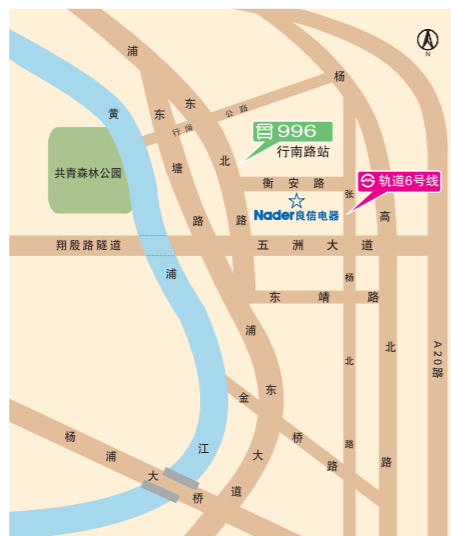


Nader

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As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

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2013.05



NDC1 Series AC Contactor

Nader

Specialist of Low-voltage Electrical Components

About us



SHANGHAI LIANGXIN ELECTRICAL CO.,LTD.

Nader is a private joint-stock enterprise that is set up by experts in this industry, with the headquarter locates in Pudong new area, Shanghai, China. We supply products with the best cost performance based on the business ideas of "Concentration and innovation" , the core value of "Sincerity and care" and the business mission of "To be the top-ranking supplier of LV devices by using resources efficiently" .

We have passed the three-in-one system certification including ISO 9001-2008, ISO 14001-2004 and IECQ QC 080000, and our series of LV components have passed CCC, CB, CE (Conformity of Europe, TÜV, Din, UL and C-UL certification in succession. We comply with the European RoHS directive actively, so our products have passed inspection of SGS-CSTC as the first company in China LV device industry. Our main products have been winning Shanghai Electrical Brand Name Products for continuous three years. In addition, our products have passed the selective examination performed by the nation and Shanghai for continuous three years.

Now we have established our regional sales & service centers in 37 large cities (Shanghai, Beijing, Guangzhou, Shenzhen, Nanjing, Hangzhou, Wuhan, Chongqing, Tianjin, Xi' an, Jinan, Dalian, Harbin, Changsha, Kunming, Zhengzhou, Chengdu, Nanchang, Shijiazhuang, Changchun and Guiyang, etc.) for providing in time and good service for our customers across the country.



The logo for Nader, consisting of the word "Nader" in a bold, blue, sans-serif font.

Specialist of Low-voltage Electrical Components

NDC1 Series AC Contactor

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NDC1(Z)-09~95 Series AC Contactor

Application

> NDC1(Z)-09~95 series AC contactor (hereinafter "contactor") is used in AC 50Hz/60Hz circuit with rated insulating voltage of 690V, rated working voltage of 400V and rated working current from 9A~95A in AC-3 utilisation type. It is used to making or breaking the circuit and for frequent start AC motors from a distance. It can also be used as electro-magnetic starter when matching with thermal relay to protect the circuit against possible overload.

Model and Implication

ND	C	1	□	-	□	□	□
1	2	3	4	5	6	7	
No.	Implication	NDC1					
1	Brand code	ND Nader					
2	Product code	C AC contactor					
3	Design code	1					
4	Control circuit code	Z: DC control circuit; No code: AC control circuit					
5	Frame size	Shown by rated current when used in AC-3 at 400V					
6	Auxiliary contact code of 3-pole contactor	10: 1 pair of normal open (NO) auxiliary contacts 01: 1 pair of normal close (NC) auxiliary contacts 11: 1 pair of NO auxiliary contacts and 1 pair of NC auxiliary contact *					
	Main contact code of 4-pole contactor	40: 4 pairs of normal open (NO) main contacts 08: 2 pairs of NO main contacts and 2 pairs of NC main contacts					
7	Special application code	TH: suitable for humid tropical					

> Note: "11" type auxiliary contact code is only available for 40A/50A/65A/80A/95A (AC-3 at 400V) 3-pole contactor.

Control Power

Parameter Type	Rated Current (A) (AC-3, 400V)	Control Power (kW)						Number of Contacts
		220/230V	380/400V	415V	440V	500V	600/690V	
NDC1(Z)-09	9	2.2	4	4	4	5.5	5.5	3P + NO or 3P + NC or 4P or 2P+2R
NDC1(Z)-12	12	3	5.5	5.5	5.5	7.5	7.5	
NDC1(Z)-18	18	4	7.5	9	9	10	10	3P + NO or 3P + NC
NDC1(Z)-25	25	5.5	11	11	11	15	15	3P + NO or 3P + NC or 4P or 2P+2R
NDC1(Z)-32	32	7.5	15	15	15	18.5	18.5	
NDC1(Z)-38	38	9	18.5	18.5	18.5	18.5	18.5	3P + NO or 3P + NC
NDC1(Z)-40	40	11	18.5	22	22	22	30	3P + NO + NC or 4P or 2P+2R
NDC1(Z)-50	50	15	22	25	30	30	33	
NDC1(Z)-65	65	18.5	30	37	37	37	37	
NDC1(Z)-80	80	22	37	45	45	55	45	3P + NO + NC or 4P
NDC1(Z)-95	95	25	45	45	45	55	45	

> Note :

3P: three pairs of NO main contacts

4P: four pairs of NO main contacts

2P: two pairs of NO main contacts

NO: one pair of NO auxiliary contacts

NC: one pair of NC auxiliary contacts

2R: two pairs of NC main contacts

Standards and Certificates

> IEC 60947-4, GB 14048.4, IEC 60947-5, GB 14048.5.

> TÜV, CE, CCC.

Working Condition

> Ambient temperature: -60°C~+80°C(Storage); -25°C~+60°C(Operating).

> Altitude: ≤3000m. Less than 5000m for plateau type product.

> The relative humidity of the air does not exceed 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.

> Pollution degree: 3

> Installation category: III

> In addition to screw mounting, it can be installed on 35mm DIN rail or 75mm DIN rail.

> Vertical installation. The angle between installing surface and vertical surface should be less than ±30°.

> Working hours

a) Eight hours

b) Around-the-clock working

c) Remittent periodical working

Load factor: 40%

Operating frequency: Ie≤25A

1200 times/hour

Ie>25A

600 times/hour

> Usage in altitude less than 5000m:

The capacity of contactor will derating as the altitude changes.

The rate of current derating is shown as below ("h" means altitude):

No need to derating when contactor works in $h \leq 3000m$;

The rate of current derating is 0.92Ie or 0.92Ith when contactor works in $3000m < h \leq 3500m$;

The rate of current derating is 0.88Ie or 0.88Ith when contactor supplied in $3500m < h \leq 4000m$;

The rate of current derating is 0.86Ie or 0.86Ith when contactor supplied in $4000m < h \leq 5000m$.

The rate of voltage derating:

The maximum rated voltage will be decrease as the altitude increases when $h > 3000m$.

The rate of voltage derating is 10% when increasing each 500m of altitude.

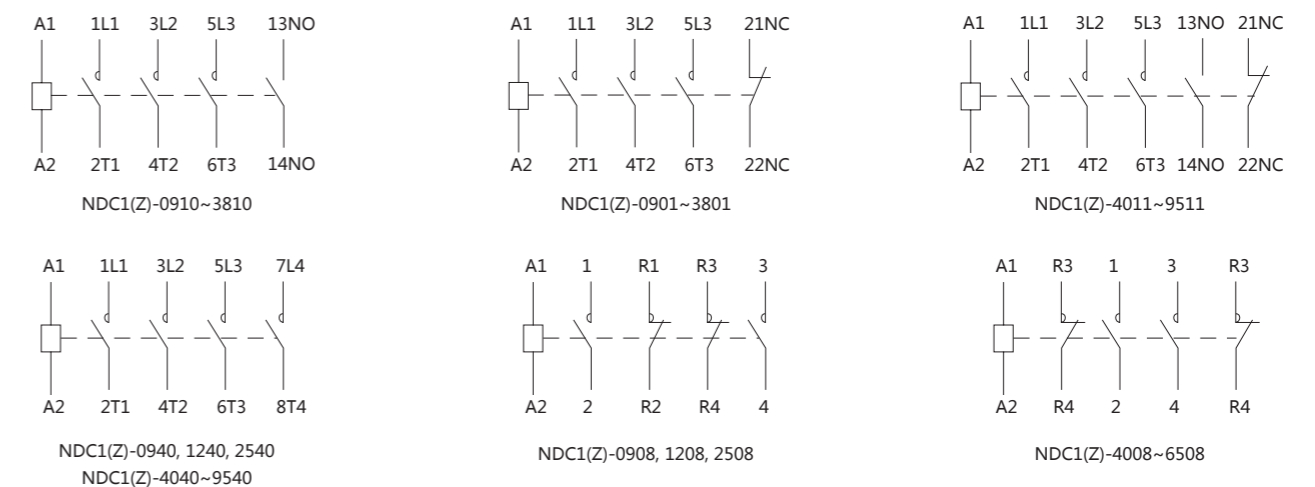
Product Features

- > Direct operating mechanism, double breaking points
- > Compatible with accessories on every side except installing side
- > Capable of adding mechanical interlocks on left or right side to form reversing contactor
- > NF1 series auxiliary contact group and NS1 series pneumatic timer can be added on the front side and NF2 series auxiliary contact group can be added on left or right side
- > NG1 series coil suppressor module can be added on coil terminal
- > Protection degree: IP20

Main Specification

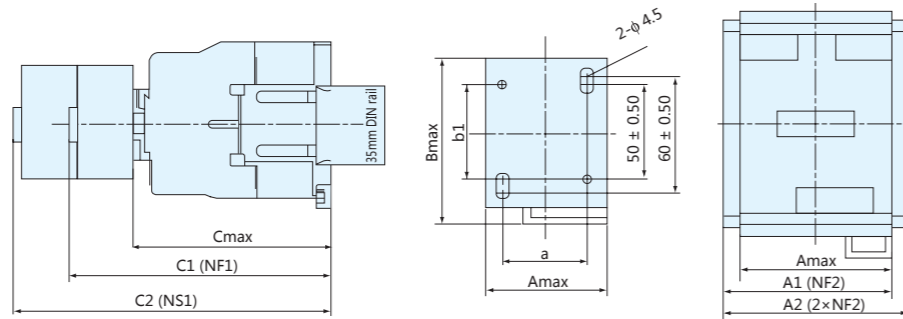
Parameters		Type	NDC1 (Z)-09	NDC1 (Z)-12	NDC1 (Z)-18	NDC1 (Z)-25	NDC1 (Z)-32	NDC1 (Z)-38	NDC1 (Z)-40	NDC1 (Z)-50	NDC1 (Z)-65	NDC1 (Z)-80	NDC1 (Z)-95	
Rated current (A) Ie (AC-3)	400V		9	12	18	25	32	38	40	50	65	80	95	
	690V		6.6	8.9	12	18	21	21.5	34	39	42	49	49	
Conventional thermal current (A) Ith			25	25	32	40	50	50	60	80	80	125	125	
Rated insulation voltage (V) Ui			690											
Rated operational voltage (V) Ue			380/400					660/690						
AC-3 (6Ie, Ie)	Electrical life (times)		100×10 ⁴	100×10 ⁴	100×10 ⁴	100×10 ⁴	80×10 ⁴	80×10 ⁴	80×10 ⁴	60×10 ⁴	60×10 ⁴	60×10 ⁴	60×10 ⁴	
	Max. operating frequency (h ⁻¹)		1200	1200	1200	1200	600	600	600	600	600	600	600	
AC-4 (6Ie, 6Ie)	Electrical life (times)		20×10 ⁴	20×10 ⁴	20×10 ⁴	20×10 ⁴	20×10 ⁴	15×10 ⁴	15×10 ⁴	15×10 ⁴	15×10 ⁴	10×10 ⁴	10×10 ⁴	
	Max. operating frequency (h ⁻¹)		300											
	Rated current (A) Ie		380/400V	3.5	5	7.7	8.5	12	13.9	18.5	24	28	37	44
			660/690V	1.5	2	3.8	4.4	7.5	8	9	12	14	17.3	21.3
Conventional thermal current (A) Ith			10											
Auxiliary contact	Electrical life (times)	AC-15 (360VA)	100×10 ⁴					80×10 ⁴			60×10 ⁴			
		DC-13 (33W)												
Min. load connected			24V 10mA											
Rated control circuit voltage (V) Ucs			AC(50Hz,50Hz/60Hz): 24, 36, 48, 110, 220, 380, 400; DC: 24, 48, 110, 220											
Pick-up voltage			85%Us ~ 110%Us											
Drop-out voltage			20%Us ~ 75%Us (AC); 10%Us ~ 75%Us (DC)											
Coil	Coil power	50Hz (VA)	Inrush	65	65	65	100	100	100	200	200	200	200	200
			Sealed	8	8	8	11	11	11	20	20	20	20	20
		DC (W)	Inrush	11	11	11	13	13	13	22	22	22	22	22
			Sealed											
Mechanical life			1000×10 ⁴					800×10 ⁴				600×10 ⁴		
Wiring capacity (Min.~Max.)	Flexible cable without cable end (mm ²)	1 conductor	1~4	1.5~6	1.5~10	2.5~10	2.5~25				4~50			
		2 conductors	1~4	1.5~6	1.5~6	2.5~10	2.5~16				4~25			
	Flexible cable with cable end (mm ²)	1 conductor	1~4	1~6	1~6	1~10	2.5~25				4~50			
		2 conductors	1~2.5	1~4	1~4	1.5~6	2.5~10				4~16			
	Solid cable without cable end (mm ²)	1 conductor	1~4	1.5~6	1.5~6	1.5~10	2.5~25				4~50			
		2 conductors	1~4	1.5~6	1.5~6	2.5~10	2.5~16				4~25			

Wiring Schematic



Dimension

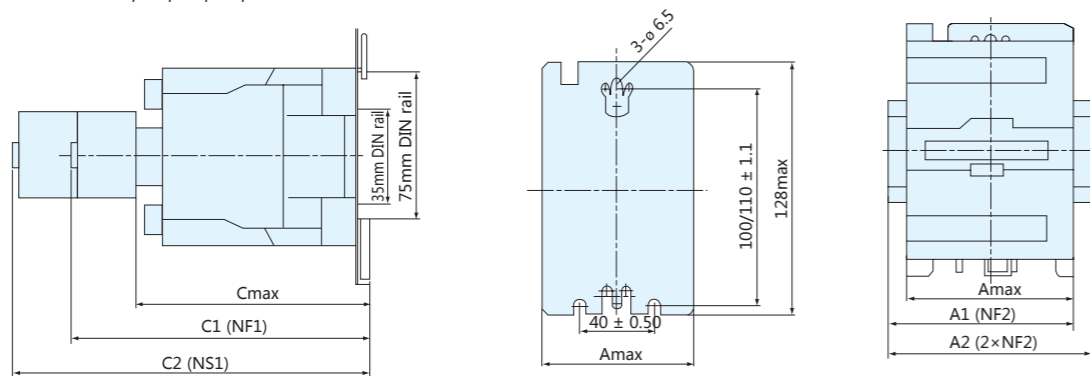
NDC1-09, 12, 18, 25, 32, 38 (3P&4P)



Type	Amax	A1	A2	Bmax	Cmax	a	b1	C1	C2
NDC1-09, 12	46	60	72	76	84	35±0.50	47	115	135
NDC1-18					89			120	140
NDC1-25	58	71	84	86	98	40±0.50	47	128	148
NDC1-32, 38					103			133	153

