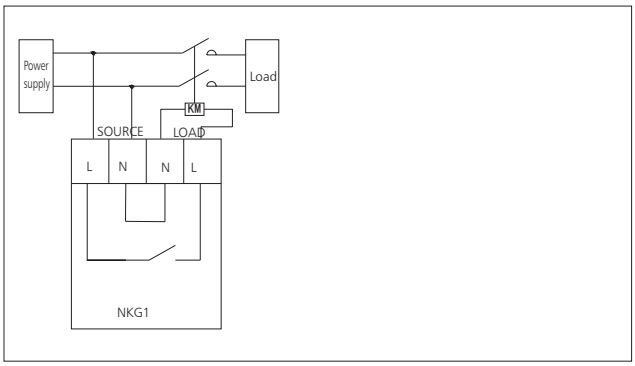


Figure 3

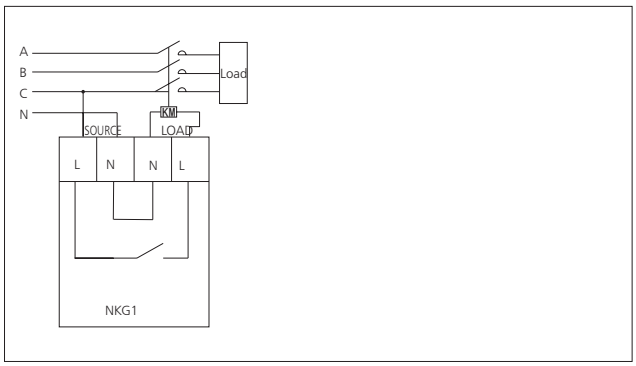
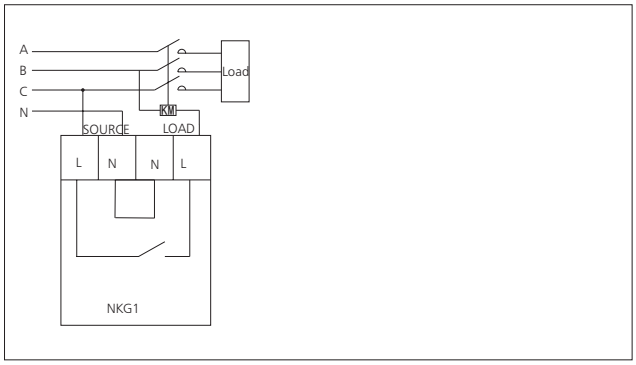
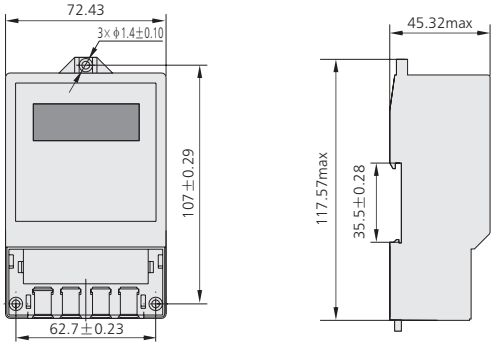



Figure 4




## 4. Overall and mounting dimensions (mm)

Profile installation dimensions



# KG10D Time Switch

## 1. General

KG10D Microcomputer Time Switch can automatically turn on or turn off power supply of various consumer equipments according to preset time by user. The controlled objects are circuit equipments and household appliances such as street lamps, neon lamps, advertising lamps, manufacturing equipments, broadcast & television equipments, etc., which requires turning on and off at

## 2. Technical data

| Operating mode | Time automatic control |
|---|---|
| Rated operating voltage | AC220V 50Hz/60Hz |
| Applicable voltage range | (85%~110%)Ue |
| Rated operating current | AC-15 220V 3A |
| Contact number | One group changeover or 1 ON |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Battery | Built-in rechargeable battery |
| Time control range | 1 min~168h |
| Timing error | ≤2s/day |
| Times of open/close | 16 opens & 16 closes |
| Consumed power | <4VA |
| Relative humidity | ≤95% |
| Ambient temperature | -25℃~+60℃ |
| Installation mode | Guide rail type |
| External dimension | 100.2×49.8×75.5 |

## 3. Wiring diagram

3.1 KG10D-1H is 1 ON and see Figure 4 for wiring method;
3.2 KG10D-1Z is 1 ON/ 1 NC and see Figure 3 for wiring method;
3.3 Wiring for single-phase direct control mode: direct control mode can be used for electrical apparatus which is single-phase power supply and its power consumption doesn't exceed rated value of this switch. See Figure 1 for wiring method;
3.4 Wiring for three-phase operation mode: if the controlled electrical apparatus is three-phase power supply, it is required to externally connect three-phase AC contactor. See Figure 2 for wiring method for control contactor @ AC380V coil voltage, 50Hz.

Figure 1 single-phase load

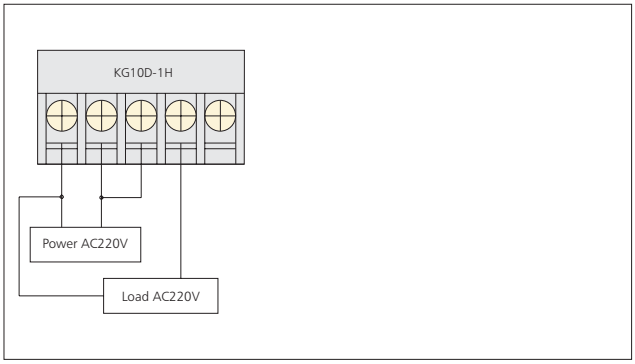



Figure 2 three-phase load

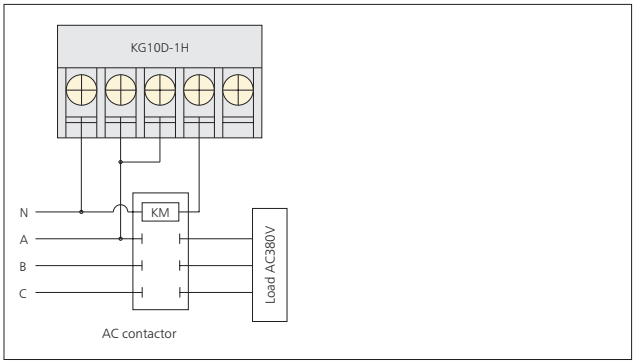


Figure 3 KG10D-1Z

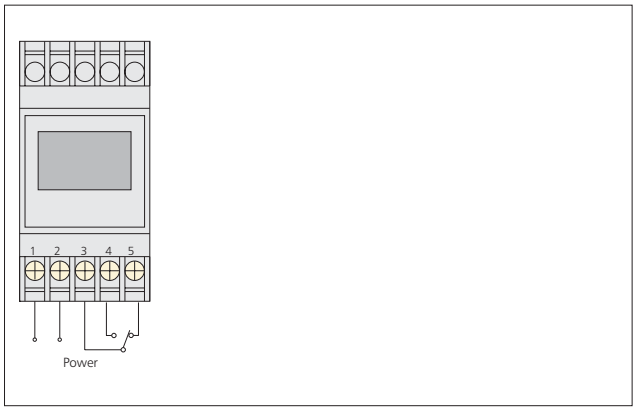
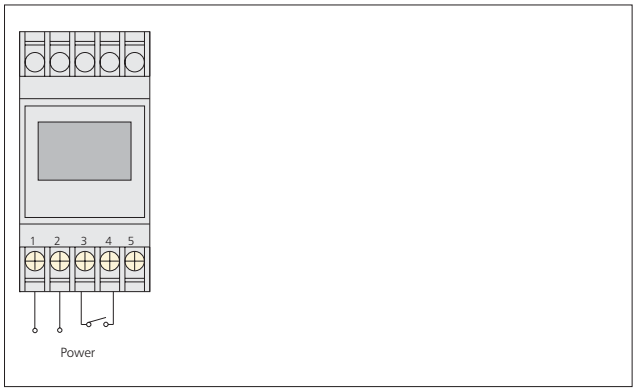
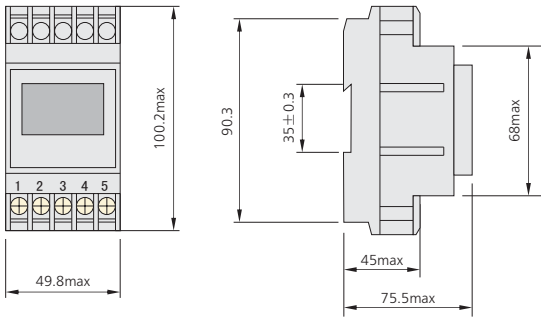



Figure 4 KG10D-1H




## 4. Overall and mounting dimensions (mm)

Profile installation dimensions




# KG10M Time Switch

## 1. General

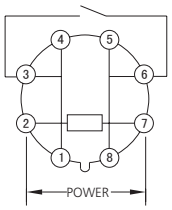
KG10M Time Switch can automatically turn on or turn off power supply of various consumer equipments according to preset time by user. The controlled objects are circuit equipments and household appliances such as street lamps, neon lamps, advertising lamps, manufacturing equipments, broadcast & television devices etc. Which requires turning on and off at definite time.

