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**Motor Control & Protection** 

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## **CHINT**•Empower the World



Founded in 1984, CHINT Group is a leader in Chinese industrial electric appliance and new

energy sectors. With total assets of 36.5 billion RMB and nearly 30 thousand employees, the company is running business that covers the whole power equipment industrial chain including power generation, transmission, transformation, distribution, and consumption. The company is also operating in the fields of urban rail traffic, energy equipment



## The Next Reliable Choice

# **Motor Control & Protection**





The solution for various voltage fluctuation, guarantee the steady operation of the system

With 70% - 120% pull-in voltage range, which can avoid the voltage fluctuation in grid, also operates steadily in the peak power demands.



Equipped with more standard auxiliary contacts, to meet several application requirements

Standard equipped with 1NO+1NC below 100A and 2NO+2NC above 100A, which can optimize the inventory and cost performance.



Ergonomically design, easy to handle and maintain

Integrated label cover, with double coil terminal blocks, which can fast be connected without tools.



Delicate current specification, more cost-effective performance

Newly increase 6A, 16A, 22A, 38A, 75A, which fully cover 6-630A.



Absolute adaptability, with steady and reliable operation in extreme conditions

-35°C/+70°C operating temperature range. Meets several applications requirements.



# Content

NXC AC contactor	
Overview	P-01
Description	P-02
Parameters	P-04
Accessories	P-07
Dimensions and installation	P-11
Wiring diagrams	P-13
Annex I: Instructions for use in abnormal conditions	P-15
Annex II: Utilization category description	P-16
NXR thermal overload relay	
Overview	P-17
Description	P-18
Parameters	P-20
Product front view	P-21
Dimensions and installation	P-21
Wiring diagrams	P-26
Annex I: Instructions for use in abnormal conditions	P-26
NXJ plug-in relay	
Overview	P-27
Description	P-27
Parameters	P-27
Accessories	P-29
Dimensions and installation	P-29

## **NXC AC contactor**









### **Overview**

#### Applicable scop

The new NXC AC contactors feature a novel appearance and a compact structure. They are mainly used for frequent starts and control of AC motors as well as remote circuit making /breaking. They can also be combined with appropriate thermal overload relays to form electromagnetic starters.

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

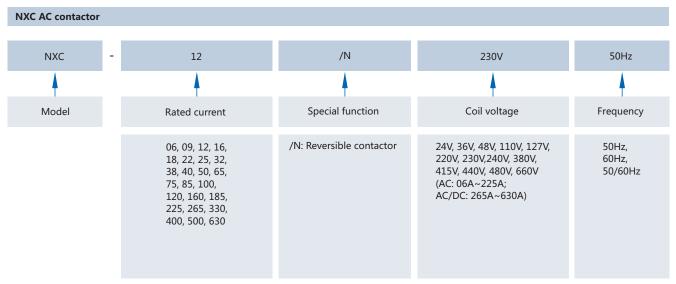
#### **Parameters**

- Rated operation current Ie: 6A~630A
- Rated operation voltage Ue: 220V~690V
- Rated insulation voltage: 690V (NXC-06M~100), 1000V (NXC-120~630)
- Number of poles: 3P and 4P (only for NXC-06M~12M)
- Coil control method: AC (NXC-06(M)~225), DC (NXC-06M~12M), AC/DC (NXC-265~630)
- Installation method: NXC-06M~100 rail and screw installation, NXC-120~630 screw installation

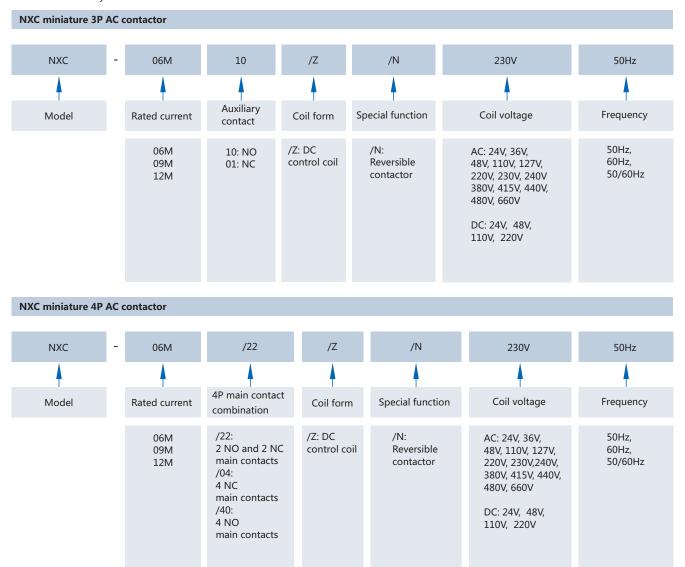
#### **Operation and installation conditions**

Туре	Operation and installation conditions
Installation class	ш
Pollution degree	3
Compliant standards	IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 60947-5-1
Certification mark	CE
Enclosure protection degree	NXC-06M~38: IP20; NXC-40~100: IP10; NXC-120~630: IP00
Ambient temperature	Operation temperature limits: -35°C~+70°C.  Normal operation temperature range: -5°C~+40°C.  The 24-hour average temperature should not exceed +35°C.  For use beyond the normal operation temperature range, see "Instructions for use in abnormal conditions" in the annex.
Altitude	Not exceeding 2000 m above sea level
Atmospheric conditions	The relative humidity should not exceed 50% at the upper temperature limit of +70°C.  A higher relative humidity is allowed at a lower temperature, e.g. 90% at +20°C. 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 $\pm 5^\circ$ .
Shock and vibration	The product should be installed in places without significant shaking, shock, and vibration.

## **Description**



Note: 06A-100A products contain one NO auxiliary contact and one NC auxiliary contact. 120A-630A products contain two NO auxiliary contacts and two NC auxiliary contacts.



Model example: NXC-12 240V 50Hz represents an AC contactor under AC-3 utilization category that provides a rated current of 12A at a main circuit voltage of 380V/400V/415V. Each contactor body contains one NO auxiliary contact and one NC auxiliary contact. The coil control voltage and frequency are 240V AC and 50Hz respectively.

## **NXC AC contactor**

### **NXC AC contactor selection table**

Motor power kW			Maximum operation current A	Number of contacts contain	ned in the contactor body	
220V/230V/240V	380V/400V	660V/690V	(AC-3 380V/400V)	NO	NC	Contactor model
1.5	2.2	3	6	1	0	NXC-06M10
1.5	2.2	3	6	0	1	NXC-06M01
1.5	2.2	3	6	1	1	NXC-06
2.2	4	4	9	1	0	NXC-09M10
2.2	4	4	9	0	1	NXC-09M01
2.2	4	5.5	9	1	1	NXC-09
3	5.5	4	12	1	0	NXC-12M10
3	5.5	4	12	0	1	NXC-12M01
3	5.5	7.5	12	1	1	NXC-12
3	7.5	7.5	16	1	1	NXC-16
4	7.5	10	18	1	1	NXC-18
5.5	11	11	22	1	1	NXC-22
5.5	11	15	25	1	1	NXC-25
7.5	15	18.5	32	1	1	NXC-32
9	18.5	18.5	38	1	1	NXC-38
11	18.5	30	40	1	1	NXC-40
15	22	37	50	1	1	NXC-50
18.5	30	37	65	1	1	NXC-65
22	37	37	75	1	1	NXC-75
22	37	45	85	1	1	NXC-85
25	45	45	100	1	1	NXC-100
37	55	80	120	2	2	NXC-120
45	75	100	160	2	2	NXC-160
55	90	100	185	2	2	NXC-185
63	110	110	225	2	2	NXC-225
75	132	160	265	2	2	NXC-265
90	160	200	330	2	2	NXC-330
132	200	300	400	2	2	NXC-400
160	250	335	500	2	2	NXC-500
200	335	350	630	2	2	NXC-630

## Coil voltage specification table

NXC-06M~12M											
AC (V) 50Hz	24	36	48	110	127	220 230 240	380	415			
AC (V) 60Hz	24	36	48	110	127	220	380	415			
DC (V)	24	-	48	110	-	220	-	-			