> Note: C1: NDC1+NF1 C2: NDC1+NS1 A1: NDC1+NF2 A2: NDC1+2×NF2

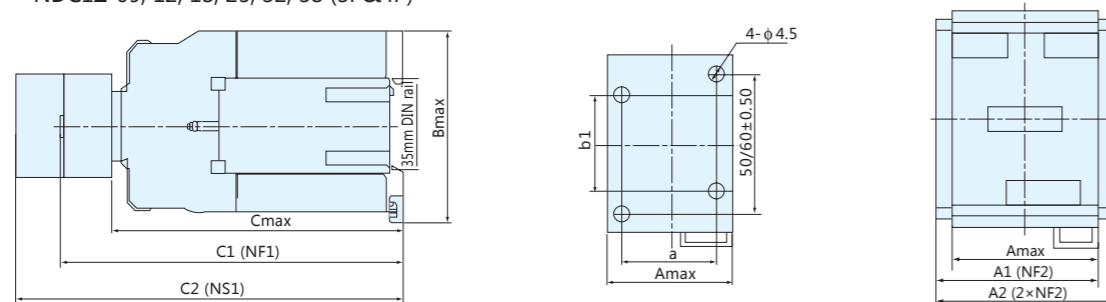
NDC1-40, 50, 65, 80, 95



Type	Amax	A1	A2	Cmax	C1	C2
NDC1-4011, 5011, 6511	76	90	102	122	149	169
NDC1-4040, 5040, 6540	86	99	110	118	149	169
NDC1-4008, 5008, 6508	86	99	110	128	149	169
NDC1-8011, 9511	86	100	110	127	157	177
NDC1-8040, 9540	97	110	122			

> Note: C1: NDC1+NF1 C2: NDC1+NS1 A1: NDC1+NF2 A2: NDC1+2×NF2

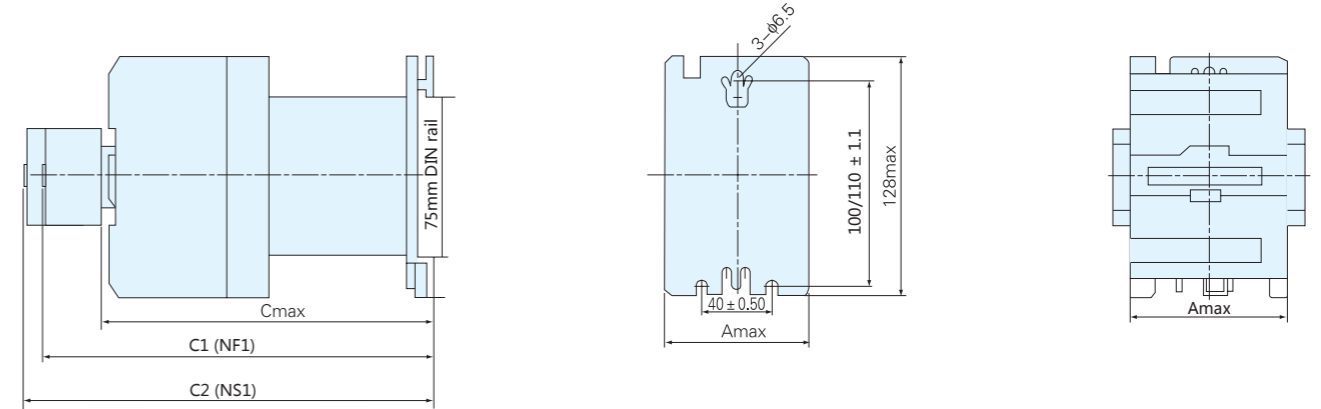
NDC1Z-09, 12, 18, 25, 32, 38 (3P&4P)



Type	Amax	A1	A2	Bmax	Cmax	a	b1	C1	C2
NDC1Z-09, 12	46	60	72	76	120	35 ± 0.50	45~50	150	170
NDC1Z-18					125			155	175
NDC1Z-25	58	71	84	84	134	40~50	-	165	185
NDC1Z-32, 38					139			170	190

> Note: C1: NDC1Z+NF1 C2: NDC1Z+NS1 A1: NDC1Z+NF2 A2: NDC1Z+2×NF2

NDC1Z-40, 50, 65, 80, 95



Type	Amax	A1	A2	Cmax	C1	C2
NDC1Z-4011, 5011, 6511	76	-	-	175	204	224
NDC1Z-4040, 5040, 6540	86	-	-			
NDC1Z-4008, 5008, 6508	86	-	-			
NDC1Z-8011, 9511	86	-	-	184	213	233
NDC1Z-8040, 9540	97	-	-			

> Note: C1: NDC1Z+NF1 C2: NDC1Z+NS1

Accessory (Order separately)

> Please refer to Page 39~44 in catalogue of NDC1 Series AC Contactor when ordering NF1 series auxiliary contact group, NF2 series auxiliary contact group, NS1 series pneumatic timer and NG1 series coil suppressor module.

Ordering Notice

Please specify the following information when placing an order

> Full model of the contactor

> Rated control circuit voltage and its frequency

> Quantity

For example: AC contactor NDC1-0910 50Hz/60Hz 220V 10PCS

Means: Rated current is 9A. Rated control circuit voltage is 220V (50Hz/60Hz). Quantity is 10 pieces.

> Contactor with special voltage can be customized upon customer's request.

NDC1-115~780 Series AC Contactor

Application

> NDC1- 115~780 series AC contactor (hereinafter "contactor") is used in AC 50Hz or 60Hz circuit with rased insulating voltage up to 1000V, rated working voltage of 400V and rated working current from 115A~780A in AC~3 utilisation type. It is used to making or breaking the circuit and for frequent start AC motors from a distance. It can be easily equipped with auxiliary contacts group, pneumatic timer and such accessories. It can also be used as electro-magnetic starter when matching with thermal relay to protect the circuit against possible overload.

Model and Implication



No.	Implication	NDC1
1	Brand code	ND Nader
2	Product code	C AC contactor
3	Design code	1
4	Frame size	Shown by rated current when used in AC-3 at 400V
5	Number of poles	No code: 3 poles; 4: 4 poles
6	Special application code	TH: suitable for humid tropical

Standards

- > IEC60947-4, GB14048.4, IEC60947-5, GB14048.5;
- > CCC.

Product Features

- > Direct operating mechanism, double breaking points.
- > Capable of adding mechanical interlocks on left or right side to form reversing contactor.
- > NF1 series auxiliary contact group and NS1 series pneumatic timer can be added on the top of right side.

Working Condition

- > Ambient temperature:
 - 60°C~+80°C (Storage); -25°C~+60°C (Operating)
 - > No significant shock or vibration.
- > Altitude: ≤3000m
 - > Screw mounting
- > The relative humidity does not more than 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% relative humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.
 - > Installation category: III
 - > Vertical installation, the angle between installing surface and vertical surface should be less than ±30°.
 - > Pollution degree: 3

Main Specification

Parameters		Type	NDC1-115	NDC1-150	NDC1-185	NDC1-225	NDC1-265	NDC1-330	NDC1-400	NDC1-500	NDC1-630	NDC1-780
Rated current (A) Ie	AC-3	400V	115	150	185	225	265	330	400	500	630	780
		690V	86	107	118	135	170	225	305	355	460	550
	AC-4	400V	52	60	79	85	105	117	138	147	188	234
		690V	49	57	69	82	98	107	135	145	170	190
Max. rated power of controlled 3-phase squirrel cage motor (kW) Pe	AC-3	400V	55	75	90	110	132	160	200	250	335	400
		690V	80	100	110	129	160	220	280	335	450	475
	AC-4	400V	25	30	40	45	55	63	75	80	100	110
		690V	45	51	63	75	90	100	129	140	160	220
Conventional thermal current (A) Ith			200	250	275	315	350	400	500	700	1000	1500
Rated operational voltage (V) Ue			400, 690, 1000									
Rated insulation voltage (V) Ui			1000									
AC-3	Electrical life (times)		80×10 ⁴			50×10 ⁴			30×10 ⁴		20×10 ⁴	
	Max. operating frequency (h ⁻¹)		600			300						
AC-4	Electrical life (times)		15×10 ⁴			8×10 ⁴		5×10 ⁴				
	Max. operating frequency (h ⁻¹)		150									
Mechanical life (times)			300×10 ⁴					100×10 ⁴				
Auxiliary contact			10									
	Electrical life (times)	AC-15 (360VA)	60×10 ⁴			50×10 ⁴			30×10 ⁴		20×10 ⁴	
		DC-13 (33W)										
Coil	Rated control circuit voltage (V) Us		AC: 24, 48, 110, 230(220), 400(380); DC: 24, 48, 110, 220					AC: 48, 110, 230(220), 400(380); DC: 110, 220				
	Pick-up voltage		85%Us~110%Us									
	Drop-out voltage		20%Us~75%Us (AC); 10%Us~70%Us (DC)									
	AC coil power (VA)	Inrush	560	800	750	1000	1100	1600	2000			
	Sealed	45	55	8	12	16	20	44				
Pick-up time (ms)			23~35	20~35	30~65	40~75	40~80	50~80				
Drop-out time (ms)			5~15	7~15	100~170	100~170	100~200	100~250				
Wiring capacity for power circuit	Copper cable	Number of conductors	1	1	1	1	1	2	2	2	2	
		Sectional area (mm ²)	95	120	150	185	240	240	150	240	240	240
	Steel bar	Number of lugs	2	2	2	2	2	2	2	2	2	2
	Dimension (mm)	20×3	25×3	25×3	32×4	32×4	30×5	30×5	50×5	60×5	100×5	
Wiring capacity for auxiliary circuit or control circuit	Flexible cable (mm ²)	1 conductor	2.5									
		2 conductors										
	Solid cable (mm ²)	1 conductor	4									
		2 conductors										

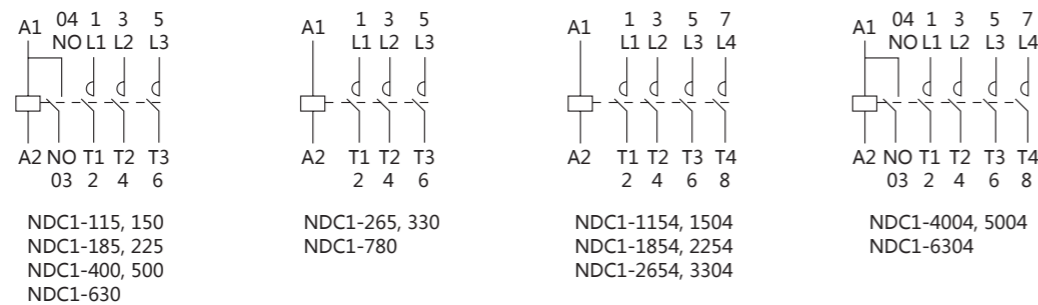


Table 1 Unit: mm

NDC1	a	p	Q	Q1	S	Φ	f	b	b1	M	N	c	L	G	H	Φ1	G1	Z	Y	X1	
																				500V≤	> 500V
115	163.5	37	29.5	60	20	M6	131	162	137	147	124	171	107	80	120-106	6.5	106	13.5	44	10	15
1154	200.5	37	29.5	60	20	M6	131	162	137	147	124	171	107	80	120-106	6.5	143	13.5	44	10	15
150	163.5	40	26	57.5	20	M8	131	170	137	150	124	171	107	80	120-106	6.5	106	13.5	44	10	15
1504	200.5	40	25	55.5	20	M8	131	170	137	150	124	171	107	80	120-106	6.5	143	13.5	44	10	15
185	168.5	40	29	59.5	20	M8	130	174	137	154	127	181	113.5	80	120-106	6.5	111	13.5	44	10	15
1854	208.5	40	29	59.9	20	M8	130	174	137	154	127	181	113.5	80	120-106	6.5	151	13.5	44	10	15
225	168.5	48	21	51.5	25	M10	130	197	137	172	127	181	113.5	80	120-106	6.5	111	13.5	44	10	15
2254	208.5	48	17	47.5	25	M10	130	197	137	172	127	181	113.5	80	120-106	6.5	151	20.5	44	10	15
265	201.5	48	39	66.5	25	M10	147	203	145	178	147	213	141	96	120-106	6.5	140	20.5	38	10	15
2654	244.5	48	34	66.5	25	M10	147	203	145	178	147	213	141	96	120-106	6.5	186	20.5	38	10	15
330	213	48	43	74	25	M10	147	206	145	181	158	219	145	96	120-106	6.5	154.5	20.5	38	10	15
3304	261	48	43	74	25	M10	147	206	145	181	158	219	145	96	120-106	6.5	202.5	20.5	38	10	15

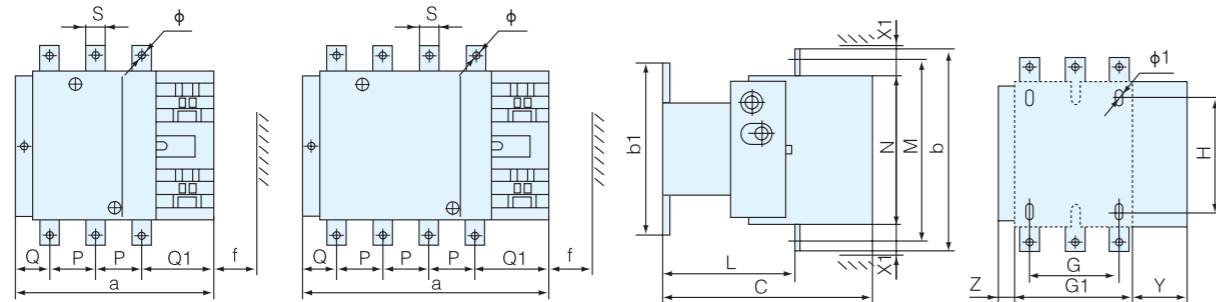
Note: f is the necessary distance for coil replacement, X1 is the Min. clearance (arcover distance).

