NO:2020.04

CHINT ELECTRICS

# NR2 Series
# Thermal Overload Relay

# User Instruction

Standard: IEC/EN 60947-4-1

# ⚠ Safety Warning

1. Only professional technicians are allowed for installation and maintenance.
2. Installation in any damp, condensed-phase environment with inflammable and explosive gas is forbidden.
3. When the product is being installed or maintained, the power must be switched off.
4. You are prohibited from touching the conductive part when the product is operating.

# 1 Use Purpose

NR2 series thermal overload relay (hereinafter referred to as thermal relay) is applicable to circuits with frequency of AC 50Hz or 60Hz, rated operating voltage up to 690V and current from 0.1A to 630A. It is used for overload protection and phase-failure protection of 3-phase AC motor. It can also be used with corresponding contactor to act as magnetic starter.

# 2 Main Technical Parameters

**Table 1 Environmental conditions and technical parameter of main circuit**

| Environmental conditions | |
|---|---|
| Ambient temp. (℃) | -5℃~+40℃, average temperature should not exceed +35℃ within 24h |
| Hot and humid atmospheric conditions | Relative humidity should not exceed 50% at +40℃; up to 90% at +20℃ |
| Altitude | No influence below 2000m |
| Pollution class/installation category | Class 3/Ⅲ |

**Table 2 Key technical parameters**

| Model | NR2-11.5 | NR2-25 | NR2-36 | NR2-93 | NR2-150 | NR2-200 | NR2-630 |
|---|---|---|---|---|---|---|---|
| Phase-failure protection | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Manual and automatic reset | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Temperature compensation | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Tripping indication | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Test button | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Stop button | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Setting current range (A) | 0.1-13 | 0.1-25 | 23-36 | 23-93 | 80-150 | 80-200 | 160-630 |
| Matching mounting base | MB-1 | MB-2 | MB-3 | MB-4 | — | — | — |
| Rated insulation voltage Ui | 690V | | | | | | |

**Table 2 (continued)**

| Model | | NR2-11.5 | NR2-25 | NR2-36 | NR2-93 | NR2-150 | NR2-200 | NR2-630 |
|---|---|---|---|---|---|---|---|---|
| Rated operating voltage Ue | | 690V | | | | | | |
| Rated impulse withstand voltage Uimp | | 6kV | | | | | | |
| Auxiliary circuit | Ith | 5A | | | | | | |
| | AC-15 | 220V/2.73A ; 380V/1.58A | | | | | | |
| | DC-13 | 220V 0.2A | | | | | | |
| | Auxiliary contact type | 1NO 1NC | | | | | | |
| | Specification of matching fuse A | 6A | | | | | | |

**Table 3 Combination with contactor and fuse**

| Model | Setting current range A | Specification of matching fuse gG (Recommend RT16) A | Recommended matching contactor | Sectional area of connecting wire mm² |
|---|---|---|---|---|
| NR2-11.5 | 0.1~0.16 | 2 | NC6-09 | 1 |
| | 0.16~0.25 | 2 | | |
| | 0.25~0.4 | 2 | | |
| | 0.4~0.63 | 2 | | |
| | 0.63~1 | 4 | | |
| | 1~1.6 | 4 | | |
| | 1.25~2 | 6 | | |
| | 1.6~2.5 | 6 | | |
| | 2.5~4 | 10 | | |
| | 4~6 | 16 | | |
| | 5.5~8 | 20 | | |
| | 7~10 | 20 | | 1.5 |
| | 9~13 | 25 | | 2.5 |