NXC-06~100											
AC (V) 50Hz	24	36	48	110	127	220 230 240	380	415			
AC (V) 60Hz	24	36	48	110	127	220	380	415			

NXC-120~225												
AC (V) 50Hz	-	-	-	-	110	127	220 230 240	380				
AC (V) 60Hz	-	-	-	-	110	127	220	380				

NXC-265~630								
AC/DC (V)	-	-	-	-	110~127	220~240	380~415	-

#### **Parameters**

#### Main circuit parameters and technical performance Contactor model NXC-06M NXC-09M NXC-12M NXC-06 NXC-09 NXC-12 NXC-16 NXC-18 25 25 Conventional thermal current Ith (A) 20 20 20 20 Rated insulation voltage Ui (V) 690 Rated impulse withstand voltage Uimp (kV) 6 Rated making capacity Making current: 10×Ie (AC-3) or 12×Ie (AC-4) Rated breaking capacity Breaking current: 8×Ie (AC-3) or 10×Ie (AC-4) AC-3 16 18 22 6 12 12 9 220V/230V/240V 12 16 22 AC-4 6 9 6 9 12 18 Rated operation current Ie (A) 16 18 22 AC-3 6 9 12 6 9 12 380V/400V/415V 12 18 AC-4 6 9 9 6 9 12 18 AC-3 3.8 4.9 4.9 3.8 6.6 8.9 8.9 12 14 660V/690V AC-4 3.8 4.9 4.9 3.8 6.6 8.9 8.9 12 12 220V/230V/240V 2.2 1.5 3 1.5 2.2 3 3 4 5.5 Rated control power 380V/400V/415V 2.2 4 5.5 2.2 4 5.5 7.5 7.5 11 (kW) 3 5.5 7.5 7.5 10 11 660V/690V Electrical life (cycles) AC-3 1.2×10<sup>6</sup> Mechanical life (cycles) 1.2×10<sup>7</sup> 3 NO, 4 NO, 2 NO+2 NC Main contact 3 NO NT00-25 NT00-25 Fuse supplied for SCPD NT00-20 NT00-20 NT00-25 NT00-20 NT00-32 NT00-32 Matching thermal overload relay Model NXR-25 3P 1 NO or 1 NC 1 NO+1 NC Built-in auxiliary contact

Control circuit	t	Contactor mod	lel	NXC-06M	NXC-09M	NXC-12M	NXC-06	NXC-09	NXC-12	NXC-16	NXC-18	NXC-22
		Prefabricated	1	1~2.5			1~4				1.5~6	
	Cable connection	flexible wire	2	1~1.5	1~1.5						1.5~4	
Main circuit	(mm²)	Hard wire	1	1~2.5			1~4			1.5~6		
connection		naru wire	2	1~2.5			1~4				1.5~6	
	Size of fasten	ing screw		M3			M3.5				M3.5	
	Tightening torque (N·m)			0.8			0.8				0.8	
		Prefabricated	1	1~2.5			1~4					
	Cable connection	flexible wire	2	1~1.5			1~2.5					
Control circuit	(mm²)	Hard wire	1	1~2.5			1~4					
connection	Hard wire 2			1~2.5			1~4					
	Size of fastening screw			M3			M3.5					
	Tightening torque (N·m)			0.8			0.8					

Contactor model		NXC-06M	NXC-09M	NXC-12M	NXC-06	NXC-09	NXC-12	NXC-16	NXC-18	NXC-22		
Coil control	AC 50Hz	24, 36, 48, 110, 12	27, 220, 230, 240, 380	0, 415	24, 36, 48, 110, 127, 220, 230, 240, 380, 415							
power supply	DC	24, 48, 110, 220			-							
Control voltage	Pull-in	(75%~120%) Us			(70% ~ 120%) Us							
Control voltage	Release	AC: (20%~70%) L	s; DC: (10%~70%) U	s	(20% ~ 65%) Us							
Coil average	Start	25~40			40~60			40~60				
power (VA)	Hold	2~7			9.5		9.5					
Heat dissipation AAA	AC	1~3			1~3		1~3					
Heat dissipation (W)	DC	-			-				-			

## **NXC AC contactor**

Contactor mod	del			NXC-25	NXC-32	NXC-38	NXC-40	NXC-50	NXC-65	NXC-75	NXC-85	NXC-100			
						68 •			72		2 0				
Conventional th	hermal cu	rrent Ith (A)		40	50	50	60	80	80	90	100	110			
Rated insulation	n voltage	e Ui (V)		690											
Rated impulse	withstand	d voltage Uimp	(kV)	8											
Rated making	capacity			Making currer	nt: 10×Ie (AC-3) o	r 12×Ie (AC-4)									
Rated breaking capacity  AC-3				Breaking curre	ent: 8×Ie (AC-3) o	r 10×Ie (AC-4)		,							
220V/2	220V/230	220V/230V/240V		25	32	38	40	50	65	75	85	100			
Rated				25	32	38	40	50	65	75	85	100			
operation current	380V/40	00V/415V	AC-3	25	32	38	40	50	65	75	85	100			
Ie (A)	5001711		AC-4	25	32	32	40	50	65	75	85	100			
	660V/69	90V	AC-3	18	22	22	34	39	42	42	49	49			
	,		AC-4	18	22	22	34	39	42	42	49	49			
Rated	AC-3	220V/230V/2	40V	5.5	7.5	9	11	15	18.5	22	22	25			
control power	(kW)	380V/400V/4	15V	11	15	18.5	18.5	22	30	37	37	45			
		660V/690V		15	18.5	18.5	30	37	37	37	45	45			
Electrical life (cy	rcles)		AC-3	1.2×10 <sup>6</sup>			1×10 <sup>6</sup>			0.8×10 <sup>6</sup>					
	,		AC-4	See electrical	life curve										
Mechanical life	(cycles)			1×10 <sup>7</sup>			0.9×10 <sup>7</sup>			0.65×10 <sup>7</sup>					
Main contact				3 NO											
Fuse supplied fo	or SCPD			gG40	gG50	gG50	gG63	gG80	gG80	gG100	gG100	gG125			
Matching therm	nal overlo	ad relay	Model	NXR-25	NXR-38		NXR-100								
Built-in auxiliary	/ contact		3P	1 NO+1 NC											
z zz m. aaxillar y	4P	4P	-												

Control circuit	t	Contactor mod	lel	NXC-25	NXC-32	NXC-38	NXC-40	NXC-50	NXC-65	NXC-75	NXC-85	NXC-100
		Prefabricated	1	1.5~10			6~25			10~35		
	Cabling	flexible wire	2	1.5~6			4~10	4~10				
Main circuit	(mm²)	Handorder.	1	1.5~6	1.5~6			6~25				
connection		Hard wire	2	1.5~6			4~10			6~16		
	Size of fastening screw			M4			M8			M8		
	Tightening	g torque (N·m)		1.2			6			6		
		Prefabricated	1	1~4	1~4							
	Cabling	flexible wire	2	1~2.5								
Control circuit	(mm²)		1	1~4								
connection		Hard wire 2		1~4								
	Size of fastening screw			M3.5								
	Tightening torque (N·m)			0.8	0.8							

Contactor model		NXC-25	NXC-32	NXC-38	NXC-40	NXC-50	NXC-65	NXC-75	NXC-85	NXC-100
Coil control power supply	AC 50Hz	24, 36, 48, 110, 1	127, 220, 230, 240,	380, 415						
Control voltage	Pull-in	(70%~120%) Us								
Control voltage	Release	(20%~65%) Us								
Coil average	Start	50~70			160~210			190~250		
power (VA)	Hold	8~11.4			13~25			17~30		
Heat dissipation (AD	AC 1~3							6~10		
Heat dissipation (W)	DC	-			-			-		