Wiring Schematic



Dimension

Dimension for NDC1-115~330 (Please refer to Table 1)



Dimension for NDC1-400~500 (Please refer to Table 2)

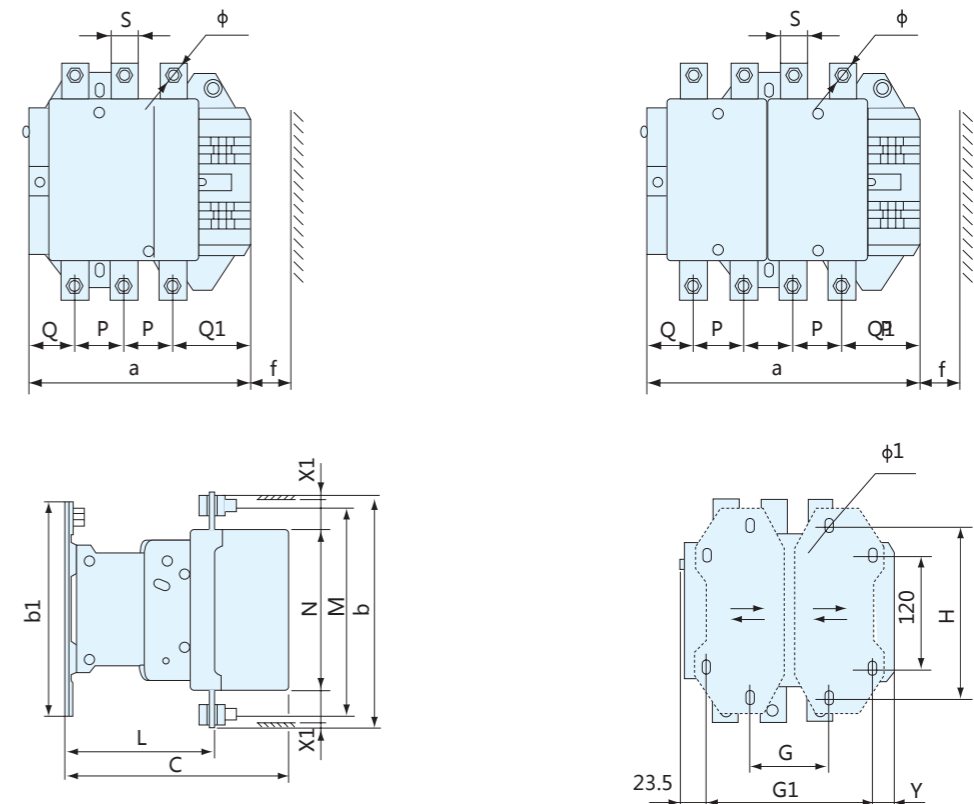


Table 2 Unit: mm

NDC1	a	P	Q	Q1	S	Φ	f	b	b1	M	N	c	L	G	G1	Φ1	H	Y	X1	
																			500V≤	> 500V
400	213	48	43	74	25	M10	151	206	209	181	158	219	145	80(66-102)	170(156-192)	8.5	180	19.5	15	20
4004	261	48	43	74	25	M10	151	206	209	181	158	219	145	80(66-150)	170(156-240)	8.5	180	67.5	15	20
500	233	55	46	77	30	M10	169	238	209	208	172	232	146	80(66-120)	170(156-210)	8.5	180	39.5	15	20
5004	288	55	46	77	30	M10	169	238	209	208	172	232	146	140(66-175)	230(156-265)	8.5	180	34.5	15	20

Note: f is the necessary distance for coil replacement, X1 is the Min. clearance (arcover distance).

Dimension for NDC1-630 (Please refer to Table 3)

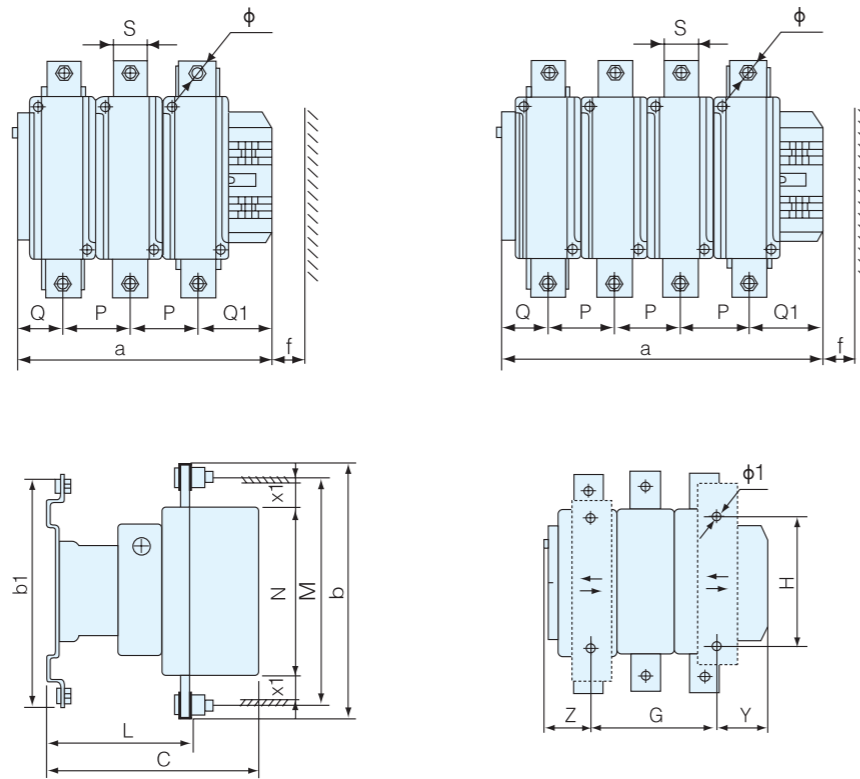


Table 3 Unit: mm

NDC1	a	P	Q	Q1	S	Φ	f	b	b1	M	N	c	L	G	H	Φ1	Y	X1		
																		500V≤	> 500V	
630	309	80	60	89	40	M12	201	304	280	264	202	255	155	180(100-195)	180	10.5	60.5	68.5	20	30
6304	389	80	60	89	40	M12	201	304	280	264	202	255	155	240(150-275)	180	10.5	60.5	88.5	20	30

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Dimension for NDC1-780 (Please refer to Table 4)

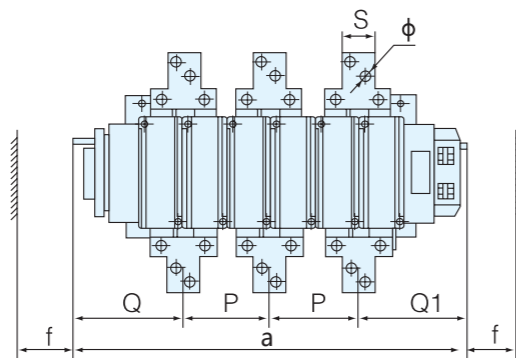


Table 4 Unit: mm

NDC1	a	P	Q	Q1	S	Φ	f	b	b1	M	N	c	L	G	Φ1	H	Z	Y	X1	
																			500V≤	> 500V
780	704	160	192	192	60	M12	201	435	280	400-348	202	255	165	240	10.5	180	91	133	20	30

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Attention

> Surface of silver contacts may appear dark and singeing after operating for certain period of time. But this will not affect normal operation. Please do not polish as it reduce the endurance of silver contact. If singeing is severe and affect contact, please use dead smooth file to slightly smooth the surface. The contacts can still work till exposing contact plate.

Accessory (Order separately)

> Please refer to Page 45-48 for NF1 series auxiliary contact group and NS1 series pneumatic timer.

Ordering Notice

> Please specify the following information when placing an order:

- b) a) Full model of the contactor
- c) Rated control circuit voltage and its frequency

Quantity

For example: AC contactor NDC1-115 220V 50Hz 10PCS

It means the rated current is 115A, rated control circuit voltage is 220V(50Hz),the quantity is 10 pieces.

> Contactors with special voltage can be customized upon customer' s requests.

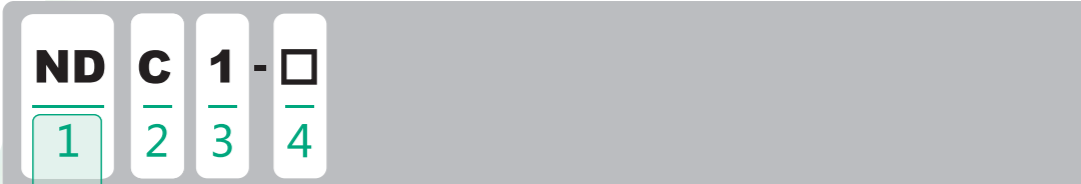
> Coil can be ordered separately as it is the damageable part.

NDC1-1000~2100 Series AC Contactor

Application

- > NDC1-1000~2100 Series AC contactor (hereinafter "Contactor") is used in AC50Hz or 60Hz circuit with rated working voltage of 690V and rated working current from 1000A to 2100A in AC-1 utilisation type .

Model and Implication



NO.	Implication	NDC1
1	Brand code	ND Nader
2	Product code	C AC Contactor
3	Design code	1
4	Frame size	Shown by rated current Ie when used in AC-1 at 690V

Standards

- > IEC 60947-4-1,GB 148048.4,IEC 60947-5-1,GB 14048.5

Product features

- > Direct operating mechanism, double breaking points.
- > NF1 series auxiliary contact group and NS1 series pneumatic timer can be added on the top of right side.
- > Contact optimization and parallel arc chute can increase current carrying capacity.

Working condition

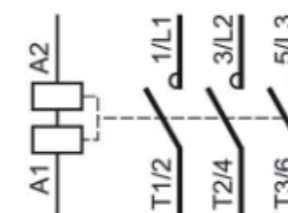
- > Ambient temperature: -60°C~+80°C(Storage); -5°C~+40°C (Operating);
The maximum range under rated control voltage is -40°C~+60°C.
- > Altitude: ≤3000m
- > The relative humidity of the air does not exceed 50% at the temperature of +40°C. Higher relative may be permitted at lower temperature. Such as special measures should be taken for condensation under 90% relative humidity when temperature is 20°C.
- > No significant shock or vibration
- > Installation mode: Screw mounting
- > Installation category: III
- > Vertical installation, the angel between installing surface and vertical surface should be less than ±5°.
- > Pollution degree: 3

Main specification

Table 1

Type	NDC1-1000	NDC1-1250	NDC1-1450	NDC1-1700	NDC1-2100		
Rated current Ie A (Open installation) AC-1 , Ue≤690V	1000	1250	1450	1700	2100		
Conventional thermal current Ith (A)	1000	1250	1450	1700	2100		
Rated insulation voltage Ui (V)	1000						
Max. rated power Pe (kW) AC-1	380/400 V	600	750	870	1000	1250	
	660/690 V	980	1230	1430	1650	2050	
Max. operating frequency h ⁻¹ AC-1	600						
Electrical life AC-1 (10 ⁴ times)	60		40				
Mechanical life (10 ⁴ times)	120		80				
Weight (kg)	20	21	27	29	31		
Rated control circuit breaker Us (V)	110、220、380 50/60Hz						
Coil	Pick-up voltage (V)		85%Us~110%Us				
	Drop-out voltage (V)		20%Us~75%Us				
	AC Coil power 50/60Hz	Inrush (VA)		2000 ~ 2300			
		Sealed(VA)		24 ~ 44			
	Wiring capacity	Flexible cable	1	2.5			
		mm ²	2				
Solid cable	1	4					
	mm ²				2		
Operating time	Closed " C" (ms)		40 ~ 75				
	Opened " O" (ms)		100 ~ 170				
Wiring capacity for power circuit(copper bar)	Number of lugs		2	2	2	3	4
	Dimension		60×5	80×5	100×5	100×5	100×5
Fastening torque (N.m)	58						
Auxiliary contact	See Page 45-48						

NDC1-1000 ~ 2100 Wiring schematic



Dimension

Dimension for NDC1-1000,1250 (See table 2)

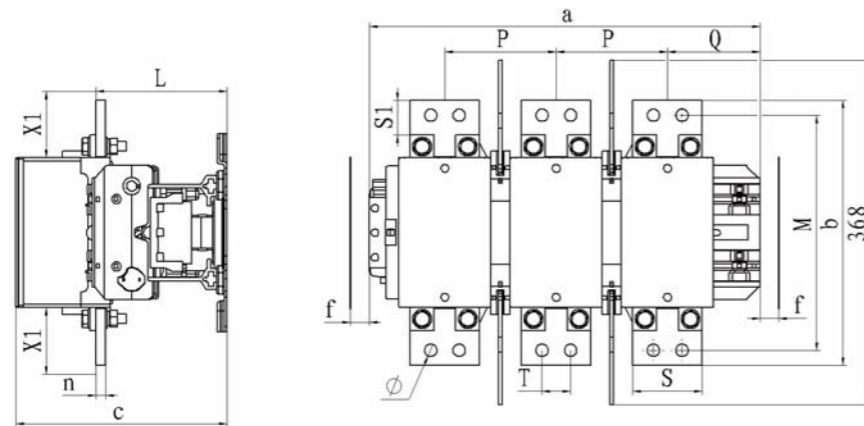
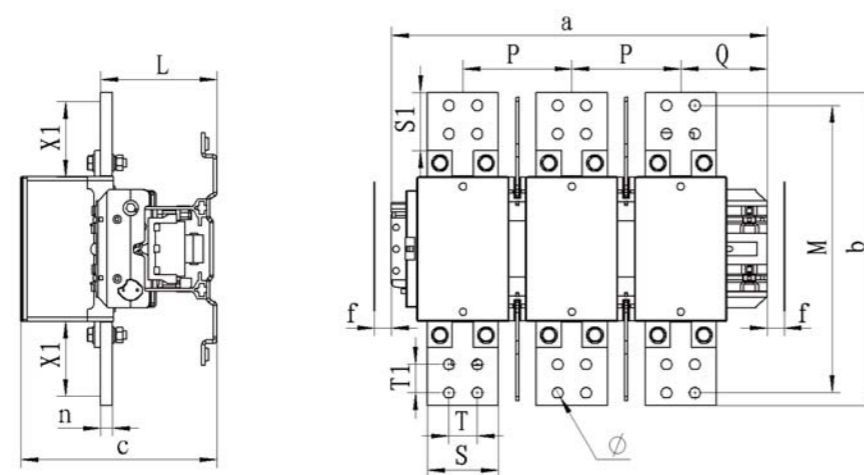


Table 2 Unit: mm

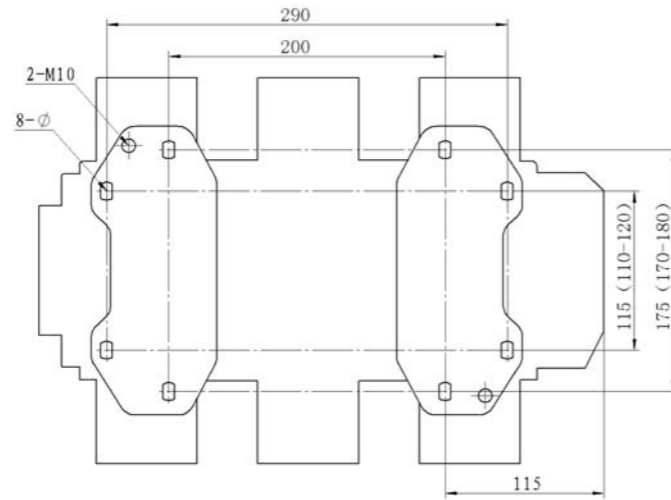
Type	NDC1-1000	NDC1-1250	NDC1-1450	NDC1-1700	NDC1-2100
a	406	406	448	448	448
b	281	281	378	376	376
c	222	222	238	238	238
L	138	138	144	139	139
n	10	12	12	14	16
P	117	117	130.5	130.5	130.5
Q	97	97	104	104	104
M	249	249	346	344	344
φ	13	13	13	13	13
S	73	80	100	100	100
S1	36.5	36.5	69	70	67
T	30	30	34	34	34
T1	—	—	34	34	34
f	151	151	170	170	170
X1 (Ue≤690V)	30		100		

Note: f is the necessary space for coil replacement; X1 is the Min. clearance (arcover distance).