## 2. Technical data

| Operating mode | Time automatic control |
|---|---|
| Rated operating voltage | AC220V 50Hz/60Hz |
| Applicable voltage range | (85%~110%)Ue |
| Rated operational current | AC-15 220V 3A |
| Contact number | 1 NO |
| Times of ON/OFF | 16-opens & 16-closes |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Battery | Internal Rechargeable Battery |
| Time-controlling range | 1 min~168h |
| Timing error | ≤2s/day |
| Consumed power | <4VA |
| Relative humidity | ≤95% |
| Ambient temperature | -25℃~+60℃ |
| Installation mode | Panel type |
| External dimension | 58.4×52.4×124.6 |

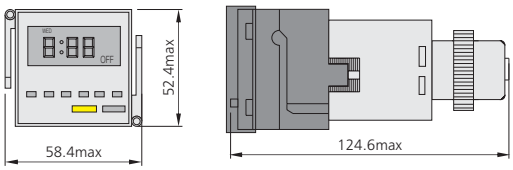
## 3. Wiring diagram

Wiring diagram

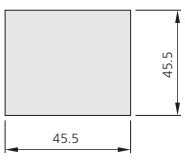



## 4. Overall and mounting dimensions (mm)

Profile installation dimensions




Opening size




I


# KG316T Time Switch

## 1. General

KG316T Time Switch can automatically turn on or turn off power supply of various consumer equipments according to preset time by user. The controlled objects are circuit equipments and household appliances such as street lamps, neon lamps, advertising lamps, manufacturing equipments, broadcast & television equipments, etc., which requires turning on and off at definite time.

## 2.Technical data

| Operating mode | Time automatic control |
|---|---|
| Rated operating current | AC-15 3A |
| Rated operating voltage | AC220V 50Hz/60Hz |
| Applicable voltage range | (85%～110%)Ue |
| Rated output voltage | AC220V±1% |
| Electrical life | $1\times10^5$ |
| Mechanical life | $1\times10^6$ |
| Times of ON/OFF | 8 opens & 8 closes, 16 opens & 16 closes |
| External dimension | 121.32×74.73×50.77 |

## 3. Function features

3.1 "AA" size battery, replaceable;
3.2 Max set times per day (8 opens & 8 closes, 16 opens & 16 closes) and select according to requirements;
3.3 On-off time may cycle according to day or week;
3.4 Equipped with keyboard locking function for error operation protection;
3.5 Adopt single key operation in all, easy to install and adjust;
3.6 Timing error ⩽2s/day.

## 4. Wiring diagram

4.1 Wiring for direct control mode: direct control mode can be used for electrical apparatus which is single-phase power supply and its power consumption doesn't exceed rated value of this switch. See Figure 1 for wiring method;
4.2 Wiring for single-phase dilatancy mode: it is required a AC contactor with larger capacity than electrical apparatus power consumption for dilatancy when the controlled electrical apparatus is single-phase power supply, whereas its power consumption exceeds rated value of this switch. See Figure 2 for wiring method;
4.3 Wiring for three-phase operation mode: if the controlled electrical apparatus is three-phase power supply, it is required to externally connect three-phase AC contactor;
a. See Figure 3 for wiring, control contactor @ AC220V coil voltage, 50Hz;
b. See Figure 4 for wiring, control contactor @ AC380V coil voltage, 50Hz.

Figure 1

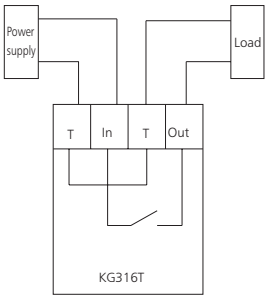



Figure 2

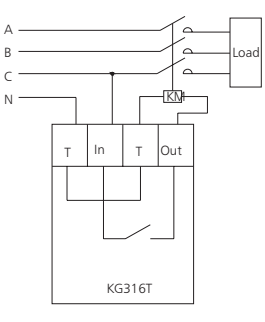


Figure 3

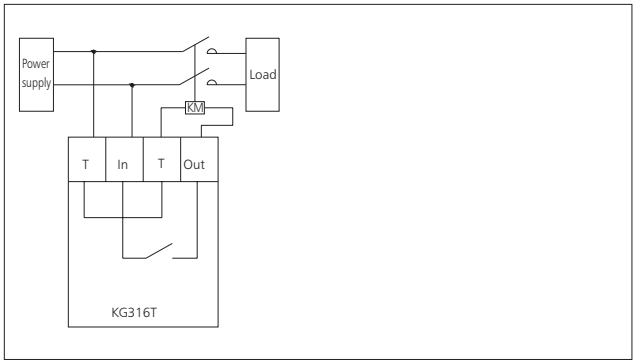
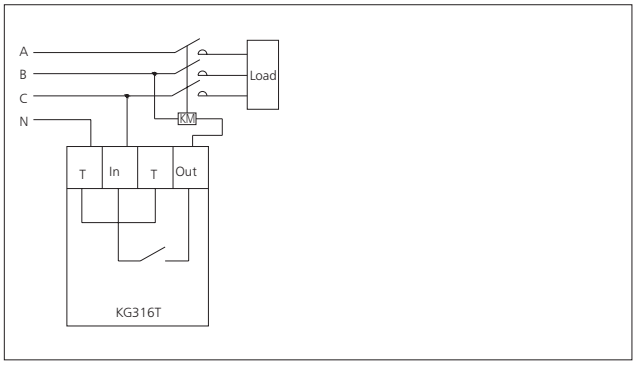
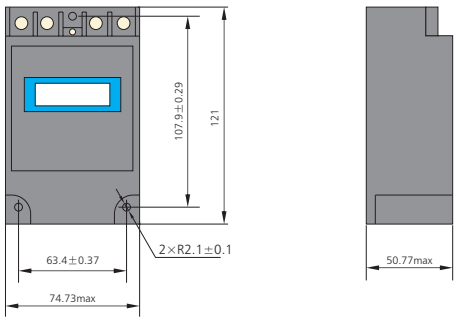



Figure 4




## 5. Overall and mounting dimensions (mm)

Profile installation dimensions




# NJYW1 Floatless Relay

## 1. General

NJYW1 Series Floatless Relay is used in control circuit @ A.C. 50Hz/60Hz, up to 380V rated supply voltage for liquid level automatic control at places of civil water tower, high cistern, and underground conservation pool, etc. It is capable to realize automatic water supply control or water drainage control according to wiring requirement of user.

This product is not applicable for level control for liquid with poor conductivity such as oil, pure water, flammable & explosive chemical liquid and high density sewage, etc.

## 2. Type designation

N JYW 1— □ □/□

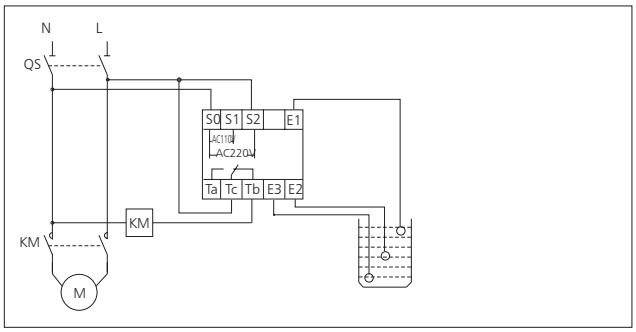
- Rated power supply voltage
- Length of electrode lead-wire:
  L1: represents the max length of lead-wire is 1km
  L2: represents the max length of lead-wire is 2km
- Function code:
  N: water supply, water drainage type
  B: water supply and water drainage with anti-exhausted of pump type
- Design sequnce No.
- Floatless relay
- Company code

## 3. Technical data

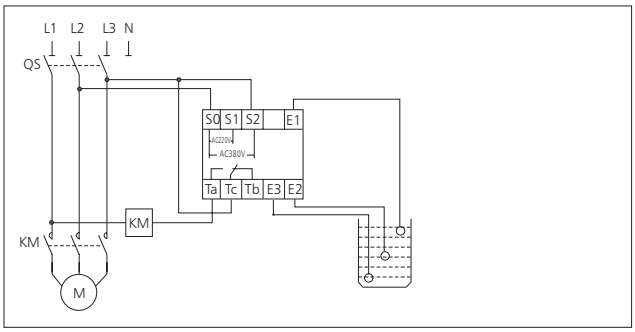
| Type | NJYW1-NL1 | NJYW1-NL2 | NJYW1-BL1 | NJYW1-BL2 |
|---|---|---|---|---|
| Operating mode | Continuous working | | | |
| Contact number | One group changeover contact | | | |
| Operating voltage | AC 50Hz/60Hz 36V, 110V/220V, 220V/380V | | AC 50Hz/60Hz 36V, 110V, 220V, 380V | |
| Control electrode voltage | 24V | | | |
| Conductor length | Max 1km | Max 2km | Max 1km | Max 2km |
| Operating resistance | ≤25kΩ | | | |
| Releasing resistance | ≥2kΩ | | | |
| Response time | Reacting: max 80ms; releasing: max 160ms | | | |
| Ambient temperature | −5℃～+40℃ | | | |
| Power consumption | <3VA | | | |
| Installation mode | Guide rail type or device type | | | |

## 4. Wiring diagram

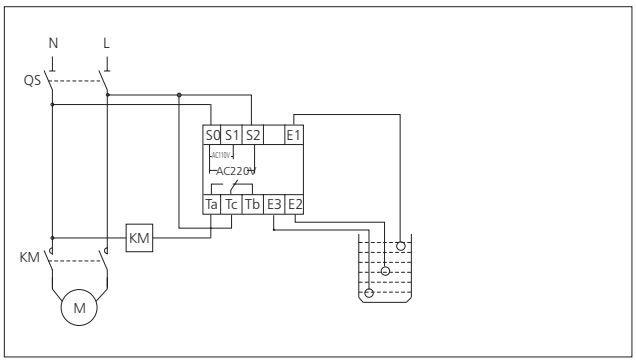
Wiring diagram for NJYW1-NL1, NJYW1-NL2
water supply mode 110V/220V