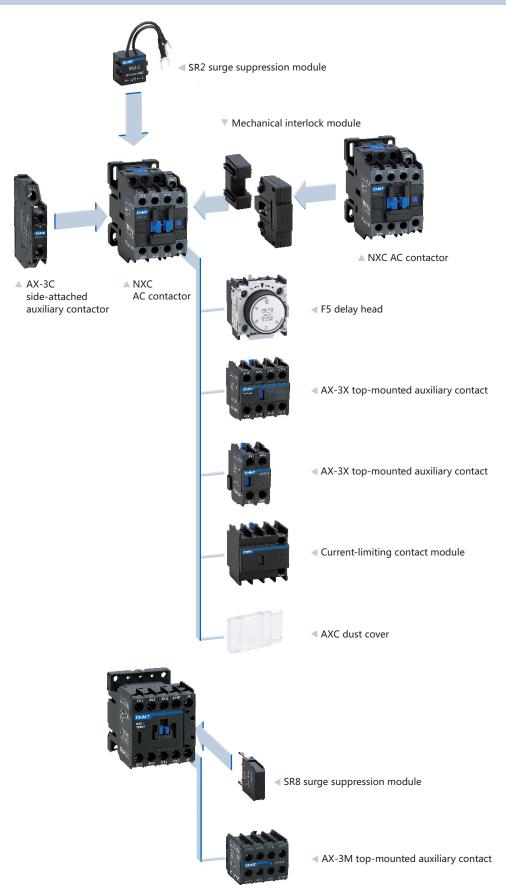
Contactor mode	el			NXC-120	NXC-160	NXC-185	NXC-225	NXC-265	NXC-330	NXC-400	NXC-500	NXC-630		
Conventional the	ermal cu	rrent Ith (A)		200	200	275	275	315	380	450	630	700		
Rated insulation voltage Ui (V)				1000										
Rated impulse w	rithstand	l voltage Uimp	(kV)	12										
Rated making ca	pacity			Making curren	t: 10×Ie (AC-3) or	12×Ie (AC-4)								
Rated breaking capacity				Breaking curre	nt: 8×Ie (AC-3) or	10×Ie (AC-4)								
	220V/230V/240V		AC-3	120	160	185	225	265	330	400	500	630		
Rated			AC-4	120	160	160	185	265	330	330	500	500		
operation current	380V/400V/415V		AC-3	120	160	185	225	265	330	400	500	630		
Ie (A)		AC-		120	160	160	185	265	330	330	500	500		
	660V/69	90V	AC-3	86	107	107	118	170	235	303	353	400		
			AC-4	86	107	107	107	137	170	235	303	353		
Rated	AC-3	220V/230V/2		37	45	55	63	75	90	132	160	200		
COILLIOI	(kW)	380V/400V/4	415V	55	75	90	110	132	160	200	250	335		
		660V/690V	1	80	100	100	110	160	200	300	335	350		
Electrical life (cyc	les)		AC-3	1.2×10 <sup>6</sup>				0.8×10 <sup>6</sup>						
			AC-4	See electrical li	fe curve									
Mechanical life (c	cycles)			0.6×10 <sup>7</sup>										
Main contact				3 NO										
Fuse supplied for SCPD			gG224	gG224	gG315	gG315	gG400	gG425	gG500	gG800	gG950			
Matching therma	l overlo	ad relay	Model	NXR-200			NXR-630							
Built-in auxiliary o	contact		3P	2 NO+2 NC										
			4P	-										

		Contactor mod				l							
Control circuit	Control circuit Contac		lel	NXC-120	NXC-160	NXC-185	NXC-225	NXC-265	NXC-330	NXC-400	NXC-500	NXC-630	
		Prefabricated	1	10~150									
Cable	Cable connection	flexible wire	2	10~75	10~75								
Main circuit	(mm²)	Hard wire	1	10~150			50~240						
connection		naid wife	2	10~75			50~240						
	Size of fastening screw			M6 M8			M10						
	Tightening to	Tightening torque (N·m)			10			14					
		Prefabricated	1	1~4									
	Cable connection	flexible wire	2	1~2.5									
Control circuit	(mm²)	Hard wire	1	1~4									
connection		Hard Wire	2	1~4									
	Size of fasteni	Size of fastening screw			M3.5								
	Tightening to	rque (N·m)		0.8									

Contactor model		NXC-120	NXC-160	NXC-185	NXC-225	NXC-265	NXC-330	NXC-400	NXC-500	NXC-630	
Coil control power supply	AC 50Hz	110, 127, 220, 2	30, 240, 380			Common for AC and DC: 110, 127, 220, 230, 240, 380					
	DC	-				Common for AC and DC. 110, 127, 220, 230, 240, 380					
Control voltage	Pull-in	(75%~120%)Us				(75%~120%)Us					
Control voltage	Release	(20%~70%)Us				(10%~70%)Us					
Coil average	Start	500				600			800		
power (VA)	Hold	50				11			11		
Heat dissipation (W)	AC	30~50			3~6			3~7			
rieat dissipation (vv)	DC	-	-				3~6			3~7	

### **Accessories**

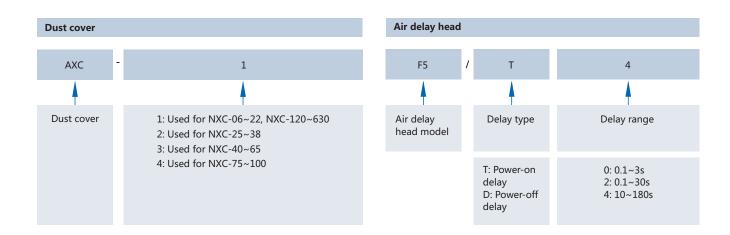
### Accessory diagrams



#### **Accessory description** Top-mounted auxiliary contact group Side-attached auxiliary contact group AX - 3X 11 AX - 3M 11 AX - 3C 11 В Auxiliary NO and NC Auxiliary NO and NC Side-attached NO and NC A: Standard model, auxiliary contact left omitted, applicable to contact contact group auxiliary contact auxiliary contact contact pair group model pair combination model pair combination group model combination 6A~225A AC contactor B: Expanded model, Applicable to 11, 20, 02 Applicable to 11, 20, 02 used for 265A~630A 22, 13, 31 NXC-06M ~12M 22, 13, 31 6A-630A AC contactor AC contactor 04, 40 AC contactor 04, 40 11

product

product



## **NXC AC contactor**

### Accessory selection table (auxiliary contact)

Contactor	Optional accessory	Accessory model	Contact combination
		AX-3M/20	2NO+0NC
		AX-3M/11	1NO+1NC
		AX-3M/02	0NO+2NC
NXC-06M~12M	AX-3M top-mounted	AX-3M/40	4NO+0NC
NAC-06WI~12WI	auxiliary contact	AX-3M/31	3NO+1NC
		AX-3M/22	2NO+2NC
		AX-3M/13	1NO+3NC
		AX-3M/04	0NO+4NC
		AX-3X/20	2NO+0NC
		AX-3X/11	1NO+1NC
		AX-3X/02	0NO+2NC
	AX-3X top-mounted	AX-3X/40	4NO+0NC
NXC-06~225	auxiliary contact	AX-3X/31	3NO+1NC
NAC-00~225		AX-3X/22	2NO+2NC
		AX-3X/13	1NO+3NC
		AX-3X/04	0NO+4NC
	AX-3C side-attached auxiliary contact	AX-3C/11	1NO+1NC
		AX-3X/20	2NO+0NC
		AX-3X/11	1NO+1NC
		AX-3X/02	0NO+2NC
	AX-3X top-mounted	AX-3X/40	4NO+0NC
NXC-265~630	auxiliary contact	AX-3X/31	3NO+1NC
INAC-203~030		AX-3X/22	2NO+2NC
		AX-3X/13	1NO+3NC
		AX-3X/04	0NO+4NC
	AX-3C side-attached auxiliary contact	AX-3C/11B	1NO+1NC

### Accessory selection table (air delay head)

Contactor	Optional accessory	Accessory model	Contact combination	Delay range (s)
		F5-T0	1NO+1NC	0.1~3
		F5-T2	1NO+1NC	0.1~30
NXC full series	EE sin dalamband	F5-T4	1NO+1NC	10~180
(except for NXC-06M~12M)	F5 air delay head	F5-D0	1NO+1NC	0.1~3
		F5-D2	1NO+1NC	0.1~30
		F5-D4	1NO+1NC	10~180

### Accessory selection table (dust cover)

Contactor	Optional accessory
NXC-06~22、NXC-120~630	AXC-1 dust cover
NXC-25~38	AXC-2 dust cover
NXC-40~65	AXC-3 dust cover
NXC-75~100	AXC-4 dust cover

### Main parameters and technical performance indicators of accessories

Item			Main technical parameters					
Rated operation cur	rent (V)		To 690					
Rated insulation vol	tage (V)		690					
Conventional therma	Conventional thermal current Ith (A)		10					
Rated making capac	Rated making capacity (A)		Breaking current 10 Ie (AC-15) or Ie (DC-13)					
Short-circuit protect	ion		gG fuse: 10A					
	Auxiliary contact	AC-15	380V/400V/415V	1.5A				
Control capacity	Auxiliary Contact	DC-13	220V/230V/240V	0.3A				
Control Capacity	F5 air delay head	AC-15	660V/380V	0.52A/0.95A				
	r5 all delay flead	DC-13	220V	0.15A				
Compliant standards	5		IEC/EN 60947-5-1					
Product certification			CE					
Enclosure protection	degree		IP 20					
	Flexible wire without co	ld-pressed terminal	1~4					
	Tiexible wife without co	ia-pressea terminai	1~4					
Cable	Flexible wire with cold-p	pressed terminal	1~4					
connection (mm²)	Tiexible wife with cold-p	nesseu terriiriai	1~2.5					
	Hard wire		1~4					
	naid wife		1~4					
Fastening screw size			M3.5, M3 (AX-3M)					
Tightening torque (N	√m)		0.8					