**Table 3 (continued)**

| Model | Setting current range A | Specification of matching fuse gG (Recommend RT16) A | Recommended matching contactor | Sectional area of connecting wire mm² |
|---|---|---|---|---|
| NR2-25 | 0.1~0.16 | 2 | NC1/CJX2-09<br>NC1/CJX2-12<br>NC1/CJX2-18<br>NC1/CJX2-25<br>NC1/CJX2-32<br>NC7-09~22<br>NC7-25~32 | 1 |
| | 0.16~0.25 | 2 | | 1 |
| | 0.25~0.4 | 2 | | 1 |
| | 0.4~0.63 | 2 | | 1 |
| | 0.63~1 | 4 | | 1 |
| | 1~1.6 | 4 | | 1 |
| | 1.25~2 | 6 | | 1 |
| | 1.6~2.5 | 6 | | 1 |
| | 2.5~4 | 10 | | 1 |
| | 4~6 | 16 | | 1 |
| | 5.5~8 | 20 | | 1 |
| | 7~10 | 20 | | 1.5 |
| | 9~13 | 25 | | 2.5 |
| | 12~18 | 35 | | 2.5 |
| | 17~25 | 50 | | 4 |
| NR2-36 | 23~32 | 63 | NC1/CJX2-32 | 6 |
| | 28~36 | 80 | NC7-32~38 | 10 |
| NR2-93 | 23~32 | 63 | NC1/CJX2-40 | 6 |
| | 30~40 | 100 | NC1/CJX2-50 | 10 |
| | 37~50 | 100 | NC1/CJX2-65 | 10 |
| | 48~65 | 100 | NC1/CJX2-80 | 16 |
| | 55~70 | 125 | NC1/CJX2-95 | 25 |
| | 63~80 | 125 | NC7-40~65 | 25 |
| | 80~93 | 160 | NC7-80~95 | 35 |

**Table 3 (continued)**

| Model | Setting current range A | Specification of matching fuse gG (Recommend RT16) A | Recommended matching contactor | Sectional area of connecting wire mm² |
|---|---|---|---|---|
| NR2-150 (match with NC2 type) | 80~104 | 250 | NC2-115, 150 | 35 |
| | 95~120 | 250 | | 50 |
| | 110~150 | 250 | | 50 |
| NR2-150 (match with NC7 type) | 80~104 | 250 | NC7-115, 150, 170 | 35 |
| | 95~120 | 250 | | 50 |
| | 110~150 | 250 | | 50 |
| NR2-200 | 80~125 | 200 | NC2-115, 150, 185, 225 NC7-115, 150, 170, 205 | 50 |
| | 100~160 | 250 | | 70 |
| | 125~200 | 315 | | 95 |
| NR2-630 | 160~250 | 400 | NC2-185, 225, 265, 330, 400, 500, 630 NC7-205, 250, 300, 410, 475, 620 | 120 |
| | 200~315 | 500 | | 185 |
| | 250~400 | 630 | | 240 |
| | 315~500 | 800 | | 2×150 |
| | 400~630 | 800 | | 2×185 |