Dimension for NDC1-1450~2100 (See table 2)



Installation dimension for NDC1-1000, 1250 (See table 3)



Installation dimension for NDC1-1450~2100 (See table 3)

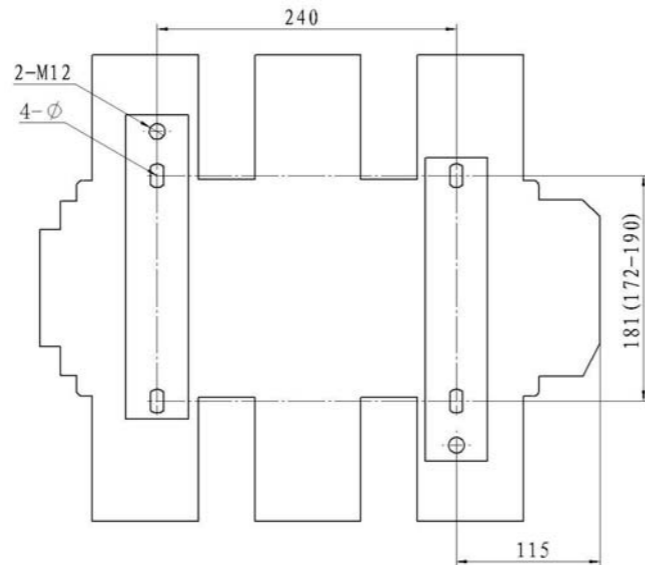


Table 3 Unit : mm

Type	NDC1-1000, 1250	NDC1-1450 ~ 2100
∅	M8	M10
⊥	M10	M12

Attention

- > Contactor terminal block should be solid and reliable. Otherwise it will be damaged by abnormal fever.
- > Surface of silver contacts may appear dark and singeing after operating for certain time but this will not affect normal operation. Please do not polish silver.

Accessory(Order separately)

- > Please refer to Page 45~48 for NF1 series auxiliary contact group and NS1 series pneumatic timer.

Order notice

- > Please specify the following informations when you placing an order.
 - Full model of the product.
 - Rated control circuit voltage and its frequency.
 - Quantity
- > For example:
AC Contactor NDC1-1000 220V 50/60Hz 10PCS which means the rated current is 1000A , the rated control circuit voltage is 220V, the frequency is 50/60Hz and the quantity is 10 pieces.

NDC1N-09~95 Series Reversing AC Contactor

Application

- > NDC1N-09~95 series reversing AC contactor is used in AC50Hz/60Hz circuit with rated insulating voltage of 690V, rated working voltage of 400V and rated working current up to 44A in AC-4 utilisation type. It is used to control dual powers and reversible operational motors or motors which can back braking. It can also be used as electro-magnetic starter when matched with thermal relay to protect the circuit against possible overload.

Model and Implication

ND	C	1	N	-	□	□	□
1	2	3	4	5	6	7	
No.	Implication	NDC1					
1	Brand code	ND Nader					
2	Product code	C AC contactor					
3	Design code	1					
4	Contact type	N Reversing contactor					
5	Frame size	Shown by rated current Ie when used in AC-3 at 400V					
6	Auxiliary contact code of 3-pole contactor	10: 1 pair of normal open (NO) auxiliary contacts 01: 1 pair of normal close (NC) auxiliary contacts 11: 1 pair of NO auxiliary contacts and 1 pair of NC auxiliary contact *					
	Main contact code of 4-pole contactor	40: 4 pairs of normal open (NO) main contacts					
7	Special application code	TH: suitable for humid tropical					

Note: "11" type auxiliary contact code is only available for 40A/50A/65A/80A/95A (AC-3 at 400V) 3-pole contactor.

Control Power

Type	Conventional Thermal Current (A) Ith	AC-4 Utilisation Type			
		Rated Current (A) Ie		Max. power of controlled 3-phase squirrel cage motor (kW)	
		400V	690V	400V	690V
NDC1N-09	25	3.5	1.5	1.5	1.1
NDC1N-12	25	5	2	2.2	1.5
NDC1N-18	32	7.7	3.8	3.7	3
NDC1N-25	40	8.5	4.4	4	3.7
NDC1N-32	50	12	7.5	5.5	5.5
NDC1N-38	50	13.9	8	5.5	5.5
NDC1N-40	60	18.5	9	7.5	7.5
NDC1N-50	80	24	12	11	10
NDC1N-65	80	28	14	15	11
NDC1N-80	125	37	17.3	18.5	15
NDC1N-95	125	44	21.3	22	18.5

Standards and Certificates

- > IEC60947-4, IEC60947-5, GB14048.4, GB14048.5; CCC.

Working Condition

- > Ambient temperature: -60°C~+80°C(Storage); -25°C~+60°C(Operating).
 - > Altitude: ≤3000m
 - > The relative humidity does not exceed 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.
 - > Pollution degree: 3
 - > Installation category: III
 - > In addition to screw mounting, it can be installed on 35mm DIN rail or 75mm DIN rail.
 - > Vertical installation. The angle between installing surface and vertical surface should be less than ±5°.
 - > Working hours
 - a) Eight hour
 - b) Around-the-clock working
 - c) Remittent periodical working
- | | |
|-----------------------------|------------------------|
| Load factor: 40% | |
| Operating frequency: Ie≤25A | 1200 times/hour (AC-3) |
| Ie>25A | 600 times/hour (AC-3) |

Product Features

- > Direct operating mechanism, double breaking points
- > Compatible with accessories on every side expect installing side
- > NF1 series auxiliary contact group and NS1 series pneumatic timer can be added on the front side and NF2 series auxiliary contact group can be added on left or right side

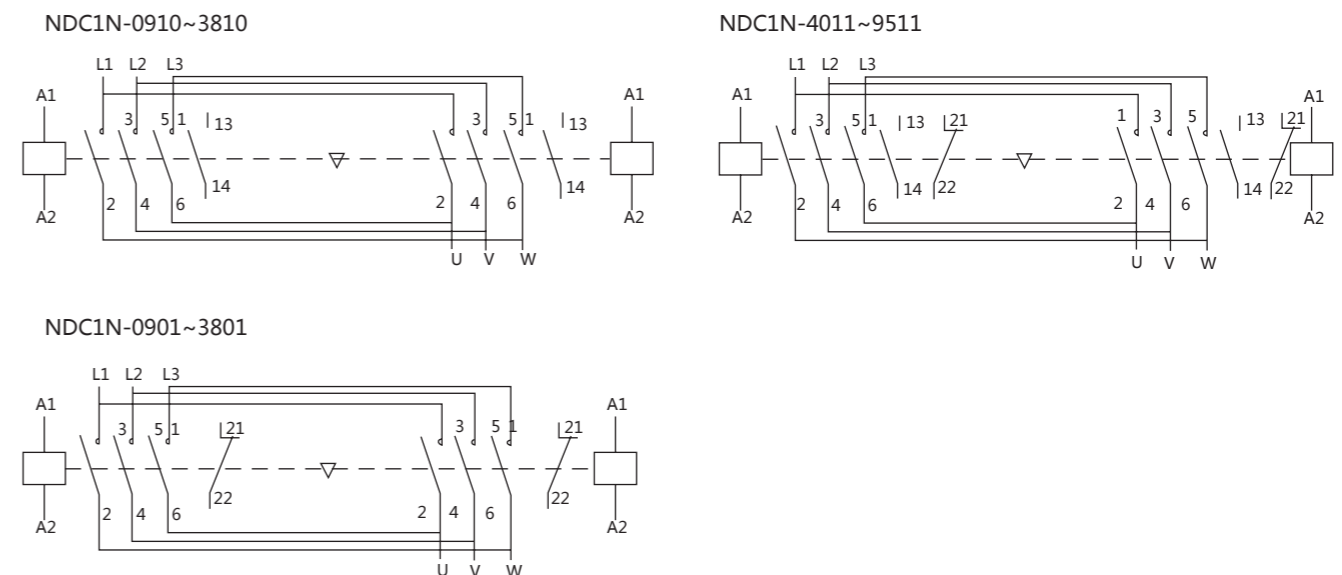
Main Specification

Parameters		Type	NDC1N-09	NDC1N-12	NDC1N-18	NDC1N-25	NDC1N-32	NDC1N-38
Rated current (A) Ie	AC-3	400V	9	12	18	25	32	38
		690V	6.6	8.9	12	18	21	21.5
	AC-4	400V	3.5	5	7.7	8.5	12	13.9
		690V	1.5	2	3.8	4.4	7.5	8
Conventional thermal current (A) Ith			25	25	32	40	50	50
Rated operational voltage (V) Ue			380/400, 660/690					
Rated insulation voltage (V) Ui			690					
AC-3 (6Ie, Ie)	Electrical life (times)		100×10 ⁴	100×10 ⁴	100×10 ⁴	100×10 ⁴	80×10 ⁴	80×10 ⁴
	Max. operating frequency (h ⁻¹)		1200	1200	1200	1200	600	600
AC-4 (6Ie, 6Ie)	Electrical life (times)		20×10 ⁴	20×10 ⁴	20×10 ⁴	20×10 ⁴	20×10 ⁴	15×10 ⁴
	Max. operating frequency (h ⁻¹)		300					
Mechanical life (times)			300×10 ⁴					
Conventional thermal current (A) Ith			10					
Auxiliary contact	Electrical life (times)	AC-15(360VA)	100×10 ⁴				80×10 ⁴	
		DC-13(33W)						
Min. load connected			24V 10mA					
Rated controlling voltage (V) Us			AC(50Hz, 50Hz/60Hz): 24, 36, 48, 110, 220, 380, 400					
Pick-up voltage			85%Us ~ 110%Us					
Drop-out voltage			20%Us ~ 75%Us					
Coil	Coil Power (VA) 50Hz AC	Inrush	65	65	65	100	100	100
		Sealed	8	8	8	11	11	11
Wiring capacity (mm ²) (Min.~Max.)	Flexible cable without cable end	1 conductor	1~4	1.5~6	1.5~10	2.5~10		
		2 conductors	-	-	-	-		
	Flexible cable with cable end	1 conductor	1~4	1~6	1~6	1~10		
		2 conductors	-	-	-	-		
	Solid cable without cable end	1 conductor	1~4	1.5~6	1.5~6	1.5~10		
		2 conductors	-	-	-	-		

Main Specification (Continued)

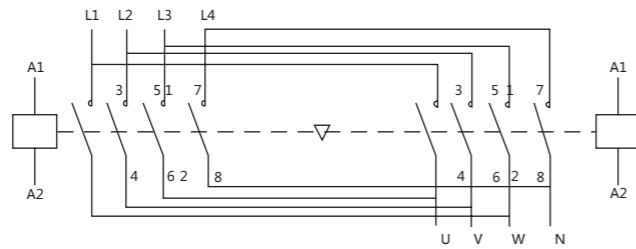
Parameters		Type	NDC1N-40	NDC1N-50	NDC1N-65	NDC1N-80	NDC1N-95
Rated current (A) Ie	AC-3	400V	40	50	65	80	95
		690V	34	39	42	49	49
	AC-4	400V	18.5	24	28	37	44
		690V	9	12	14	17.3	21.3
Conventional thermal current (A) Ith			60	80	80	125	125
Rated operational voltage (V) Ue			380/400, 660/690				
Rated insulation voltage (V) Ui			690				
AC-3 (6Ie, Ie)	Electrical life (times)		80×10 ⁴	60×10 ⁴	60×10 ⁴	60×10 ⁴	60×10 ⁴
	Max. operating frequency (h ⁻¹)		600	600	600	600	600
AC-4 (6Ie, 6Ie)	Electrical life (times)		15×10 ⁴	15×10 ⁴	15×10 ⁴	10×10 ⁴	10×10 ⁴
	Max. operating frequency (h ⁻¹)		300				
Mechanical life (times)			300×10 ⁴				
Conventional thermal current (A) Ith			10				
Auxiliary contact	Electrical life (times)	AC-15(360VA)	80×10 ⁴		60×10 ⁴		
		DC-13(33W)					
Min. load connected			24V 10mA				
Rated controlling voltage (V) Us			AC(50Hz, 50Hz/60Hz): 24, 36, 48, 110, 220, 380, 400				
Pick-up voltage			85%Us ~ 110%Us				
Drop-out voltage			20%Us ~ 75%Us				
Coil	Coil Power (VA) 50Hz AC	Inrush	200	200	200	200	200
		Sealed	20	20	20	20	20
Wiring capacity (mm ²) (Min.~Max.)	Flexible cable without cable end	1 conductor	2.5~25			4~50	
		2 conductors	2.5~16			4~25	
	Flexible cable with cable end	1 conductor	2.5~25			4~16	
		2 conductors	2.5~10			4~16	
	Solid cable without cable end	1 conductor	2.5~16			4~50	
		2 conductors	2.5~16			4~25	

Wiring Schematic

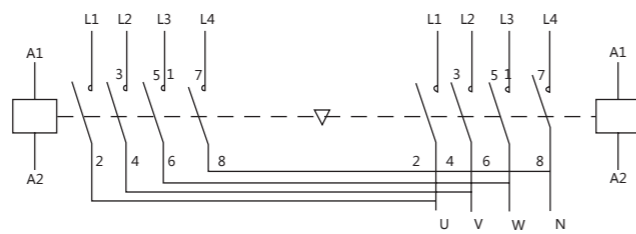


NDC1N-0940~9540

a. Wiring schematic for controlling reversible operation

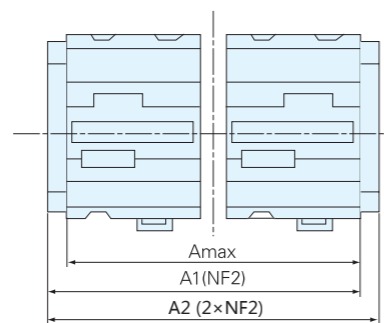
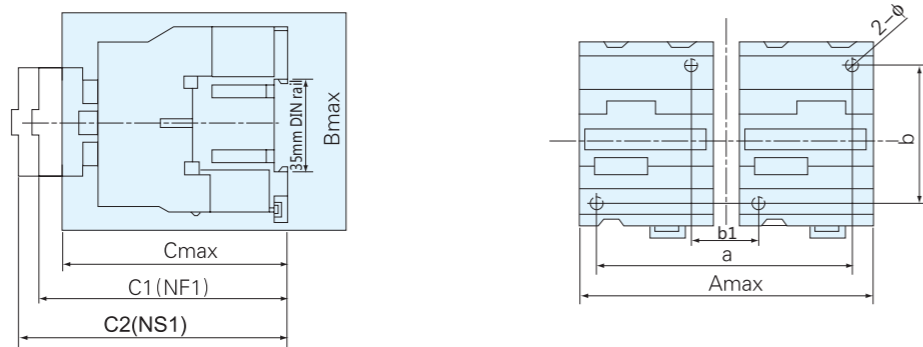


b. Wiring schematic for controlling dual-power switching

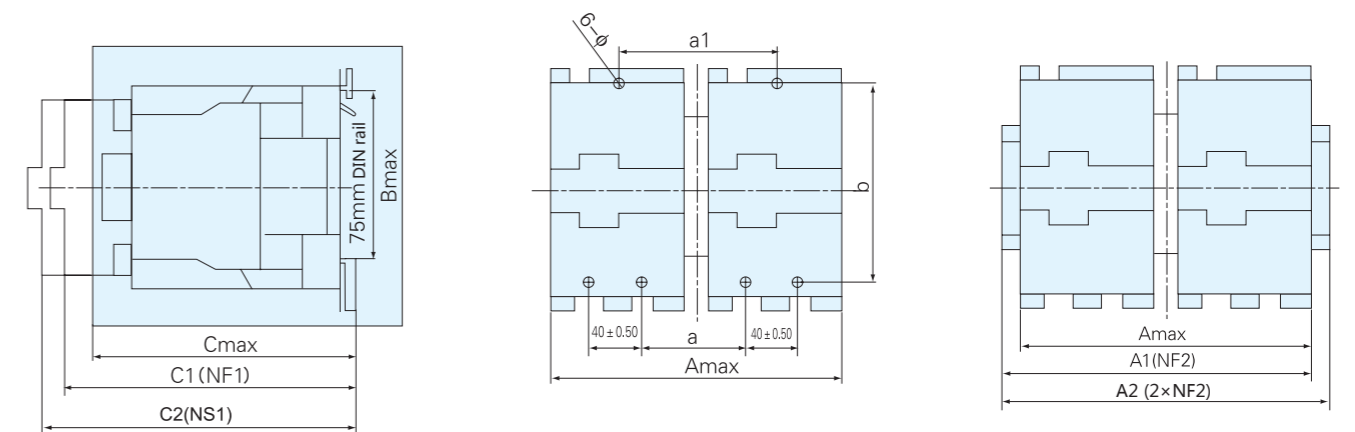


Dimension

NDC1N-09~NDC1N-38 (3P&4P)



NDC1N-4011~9511, NDC1N-4040~9540



Unit: mm

Type	Amax	A1	A2	Bmax	Cmax	a	a1	b	b1	C1	C2	Φ
NDC1N-09~12 (Including 4P)	106	118	131	85	85	95±0.70	-	50/60 (±0.50)	26	115	135	4.5
NDC1N-18	106	119	132	86	90				26	120	140	
NDC1N-25 (Including 4P)	127	142	154	98	102	112±1	-	50/60 (±0.50)	32	128	148	4.5
NDC1N-32~38				100	120				32	133	153	
NDC1N-4011~6511	168	178	192	138	145	50±0.50	90±0.70	100/110 (±1.1)	-	149	169	6.5
NDC1N-4040~6540	185	194	205	146	162	57±0.50	97±0.70		-	156	176	
NDC1N-8011~9511	185	194	205	146	162	57±0.50	96±0.70		-	156	176	
NDC1N-8040~9540	206	220	232	152	170	71±0.7	111±1		-	156	176	

> Note: C1: NDC1N+NF1 C2: NDC1N+NS1 A1: NDC1N+NF2 A2: NDC1N+2xNF2

Accessory (Order separately)

> Please refer to Page 39~44 in catalogue of NDC1 Series AC Contactor when ordering NF1 series auxiliary contact group, NF2 series auxiliary contact group, NS1 series pneumatic timer and NG1 series coil suppressor module.