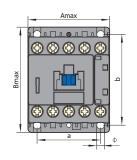
#### **Derivative products**

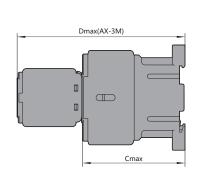


### **Dimensions and installation**

## NXC-06M-12M







Dimensions and installation

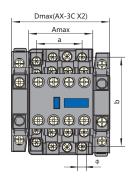
Dimensions and installation

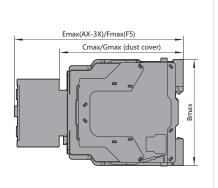
Dimensions and installation

Model	Amax	Bmax	Cmax	Dmax	a	b	Φ
NXC-06M-12M	45.5	59	58	94	35±0.35	50±0.48	4.2
NXC-06M/4-12M/4	45.5	59	58	94	35±0.35	50±0.48	4.2
NXC-06M/Z-12M/Z	45.5	59	70	106	35±0.35	50±0.48	4.2
NXC-06M/4/Z-12M/4/Z	45.5	59	70	106	35±0.35	50±0.48	4.2

## NXC-06-22

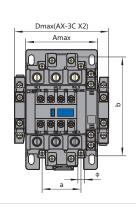


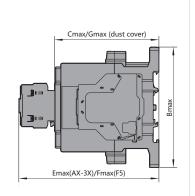




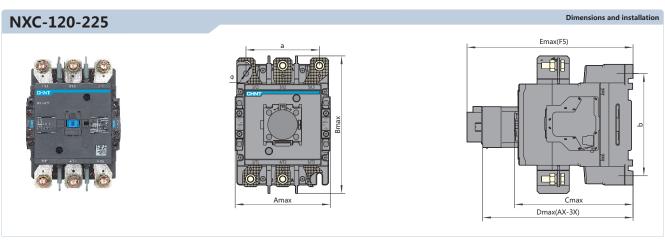
## NXC-25-100

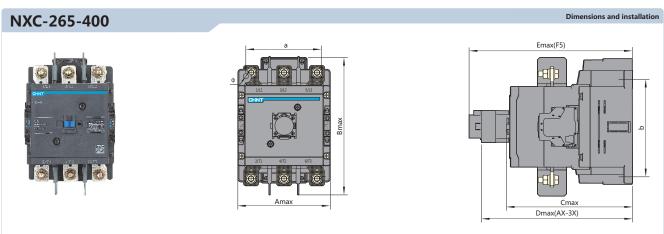


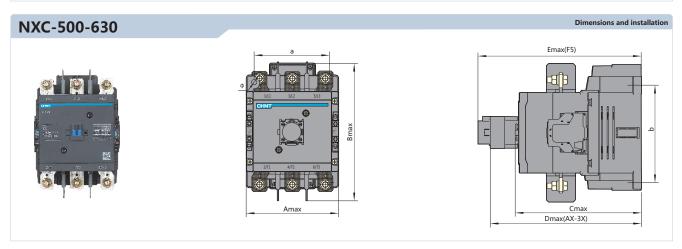




Model	Amax	Bmax	Cmax	Dmax	Emax	Fmax	Gmax	a	b	Ф
NXC-06-22	45.5	75	88	70	126.5	146.5	90	35±0.31	62±0.31	4.5
NXC-25-38	56.5	87	93	81	131.5	151.5	95	40±0.31	48±0.31	4.5
NXC-40-65	77	129	118	102	156.5	176.5	121	40±0.31	105±0.31	6.5
NXC-75-100	87	132	127	112	165.5	185.5	129	40±0.28	105±0.57	6.5



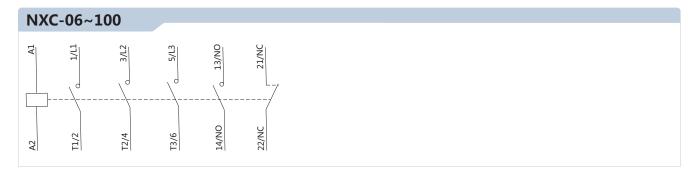


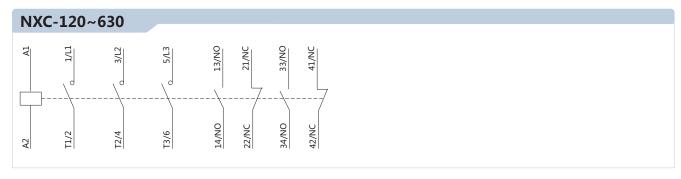


Model	Amax	Bmax	Cmax	Dmax	Emax	a	b	ф
NXC-120-225	127	182	158	196.5	216.5	96±0.5	133.6±0.8	7
NXC-265-400	150	236	207	245.5	265.5	120±0.5	180±0.8	9
NXC-500-630	165	248	225	263.5	283.5	130±0.5	180±0.8	9

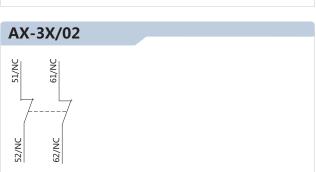
## **NXC AC contactor**

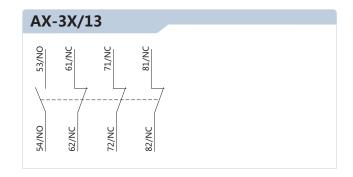
## Wiring diagrams

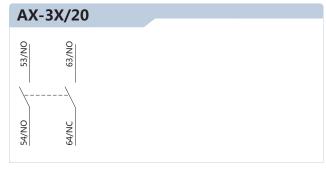


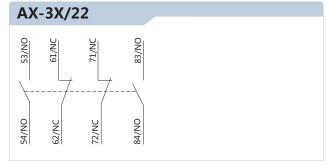


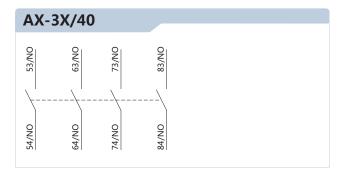


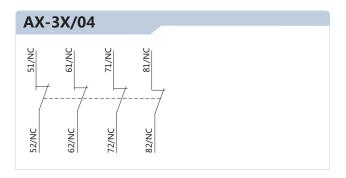


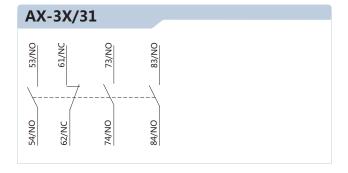


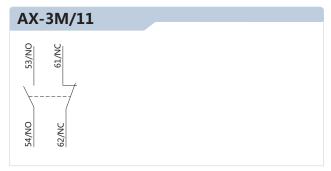


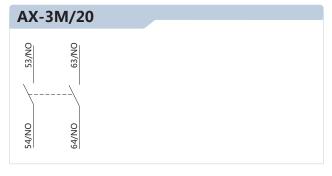


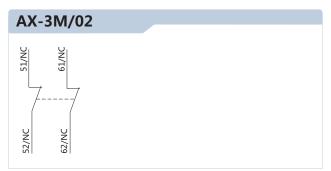


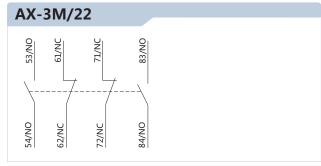


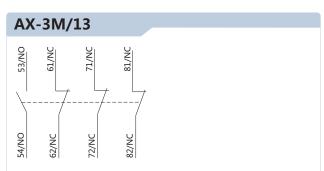


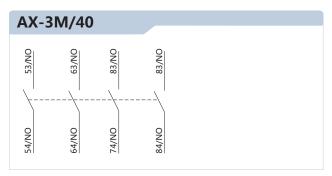


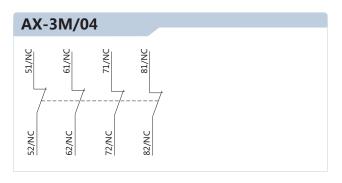


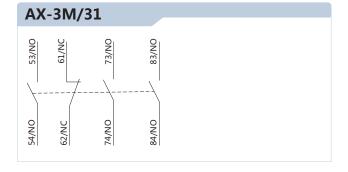












#### Annex I: Instructions for use in abnormal conditions

#### Instructions for use of correction factors in high altitude areas

- IEC/EN 60947-4-1 standard defines the relation between altitude and impulse withstand voltage. An altitude of 2000 m above sea level or lower has no significant impact on product performance.
- At an altitude higher than 2000 m, air cooling effect and decease of rated impulse withstand voltage have to be considered. In this case, design and use of products have to be negotiated by the manufacturer and the user.
- The correction factors for rated impulse withstand voltage and rated operation current for altitudes higher than 2000 m are given in the following table. The rated operation voltage remains unchanged.