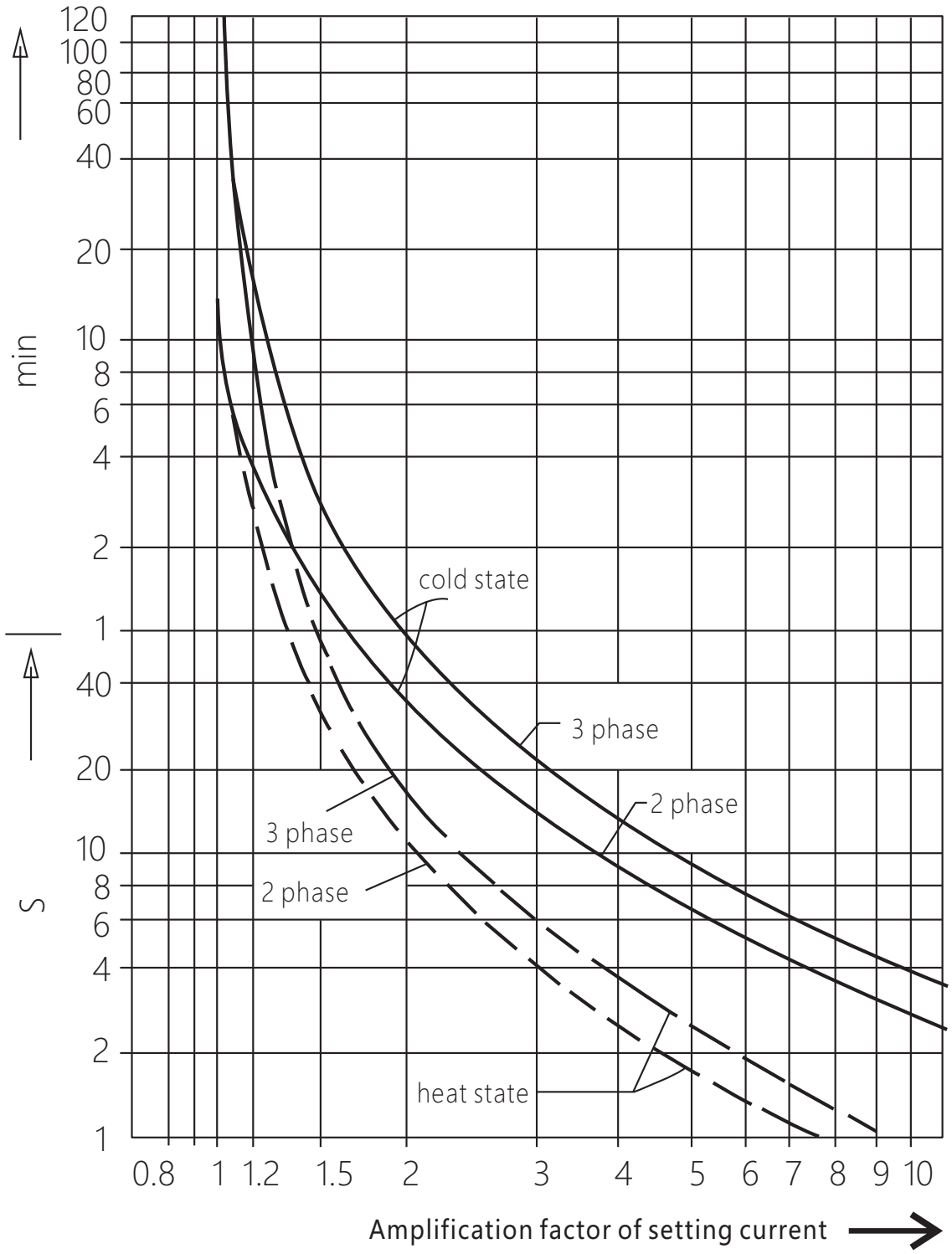



**Figure 1 Thermal relay operation time – current characteristic curve**

# 3 Installation

1 ) Installation

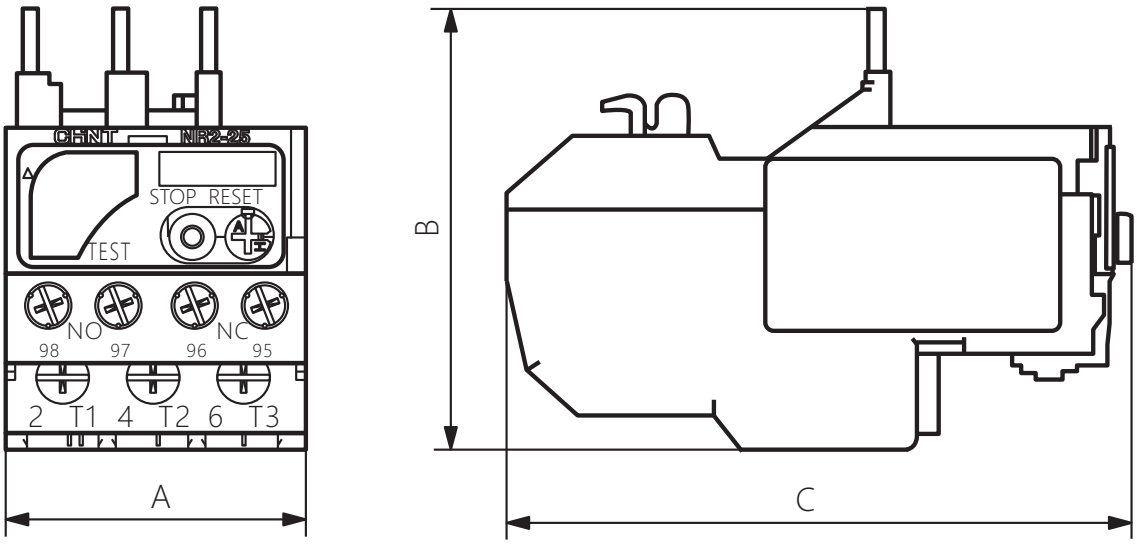



**Figure 2 Product overall dimensions (NR2-11.5~150)**

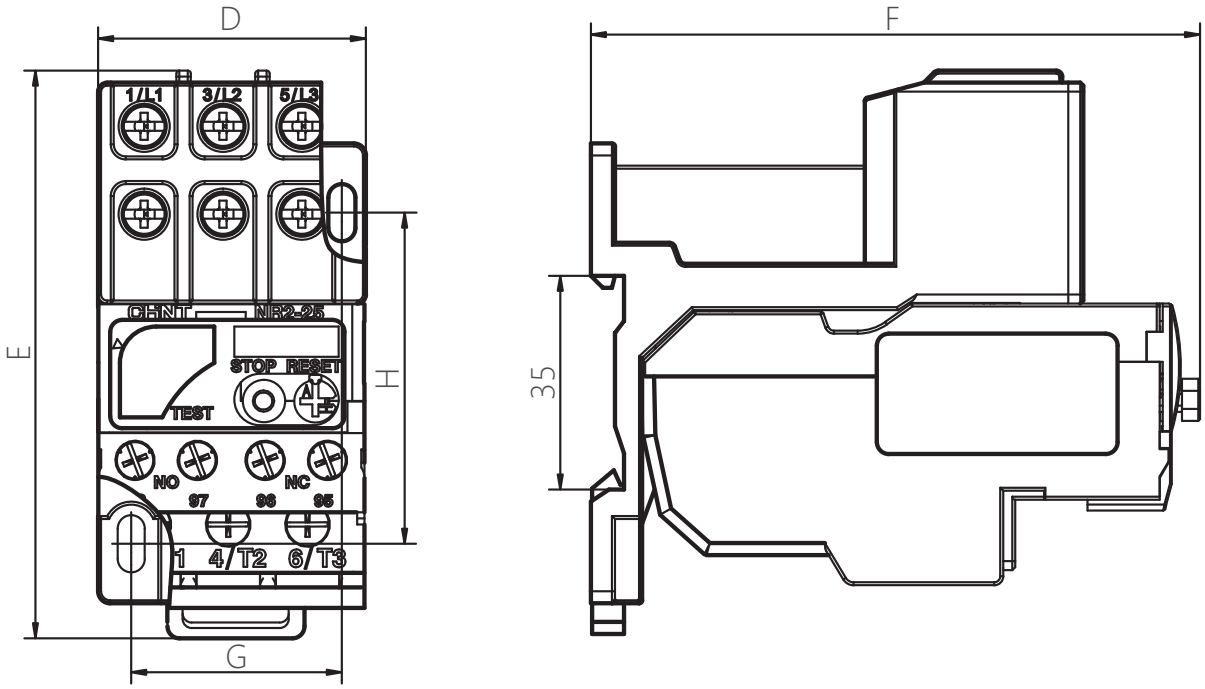



**Figure 3 Outline dimensions of product with mounting base (NR2-11.5~93)**

**Table 4 Overall dimensions**

Unit：mm

| Model | Amax | Bmax | Cmax | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| NR2-11.5 | 45 | 75 | 67.5 | 45 | 96 | 75.3 | 34 | 85.1 |
| NR2-25 | 45 | 66 | 94 | 45 | 93.6 | 102 | 35 | 55 |
| NR2-36 | 55 | 78 | 94 | 55 | 102.9 | 102 | 41 | 75.1 |
| NR2-93 | 72 | 83 | 117 | 72 | 126.5 | 126 | 61.5 | 109 |
| NR2-150 (match with NC2 type) | 102 | 141 | 120 | Must combined with contactor | | | | |
| NR2-150 (match with NC7 type) | 98 | 135 | 120 | | | | | |