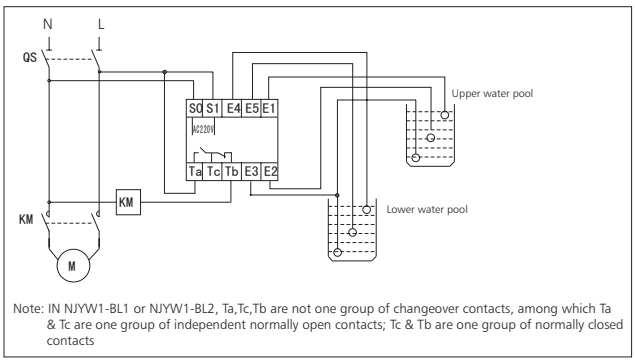

Wiring diagram for NJYW1-NL1, NJYW1-NL2
water drainage mode 220V/380V




Wiring diagram for NJYW1-NL1, NJYW1-NL2
water drainage mode 110V/220V

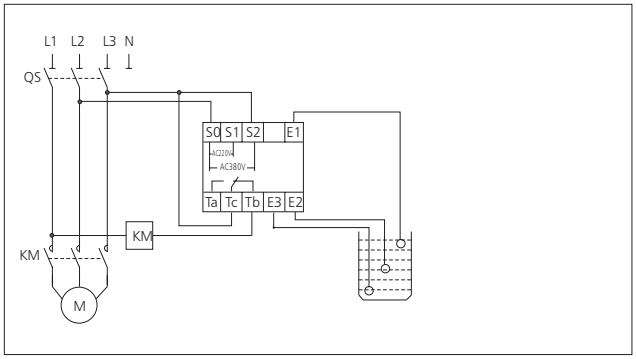



wiring diagram for NJYW1-BL1 and NJYW1-BL2
upper/lower water pool level control 220V

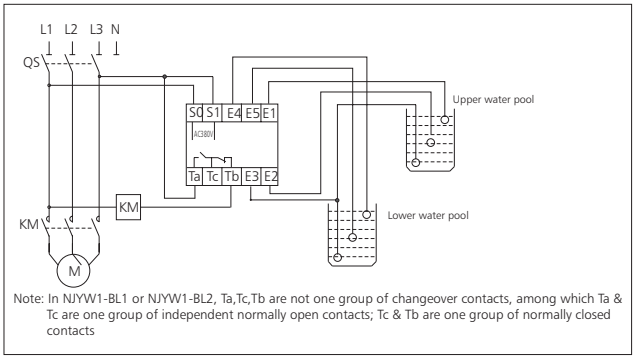



Note: IN NJYW1-BL1 or NJYW1-BL2, Ta,Tc,Tb are not one group of changeover contacts, among which Ta & Tc are one group of independent normally open contacts; Tc & Tb are one group of normally closed contacts

Wiring diagram for NJYW1-NL1, NJYW1-NL2
water supply mode 220V/380V




wiring diagram for NJYW1-BL1 and
NJYW1-BL2 upper/lower water pool level control 380V

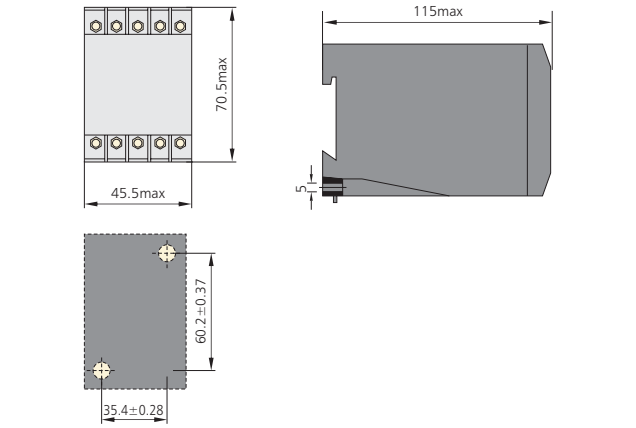



Note: In NJYW1-BL1 or NJYW1-BL2, Ta,Tc,Tb are not one group of changeover contacts, among which Ta & Tc are one group of independent normally open contacts; Tc & Tb are one group of normally closed contacts

Note: NJYW1-BL1 & NJYW1-BL2 can be used as water supply or water drainage control independently, its wiring diagram referring to NJYW1-NL1.

## 5. Overall and mounting dimensions (mm)

Profile and installation dimensions for NJYW1-NL1,
NJYW1-NL2, NJYW1-BL1, and NJYW1-BL2




# JYB-714 Floatless Relay

## 1. General

JYB-714 Series Floatless Relay is used in liquid level automatic control circuit @ AC 50Hz/60Hz, up to 380V rated supply voltage for liquid level automatic control at places of civil water tower, high cistern, and underground conservation pool etc.

## 2. Type designation

JYB—714 □

Design sequence No.: Nil: Basic type
Type B: with reacting indicator;
Type C: with"water supply"; "drainage" reacting indicator

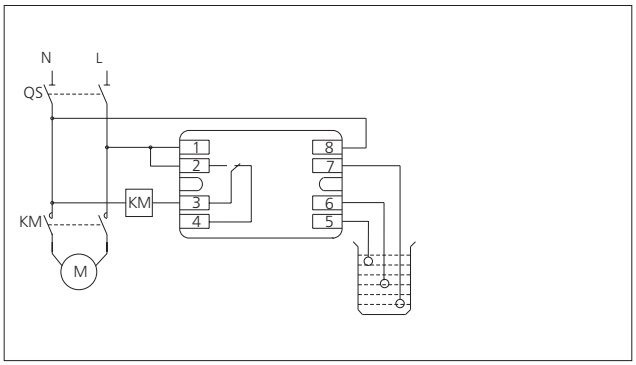
Floatless Relay

## 3. Technical data

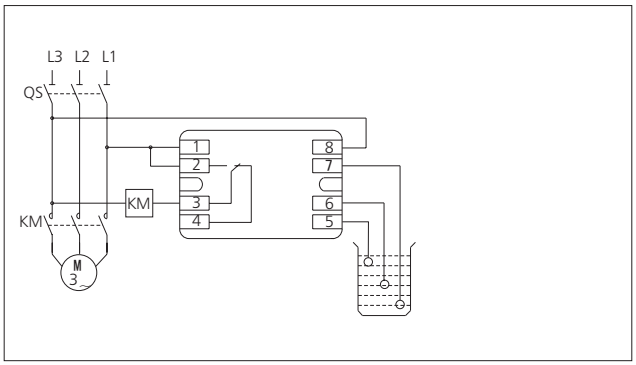
| Type | JYB-714 | JYB-714B | JYB-714C |
|---|---|---|---|
| Operating mode | Continuous working | | |
| Contact number | One group of changeover contact | | |
| Operating voltage | AC 50Hz/60Hz 36V, 110V, 220V, 380V (other voltage can be custom made) | | |
| Control electrode max current | 50μA | | |
| Conductor length | Max 1km | | |
| Ambient temperature | -5℃～+40℃ | | |
| Power consumption | <3VA | | |
| Installation mode | Device type or guide rail type | | |

## 4. Wiring diagram

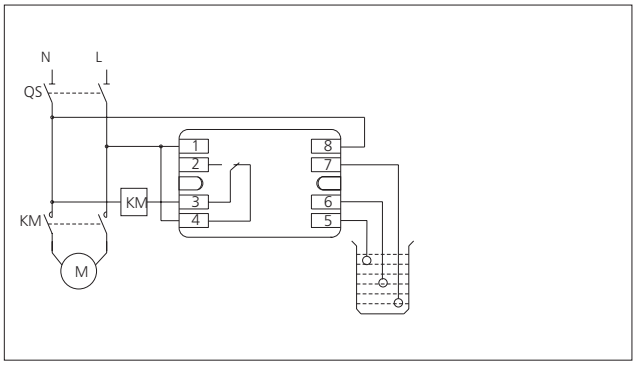
Wiring diagram for JYB-714, JYB-714B, JYB-714C
220V water supply mode



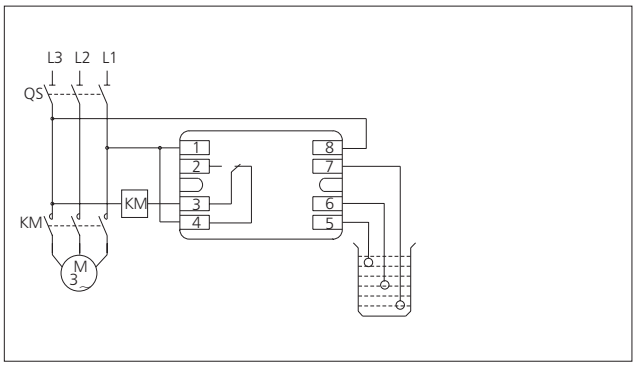

Wiring diagram for JYB-714, JYB-714B, JYB-714C
380V water supply mode



Wiring diagram for JYB-714, JYB-714B, JYB-714C
220V water drainage mode

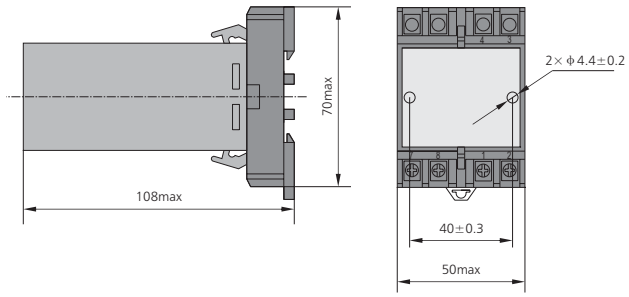



Wiring diagram for JYB-714, JYB-714B, JYB-714C
380V water drainage mode

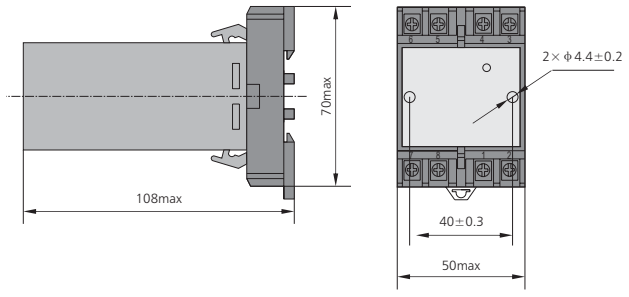



## 5. Overall and mounting dimensions (mm)

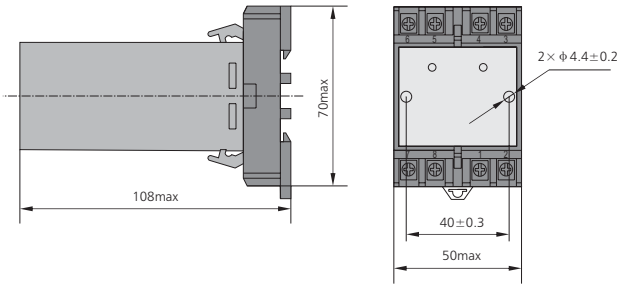
JYB-714 profile and installation dimensions



