NXR thermal overload relay






Overview

Applicable scope

NXR thermal overload relays (hereinafter abbreviated as thermal relays) are suitable for overload and phase loss protection for uninterrupted or intermittent AC motors with AC frequency of 50 Hz/60 Hz, a voltage up to 690 V, and a current of (0.1-630)A.

The thermal relays also provide temperature compensation, action indication, automatic and manual reset, stop, and testing functions. The products are characterized by stable and reliable performance. The thermal relays can be plugged into contactors or installed independently.

Compliant standards: IEC 60947-4-1, IEC 60947-5-1.

Structural characteristics

- Three-phase bi-metal sheet type or electronic type (NXR-200, NXR-630), with a tripping level of 10A
- With phase loss protection
- With a device for continuous adjustment of setting current
- With temperature compensation
- With action indication
- With testing mechanism
- With stop bottom
- With manual and automatic reset button (NXR-200 and NXR-630 only have manual reset)
- With one NO contact and one NC contact that are electrically separable
- Installation method: Plugged into contactor (NXR-12, 25, 38, 100) or installed independently (NXR-200, 630)
- Protection characteristics

Operation environment

Type	Operation and installation conditions
Installation type	III
Pollution degree	3
Compliant standards	IEC 60947-4-1, IEC 60947-5-1
Certification mark	CE
Enclosure protection degree	IP20 (NXR-12, 25, 38, 100)
Ambient temperature	Operation temperature limits: -35℃~+70℃. Normal operation temperature range: -5℃~+40℃. The 24-hour average temperature should not exceed +35℃. For use beyond the normal operation temperature range, see "Instructions for use in abnormal conditions" in the annex.
Altitude	Not exceeding 2000m above sea level
Atmospheric conditions	The relative humidity should not exceed 50% at the upper temperature limit of +70℃. A higher relative humidity is allowed at a lower temperature, e.g. 90% at +20℃. Special precautions should be taken against occasional condensation due to humidity variations.
Installation conditions	The angle between the installation surface and the vertical surface should not exceed ±5°.
Shock and vibration	The product should be installed in places without significant shaking, shock, and vibration.

Description

NXR	-	12	7 - 10A
Thermal overload relay model		Frame current	Setting current range
		12 25 38 100 200 630	See the table

Frame	Setting current
12	0.1-0.16A
	0.16-0.25A
	0.25-0.4A
	0.4-0.63A
	0.63-1A
	1-1.6A
	1.25-2A
	1.6-2.5A
	2.5-4A
	4-6A
	5.5-8A
	7-10A
	9-12A

Frame	Setting current
25	0.1-0.16A
	0.16-0.25A
	0.25-0.4A
	0.4-0.63A
	0.63-1A
	1-1.6A
	1.25-2A
	1.6-2.5A
	2.5-4A
	4-6A
	5.5-8A
	7-10A
	9-13A
	12-18A
	17-25A

Frame	Setting current
38	23-32A
	30-38A
100	23-32A
	30-40A
	37-50A
	48-65A
	55-70A
	63-80A
	80-93A
	80-100A
200	80-160A
	100-200A
630	125-250A
	200-400A
	315-630A

Selection example:

"NXR-25 7-10A" represents a NXR 3P thermal overload relay with a frame current class of 25 and a setting current range between 7A and 10A.

NXR thermal overload relay

Quick selection and matching table

Product appearance	Rated current A	Specification of matching fuse (RT16 recommended) A	Model of matching contactor
		gG	
 NXR-12	0.1~0.16	2	 NXC-06M, 09M, 12M
	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	
	9~12	25	
 NXR-25	0.1~0.16	2	 NXC-06, 09, 12, 16, 18, 22, 25, 32, 38
	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	
	9~13	25	
	12~18	35	
	17~25	50	
 NXR-38	23~32	63	 NXC-25, 32, 38
	30~38	80	
 NXR-100	23~32	63	 NXC-40, 50, 65, 75, 85, 100
	30~40	100	
	37~50	100	
	48~65	100	
	55~70	125	
	63~80	125	
	80~93	160	
	80~100	160	
 NXR-200	80~160	315	 NXC-120, 160, 185, 225
	125~200	315	
 NXR-630	125~250	800	 NXC-225, 265, 330, 400, 500, 630
	200~400	800	
	315~630	800	