Altitude (m)	2000	3000	4000
Rated impulse withstand voltage correction factor	1	0.88	0.78
Rated operation current correction factor	1	0.92	0.9

#### Instructions for use under abnormal ambient temperature

- IEC/EN 60947-4-1 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°C, the tolerable temperature rise of products needs to be reduced. Both rated operation current and number of contactors in standard products have to be decreased to prevent product damage, shortened service life, lower reliability, or impact on control voltage. At a temperature lower than -5°C, freezing of insulation and lubrication grease should be considered to prevent action failures. In these cases, design and use of products have to be negotiated by the manufacturer and the user.
- The correction factors for different rated operation current under operation temperature higher than +55°C are given in the following table. The
  rated operation voltage remains unchanged.

Ambient temperature (°C)	55	60	65	70
Correction factor	1	0.93	0.875	0.75

• At the temperature range of +55°C~+70°C, the pull-in voltage range of AC contactors is (90%~110%)Us, and (70%~120%)Us is the results of cold status tests at 40°C ambient temperature.

#### Instructions for derating during use in corrosive environment

#### Impact on metal parts

Chlorine Cl<sub>2</sub>, nitrogen dioxide NO<sub>2</sub>, hydrogen sulfide H<sub>2</sub>S, sulfur dioxide SO<sub>2</sub>

Copper: The thickness of copper sulfide coating in chlorine environment will be twice that in normal environment conditions. This is also the case for environments with nitrogen dioxide.

Silver: When used in  $SO_2$  or  $H_2S$  environment, the surface of silver or silver coated contacts will become dark due to formation of a silver sulfide coating. This will lead to higher contact temperature rise and may damage to the contacts.

In humid environments where  $Cl_2$  and  $H_2S$  coexist, the coating thickness will increase by 7 times. With presence of both  $H_2S$  and  $NO_2$ , the silver sulfide thickness will increase by 20 times.

#### Considerations during product selection

In refinery, steel, paper, artificial fiber (nylon) industry or other industries using sulphur, equipment may experience vulcanization (also called oxidization in some industrial sectors). Equipment installed in machine rooms is not always well protected from oxidization. Short inlets are often used to ensure that the pressure in such rooms is slightly higher than atmospheric pressure, which helps reduce pollutions due to external factor to a certain degree. However, after operation for 5 to 6 years, the equipment still experience rust and oxidization inevitably. Hence in operation environments with corrosive gas, the equipment needs to be used with derating. The derating coefficient relative to the rated value is 0.6 (up to 0.8). This helps reduce rate of accelerated oxidization due to temperature rise.

#### Instructions for use with parallel poles

• In case of parallel poles, the rated current of such poles needs to be corrected to make up for distribution of long-term unstable current, as shown in the table below:

Number of parallel poles	2	3	4
Correction factor	1.6	2.25	2.8

### Annex II: Utilization category description

Different types of power-consuming equipment may have significantly different loading characteristics and current changes during making/ breaking, hence they have different requirements for contactors. IEC 60947-1 standard defines contactor utilization categories that are indicated by one or more of the following use conditions:

- Current, indicated with multiples of rated current
- Voltage, indicated with multiples of rated voltage
- Power factor or time constant
- Short-circuit performance
- Selectivity
- Other use conditions (if applicable)

NXC AC contactors mainly include the following categories:

#### Utilization categories of AC main circuit

#### AC-1 type

This type is used for AC loads with a power factor higher than or equal to 0.95.

Examples: heating, power distribution.

#### AC-2 type

This type is used for start revere braking and inching of slip ring motors.

During closing, the contactor makes a start current that is about 2.5 times motor rated current.

During opening, the contactor must break the start current at a voltage lower than or equal to the main supply voltage.

#### AC-3 type

This type is used for breaking normally started squirrel cage motors.

During closing, the contactor makes a start current that is about 7 times motor rated current.

During opening, the contactor breaks motor rated current. In this case, the voltage at the contactor wire terminal is about 20% of main supply voltage. The breaking process is not harsh.

Examples: all standard squirrel cage motors such as those in elevator, escalator, conveyance belt, air compressor, pump, mixer, and air conditioner.

#### AC-4 type

This type is used for reverse braking and inching of squirrel motors and sling ring motors.

The contactor makes a current that is 5 to 7 times rated motor current, and breaks the same current at higher voltage. At lower motor RPMs, the voltage breaking is as harsh as main voltage.

Control circuit utilization categories.

#### Examples: printing machinery, wire drawing machine, tower crane, crane, metallurgy

#### DC-13 type

This type of system is used for starting, reverse current braking, and inching of DC shunt excited machines. The duration is equal to or less than 2 ms. This type is used for switching electromagnetic loads.

#### AC-15 type

This type is used for switching electromagnetic loads. The pull-in power during closing of electromagnet is higher than 72VA. Examples: operation coil of switch contactors.













#### **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/EN 60947-4-1, IEC/EN 60947-5-1.

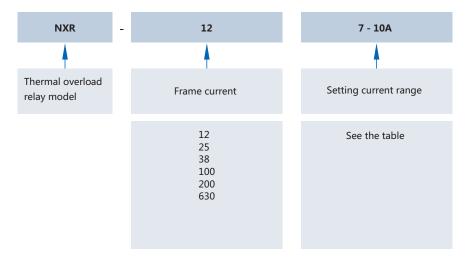
#### **Structural characteristics**

- 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

Туре	Operation and installation conditions
Installation type	ш
Pollution degree	3
Compliant standards	IEC/EN 60947-4-1, IEC/EN 60947-5-1
Certification mark	CE
Enclosure protection degree	IP20 (NXR-12, 25, 38, 100)
Ambient temperature	Operation temperature limits: -35°C~+70°C. Normal operation temperature range: -5°C~+40°C. The 24-hour average temperature should not exceed +35°C. 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°C. A higher relative humidity is allowed at a lower temperature, e.g. 90% at +20°C. 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 $\pm 5^\circ$ .
Shock and vibration	The product should be installed in places without significant shaking, shock, and vibration.

## Description



Frame	Setting current
	0.1-0.16A
	0.16-0.25A
	0.25-0.4A
	0.4-0.63A
	0.63-1A
12	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
	0.1-0.16A
	0.16-0.25A
	0.25-0.4A
	0.4-0.63A
	0.63-1A
	1-1.6A
25	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	30-38A
	23-32A
	30-40A
	37-50A
100	48-65A
	55-70A
	63-80A
	80-93A
	80-100A
200	80-160A
200	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.

### Quick selection and matching table

Product appearance	Rated current A	Specification of matching fuse (RT16 recommended) A	Model of matching contactor
		gG	
	0.1~0.16	2	
	0.16~0.25	2	
	0.25~0.4	2	
	0.4~0.63	2	Charles of
	0.63~1	4	
	1~1.6 1.25~2	6	( mint
	1.6~2.5	6	
	2.5~4	10	
NXR-12	4~6	16	NXC-06M, 09M, 12M
	5.5~8	20	
	7~10	20	
	9~12	25	
	0.1~0.16	2	
	0.16~0.25	2	
	0.25~0.4	2	
	0.4~0.63	2	
-	0.63~1	4	
	1~1.6	4	5000
DESCRIPTION OF THE PROPERTY OF	1.25~2	6	1 0000
	1.6~2.5	6	
N. Land	2.5~4	10	Tona B
NXR-25	4~6	16	
TVAIL 25	5.5~8	20	NXC-06, 09, 12, 16, 18, 22, 25, 32, 38
	7~10	20	
	9~13	25	
	12~18	35	
	17~25	50	
	23~32	63	
MA IN	30~38	80	9 9 3
NXR-38			NXC-25, 32, 38
	23~32	63	
e n E	30~40	100	
	37~50	100	1000
	48~65	100	
	55~70	125	
	63~80	125	
NXR-100	80~93	160	NXC-40, 50, 65, 75, 85, 100
	80~100	160	
NXR-200	80~160	315	
	125~200	315	NXC-120, 160, 185, 225
	125~250	800	- <b>a a b</b>
	200~400	800	
			NXC-225, 265, 330, 400, 500, 630
diam's	315~630	800	