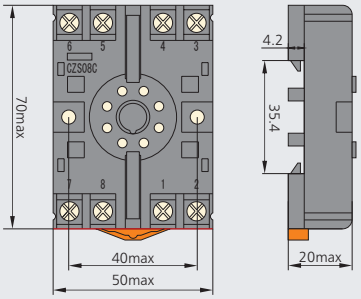
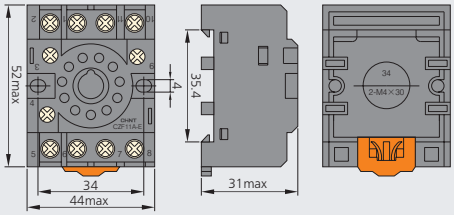

JYB-714B profile and installation dimensions

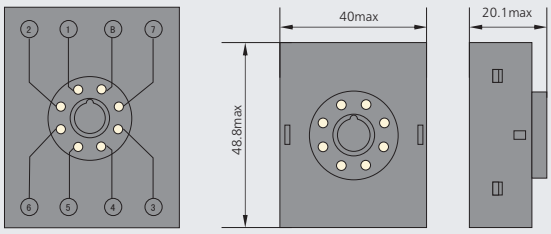
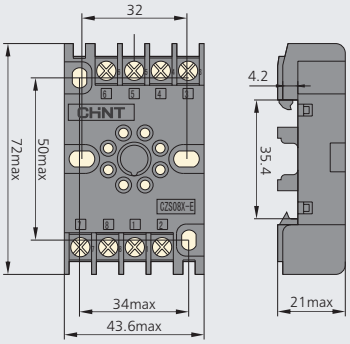


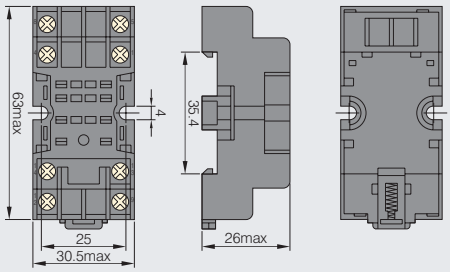
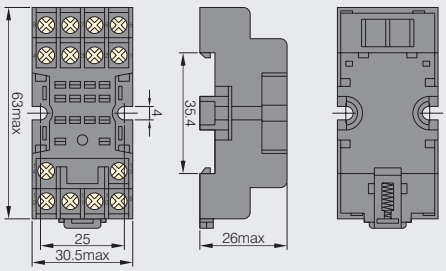

JYB-714C profile and installation dimensions

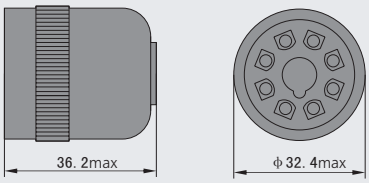
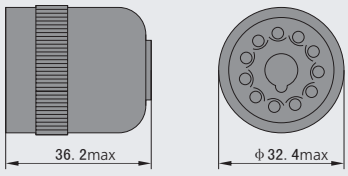


# Time Relay Socket Series

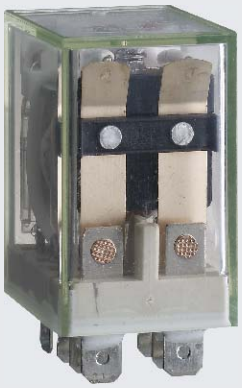
| CZS08C | CZF11A-E (with finger safety protection) |
|---|---|
|  |  |
| 70×50×20(mm) | 52×44×31(mm) |
|  |  |
| Applicable relay type: JSS48A, JDM1-48, KG10M, JYB-714 and NJS1 | Applicable relay type: JS14S device type, and JDM1-14 |

| CZS08G | CZS08X-E (with finger safety protection) |
|---|---|
|  |  |
| 48.8×40×20.1(mm) | 72×43.6×21(mm) |
|  |  |
| Applicable relay type: JSS48A, NJS1, JDM1-48, KG10M, and JSZ3H-Y | Applicable relay type: JSZ3A, JSZ3C, JSZ3-2/3, JSZ3K, JSZ3R, JSZ3F, and JSZ3Y |

| CZY08B-01 (wide type, copper strip connection) | CZY14B (copper strip connection) |
|---|---|
|  |  |
| 63×30.5×26(mm) | 63×30.5×26(mm) |
|  |  |
| Applicable relay type: JSZ6-2 | Applicable relay type: JSZ6-4 |

| CZS08S | CZS11S | FM8858 |
|---|---|---|
|  |  |  |
| ϕ32.4×36.2(mm) | ϕ32.4×36.2(mm) | |
|  |  | |
| Applicable relay type: JSS48A, JDM1-6, JSZ3H-Y, NJS1 | Applicable relay type: JSS48A-11, JDM1-48, NJS1-11 | Applicable relay type: JSZ3 |

I



# NJX-13FW Miniature Power Relay

## 1. General

1.1 3A, 5A, 10A switching capacity
1.2 Wide range of coil ratings
1.3 Fully sealed
1.4 Certificate: CE, UL

## 2. Type designation

NJX-13FW (D) / 006 - 2Z 1 1

- Installation: 1=top flange type; 2=lateral flange type; blank=standard type
- Termination: 1=PCB 6=Plug-in
- Contact arrangement: 2Z=2C(10A); 2ZS=2C(5A); 3ZS=3C; 4ZS=4C
- Coil type: ~= AC; - = DC
- Coil voltage : DC: 5V~220V; AC: 6V~380V
- Type: D=with LED indicator; B=With LED indicator and surge withstand; M=With arc suppression cover (only 4C); Blank=Standard
- Series

## 3. Technical data

| Contact Arrangement | | 2Z | 2ZS | 3ZS | 4ZS |
|---|---|---|---|---|---|
| Initial contact resistance | mΩ | | 100 | | |
| Contact material | | | Silver alloy | | |
| Rated load (resistive) | A (220VAC/28VDC) | 10 | 5 | 5 | 3 |
| Max. switching voltage | VAC | | 250 | | |
| | VDC | | 125 | | |
| Max. switching current | A | 10 | 5 | 5 | 3 |
| Max. switching power | VA | 2200 | 1100 | 1100 | 660 |
| | W | 280 | 140 | 140 | 84 |
| Electrical endurance | Cycles($\times 10^3$) | | | 300 | |
| Machenical endurance | Cycles($\times 10^6$) | | | 10 | |

## 4. Coil specification

AC

| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 6 | 80%Un | 20%Un | (80%~110%) Un | 1.2VA |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |
| 230 | | | | |
| 380 | | | | |

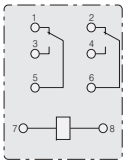
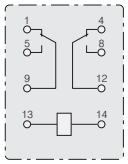
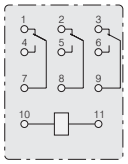
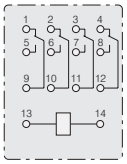
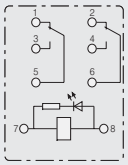
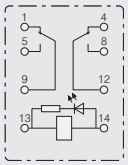
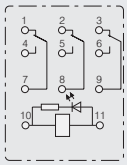
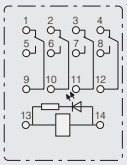
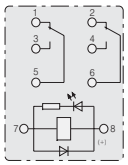
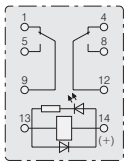
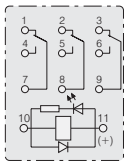
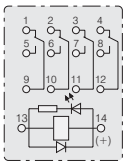
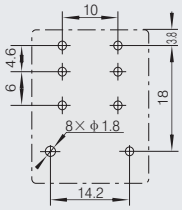
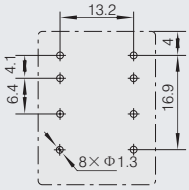
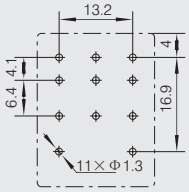
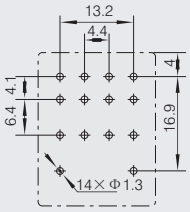
DC

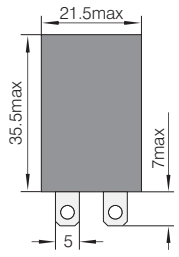
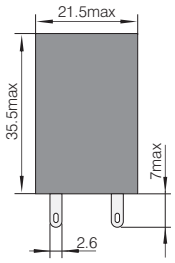
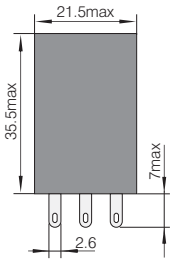
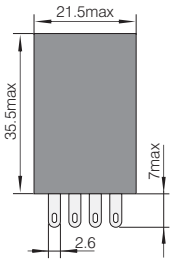
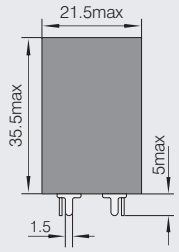
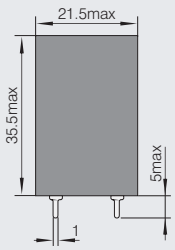
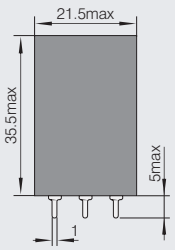
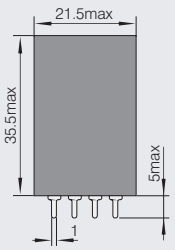
| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 5 | 75%Un | 10%Un | (75%~110%) Un | 0.9W |
| 6 | | | | |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |

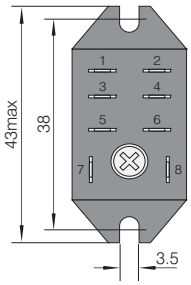
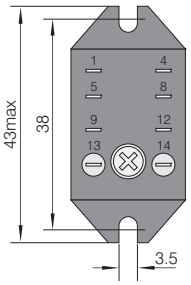
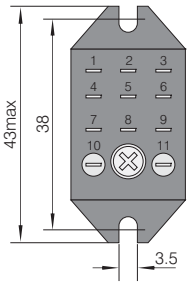
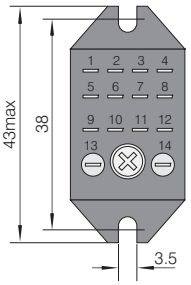
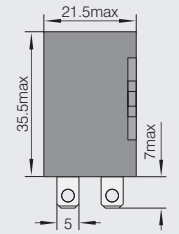
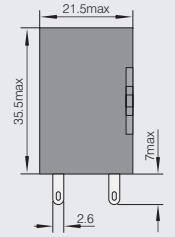
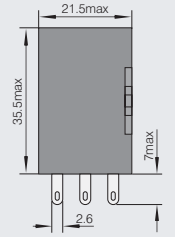
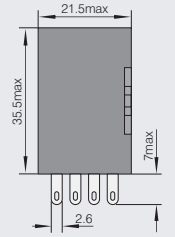
## 5. Characteristics

| Insulation resistance(at 500VDC) | | MΩ | 100 |
|---|---|---|---|
| Dielectric strength | Between coil & contacts | | 1500VAC |
| | Between open contacts | | 1000VAC |
| Operation time | | ms | ≤25 |
| Release time | | ms | ≤25 |
| Shock resistance | | $m/s^2$ | 100 |
| Vibration | | | 10～55Hz,1mm double amplitude |
| Ambient temperature range | | ℃ | -30～+60 |
| Termination | | | Plug-in, PCB |
| Dimension | | mm | 27.5×21.5×35.5 |

## 6. Overall and mounting dimensions (mm)

| Internal connection | 2Z | 2ZS | 3ZS | 4ZS |
|---|---|---|---|---|
| Standard type |  |  |  |  |
| with indicator |  |  |  |  |
| with indicator and diode |  |  |  |  |
| PCB mounting holes |  |  |  |  |

| Dimensions | 2Z | 2ZS | 3ZS | 4ZS |
|---|---|---|---|---|
| Plug-in type |  |  |  |  |
| PCB type |  |  |  |  |

| Installation | 2Z | 2ZS | 3ZS | 4ZS |
|---|---|---|---|---|
| Top flange type |  |  |  |  |
| Lateral flange type |  |  |  |  |

# JQX-13F Miniature High-power Electromagnetic relay

## 1. General

Contact switching capability of 10A; a complete range of AC/DC specifications; enclosed in transparent dust cover, a variety of mounting types; various sockets available;

Specifications with state indicators available; certifictaion: CQC 03001003918, UL E205607, CE; models of the same type: LY2(N), HH62P(-L).

## 2. Normal operating conditions and mounting conditions

| | |
|---|---|
| Temperature range | -30℃～+60℃ |
| Relative humidity | +40℃ return 90% |
| Atmospheric pressure | 86kPa～106kPa |
| Working position | Any |

## 3. Technical data

3.1 Contact data

| | |
|---|---|
| Contact form | 2Z(C) |
| Initial contact resistance | 100mΩ |
| Contact material | Silver alloy |
| Contact load (resistive) | 10A/220VAC、10A/28VDC |
| Max. switching voltage | 250VAC/125VDC |
| Max. switching current | 10A |
| Max. switching power | 2200VA 280W |
| Electrical life (times) | $1\times10^5$ |
| Mechanical life (times) | $1\times10^7$ |

3.2 Characteristics data

| | | |
|---|---|---|
| Insulation resistance | | 100MΩ(500VDC) |
| Dielectric strength | Between coil & yoke, between different groups of contacts | 1500VAC |
| | Between open contacts | 1000VAC |
| Operation time | | ≤25ms |
| Release time | | ≤25ms |
| Shock (resistance) | | Acceleration: 100m/s$^2$, pulse duration: 11ms |
| Vibration | | 1mm double amplitude, 10～55Hz |
| Outlet terminal type | | Plug-in type, PCB type |
| Overall dimensions (mm) | | 27.5×21.5×35.5 |

3.3 Coil data

| | |
|---|---|
| Rate power consumption | 0.9W、1.2VA |
| Pick-up voltage | DC: ≤75% rated voltage; AC: ≤80% rated voltage |
| Release voltage | DC: ≥10% rated voltage; AC: ≥20% rated voltage |
| Max. voltage | 110% Rated voltage |

3.4 Specification data

| Rated voltage | Operation voltage VDC(≤) | Release voltage VDC(≥) | Coil resistance Ω ±10% |
|---|---|---|---|
| 5 | 3.75 | 0.5 | 28 |
| 6 | 4.5 | 0.6 | 44 |
| 12 | 9.0 | 1.2 | 160 |
| 24 | 18.0 | 2.4 | 640 |
| 36 | 27.0 | 3.6 | 1440 |
| 48 | 36.0 | 4.8 | 2560 |
| 110 | 82.5 | 11.0 | 14500 |
| 127 | 95.3 | 12.7 | 17000 |
| 220 | 165.0 | 22.0 | 39000 |

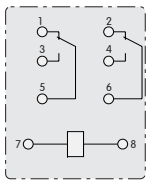
| Rated voltage | Operation voltage VDC(≤) | Release voltage VDC(≥) | Coil resistance Ω ±10% |
|---|---|---|---|
| 6 | 4.8 | 1.2 | 10.5 |
| 12 | 9.6 | 2.4 | 44 |
| 24 | 19.2 | 4.8 | 180 |
| 36 | 28.8 | 7.2 | 380 |
| 48 | 38.4 | 9.6 | 650 |
| 110 | 88.0 | 22 | 3670 |
| 127 | 101.6 | 25.4 | 4100 |
| 220 | 176.0 | 44 | 14500 |
| 380 | 304.0 | 76 | 39000 |

## 4. Matching socket (optional)

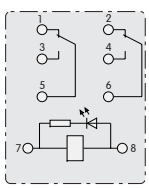
| Relay model | JQX-13F(D)/2Z | | | |
|---|---|---|---|---|
| Model of matching socket | CZT08A-01 | CZT08A-02 | CZT08B-01 | CZT08B-01E |
| Overall dimensions of socket (mm) | 72×30×31 | 72×23×31 | 68×30×28 | 68×30×28 |
| Type of socket lead | Screw terminal (installation type, rail type) | | | |

## 5. Overall and mounting dimensions (mm)

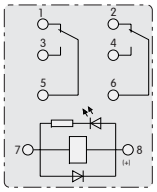
Connection diagram (bottom view) (2Z)



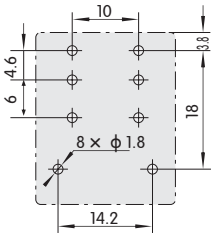

Connection diagram (bottom view) 2Z(D)



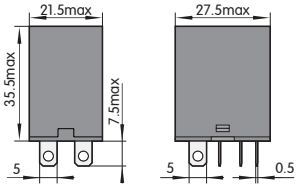

Connection diagram (bottom view) 2Z(B)



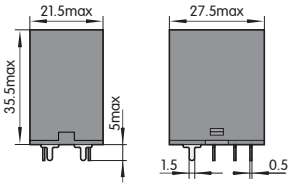

PCB opening drawing (2Z)



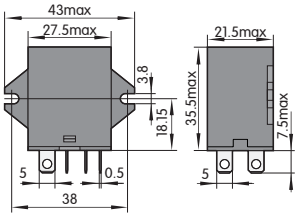

Outline drawing (plug-in type)



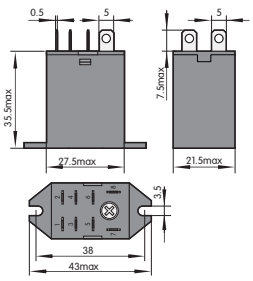

Outline drawing (PCB type)




Outline drawing (lateral flange type)




Outline drawing (top flange type)



# JZX-22F Miniature Power Relay

## 1. General

1.1 3A, 5A switching current
1.2 Various sockets available
1.3 With indicator to be selected
1.4 Full range of AC and DC coil
1.5 Certificate: CE.