Unit：mm

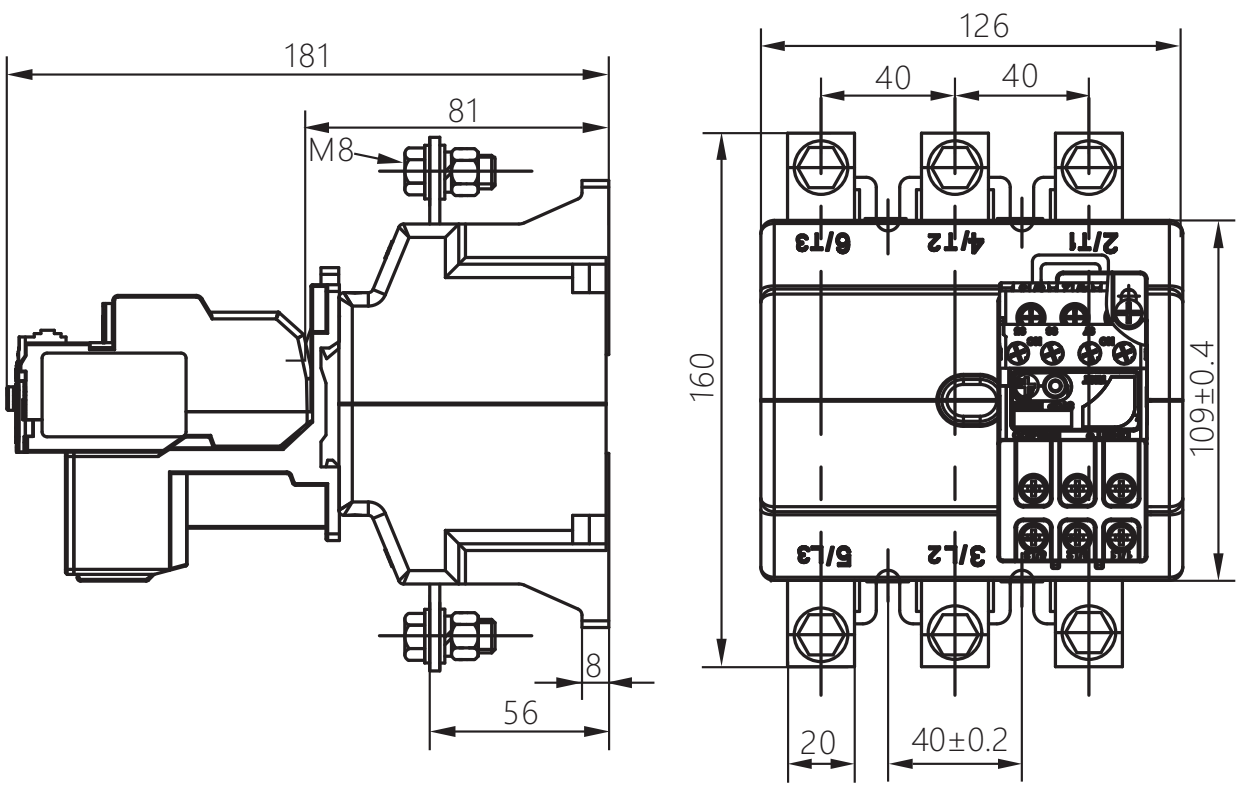