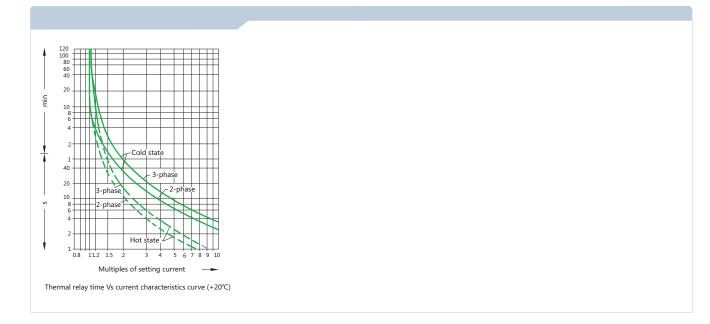
## **Parameters**

Item		NXR-12	NXR-25	NXR-38	NXR-100	NXR-200	NXR-630	
Current level		12	25	38	100	200	630	
Rated insulat	tion voltage V		690	690	690	690	690	690
Rated impuls	se withstand vol	Itage V	6000	6000	6000	6000	6000	6000
Enclosure pro	otection degree		IP20	IP20	IP20	IP20	-	-
Phase loss pr	rotection		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/415V rate	ed 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
		Single-core or stranded wire	1~4	1~6	4~10	4~35	25~95	50~2×185
Conductor	Main circuit	Wiring screw	M3.5	M4	M4	M10	M8	M10
cross		Tightening torque (N·m)	0.8	0.8	0.8	0.8	1.2	1.2
section mm <sup>2</sup>		Single-core or stranded wire	1~2.5	1~2.5	1~2.5	1~2.5	1~2.5	1~2.5
	Auxiliary circuit	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		
	1	1.05		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)		
Overload protection	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		
	F	Any two phases The other phase		Without action in 2 hours	a		
Phase loss protection	5	1.0	0.9	Without action in 2 hours	Start from cold state		
	6	1.15	0	Act within 2 hours	Start from hot state (after No. 5)		