## 2. Type designation

JZX-22F (D) / 006 - 2Z 1 1

- Installation: 1=top flange type; 2=lateral flange type; blank=standard type
- Termination: 1=PCB, 6=Plug-in
- Contact arrangement 2Z=2C; 3Z=3C; 4Z=4C
- Coil type: ~= AC; - = DC
- Coil voltage : DC: 5V~220V; AC: 6V~380V
- Type: D=with LED indicator; B=With LED indicator and surge withstand; M=With arc suppression cover (only 4C); Blank=Standard
- Series

## 3. Technical data

| Contact Arrangement | | 2C | 3C | 4C |
|---|---|---|---|---|
| Initial contact resistance | mΩ | 100 | | |
| Contact material | | Silver alloy | | |
| Rated load(resistive) | | 5A/220VAC | | 3A/220VAC |
| | | 5A/28VDC | | 3A/28VDC |
| MAX. switching voltage | VAC | 250 | | |
| | VDC | 125 | | |
| MAX. switching current | A | 5 | | 3 |
| Max. swithcing capacity | VA | 1100VA | | 660VA |
| | W | 140 | | 84 |
| Electrical endurance | Cycles($\times 10^3$) | 100 | | |
| Machenical endurance | Cycles($\times 10^6$) | 10 | | |

## 4. Coil specification

AC

| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 6 | 80%Un | 20%Un | (80%~110%)Un | 1.2VA |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |
| 230 | | | | |
| 380 | | | | |

DC

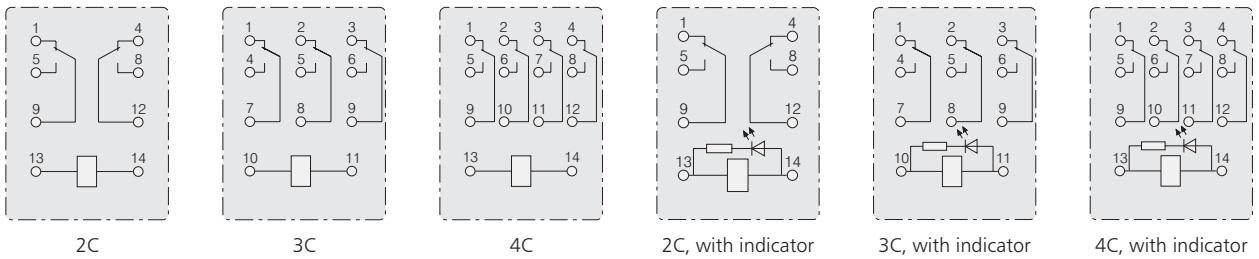
| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 5 | 75%Un | 10%Un | (75%~110%) Un | 0.9W |
| 6 | | | | |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |

## 5. Characteristics

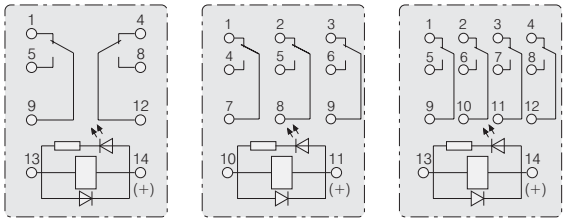
| Insulation resistance(at 500VDC) | | MΩ | 100 |
|---|---|---|---|
| Dielectric strength | Between coil & contacts | | 1500VAC |
| | Between open contacts | | 1000VAC |
| Operation time | | ms | ⩽25 |
| Release time | | ms | ⩽25 |
| Shock resistance | | $m/s^2$ | 100 |
| Vibration | | | 10～55Hz,1mm double amplitude |
| Humidity | | | 90% RH at +40℃ |
| Ambient temperature range | | ℃ | -30～+55 |
| Termination | | | Plug-in, PCB |
| Dimension | | mm | 27.5×21.5×35.5 |

## 6. Overall mounting dimensions (mm)

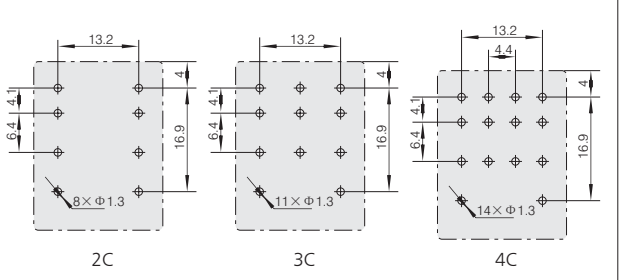
Internal connection(bottom view)



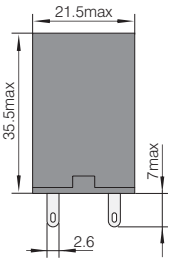

Internal connection(botton view)



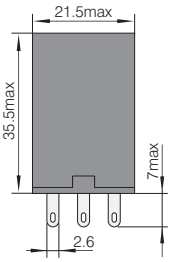

PCB mounting poles



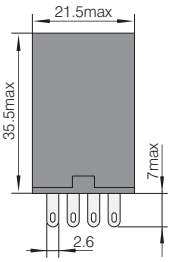
Dimensions



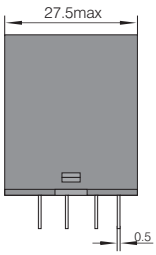
Plug-in, 2C



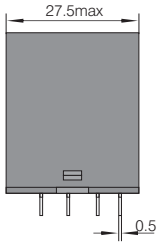
Plug-in, 3C



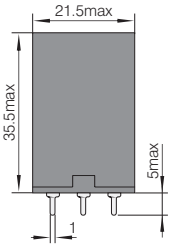
Plug-in, 4C



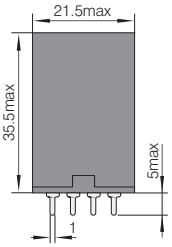
Plug in



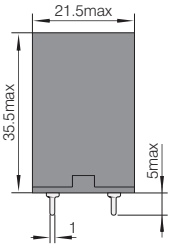
PCB



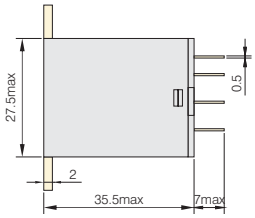
PCB, 3C



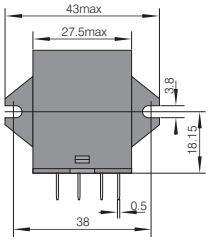
PCB, 4C



PCB, 2C

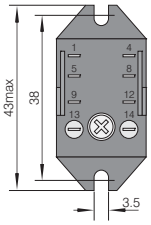


top flange

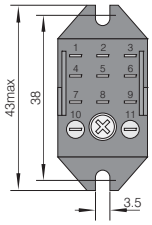


Lateral flange

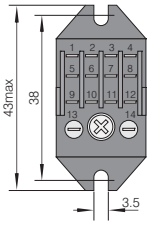
Left view



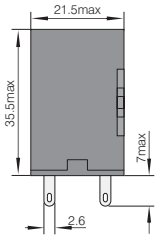
2C, front installation (top flange)



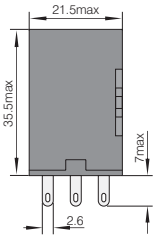
3C, front installation (top flange)



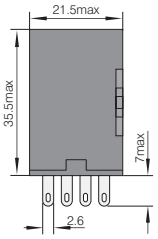
4C, front installation (top flange)



2C, lateral flange



3C, lateral flange



4C, lateral flange

I

# JQX-10F Miniature power relay

## 1. General

1.1 10A switching current
1.2 Various sockets available
1.3 Wide range of coil ratings
1.4 Certificate: UL, CE

## 2. Type designation

JQX-10F / 006 - 2Z

- Series
- Coil voltage: DC: 6V~220V; AC: 6V~380V
- Coil type: ~= AC; - = DC
- Contact arrangement: 2Z=2C; 3Z=3C

## 3. Technical data

| Contact Arrangement | | 2C, 3C |
|---|---|---|
| Initial contact resistance | mΩ | 100 |
| Contact material | | Silver alloy |
| Rated load (resistive) | | 10A/250VAC, 10A/28VDC |
| Max. switching voltage | VAC | 250 |
| | VDC | 125 |
| Max. switching current | A | 10 |
| Max. switching power | VA | 2500 |
| | W | 280 |
| Electrical endurance | Cycles($\times 10^3$) | 100 |
| Machenical endurance | Cycles($\times 10^6$) | 10 |

## 4. Coil specification

AC

| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 6 | 80%Un | 20%Un | (80%~110%)Un | 3VA |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |
| 230 | | | | |
| 380 | | | | |

DC

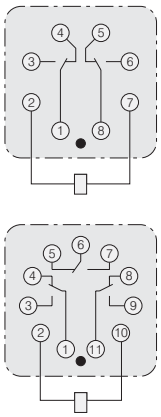
| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 5 | 75%Un | 10%Un | (75%~110%)Un | 2W |
| 6 | | | | |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |

## 5. Characteristics

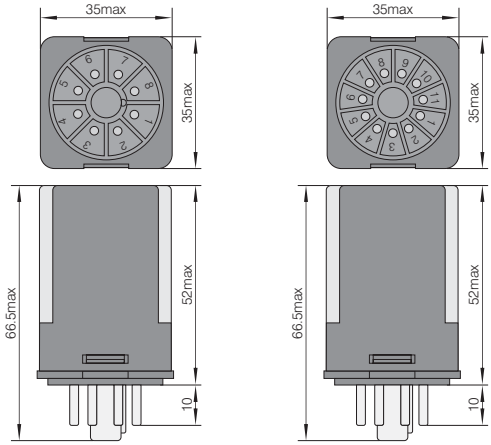
| Insulation resistance(at 500VDC) | | MΩ | 100 |
|---|---|---|---|
| Dielectric strength | Between coil & contacts | | 1500VAC |
| | Between open contacts | | 1000VAC |
| Operation time | | ms | ≤25 |
| Release time | | ms | ≤25 |
| Shock resistance | | $m/s^2$ | 100 |
| Vibration | | | 10～55Hz,1mm double amplitude |
| Humidity | | | 98% RH at +20℃ |
| Ambient temperature range | | ℃ | -40～+55 |
| Termination | | | Plug-in, PCB |
| Dimension | | mm | 35×35×52 |

## 6. Overall and mounting dimensions (mm)

Internal connection (bottom view)



Dimensions




# JTX Miniature power relay

## 1. General

1.1 10A switching current
1.2 Various sockets available
1.3 Wide range of coil ratings
1.4 Certificate: UL, CE

## 2. Type designation

JTX - 2C / 006 / VDC

- Series
- Contact configuration: 2C; 3C
- Coil voltage: DC: 6V~220V; AC: 6V~380V
- Coil type: VDC/VAC