Ordering Notice

Please specify the following information when placing an order:

> Full model of the contactor

> Rated control circuit voltage and its frequency

> Quantity

For example: AC reversing contactor NDC1N-0901 220V 50Hz/60Hz 10PCS

Means: Reversing AC contactor with 1 pair of normal close auxiliary contact. Rated current is 9A (AC-3 at 400V). Rated control circuit voltage is 220V (50Hz/60Hz). Quantity is 10 pieces.

> Contactor with special voltage can be customized upon request.

NDC1N-115~780 Series Reversing AC Contactor

Application

- > NDC1N-115~780 series reversing AC contactor is used in AC50Hz/60Hz circuit with rated insulating voltage of 1000V, rated working voltage of 400V and rated working current from 52A to 234A in AC-4 utilisation type. It is used to control dual powers and reversible operational motors or motors which can back braking. It can also match with thermal relay to protect the circuit against possible overload.

Model and Implication



No.	Implication	NDC1
1	Brand code	ND Nader
2	Product code	C AC contactor
3	Design code	1
4	Contactor type	N Reversing Contactor
5	Frame size	Shown by rated current I _e when used in AC-3 at 400V
6	Number of poles	No code: 3 poles; 4: 4 poles
7	Installation type of mechanical interlocks	S: Horizontally mounted (no need to mark); C: Vertically mounted
8	Special application code	TH: suitable for humid tropical

Standards and Certificates

- > IEC60947-4, IEC60947-5, GB14048.4, GB14048.5.
- > CCC

Product Features

- > Direct operating mechanism, double breaking points.
- > NF1 series auxiliary contact group and NS1 series pneumatic timer can be added on the top of two sides.

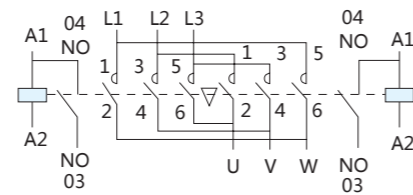
Working Condition

- > Ambient temperature: -60°C~+80°C (Storage); -25°C~+60°C (Operating)
- > Altitude: ≤3000m
- > The relative humidity does not more than 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% relative humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.
- > No significant shock or vibration
- > Screw mounting
- > Installation category: III
- > Vertical installation, the angle between installing surface and vertical surface should be less than ±5°
- > Pollution degree: 3

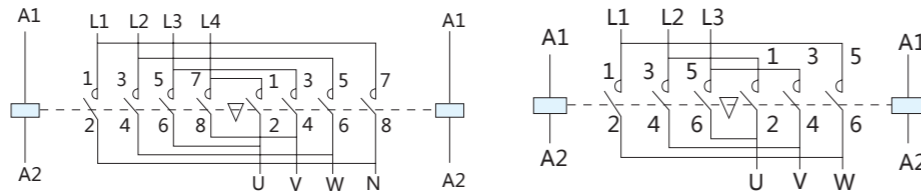
Main Specification

Parameters		Type	NDC1N-115	NDC1N-150	NDC1N-185	NDC1N-225	NDC1N-265	NDC1N-330	NDC1N-400	NDC1N-500	NDC1N-630	NDC1N-780	
Rated current (A) I _e	AC-3	400V	115	150	185	225	265	330	400	500	630	780	
		690V	86	107	118	135	170	225	305	355	460	550	
	AC-4	400V	52	60	79	85	105	117	138	147	188	234	
		690V	49	57	69	82	98	107	135	145	170	190	
Max. rated power of controlled 3-phase squirrel cage motor kW (P _e)	AC-3	400V	55	75	90	110	132	160	200	250	335	400	
		690V	80	100	110	129	160	220	280	335	450	475	
	AC-4	400V	25	30	40	45	55	63	75	80	100	110	
		690V	45	51	63	75	90	100	129	140	160	220	
Rated operational voltage (V) U _e		400, 690, 1000											
Rated insulation voltage (V) U _i		1000											
AC-3	Electrical life (times)	80×10 ⁴			50×10 ⁴			30×10 ⁴		20×10 ⁴			
	Max. operating frequency (h ⁻¹)	600			300								
AC-4	Electrical life (times)	15×10 ⁴						8×10 ⁴		5×10 ⁴			
	Max. operating frequency (h ⁻¹)	150											
Mechanical life (times)		300×10 ⁴						100×10 ⁴					
Auxiliary contact	Conventional thermal current (A) I _{th}	10											
	Electrical life (times)	AC-15 (360VA) DC-13 (33W)	60×10 ⁴			50×10 ⁴			30×10 ⁴		20×10 ⁴		
Rated control circuit voltage (V) U _s		AC: 24, 48, 110, 230(220), 400(380) DC: 24, 48, 110, 220						AC: 48, 110, 230(220), 400(380); DC: 110, 220					
Pick-up voltage		85%U _s ~110%U _s											
Drop-out voltage		20%U _s ~75%U _s (AC)						10%U _s ~70%U _s (DC)					
Coil power (VA)	Inrush	560		800		750		1000		1100		1600	
	Sealed	45		55		8		12		16		20	
Pick-up time (ms)		23~35		20~35		30~65		40~75		40~80		50~80	
Drop-out time (ms)		5~15		7~15		100~170		100~170		100~200		100~250	
Wiring capacity for power circuit	Copper cable	Number of conductors	1	1	1	1	1	1	2	2	2	2	
		Sectional area (mm ²)	95	120	150	185	240	240	150	240	240	240	
	Steel bar	Number of lugs	2	2	2	2	2	2	2	2	2	2	
Dimension (mm)		20×3	25×3	25×3	32×4	32×4	30×5	30×5	50×5	60×5	100×5		
Wiring capacity for auxiliary circuit or control circuit	Flexible cable (mm ²)	1 conductor	2.5										
		2 conductors	2.5										
	Solid cable (mm ²)	1 conductor	4										
		2 conductors	4										

Wiring Schematic

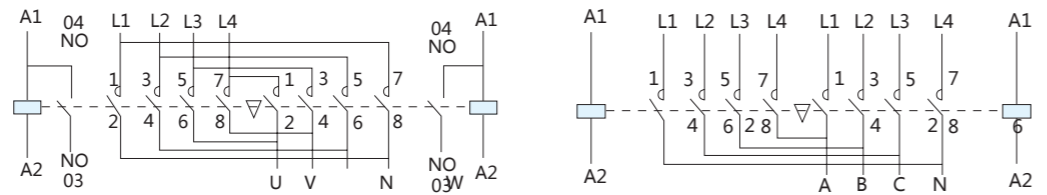


NDC1N-115, 150, 185, 225, 400, 500, 630



NDC1N-1154, 1504, 1854, 2254, 2654, 3304

NDC1N-265, 330



NDC1N-4004, 5004, 6304

NDC1N-1154~6304 changeover contactor pairs for power distribution

Dimension

Dimension for NDC1N-115S-330S (Please refer to Table 1)

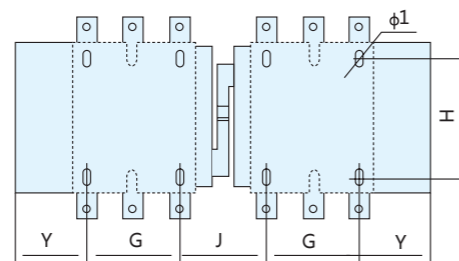
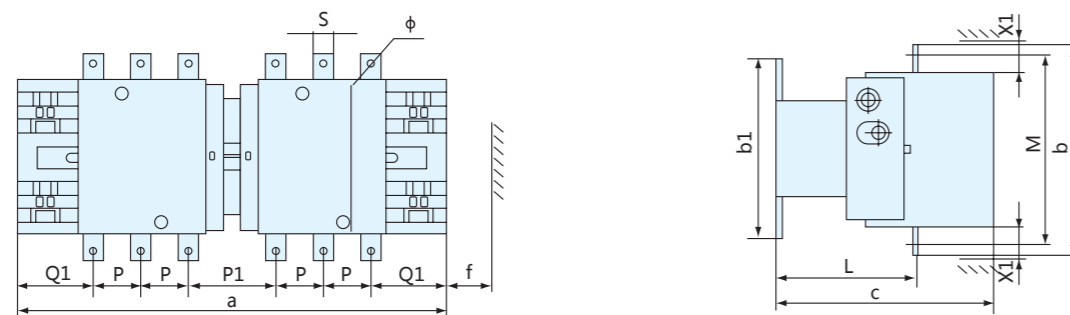


Table 1 Unit: mm

NDC1N	a	P	P1	Q1	S	Φ	f	b	b1	M	c	L	G	J	H	Φ1	Y	X1	
																		500V≤	> 500V
115	346	37	78	60	15	M6	109	162	137	147	171	107	80	72	120-106	6.5	57	10	15
1154	420	37	78	60	15	M6	109	162	137	147	171	107	80	109	120-106	6.5	75.5	10	15
150	346	40	72	57.5	20	M8	109	170	137	150	171	107	80	72	120-106	6.5	57	10	15
1504	420	40	72	55.5	20	M8	109	170	137	150	171	107	80	109	120-106	6.5	75.5	10	15
185	357	40	78	59.5	20	M8	117	174	137	154	181	135	80	78	120-106	6.5	59.5	10	15
1854	437	40	78	59.9	20	M8	117	174	137	154	181	135	80	118	120-106	6.5	79.5	10	15
225	357	48	62	51.5	25	M10	117	197	137	172	181	135	80	78	120-106	6.5	59.5	10	15
2254	437	48	54	47.5	25	M10	117	197	137	172	181	135	80	118	120-106	6.5	79.5	10	15
265	424	48	99	66.5	25	M10	143	203	145	178	213	141	96	109	120-106	6.5	61.5	10	15
2654	520	48	99	66.5	25	M10	143	203	145	178	213	141	96	157	120-106	6.5	85.5	10	15
330	445	48	105	74	25	M10	143	206	145	181	219	145	96	122	120-106	6.5	65.5	10	15
3304	541	48	105	74	25	M10	143	206	145	181	219	145	96	170	120-106	6.5	89.5	10	15

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Dimension for NDC1N-400S-500S (Please refer to Table 2)

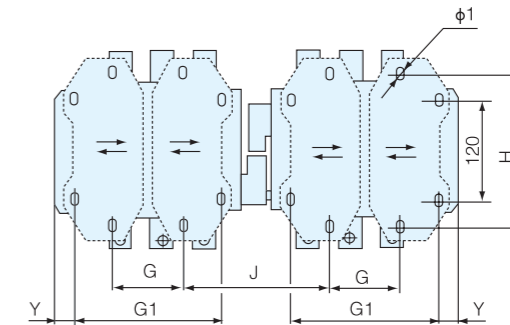
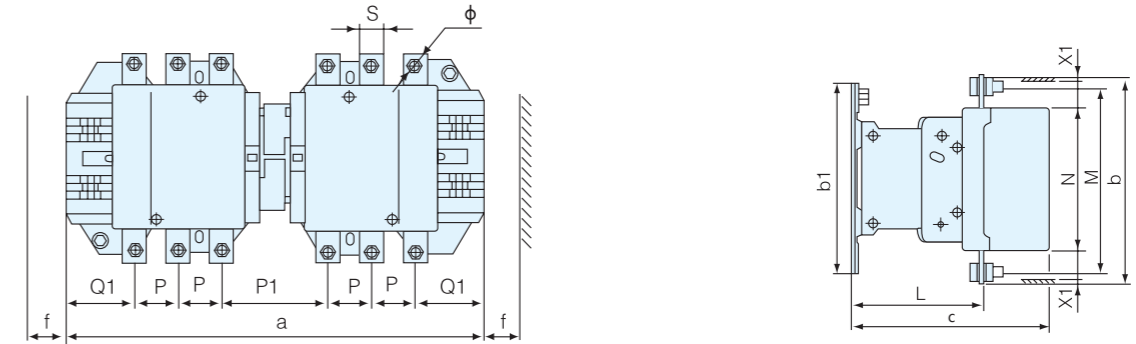


Table 2 Unit: mm

NDC1N	a	P	P1	Q1	S	Φ	f	b	b1	M	c	L	G	G1	J	H	Φ1	Y	X1	
																			500V≤	> 500V
400	445	48	105	74	25	M10	151	206	209	181	219	145	80	170	156	170-180	8.5	19.5	15	20
4004	541	48	105	74	25	M10	151	206	209	181	219	145	80	170	156	170-180	8.5	67.5	15	20
500	485	55	111	77	30	M10	169	238	209	208	232	146	80	170	156	170-180	8.5	39.5	15	20
5004	595	55	111	77	30	M10	169	238	209	208	232	146	140	230	156	170-180	8.5	34.5	15	20

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Dimension for NDC1N-630S (Please refer to Table 3)