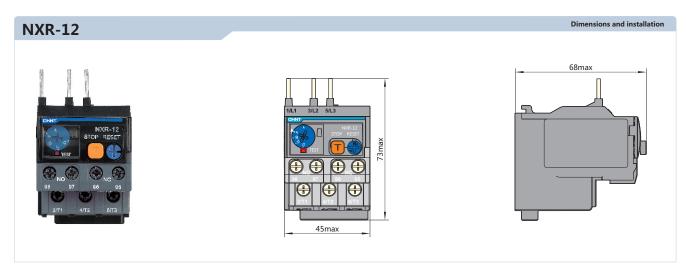
### Trip characteristics

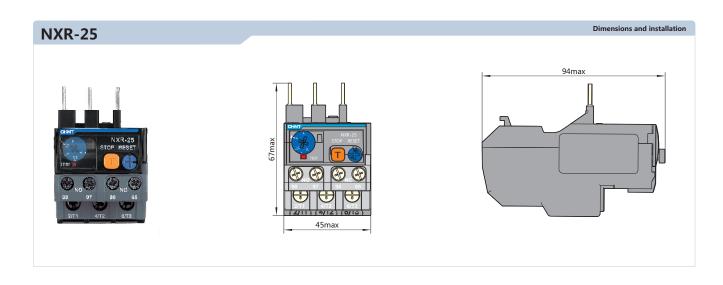


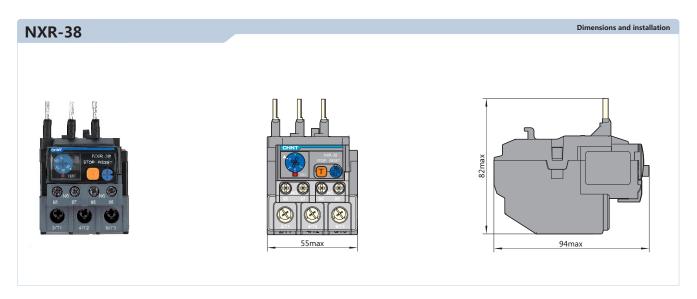
## **Product front view**

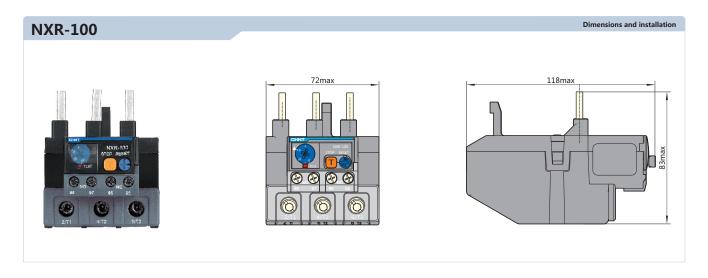


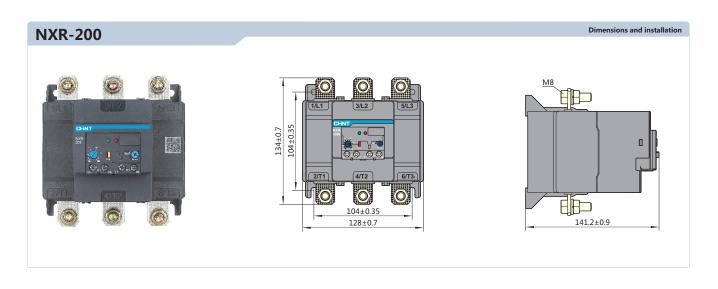
## **Dimensions and installation**

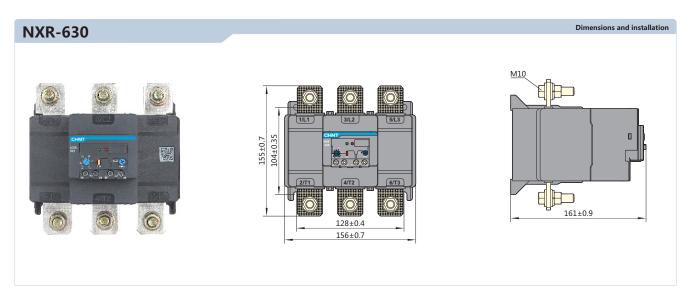


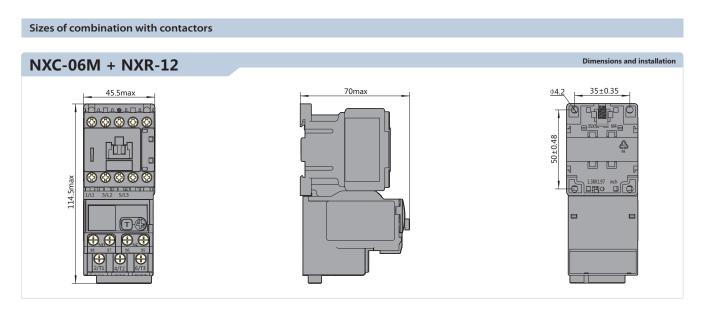


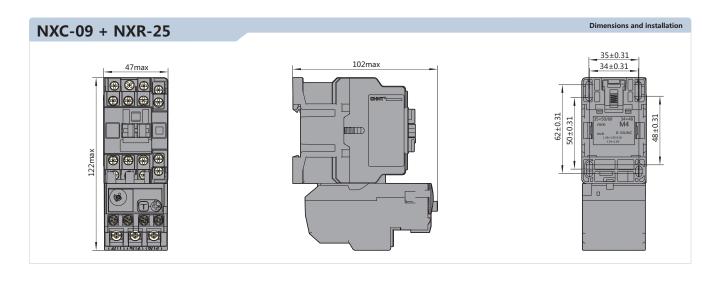


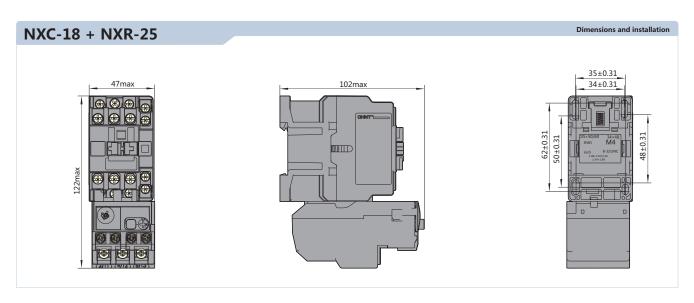


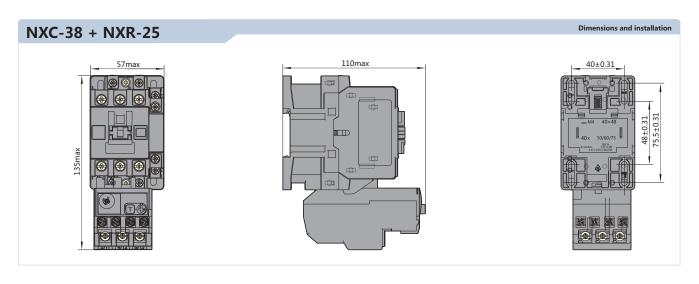


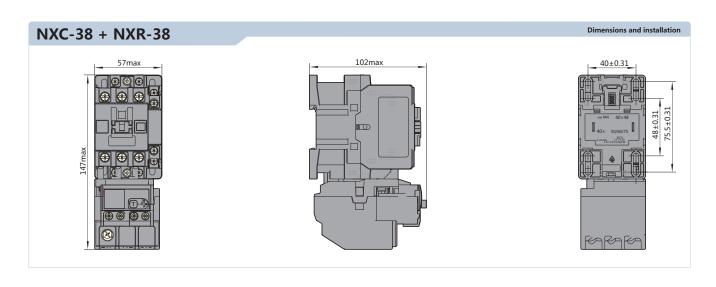


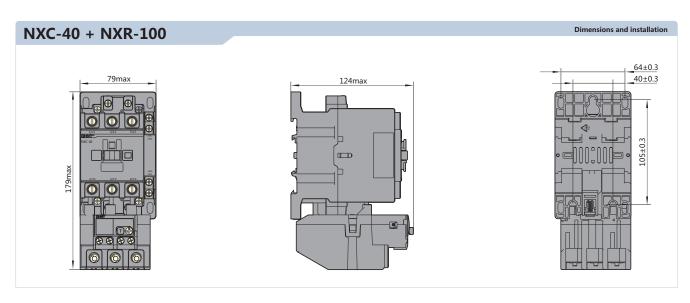


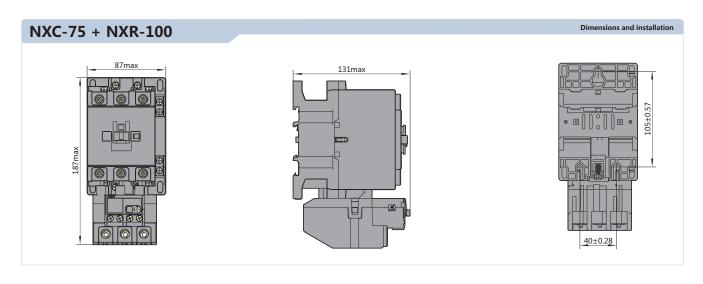




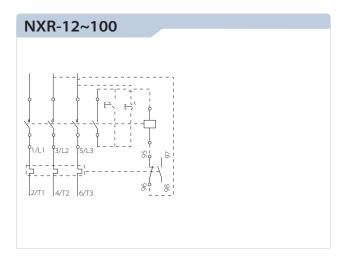


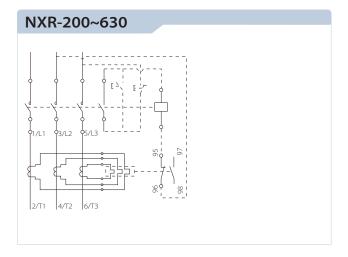






## Wiring diagrams



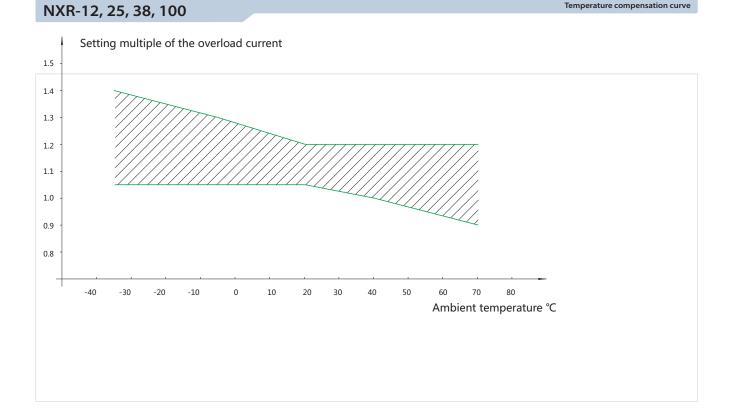


#### Annex I: Instructions for use in abnormal conditions

- IEC/EN 60947-4-1 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°C, 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°C, 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°C and lower than -5°C are given below. The compensation coefficients corresponding to -35°C and +70°C environments are given in the table below. No corrections are required for NXR-200 and NXR-630.

Operation ambient temperature	-35℃	+70°C	
Temperature compensation coefficients for NXR-12, 25, 38, 100	Multiple of stable current	1.05	0.9
remperature compensation coemcients for NAR-12, 25, 56, 100	Multiple of trip current	1.4	1.2





## **NXJ plug-in relay**









### **Overview**

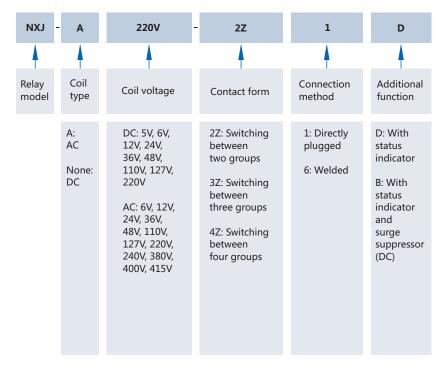
#### Applicable scope

Three types of contacts (2Z, 3Z, and 4Z): complete range of AC/DC models; high contact reliability, applicable to PLC control; transparent dust cover encapsulation; supplied with sockets; status indicators with optional specifications.

#### Normal operation conditions and installation conditions

Temperature range	-40°C~+70°C
Relative humidity	Up to 95% at +25℃
Atmospheric pressure	86kPa~106kPa
Operation position	Any

### **Description**



#### Model example:

NXJ-A220-2Z1D represents the following relay: rated control coil voltage: AC220V; contact form: switching between two groups (1NO + 1NC for each contact group, contact rated operation current 5A); directly plugged, with indicator function.

### **Parameters**

#### **Contact parameters**

Contact form	2Z (C), 3Z (C), 4Z (C), 2ZH(C)
Initial contact resistance	50mΩ
Contact material	Silver alloy
Contact load ( $cos \phi = 1.0$ )	2Z, 3Z: 5A; 4Z: 3A; 2ZH: 10A (240VAC/28VDC)
Maximum switch voltage	250VAC/30VDC
Maximum switch current	2Z, 3Z: 5A; 4Z: 3A; 2ZH: 10A
Maximum switch power	2Z, 3Z: 1250VA/140W, 2ZH: 2200VA/280W
Maximum switch power	4Z: 750VA/84W
Electrical life (cycles)	1.2x10 <sup>5</sup> * (see the safety certification report for details)
Mechanical life (cycles)	2×10 <sup>7</sup>

### Performance and characteristics parameters

Insulation resistance		1000MΩ (500VAC)	
Dielectric strength  Between contact coils  Between broken contacts		1500VAC, 1min	
		1000VAC, 1min	
Action time		≤15ms	
Release time		≤15ms	
Impulse (stability)		Acceleration 100m/s², pulse duration:11ms	
Vibration		Dual-amplitude 1mm, (10~55)Hz	
Form of leading-out end		Directly plugged, welded	
Dimensions (mm)		27.5×21.5×35.5	

### **Coil parameters**

Rated power	0.9~1W, 1.2~1.8VA
Pull-in voltage	DC≤75% rated voltage; AC: ≤80% rated voltage
Release voltage	DC≥10% rated voltage; AC: ≥20% rated voltage
Maximum voltage	120% rated voltage

### **Specification parameters**

Rated voltage VDC	Action voltage VDC (≤)	Release voltage VDC (≥)	Coil resistance (20°C) Ω
5	3.75	0.5	28×(1±10%)
6	4.5	0.6	40×(1±10%)
12	9.0	1.2	160×(1±10%)
24	18.0	2.4	640×(1±10%)
36	27.0	3.6	1440×(1±15%)
48	36.0	4.8	2200×(1±15%)
110	82.5	11.0	14500×(1±15%)
127	95.3	12.7	17000×(1±15%)
220	165.0	22.0	39000×(1±15%)

Rated voltage VAC	Action voltage VAC (≤)	Release voltage VAC (≥)	Coil resistance (20°C) Ω
6	4.8	1.2	10.5×(1±10%)
12	9.6	2.4	44×(1±10%)
24	19.2	4.8	180×(1±10%)
36	28.8	7.2	380×(1±10%)
48	38.4	9.6	650×(1±10%)
110	88.0	22	3670×(1±15%)
127	101.6	25.4	4100×(1±15%)
220/230/240	176.0	44	15800×(1±15%)
380	304.0	72	39000×(1±15%)
400	320	80	43000×(1±15%)
415	332	83	46000×(1±15%)