## 3. Technical data

| Contact Arrangement | | 2C, 3C |
|---|---|---|
| Initial contact resistance | mΩ | 100 |
| Contact material | | Silver alloy |
| Rated load (resistive) | | 10A/250VAC, 10A/28VDC |
| Max. switching voltage | VAC | 250 |
| | VDC | 125 |
| Max. switching current | A | 10 |
| Max. switching power | VA | 2500 |
| | W | 280 |
| Electrical endurance | Cycles($\times 10^3$) | 100 |
| Machenical endurance | Cycles($\times 10^6$) | 10 |

## 4. Coil specification

AC

| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 6 | 80%Un | 20%Un | (80%~110%)Un | 3VA |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |
| 230 | | | | |
| 380 | | | | |

DC

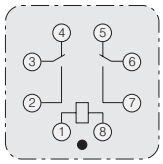
| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 5 | 75%Un | 10%Un | (75%~110%)Un | 2W |
| 6 | | | | |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |

## 5. Characteristics

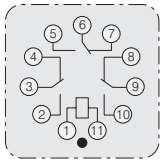
| Insulation resistance(at 500VDC) | | MΩ | 100 |
|---|---|---|---|
| Dielectric strength | Between coil & contacts | | 1500VAC |
| | Between open contacts | | 1000VAC |
| Operation time | | ms | ≤20 |
| Release time | | ms | ≤20 |
| Shock resistance | | $m/s^2$ | 100 |
| Vibration | | | 10～55Hz,1mm double amplitude |
| Humidity | | | 98% RH at +20℃ |
| Ambient temperature range | | ℃ | -40～+55 |
| Termination | | | Plug-in |
| Dimension | | mm | 35×35×52 |

## 6. Overall and mounting dimensions (mm)

Internal connection (bottom view)

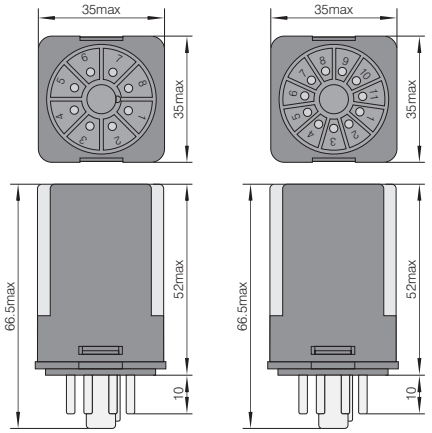



JTX-2C




JTX-3C

Dimensions




JTX-2C JTX-3C

# JMK Miniature power relay

## 1. General

1.1 10A switching current
1.2 With indicator to be selected
1.3 Full range of AC and DC coil
1.4 Certificate: UL, CE

## 2. Type designation

JMK 2P- I / 006 / VDC

- VDC/VAC
- Coil voltage: DC: 6V~220V; AC: 6V~380V
- Contact configuration: 2P=2C; 3P=3C
- Series

## 3. Technical data

| Contact Arrangement | | 2C, 3C |
|---|---|---|
| Initial contact resistance | mΩ | 100 |
| Contact material | | Silver alloy |
| Rated load (resistive) | | 10A/250VAC, 10A/28VDC |
| Max. switching voltage | VAC | 250 |
| | VDC | 125 |
| Max. switching current | A | 10 |
| Max. switching power | VA | 2500 |
| | W | 280 |
| Electrical endurance | Cycles($\times 10^3$) | 100 |
| Machenical endurance | Cycles($\times 10^6$) | 10 |

## 4. Coil specification

AC

| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 6 | 80%Un | 20%Un | (80%~110%)Un | 3.5VA |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |
| 230 | | | | |
| 380 | | | | |

DC

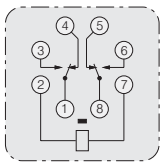
| Rated voltage | Holding voltage | Must drop-out voltage | Operating range | Power consumption |
|---|---|---|---|---|
| 5 | 75%Un | 10%Un | (75%~110%)Un | 2W |
| 6 | | | | |
| 12 | | | | |
| 24 | | | | |
| 36 | | | | |
| 48 | | | | |
| 110 | | | | |
| 127 | | | | |
| 220 | | | | |

## 5. Characteristics

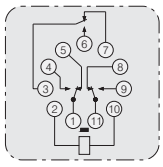
| Insulation resistance(at 500VDC) | | MΩ | 100 |
|---|---|---|---|
| Dielectric strength | Between coil & contacts | | 1500VAC |
| | Between open contacts | | 1000VAC |
| Operation time | | ms | ≤20 |
| Release time | | ms | ≤20 |
| Shock resistance | | $m/s^2$ | 100 |
| Vibration | | | 10～55Hz,1mm double amplitude |
| Humidity | | | 98% RH at +20℃ |
| Ambient temperature range | | ℃ | -40～+55 |
| Termination | | | Plug-in |
| Dimension | | mm | 35×35×53 |

## 6. Overall and mounting dimensions (mm)

Internal connection (bottom view)

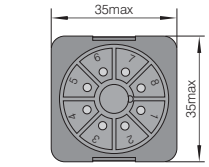


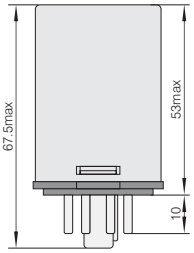

JMK2P- Ⅰ



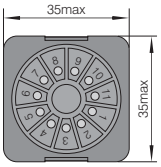

JMK3P- Ⅰ

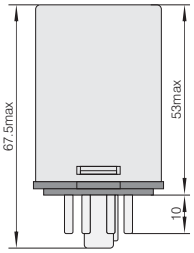
Dimensions




JMK2P- Ⅰ




JMK3P- Ⅰ

# NJMC1 pulse relay

## 1. General

Contact switching current of up to 16A and 32A; a complete range of AC/DC specifications; in conformity with GB/T 21711.1; NJMC1 pulse relay is a mechanical bistable relay that changes the contact state by inputting pulse signals. Therefore, in comparison with common relays which remain on when the armature is closed, pulse relay features a low power consumption.

## 2. Type designation

N JMC 1 - □ / □ □

- Coil rated voltage : AC:12～380V; DC: 6～220V.
- Number of poles: 1P,2P,3P,4P
- Contact capacity: 16:16A 32:32A
- Design sequence No.
- Pulse relay
- Company code

## 3. Normal operating conditions and mounting conditions

| Temperature range | -25℃～+55℃ |
|---|---|
| Pollution degree | 1 |
| Mounting position | Any |
| Environmental protection category | Dustproof type |
| Overvoltage category | II |

## 4. Technical data

4.1 Contact data

| Contact form | 1P, 2P, 3P, 4P | |
|---|---|---|
| Initial contact resistance | 100mΩ | |
| Contact material | Silver alloy | |
| Contact load (resistive) | NJMC1-16:16A 250VC/28VDC | NJMC1-32:32A 250VC/28VDC |
| Max. switching voltage | 250VAC/125VDC | NJMC1-32:32A |
| Max. switching current | NJMC1-16:16A | NJMC1-32:8000VA 896W |
| Max. switching power | NJMC1-16:4000VA 448W | |
| Electrical life (times) | $1\times10^5$ | |
| Mechanical life (times) | $1\times10^6$ | |

4.2 Specification data

| Coil rated voltage VDC | Coil resistance (20℃)Ω ±10% |
|---|---|
| 6 | 6 |
| 12 | 24 |
| 24 | 95 |
| 48 | 380 |
| 110 | 2000 |
| 127 | 2660 |
| 220 | 8000 |

| Coil rated voltage VDC | Coil resistance (20℃)Ω ±10% |
|---|---|
| 12 | 6 |
| 24 | 24 |
| 48 | 95 |
| 130 | 700 |
| 220 | 2000 |
| 230 | 2185 |
| 240 | 2380 |
| 380 | 6000 |

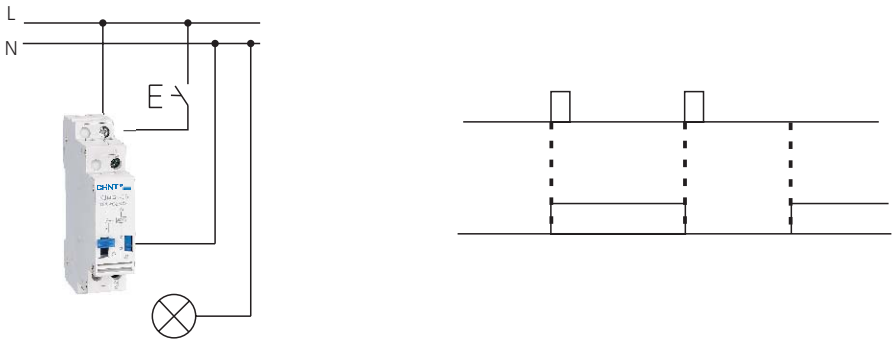
4.3 Characteristics data

| | | |
|---|---|---|
| Insulation resistance | | 100MΩ(500VDC) |
| Dielectric strength | Between contact & coil | 4000VDC |
| | Between open contacts | 1500VDC |
| Operation time | | ≤20ms |
| Shock (resistance) | | Acceleration: 100m/s$^2$, pulse duration: 11ms |
| Vibration | | 1mm double amplitude, 10～55Hz |
| Mounting type | | Rail type |
| Overall dimensions (mm) | | 86×70 |

4.4 Coil data

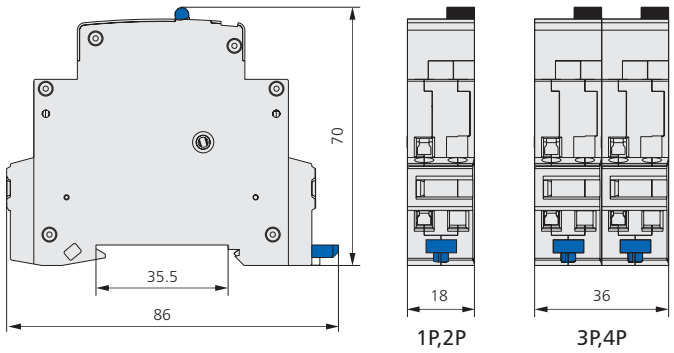
| | |
|---|---|
| Pulse voltage duration | ≥50ms (200ms is recommended) |
| Voltage range | 85%～110% |