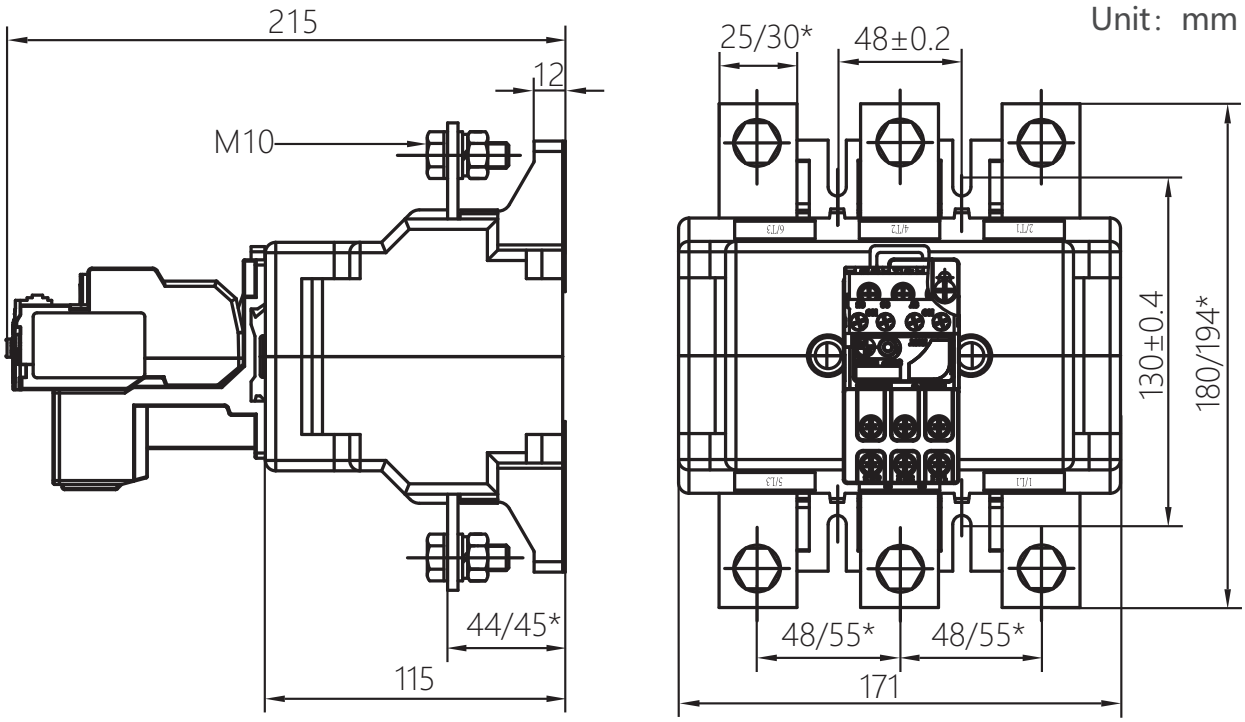