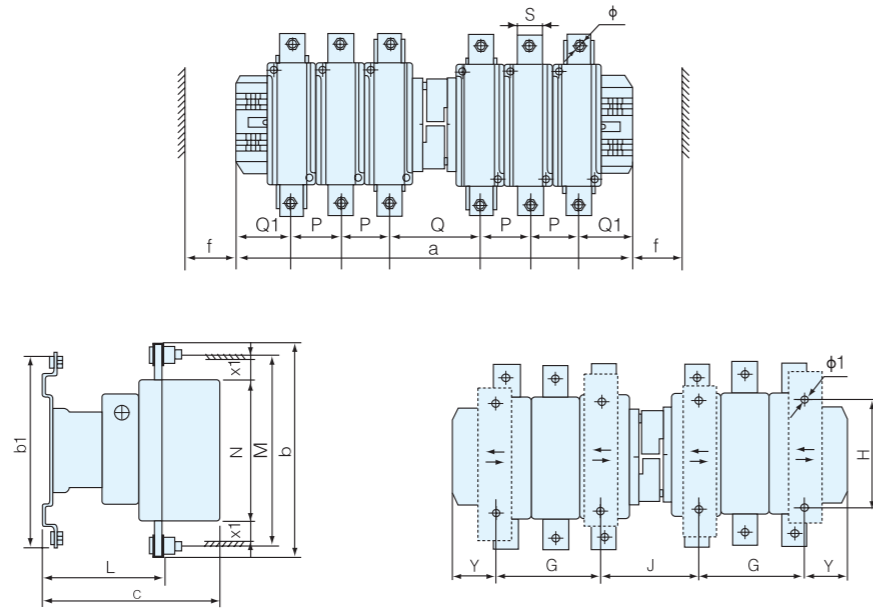


Table 3 Unit: mm

NDC1N	a	P	P1	Q1	S	Φ	f	b	b1	M	c	L	G	J	H	$\Phi1$	Y	X1	
																		500V \leq	> 500V
630	636	80	138	89	40	M12	201	304	280	264	255	155	180(100-195)	139	180-190	10.5	68.5	20	30
6304	796	80	138	89	40	M12	201	304	280	264	255	155	240(150-275)	139	180-190	10.5	68.5	20	30

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Dimension for NDC1N-115C-330C (Table 4)

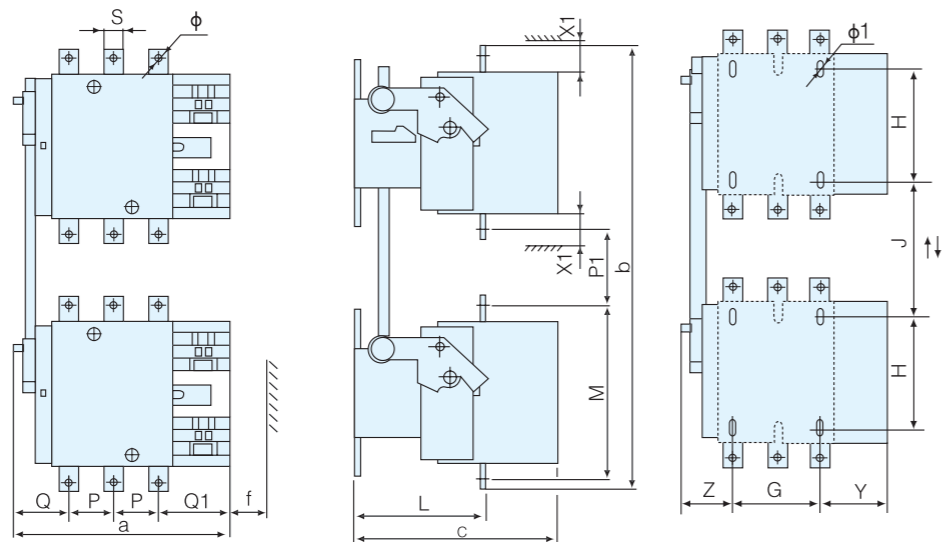


Table 4 Unit: mm

NDC1N	a	P	Q1	Q	S	Φ	f	b	P1	M	c	L	G	H	J	$\Phi1$	Z	Y	X1	
																			500V \leq	> 500V
115	184	37	60	50	15	M6	109	357-472	48-163	147	171	107	80	120	80-195	6.5	47	57	10	15
1154	221	37	60	50	15	M6	109	357-472	48-163	147	171	107	80	120	80-195	6.5	65.5	75.5	10	15
150	184	40	57	47	20	M8	109	365-480	45-160	150	171	107	80	120	80-195	6.5	47	57	10	15
1504	221	40	55.5	45.5	20	M8	109	365-480	45-160	150	171	107	80	120	80-195	6.5	65.5	75.5	10	15
185	192	40	59.5	52.5	20	M8	117	389-484	61-156	154	181	113.5	80	120	100--195	6.5	52.5	59.5	10	15
1854	232	40	59.5	52.5	20	M8	117	389-484	61-156	154	181	113.5	80	120	100-195	6.5	72.5	79.5	10	15
225	192	48	51.5	44.5	25	M10	117	412-507	43-138	172	181	113.5	80	120	100-195	6.5	52.5	59.5	10	15
2254	232	48	47.5	40.5	25	M10	117	412-507	43-138	172	181	113.5	80	120	100-195	6.5	72.5	79.5	10	15
265	226	48	66.5	63.5	25	M10	143	448-583	67-202	178	213	141	96	120	130-265	6.5	68.5	61.5	10	15
2654	274	48	66.5	63.5	25	M10	143	448-583	67-202	178	213	141	96	120	130-265	6.5	92.5	85.5	10	15
330	240	48	74	70	25	M10	143	481-586	94-199	181	219	145	96	120	160-265	6.5	78.5	65.5	10	15
3304	288	48	74	70	25	M10	143	481-586	94-199	181	219	145	96	120	160-265	6.5	102.5	89.5	10	15

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Dimension for NDC1N-400C-500C (Please refer to Table 5)

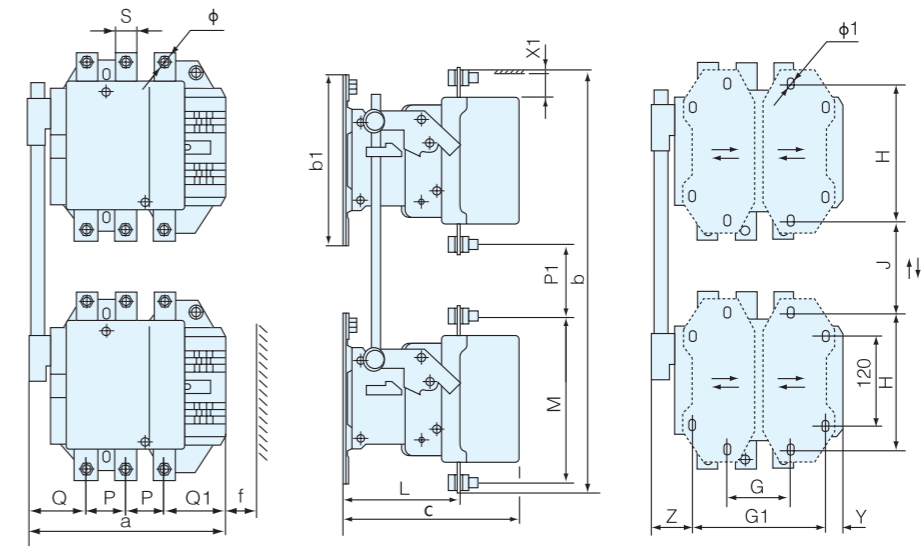


Table 5 Unit: mm

NDC1N	a	P	Q1	Q1	S	Φ	f	b	P1	M	c	L	G	G1	H	J	$\Phi1$	Z	Y	X1	
																				500V \leq	> 500V
400	240	48	74	70	25	M10	151	481-586	94-199	181	219	145	80	170	180	100-205	8.5	50.5	19.5	15	20
4004	288	48	74	70	25	M10	151	481-586	94-199	181	219	145	80	170	180	100-205	8.5	50.5	67.5	15	20
500	261	55	77	74	30	M10	169	533-618	87-172	208	232	146	80	170	180	120-205	8.5	51.5	39.5	15	20
5004	316	55	77	74	30	M10	169	533-618	87-172	208	232	146	140	230	180	120-205	8.5	51.5	34.5	15	20

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Dimension for NDC1N-630C (Please refer to Table 6)

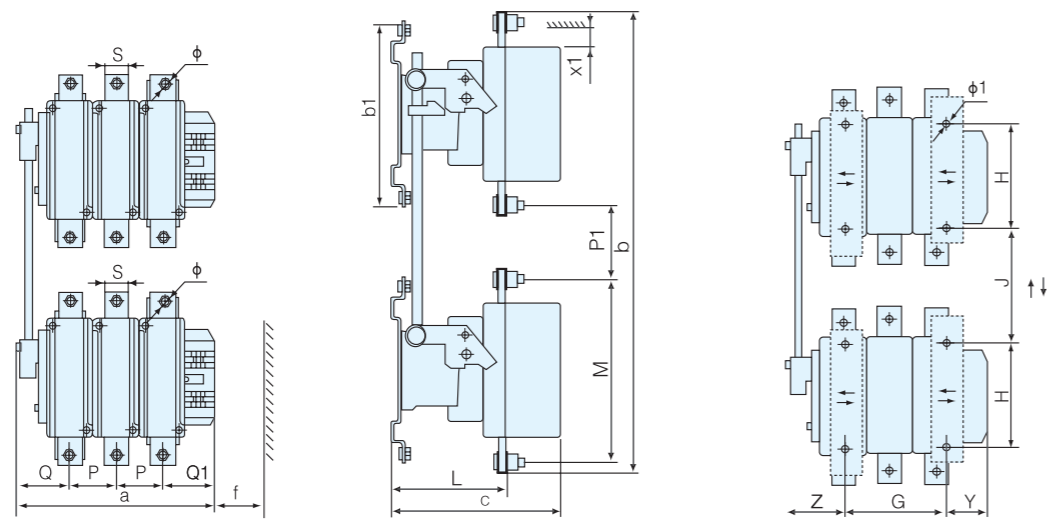


Table 6 Unit: mm

NDC1N	a	P	Q1	Q	S	Φ	f	b	P1	M	c	L	G	H	J	Φ1	Z	Y	X1	
																			500V≤	> 500V
630	309	80	89	60	40	M12	201	669-684	101-116	264	255	155	180(100-195)	190	180-195	10.5	60.5	68.5	20	30
6304	389	80	89	60	40	M12	201	669-684	101-116	264	255	155	240(150-275)	190	180-195	10.5	60.5	38.5	20	30

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Dimension for NDC1N-780 (Please refer to Table 7)

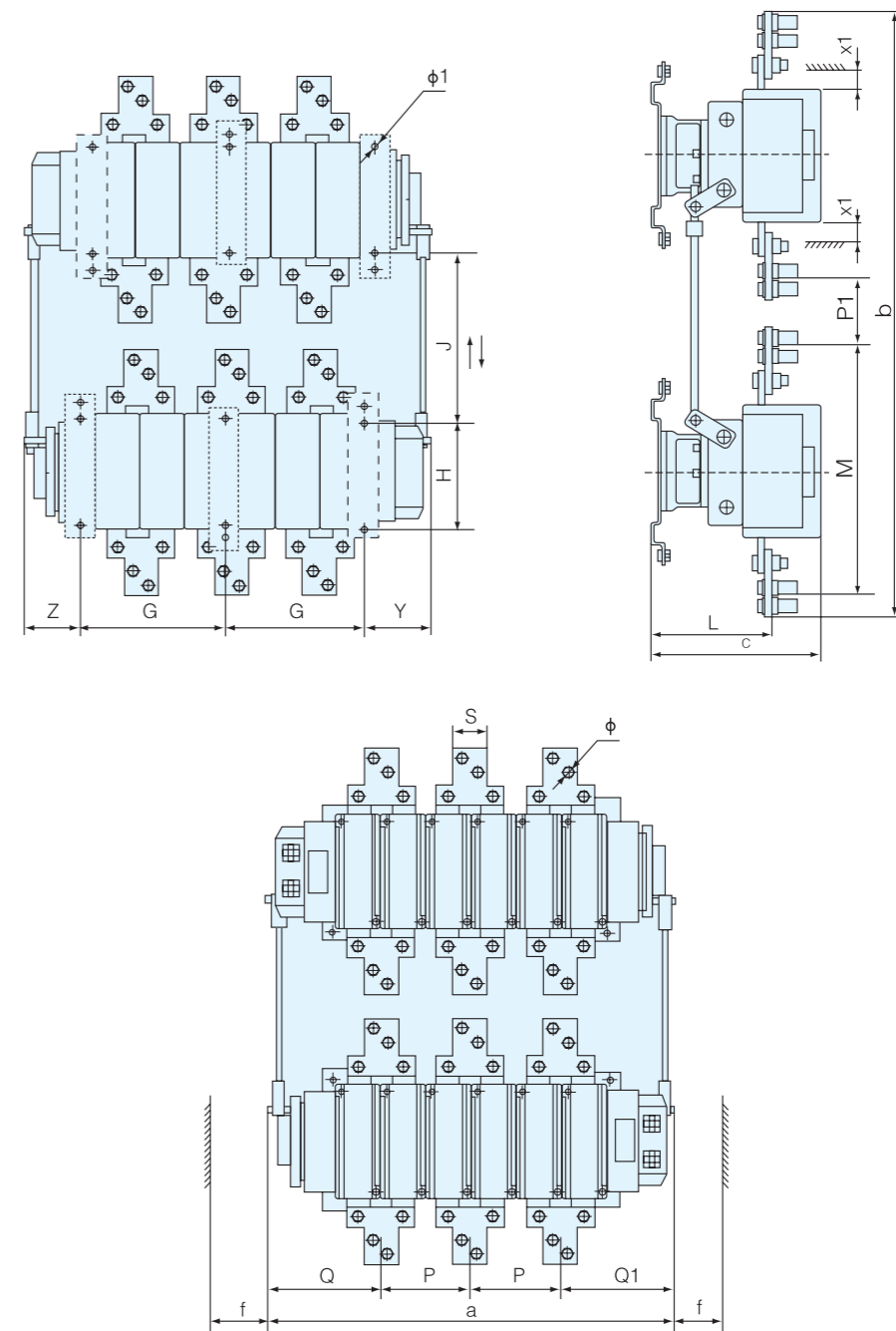


Table 7 Unit: mm

NDC1N	a	P	Q1	Q	S	Φ	f	b	P1	M	H	c	L	G	G1	Φ1	J	Z	Y	X1	
																				500V≤	> 500V
780	704	160	192	192	60	M12	201	970	81-101	400-438	202	255	265	240	-	10.5	180	91	133	20	30

> Note: f is the necessary distance for coil replacement. X1 is the Min. clearance (arcover distance).