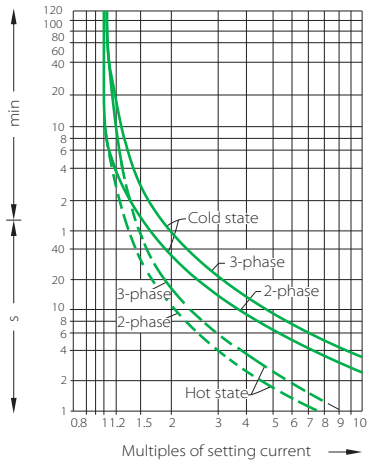
Parameters

Item			NXR-12	NXR-25	NXR-38	NXR-100	NXR-200	NXR-630
Current level			12	25	38	100	200	630
Rated insulation voltage V			690	690	690	690	690	690
Rated impulse withstand voltage V			6000	6000	6000	6000	6000	6000
Enclosure protection degree			IP20	IP20	IP20	IP20	-	-
Phase loss protection			Yes	Yes	Yes	Yes	Yes	Yes
Manual and automatic reset			Yes	Yes	Yes	Yes	Manual	Manual
Temperature compensation			Yes	Yes	Yes	Yes	Yes	Yes
Trip indication			Yes	Yes	Yes	Yes	Yes	Yes
Test button			Yes	Yes	Yes	Yes	Yes	Yes
Stop button			Yes	Yes	Yes	Yes	Yes	Yes
Installation method			Plugged	Plugged	Plugged	Plugged	Independent	Independent
Integrated auxiliary contact			1NO+1NC	1NO+1NC	1NO+1NC	1NO+1NC	1NO+1NC	1NO+1NC
AC-15 380V/400V rated current A			1.5	1.5	1.5	1.5	1.5	1.5
DC-13 220V rated current A			0.2	0.2	0.2	0.2	0.2	0.2
Conductor cross section mm^2	Main circuit	Single-core or stranded wire	1~4	1~6	4~10	4~35	25~95	50~2x185
		Wiring screw	M3.5	M4	M4	M10	M8	M10
		Tightening torque (N·m)	0.8	0.8	0.8	0.8	1.2	1.2
	Auxiliary circuit	Single-core or stranded wire	1~2.5	1~2.5	1~2.5	1~2.5	1~2.5	1~2.5
		Wiring screw	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
		Tightening torque (N·m)	1.2	1.7	1.7	10	10	20

Protection characteristics

Item	No.	Multiples of setting current		Action time	Test conditions
Overload protection	1	1.05		Without action in 2 hours	Start from cold state
	2	1.2		Act within 2 hours	Start from hot state (after No. 1)
	3	1.5		Act within 2 minutes	Start after thermal equilibrium is reached under setting current
	4	7.2		2s<Tp≤10s	Start from cold state
Phase loss protection	5	Any two phases	The other phase	Without action in 2 hours	Start from cold state
		1.0	0.9		
	6	1.15	0	Act within 2 hours	Start from hot state (after No. 5)

Trip characteristics



Thermal relay time Vs current characteristics curve (+20℃)