## 5. Wiring diagram

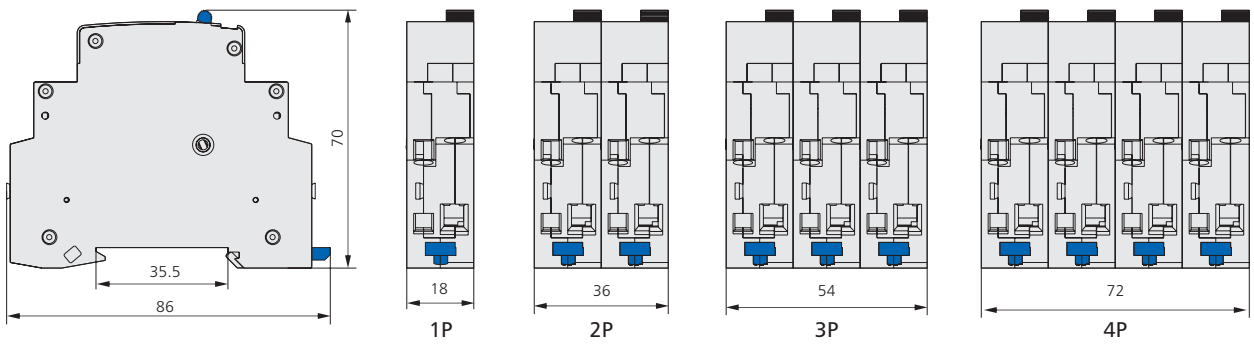



## 6. Overall and mounting dimensions (mm)

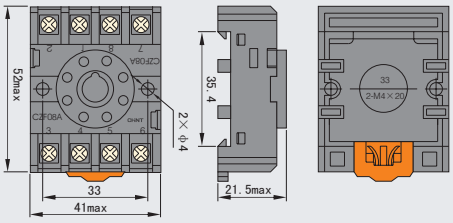
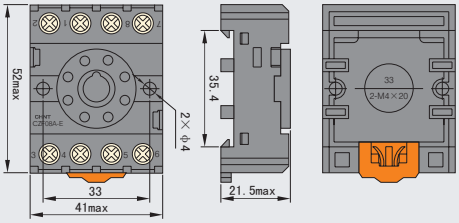
NJMC1-16

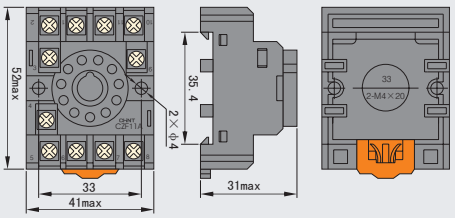
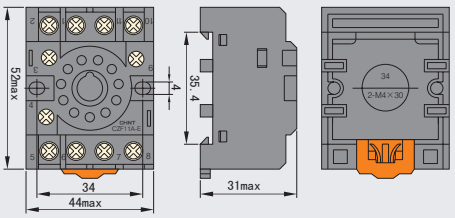



NJMC1-32



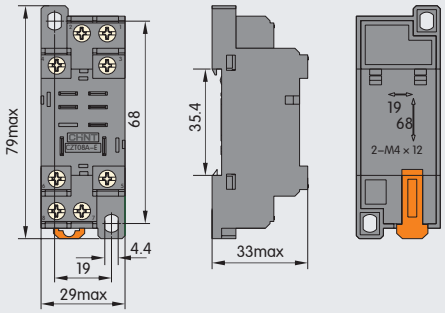
## Power Relay Socket Series

| CZF08A | CZF08A-E(With finger safety protection) |
|---|---|
|  |  |
| 52×41×21.5(mm) | 52×41×21.5(mm) |
|  |  |
| Applicable relay type: JQX-10F/2Z, JTX-2C, JMK2P-I | Applicable relay type: JQX-10F/2Z, JTX-2C, JMK2P-I |

| CZF11A | CZF11A-E(With finger safety protection) |
|---|---|
|  |  |
| 52×44×31(mm) | 52×44×31(mm) |
|  |  |
| Applicable relay type: JQX-10F/3Z, JTX-3C, JMK3P-I | Applicable relay type: JQX-10F/3Z, JTX-3C, JMK3P-I |

## CZT08A-E(With finger safety protection)

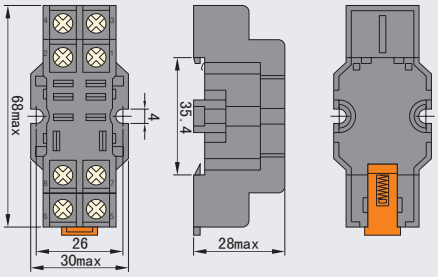
79×29×33(mm)




Applicable relay type: JQX-13F(B)/2Z, NJX-13FW(B)/2Z, HH62P(-L), LY2(N)

## CZT08B-01(Wide type, copper strip connection)

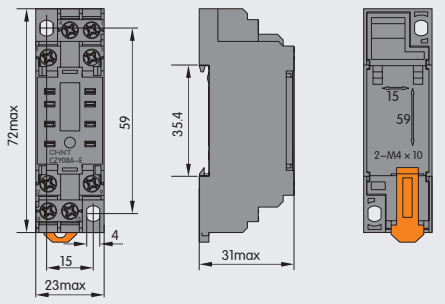
68×30×28(mm)




Applicable relay type: JQX-13F(B)/2Z, NJX-13FW(B)/2Z, HH62P(-L), LY2(N)

## CZY08A-E(With finger safety protection)

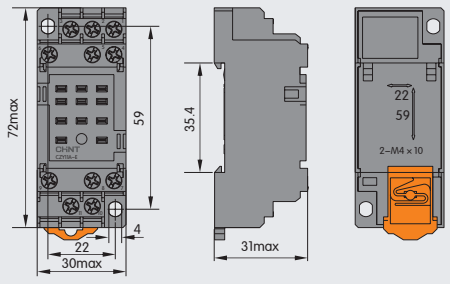
72×23×31(mm)




Applicable relay type: JZX-22F(B)/2Z, NJX-13FW(B)/2ZS, HH52P(-L), MY2(N)

## CZY11A-E(With finger safety protection)

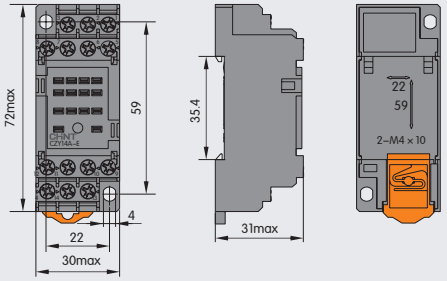
72×30×31(mm)




Applicable relay type:JZX-22F(B)/3Z, NJX-13FW(B)/3ZS, HH53P(L),MY3(N)

## CZY14A-E(With finger safety protection)

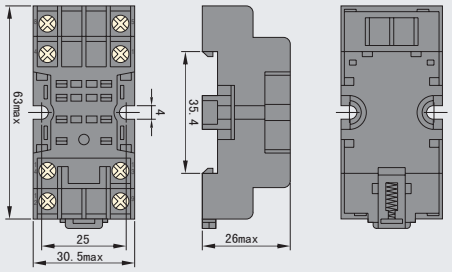
72×30×31(mm)




Applicable relay type:JZX-22F(B)/4Z, NJX-13FW(B)/4ZS, HH54P(L),MY4(N)

## CZY08B-01(Wide type, copper strip connection)

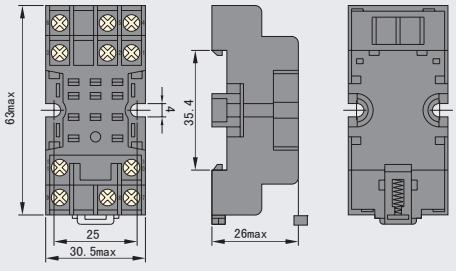
63×30.5×26(mm)




Applicable relay type:JZX-22F(B)/2Z, NJX-13FW(B)/2ZS, JZX-18F(L)/2Z, HH52P(L),MY2(N)

## CZY11B (Copper strip connection)

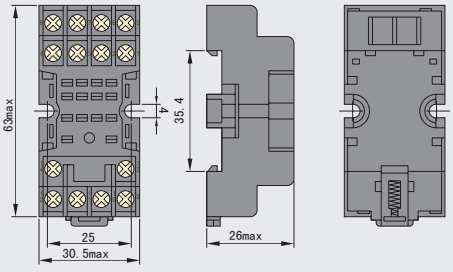
63×30.5×26(mm)




Applicable relay type: JZX-22F(B)/3Z, NJX-13FW(B)/3ZS, HH53P(L), MY3(N)

## CZY14B (Copper strip connection)

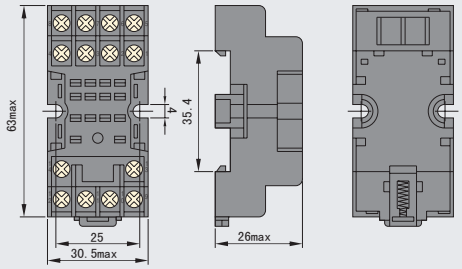
63×30.5×26(mm)




Applicable relay type: JZX-22F(B)/4Z, NJX-13FW(B)/4ZS,HH54P(L) , JZX-18F(L)/4Z, MY4(N)

## CZY14B-E (With finger safety protection, copper strip connection)

63×30.5×26(mm)




Applicable relay type: JZX-22F(B)/4Z, NJX-13FW(B)/4ZS,HH54P(L) , JZX-18F(L)/4Z, MY4(N)

## NG102

Applicable relay type: CZT series、CZY series

## NG103

Applicable relay type: CZY□B series、CZT□B series