Horizontally mounted: NDC1N-115S~630S series reversing AC contactor is supplied while being installed on a fixed bar. Customers can take out the fixed bar and install the contactors on the mounting panel or DIN rail, and then wire them. Dimension without fixed bar (Please refer to Table 8)

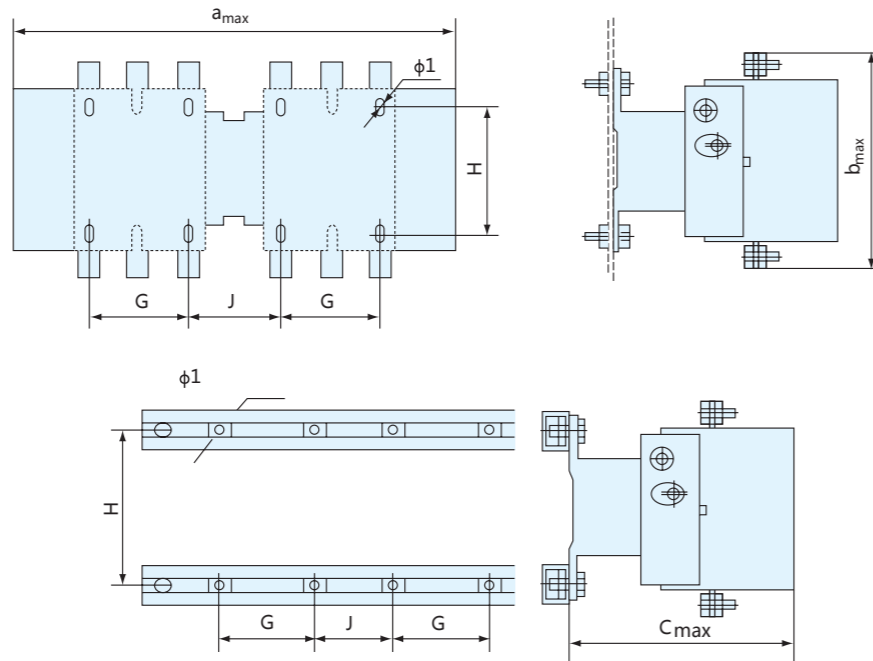


Table 8 Unit: mm

NDC1N	a _{max}	b _{max}	c _{max}	G①	J	H	Φ1	f①
115, 150	346	170	171	80	72	106-120	6.5	133
1154, 1504	425	170	171	80	109	106-120	6.5	133
185, 225	357	197	181	80	78	106-120	6.5	133
1854, 2254	425	197	181	80	118	106-120	6.5	133
265	424	203	213	96	109	106-120	6.5	146
2654	500	203	213	96	157	106-120	6.5	146
330	445	206	219	96	156	106-120	6.5	146
3304	500	206	219	96	170	106-120	6.5	146
400, 4004	500	206	219	80	156	170-180	8.5	146
500	500	238	232	80	156	170-180	8.5	150
5004	630	238	232	140	156	170-180	8.5	150
630	630	304	255	180	139	180-190	10.5	181
6304	800	304	255	240	139	180-190	10.5	181

> Note:

1. Reversing contactor of rated current 115A~300A can be installed with 3 screws. Two contactors should have the same installing face.
2. f is the necessary distance for coil replacement when DIN rail installation is adopted. Regarding this dimension for panel installation, please refer to the dimension for interlocked contactors.

Horizontal installation: NDC1N-115S~630S series reversing AC contactor is supplied while being installed on a fixed bar. Customers can also install them as the whole product (integral installation). Dimensions of NDC1N-115S~630S for integral installation (Please refer to Table 9)

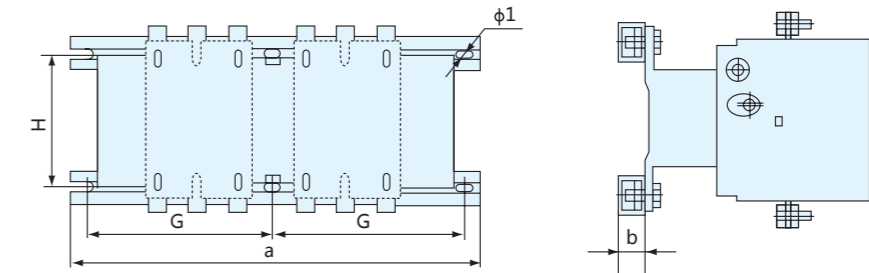


Table 10 Unit: mm

Fixed Bar No.	Applicable Product Type NDC1N-	a	G	H	Φ1	b
1	115, 225	355	160	120(106-120)	6.5	13
2	265, 330, 1154~2254	425	200	120(106-120)	6.5	13
3	2654, 3304	500	235	120(106-120)	9	20
	180(170-180)			9	20	
4	630, 5004	630	300	180(170-180)	9	20
5	6304	800	380	180(170-180)	9	20

Attention

- > Surface of silver contacts may appear dark and singeing after operating for certain period of time. But this will not affect normal operation. Please do not polish as it reduce the endurance of silver contact. If singeing is severe and affect contact, please use dead smooth file to slightly smooth the surface. The contacts can still work till exposing contact plate.

Accessory (Order separately)

- > Please refer to Page 39~42 for NF1 series auxiliary contact group and NS1 series pneumatic timer.

Ordering notice

Please specify the following information when placing an order:

- > Full model of the contactor
- > Rated control circuit voltage and its frequency
- > Installation type of mechanical interlocks. If it is not specified in purchasing order, horizontally mounted type (S) will be regard as default.
- > Quantity
- > Example 1: NDC1N-265S 220V 50Hz, 10PCS. Means: Horizontally mounted reversing AC contactor with rated current of 265A (AC-3 at 400V), rated control circuit voltage of 220V (50Hz). Quantity is 10 pieces.
Example 2: NDC1N-265C 220V 50Hz, 10PCS. Means: Vertically mounted reversing AC contactor with rated current of 265A (AC-3 at 400V), rated control circuit voltage of 220V (50Hz). Quantity is 10 pieces.
- > Contactor with special voltage can be customized upon requests.
- > Coil can be ordered separately as it is the damageable part.

NDK1 Series Capacitor-switching Contactor

Application

> NDK1 series capacitor-switching contactor (hereinafter "contactor") is used in AC 50Hz/60Hz with rated insulating voltage of 690V, rated working voltage of 400V and rated working current up to 87A in AC-6b utilisation type. It is used to making or breaking capacitor groups in low-voltage reactive power compensation equipments. It is equipped with surge refraining device so that it can effectively reduce the shocks on capacitor groups due to surge and reduce operational overvoltage.

Model and Implication



No.	Implication	NDK1
1	Brand code	ND Nader
2	Product code	K Capacitor-switching contactor
3	Design code	1
4	Frame size	25, 32, 40, 50, 60, 80, 125
5	Auxiliary contact code of 3-pole contactor	Tens digit: number of pairs of normal open (NO) auxiliary contacts Units digit: number of pairs of normal close (NC) auxiliary contacts
6	Special application code	TH: suitable for hot-humid climate

Standards and Certificates

> IEC60947-4, IEC60947-5, GB14048.4, GB14048.5.
> CCC.

Product Features

> Direct operating mechanism, double breaking points.
> Composed of a NDC1 AC contactor, a switching contacts group, six resistance wires and other spare parts. The switching contacts group is on the front side of NDC1 AC contactor. The contact system is distributed in upper and lower layers.

Working Condition

- > Ambient temperature:
Storage: -60°C~+80°C
Operating: -25°C~+60°C
 - > Altitude: ≤3000m
 - > The relative humidity does not exceed 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% relative humidity at 20°C. Special measures are necessary in case of condensation due to variations in temperature.
 - > Pollution degree: 3
 - > Installation category: III
 - > In addition to screw mounting, it can be installed on 35mm DIN rail or 75mm DIN rail.
 - > Vertical installation. The angle between installing surface and vertical surface should be less than ±5°.
 - > Working hours
 - a) Eight hour
 - b) Around-the-clock working
 - c) Remittent periodical working Load factor: 40%
- Operating frequency: 300 times/hour(For NDK1-25~NDK1-40)
120 times/hour(For NDK1-50~NDK1-125)

Working Principle

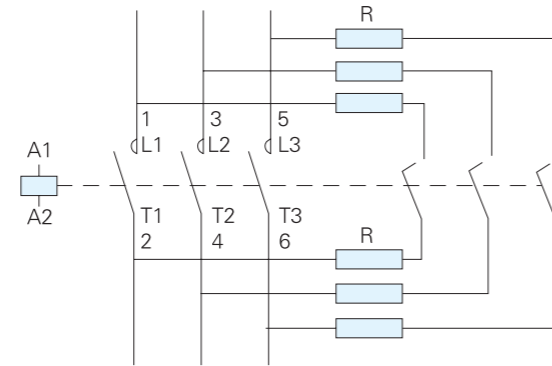
> Contactor picks up when the control circuit is electrified. The upper main contact, which is connected with current limiting device in series, connects before the lower contact to refrain surge. After that, it disconnects instantly to the normal position and the lower contact begins to work. The work of disconnecting is done by the lower contact. Long time power waste and resistance wire burning can be avoided due to the immediate introduction of current limiting device.

Main Specification

Type	NDK1-25	NDK1-32	NDK1-40	NDK1-50	NDK1-60	NDK1-80	NDK1-125								
Conventional thermal current (A) Ith	32	40	50	60	80	80	125								
Rate current (A) Ie (AC-6b 400V)	18	24	29	36	48	58	87								
Controllable capacity (kvar) AC-6b	200V~240V	6.7	8.5	10	15	20	40								
	400V~440V	12.5	16.7	20	25	33.3	60								
Surge refraining capacity (times)	20														
Electrical life (times)	12×10 ⁴			10×10 ⁴											
Mechanical life (times)	300×10 ⁴														
Max. operating frequency (h ⁻¹)	300			120											
Rated insulation voltage (V) Ui	690														
Model	NDK1-2520, 2511, 2502	NDK1-3220, 3211, 3202	NDK1-4020, 4011, 4002	NDK1-5021, 5012	NDK1-6021, 6012	NDK1-8021, 8012	NDK1-12521, 12512								
Auxiliary contact	Conventional thermal current (A) Ith		10												
	Electrical life(times)	AC-15 (360VA)	12×10 ⁴												
		DC-13 (33W)													
Min. load connected		24V 10mA													
Operating time of current limited resistance (ms)		7~9													
Coil	50Hz	Inrush	70	110	200										
		Sealed	8	11	20										
	60Hz	Inrush	80	115	220										
		Sealed	8	11	20										
Rated control circuit voltage (V) Us		AC(50Hz, 50Hz/60Hz) : 24, 36, 48, 110, 220, 380, 400													
Pick-up time (ms)		12~22	15~24		20~26		20~35								
Drop-out time (ms)		4~12	5~19		8~12		6~20								
Pick-up voltage		85%Us~110%Us													
Drop-out voltage		30%Us~55%Us			30%Us~60%Us										
Number of conductors		1	2	1	2	1	2	1	2	1	2	1	2		
Wiring capacity (mm ²)	Flexible cable	4	4	4	4	6	6	16	16	16	16	16	16	50	25
	Solid cable	6	6	6	6	10	10	25	16	25	16	25	16	50	25

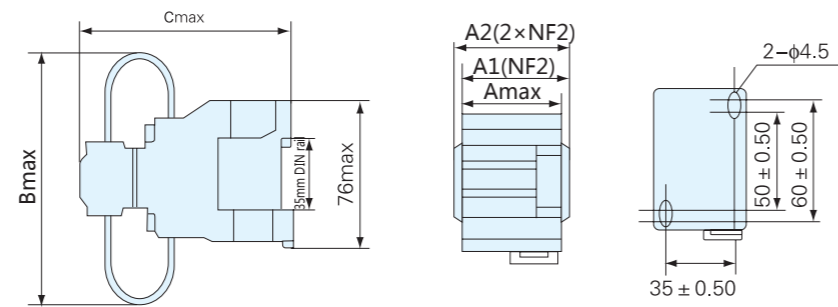
> Note: Due to the harmonic and fluctuation of voltage, the current in capacitor loop usually reach 1.3 times of capacitor' s rated current. What is more, the actual current in loop may reach 1.3*1.1*In=1.43In as the tolerable error in capacitor normally is -5%~+10%. Please take this into consideration when choosing contactor.

Wiring Schematic (Main Circuit)

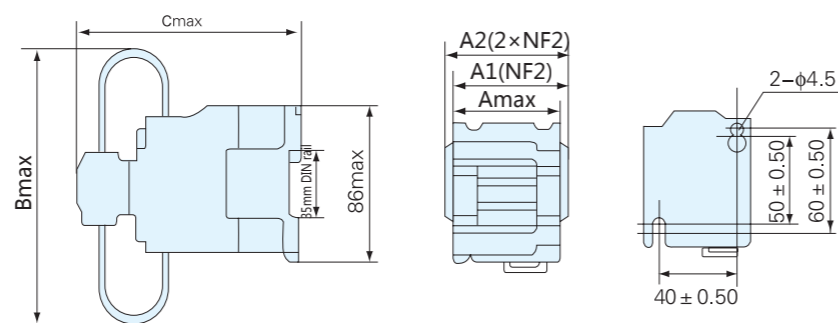


Dimensions

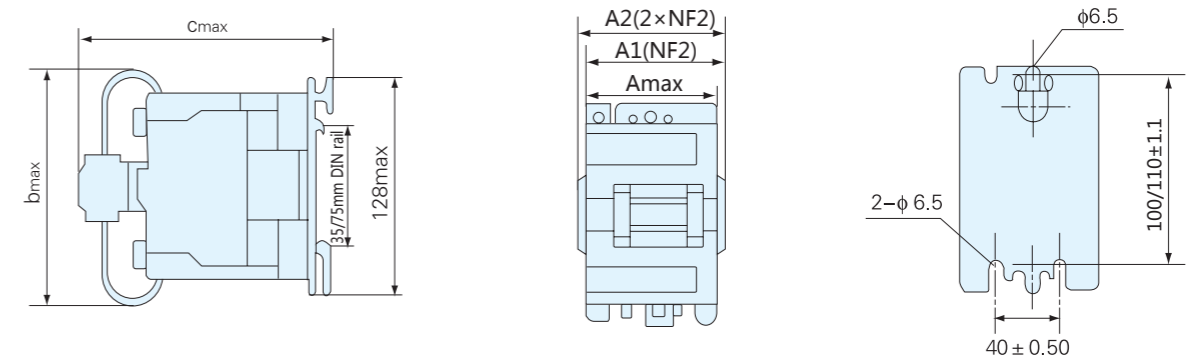
Dimension for NDK1-25



Dimension for NDK1-32, 40



Dimension for NDK1-50, 60, 80, 125



Unit: mm

Type	Amax	A1	A2	Bmax	Cmax
NDK1-25	46	60	72	130	125
NDK1-32	58	71	84	145	135
NDK1-40	58	71	84	145	140
NDK1-50, 60, 80	76	90	102	170	157
NDK1-125	86	100	110	178	165

Accessory (Order separately)

- > Please refer to Page 39~42 for NF2 series auxiliary contact group.
- > Please refer to Page 43~44 for NG1 series coil suppressor modular.

Ordering Notice

- > Please specify the following information when placing an order:
 - Full model of the contactors
 - Rated control circuit voltage and its frequency
 - Quantity

For example: NDK1-2511 380V 50Hz/60Hz 10PCS

Means: NDK1 series capacitor-switching contactor with 1 pair of NO auxiliary contacts and 1 pair of NC auxiliary contacts. Rated current is 18A (AC-6b). Rated control circuit voltage is 380V(50Hz/60Hz). Quantity is 10 pieces.

- > Contactors with special voltage can be customized upon requests.



NDJ1(Z) Series Contactor-type Relay

Application

> NDJ1(Z) series contactor-type relay (hereinafter "relay") is used in cuicut of AC 50Hz/60Hz with rated voltage up to 380V or DC 220V to control various electrical-magnetic coils, amplify or carry signals.

Model and Implication



No.	Implication	NDC1
1	Brand code	ND Nader
2	Product code	J Contactor-Type Relay
3	Design code	1
4	Circuit code	Z: DC circuit; No code: AC circuit
5	Contact code	Tens digit: number of pairs of normal open (NO) auxiliary contacts Units digit: number of pairs of normal close (NC) auxiliary contacts
6	Special application code	TH: suitable for humid tropical

Model

Model	Number of contacts	
	Normal Open (NO)	Normal Close (NC)
NDJ1 (Z) -40	4	0
NDJ1 (Z) -31	3	1
NDJ1 (Z) -22	2	2

Standards and Certificates

- > IEC60947-5, GB14048.5;
- > TÜV, CE, CCC.