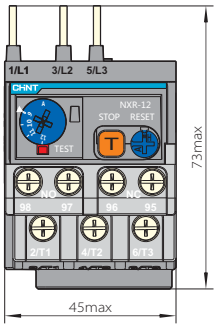
NXR thermal overload relay

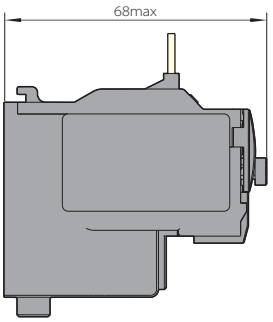
Product front view

Dimensions and installation

NXR-12

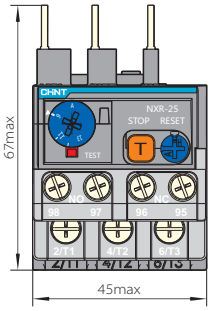
Dimensions and installation

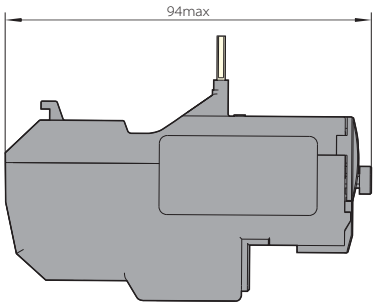




NXR-25

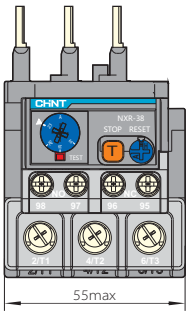
Dimensions and installation

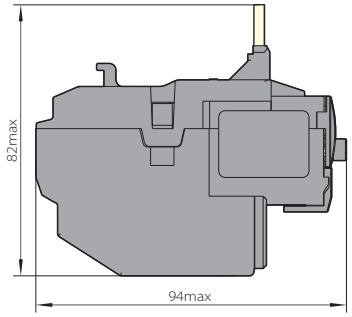




NXR-38

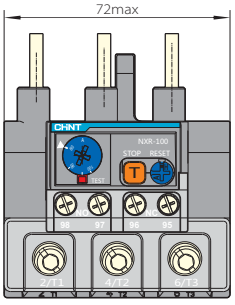
Dimensions and installation

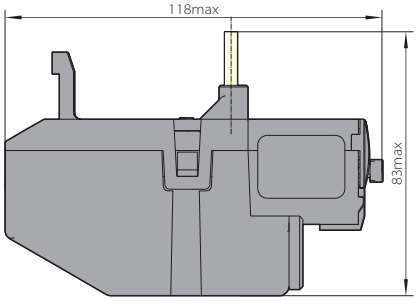




NXR-100

Dimensions and installation

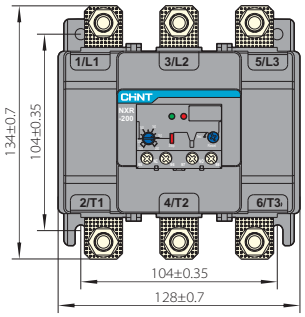


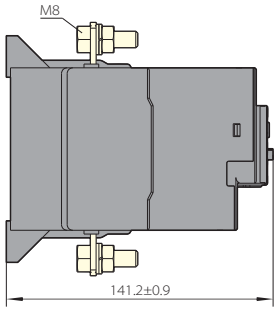


NXR thermal overload relay

NXR-200

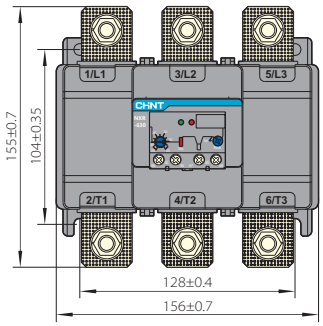
Dimensions and installation

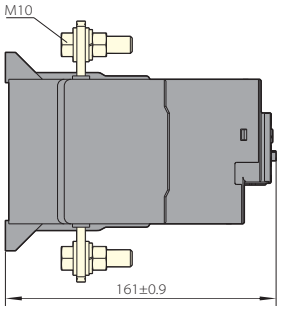




NXR-630

Dimensions and installation

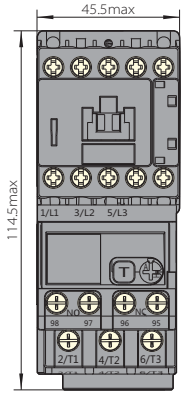


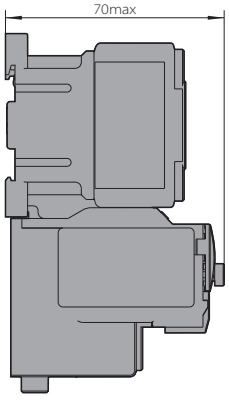


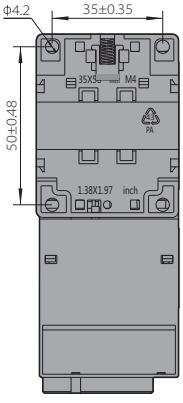
Sizes of combination with contactors

NXC-06M + NXR-12

Dimensions and installation

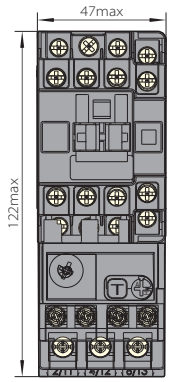


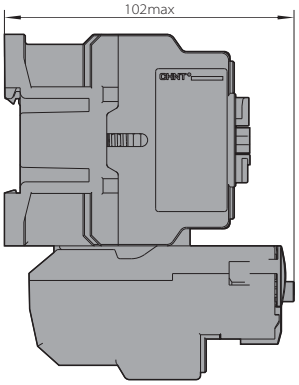


