

NR2 Series
Thermal Overload Relay

User Instruction



Safety Warning

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

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. (°C)	-5°C~+40°C, average temperature should not exceed +35°C within 24h
Hot and humid atmospheric conditions	Relative humidity should not exceed 50% at +40°C; up to 90% at +20°C
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	—	—	—
Protection class	IP20				IP00		

Table 2 (continued)

Model		NR2-11.5	NR2-25	NR2-36	NR2-93	NR2-150	NR2-200	NR2-630
Rated duty system		Eight-hour day duty system, Uninterrupted duty system, Intermittent periodic duty system						
Rated insulation voltage U_i		690V						
Rated operating voltage U_e		690V						
Rated impulse withstand voltage U_{imp}		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 mm ²
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			

Table 3 (continued)

Model	Setting current range A	Specification of matching fuse gG (Recommend RT16) A	Recommended matching contactor	Sectional area of connecting wire mm ²
	7~10	20		1.5
	9~13	25		2.5
NR2-25	0.1~0.16	2	NC1/CJX2-09 NC1/CJX2-12 NC1/CJX2-18 NC1/CJX2-25 NC1/CJX2-32 NC7-09~22 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

Table 3 (continued)

Model	Setting current range A	Specification of matching fuse gG (Recommend RT16) A	Recommended matching contactor	Sectional area of connecting wire mm ²
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
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

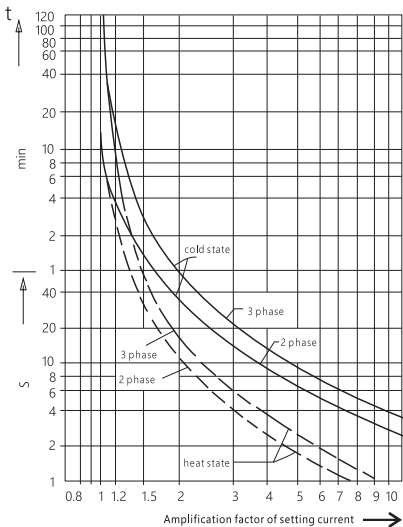


Figure 1 Thermal relay operation time – current characteristic curve

3 Installation

1) Installation

Unit: mm

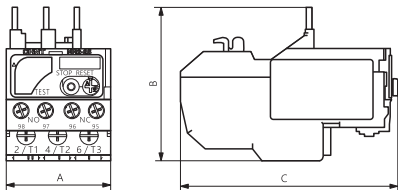


Figure 2 Product overall dimensions (NR2-11.5~150)

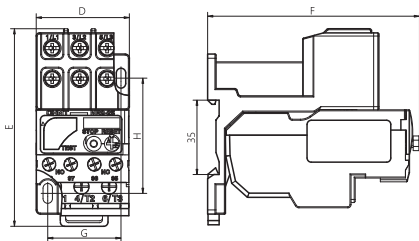


Figure 3 Outline dimensions of product with mounting base (NR2-11.5~93)

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

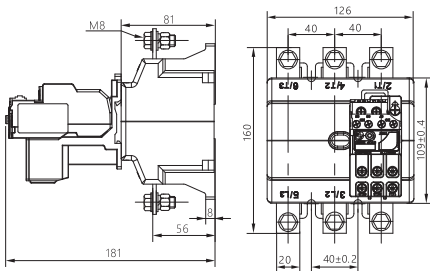
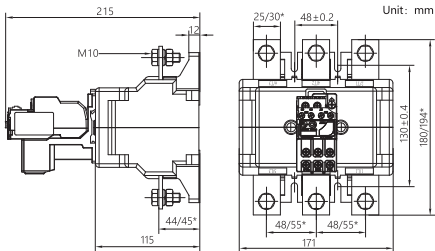


Figure 4 Overall dimensions of NR2-200



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

Figure 5 Dimensions of NR2-630

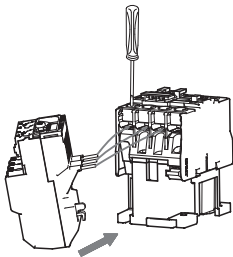
























Figure 6 Assembly drawing of thermal relay and contactor

Table 5 Wiring parameters

				S(mm ²)						s	
Main circuit	 M10 20N.m		NR2-630	—	—	—	—	120~2×185	—		
	 M8 10N.m		NR2-200	—	—	—	—	50~95	—		
	 M10 10N.m		NR2-150	—	—	35~50	—	35~50	—		
	 M10 10N.m		NR2-93	—	—	6~35	—	6~35	—		
	 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	 mm ²	 mm ²	 mm ²	 mm ²	 mm ²	 mm ²	 A > 3.5mm L < 8mm	
				1~2.5	1~2.5	1~2.5	1~2.5	1~2.5	1~2.5		

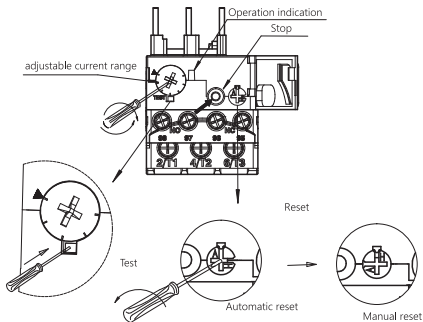


Figure 7 Operation diagram

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.
	Strong 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.

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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.

CHNT

CHINT ELECTRICS

NR2 Series
Thermal Overload Relay
User Instruction

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