**Figure 4 Overall dimensions of NR2-200**




Note: Dimensions marked with "*" means specifications for 400A and below/ specifications for 400A and above

**Figure 5 Dimensions of NR2-630**

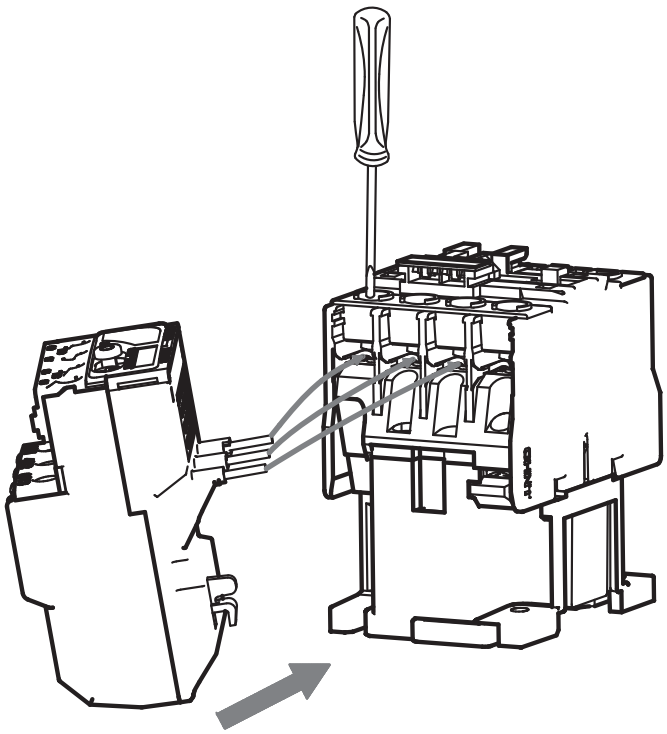


**Figure 6 Assembly drawing of thermal relay and contactor**

## Table 5 Wiring parameters

| | | | | S(mm²) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | M10 20N.m | Wrench | NR2-630 | — | — | — | — | 120~2×185 | — | S | |
| | M8 10N.m | | NR2-200 | — | — | — | — | 50~95 | — | | |
| Main circuit | M10 10N.m | | NR2-150 | — | — | 35~50 | — | 35~50 | — | | |
| | M10 10N.m | | NR2-93 | — | — | 4~35 | — | 4~35 | — | | |
| | M4 1.7N.m | | NR2-36 | — | — | 4~10 | 4~10 | 4~10 | 4~10 | A > 4mm, L < 12mm | |
| | | | NR2-25 | 1~6 | 1~6 | 1~6 | 1~6 | 1~6 | 1~6 | A > 4mm, L < 10mm | |
| | M3.5 1.2N.m | | NR2-11.5 | 1~2.5 | 1~2.5 | 1~2.5 | 1~2.5 | 1~2.5 | 1~2.5 | A > 3.5mm, L < 9mm | |
| Auxiliary circuit | M3.5 0.8 N.m | | NR2-11.5 ~630 | mm² | mm² | mm² | mm² | mm² | mm² | A L A > 3.5mm,L < 8mm | |
| | | | | 1~2.5 | 1~2.5 | 1~2.5 | 1~2.5 | 1~2.5 | 1~2.5 | | |