### **Accessories**

### Supplied sockets (optional)

Relay model	NXJ/2Z (D)		
Supplied socket model	RS-NXJ-2Z/C1	RS-NXJ-2Z/C2	RS-NXJ-2Z/C3
Socket dimensions (mm)	72×23×31	72×23×31	63×30.5×26
Socket lead form	Screw type wiring terminal (device type, rail type)		

Relay model	NXJ/3Z (D)		
Supplied socket model	RS-NXJ-3Z/C1	RS-NXJ-3Z/C2	RS-NXJ-3Z/C3
Socket dimensions (mm)	72×30×31	72×30×31	63×30.5×26
Socket lead form	Screw type wiring terminal (device	type, rail type)	

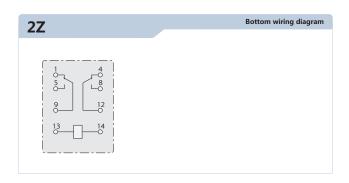
Relay model	NXJ/4Z (D)		
Supplied socket model	RS-NXJ-4Z/C1	RS-NXJ-4Z/C2	RS-NXJ-4Z/C3
Socket dimensions (mm)	72×30×31	72×30×31	63×30.5×26
Socket lead form	Screw type wiring terminal (device type, rail type)		

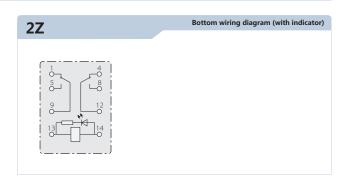
#### Connection socket and fixing hook

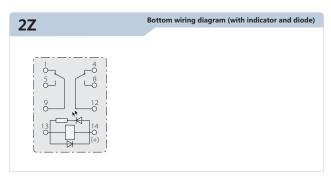
Model \ type	Normal	With finger protection	With indication sign
NXJ/2Z	RS-NXJ-2Z/C1	RS-NXJ-2Z/C2	RS-NXJ-2Z/C3
NXJ/3Z	RS-NXJ-3Z/C1	RS-NXJ-3Z/C2	RS-NXJ-3Z/C3
NXJ/4Z □	RS-NXJ-4Z/C1	RS-NXJ-4Z/C2	RS-NXJ-4Z/C3
Fixing hook	NG102	NG102	NG103

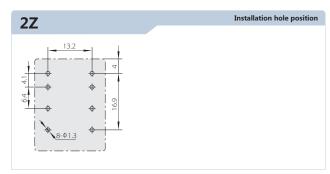
## **Dimensions and installation**

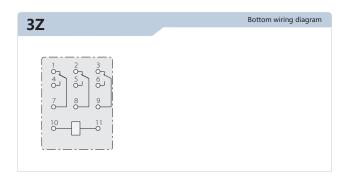
### **Body dimensions and installation sizes**

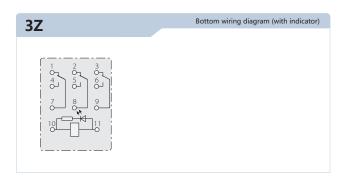


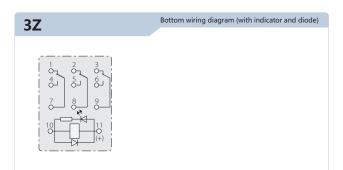


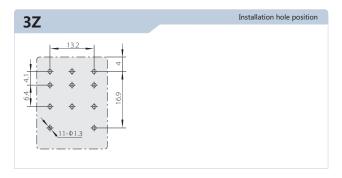


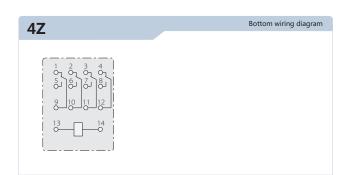


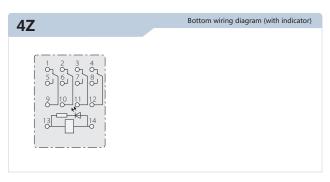


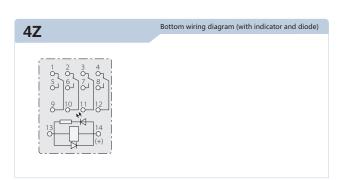


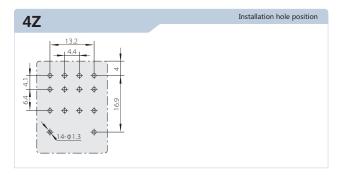




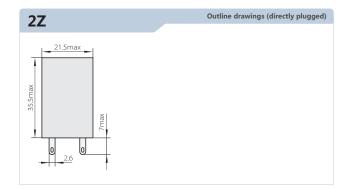


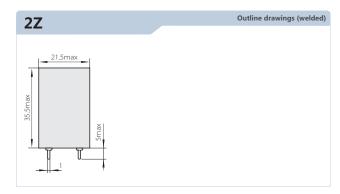


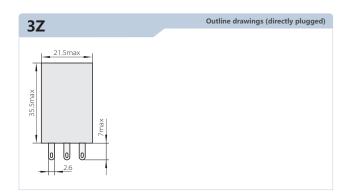


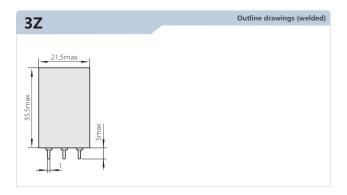


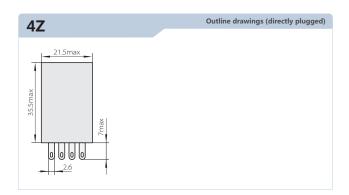
## **NXJ plug-in relay**

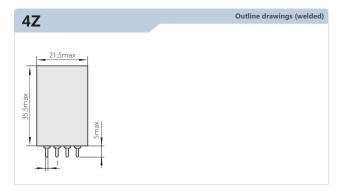








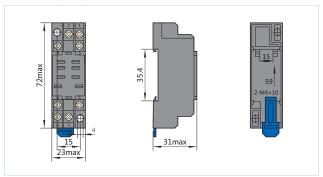




### **Socket outline and dimensions**

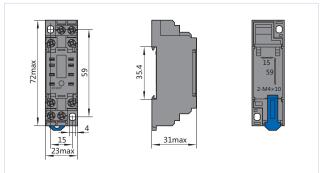


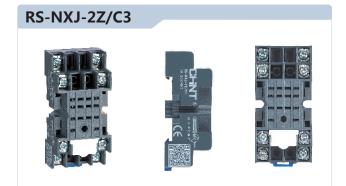




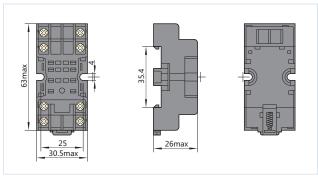


72×23×31 (mm)





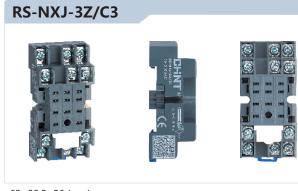
63×30.5×26 (mm)

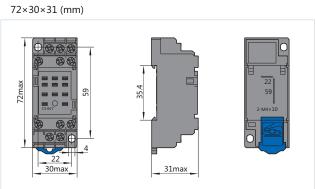


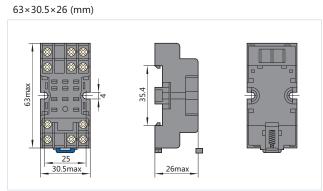


# **NXJ plug-in relay**



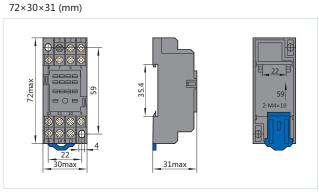


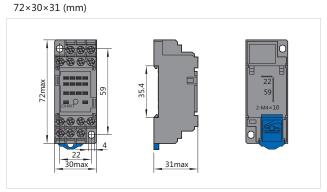


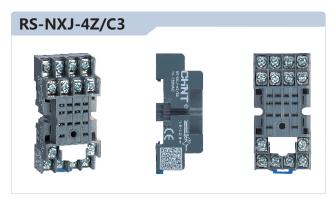




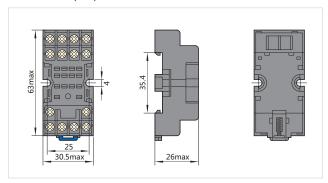








63×30.5×26 (mm)



### Hook outline







## Note

Note	

Note	