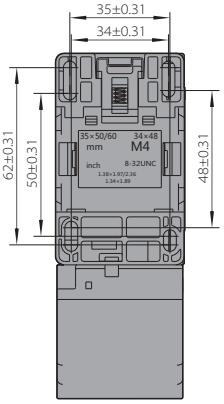


NXC-09 + NXR-25

Dimensions and installation

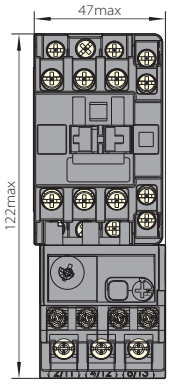


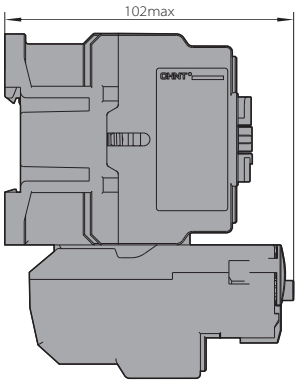


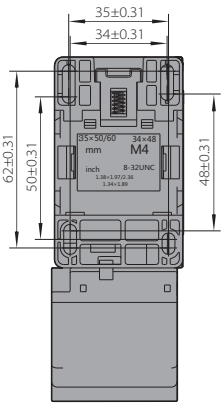


NXC-18 + NXR-25

Dimensions and installation

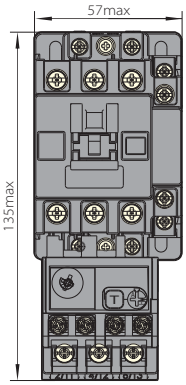


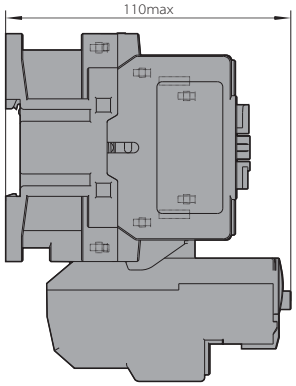


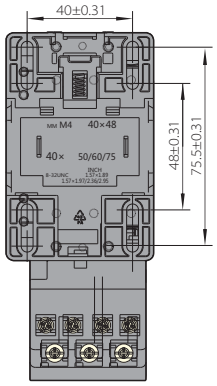


NXC-38 + NXR-25

Dimensions and installation



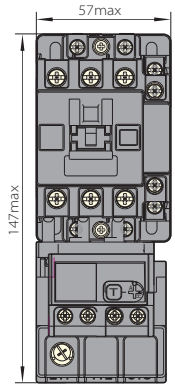


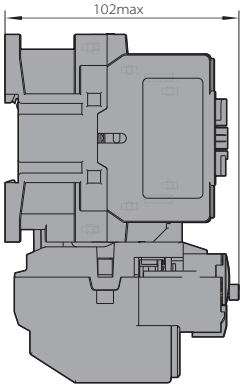


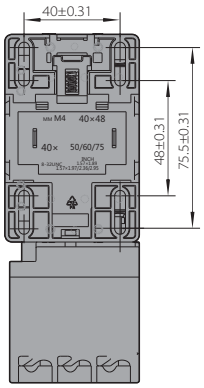
NXR thermal overload relay

NXC-38 + NXR-38

Dimensions and installation

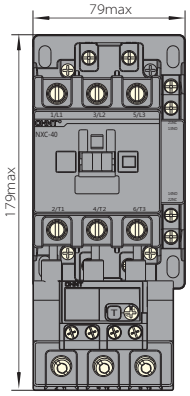


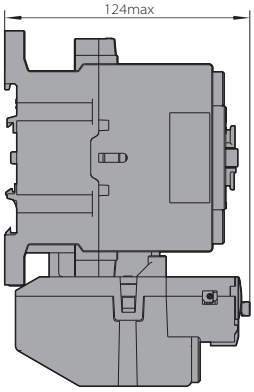


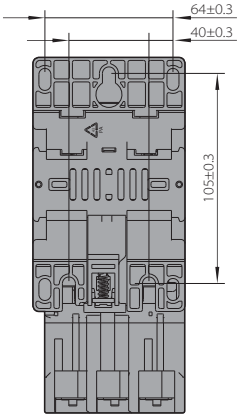


NXC-40 + NXR-100

Dimensions and installation

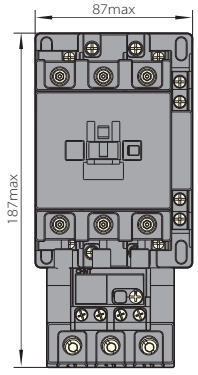


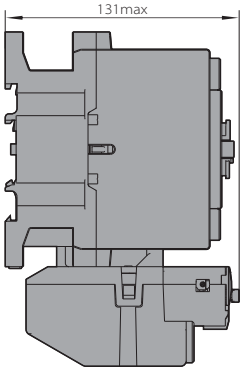


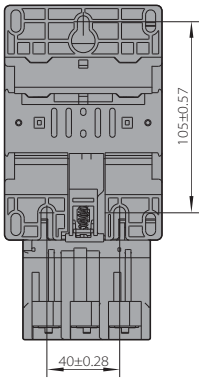


NXC-75 + NXR-100

Dimensions and installation

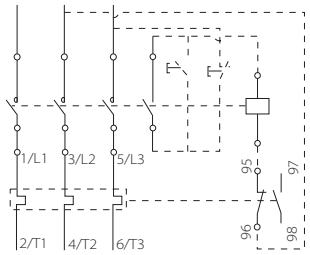




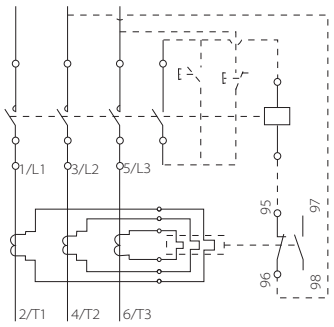


Wiring diagrams

NXR-12~100



NXR-200~630



Annex I: Instructions for use in abnormal conditions

- IEC 60947-1 standard defines normal operation temperature range for products. Use of products in the normal range will not cause significant impact on their performance.
- At an operation temperature higher than +40℃, the tolerable temperature rise of products needs to be reduced. The rated operation current should be adjusted to prevent product damage, shortened service life, lower reliability, or impact on action characteristics.
  At a temperature lower than -5℃, impact of changes to the heat dissipation system on the action characteristics of the products should be considered.
- The temperature compensation coefficients at an ambient temperature higher than +40℃ and lower than -5℃ are given below. The compensation coefficients corresponding to -35℃ and +70℃ environments are given in the table below. No corrections are required for NXR-200 and NXR-630.

Operation ambient temperature		-35℃	+70℃
Temperature compensation coefficients for NXR-12, 25, 38, 100	Multiple of stable current	1.05	0.9
	Multiple of trip current	1.4	1.2

NXR-12, 25, 38, 100

Temperature compensation curve