2) Operation and commissioning

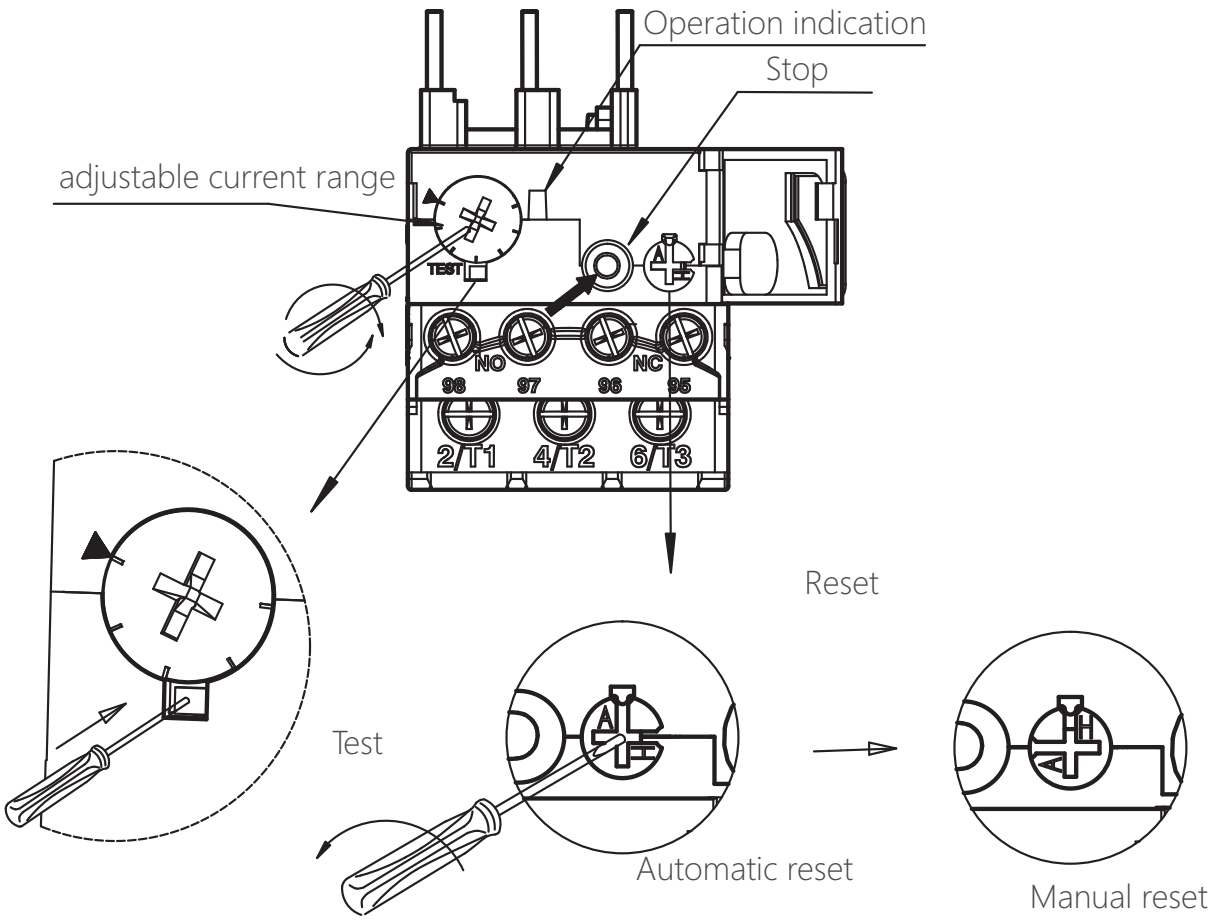



**Figure 7 Operation diagram**

# 4 Maintenance

Conduct product test and maintenance every half a year to ensure the smooth operation of the product and the good contact of NO and NC contacts. Tighten the terminal screws with specified torque and align the protection capability of the thermal overload relay with load according to commissioning requirements.

Be careful when handling and installing the thermal relay. It is prohibited to move the product by crane with strong impact so that the product will not be damaged and its protection characteristics will not change.

## Table 6 Analysis and Troubleshooting of Fault

| Symptoms | Cause analysis | Troubleshooting method and precautions |
|---|---|---|
| Misoperation of thermal relay without the motor being overloaded. | Size is too small. | Change to product with bigger size. |
| | The set current value is smaller than the actual operating current of the motor. | Fine tune the cam clockwise so that the set current matches the actual motor current. |
| | Stong shock or vibration | Check installation status and conduct troubleshooting. Do not place the product in environment with strong shock or vibration. |
| | Frequent start of motor | The start frequency of motor should not exceed 30 times per hour. |
| | The sectional area of connecting wire is too small, or there is loose connection. | Use standard wire and torque. |
| Thermal relay does not operate. | The size is too big. | Change to product with smaller size. |
| | The set current value is bigger than the actual operating current of the motor. | Fine tune the cam counter-clockwise so that the set current matches the actual motor current. |
| | The sectional area of connecting wire is too big. | Use standard wire and torque. |
| Thermal relay does not work. | The product is not reset. | Press the reset button to reset the relay. |
| | Auxiliary contacts are not powered-on. | Replace thermal relay. |
| | Main circuit or auxiliary circuit is burnt | Replace thermal relay. |

# 5 Environmental Protection

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

CHINT

# QC PASS

NR2 Series
Thermal Overload Relay
IEC/EN 60947-4-1

Check 22

Test date: Please see the packing

**ZHEJIANG CHINT ELECTRICS CO.,LTD.**

CHINT ELECTRICS

# NR2 Series
# Thermal Overload Relay
# User Instruction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