Working Condition

- > Ambient temperature:
Storage: -60°C~+80°C
Operating: -25°C~+60°C
 - > Altitude: ≤3000m
 - > The relative humidity does not exceed 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.
 - > Pollution degree: 3
 - > Installation catagory: II
 - > In addition to screw mounting, it can be installed on 35mm DIN rail.
 - > Vertical installation. The angle between installing surface and vertical surface should be less than ±30°
 - > Working hours
 - a) Eight hour
 - b) Around-the-clock working
 - c) Remittent periodical working
- Load factor: 40%
Operating frequency: 2400 times/ hour

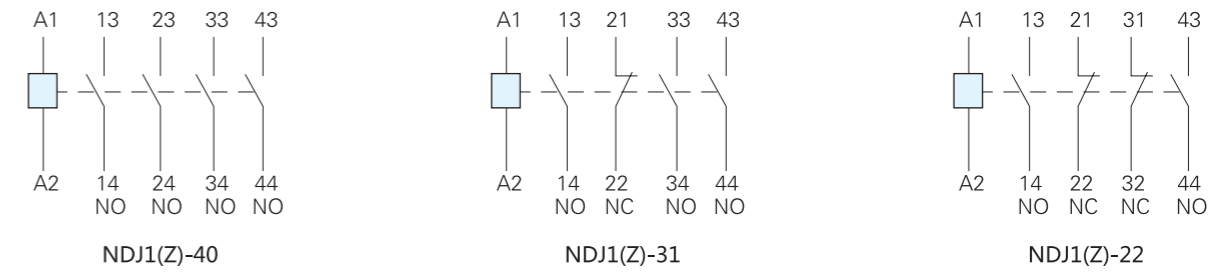
Product Features

- > Direct operating mechanism, double breaking points
- > Compatible with accessories on every side except the installing side
- > NF1 series auxiliary contact group and NS1 series pneumatic timer can be added on the front side and NF2 series auxiliary contact group can be added on left or right side. NG1 series coil suppressor module can be added on coil terminals.
- > Protection degree: IP20
- > Contacts adopt rainforced friction structure. The net-shaped contact between fixed and moving contacts can improve product' s reliability and with self-cleaning function.

Main Specification

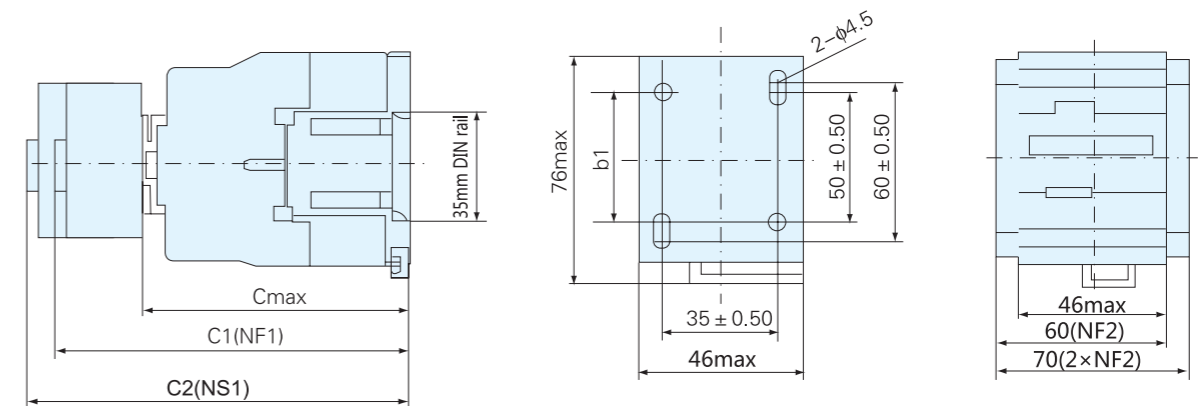
Parameters		Type	NDJ1-40, 31, 22	NDJ1Z-40, 31, 22			
Rated insulation voltage (V) U_i			690				
Rated operational voltage (V) U_e			AC 380	DC 220			
Conventional thermal current (A) I_{th}			10				
Rated current (A) I_e	AC-15 (380)		0.95				
	DC-13 (220)		0.15				
Min. load connected			24V 10mA				
Rated operating frequency (h^{-1})			2400				
Mechanical life (times)			1000×10^4				
Electrical life (times)			120×10^4				
Coil	Rated control circuit voltage (V) U_s		AC : 50Hz, 50/60Hz 24, 36, 48, 110, 220, 380, 400	DC : 24, 48, 110, 220			
	Pick-up voltage		85% U_s ~110% U_s	85% U_s ~110% U_s			
	Drop-out voltage		20% U_s ~75% U_s	10% U_s ~75% U_s			
	Inrush power		65VA	11W			
	Sealed power		8VA	11W			
Insulation withstand voltage (AC 50Hz)			2500V/1min				
Switching time between NO and NC			4ms				
Operating time		NO	Closing	10~22ms	NO	Opening	5~20ms
		NC	Closing	9~24ms	NC	Opening	7~20ms
Instantaneous over current permitted	1s		100A				
	500ms		120A				
	100ms		180A				
Wiring capacity (mm ²)	Flexible cable	1 or 2 conductors	2.5				
	Solid cable	1 or 2 conductors	4				

Wiring Schematic



Dimension

NDJ1(Z)-40, 31, 22



Type	b1	Cmax	C1	C2
NDJ1-40, 31, 22	47	84	115	135
NDJ1Z-40, 31, 22	45~50	120	150	170

Accessory (Order separately)

- > Please refer to Page 39~42 for NF1 and NF2 series auxiliary contact group and NS1 series pneumatic timer.
- > Please refer to Page 43~44 for NG1 series coil suppressor module.

Ordering Notice

- > Please specify the following information when placing an order:

- Full model of the relays
- Rated control circuit voltage and its frequency
- Quantity

For example: NDJ1-40 220V 50Hz/60Hz 10PCS

Means: NDJ1 series contactor-type relay with 4 pairs of NO contacts.

Rated control circuit voltage is 220V(50Hz/60Hz). Quantity is 10 pieces.

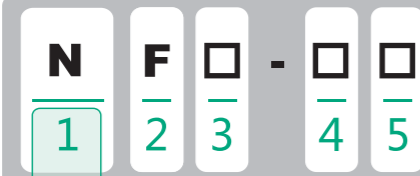
- > Relays with special voltage can be customized upon requests.

NF1 and NF2 Series Auxiliary Contact Group and NS1 Series Pneumatic Timer

Application

> NF1, NF2 series auxiliary contact group, NS1 series pneumatic timer are accessories of AC contactor and contactor-type relay. They are used to expand the number of auxiliary contacts when connected with AC contactor and contactor-type relay, instantly or delayed make or break circuit in control circuit.

Model and Implication



No.	Implication	NF
1	Brand code	N Nader
2	Product code	F Auxiliary contact
3	Mounting type	1: Top mounting; 2: Side mounting
4	Contact code	Tens digit: number of pairs of normal open (NO) auxiliary contacts Units digit: number of pairs of normal close (NC) auxiliary contacts
5	Special application code	TH: Suitable for humid tropical

Model and Implication



No.	Implication	NS1
1	Brand code	N Nader
2	Product code	S Auxiliary contact (Pneumatic timer)
3	Design code	1
4	Delay type	2: Making-delay; 3: Breaking-delay
5	Delay time range	20: 0.1s~3s; 22: 0.1s~30s; 24: 10s~180s

Model

Auxiliary Contact Groups

Model	Number of Contacts		Mounting Type	
	Normal Open (NO)	Normal Close (NC)		
NF1-40	4	0	Top mounting on NDC1(N)-09~95 series contactor and NDJ1(Z) series contactor-type relay; Top mounting on the left or right side of NDC1(N)-115~780 series contactors. Top mounting on the right side of NDC1-1000~2100 series contactors.	
NF1-31	3	1		
NF1-22	2	2		
NF1-13	1	3		
NF1-04	0	4		
NF1-20	2	0		
NF1-11	1	1		
NF1-02	0	2		
NF2-20	2	0		Side mounting on NDC1(N)-09~95 series contactor, NDC1(Z)-09~38 series contactor and NDJ1(Z) series contactor-type relay.
NF2-11	1	1		

Auxiliary Contact (Pneumatic Timer)

Model	Delay Time Range	Delay Contacts	Delay Type	Mounting Type
NS1-220	0.1s~3s	1NO+1NC	Making-delay	Top mounting
NS1-222	0.1s~30s			
NS1-224	10s~180s		Breaking-delay	
NS1-320	0.1s~3s			
NS1-322	0.1s~30s			
NS1-324	10s~180s			

Standards and Certificates

- > IEC60947-5, GB14048.5;
- > TÜV, CE, CCC.

Working Condition

- > Ambient temperature:
Storage: -60°C~+80°C
Operating: -25°C~+60°C
- > Altitude: ≤3000m
- > The relative humidity does not exceed 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% relative humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.

Product Features

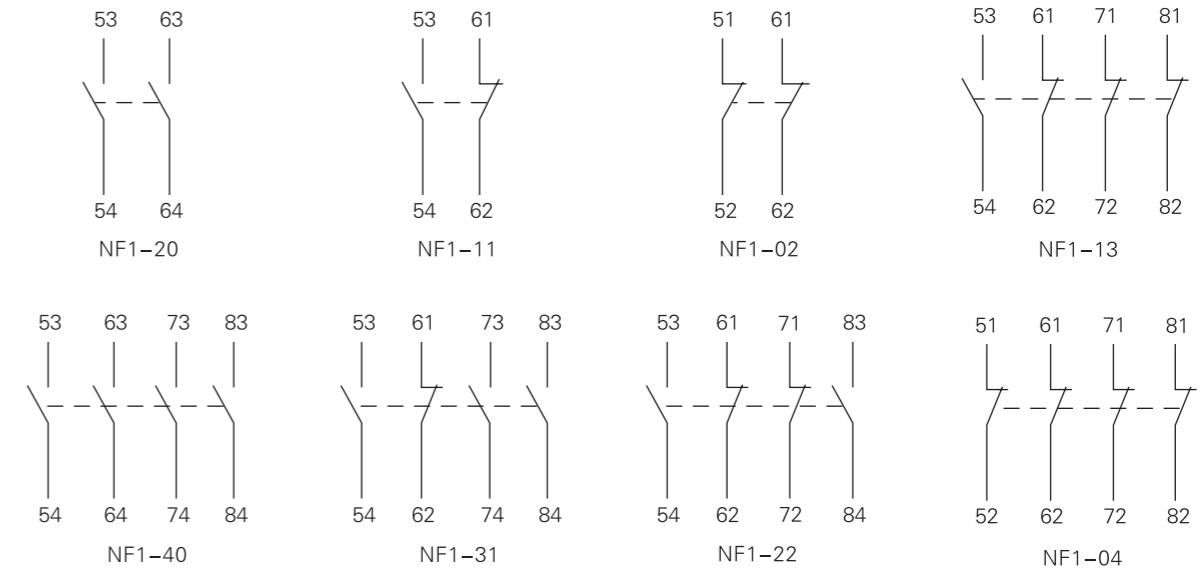
- Auxiliary contact group
 - > Direct operating mechanism, double breaking points
 - > Tilting guiding track of operating mechanism with self-cleaning function
 - > Net-shaped contact surface to ensure reliable contact
 - > Protection degree of contacts: IP20
 - > Unable to be used alone
- Auxiliary contact (Pneumatic timer)
 - > Contacts with delay function
 - > Making-delay and breaking-delay types
 - > Accuracy and easy to adjust

Main Specifications

Parameters		Type	Auxiliary Contact Group NF1, NF2	Auxiliary Contact (Pneumatic Timer) NS1
Standards		IEC60947-5, GB14048.5		
Rated insulation voltage (V) U_i		690		
Rated operational voltage (V) U_e		AC : 380		DC : 220
Conventional thermal current (A) I_{th}		10		
Rated current (A) I_e	AC-15 (360VA)	0.95		
	DC-13 (33W)	0.15		
Min. load connected		24V 10mA		
Rated operating frequency (h^{-1})		2400		1200
Endurance	Mechanical (times)	10×10^6		3×10^6
	Electrical (timers)	1.2×10^6		0.5×10^6
Insulation resistance (mΩ)		10		
Withstand Voltage (AC)		2500V/1min		
Time-delay repeat error		—		±5%
Time-delay stable error		—		±15%
Temperature error		—		±0.3%
Wiring capacity (mm ²)	Flexible cable	1 or 2 conductors		2.5
	Solid cable	1 or 2 conductors		4

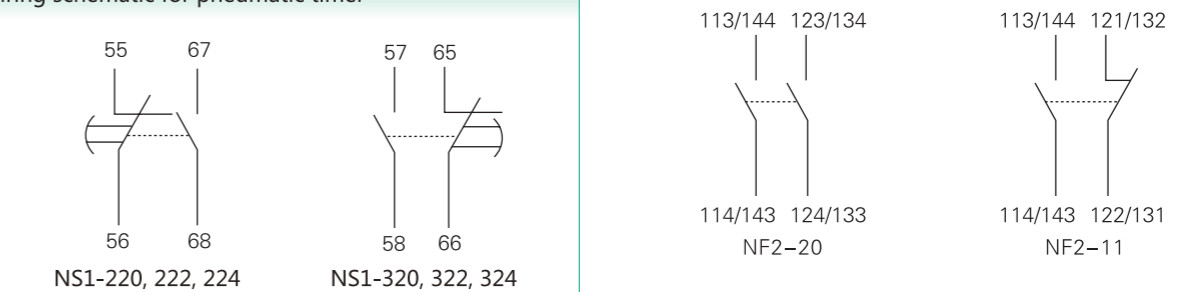
Wiring Schematic

Wiring schematic for auxiliary contact group



- > Note: Tens digit of terminal number is for the position of contacts. And units digit of terminal number is for the contact type. 1, 2 is for NC contacts; 3,4 is for NO contacts.

Wiring schematic for pneumatic timer



Dimension

- > NF1, NF2 auxiliary contact groups and NS1 pneumatic timer are connected to NDC1(N)-09~95 series AC contactors or NDJ1(Z) series contact-type relay. Refer to corresponding catalogue for the dimensions.
- > The dimensions of NDC1(N)-115~780 series AC contactors do not change when NF1, NF2 auxiliary contact groups and NS1 pneumatic timer are connected to the contactors.

Attention

- > Make sure to connect the auxiliary contact groups with contactors or contact-type relay properly to ensure normal work.
- > Please do not open the auxiliary contact NS1 optionally during usage.

Ordering Notice

- > Please specify the following information when placing an order
 - Full model of the accessories
 - Quantity
 Foreexample: NF1-31 auxiliary contact groups 10PCS
 Means: Auxiliary contact groups with 3 pairs of NO contacts and 1 pair of NC contacts. Quantity is 10 pieces.
 NS1-222 auxiliary contact 10PCS
 Means: Making-delay type pneumatic timer with delay time from 0.1s to 30s. Quantity is 10 pieces.

NG1 Series Coil Suppressor Module

Application

> NG1 series coil surge refraining modular can limit the transient overvoltage at both sides of contactor's controlling coil to protect circuits which are sensitive to overvoltage's disturbance.

Model and Implication

N	G	1	-	□	□	□
1	2	3		4	5	6
No.	Implication	NG1				
1	Brand code	ND Nader				
2	Product code	G Coil surge refraining modular				
3	Design code	1				
4	Mounting method	1: Clip-on 2: Screw mounting				
5	Protection type	NR: Varistor RC: RC circuits DC: Diode				
6	Voltage code	E: 24~48V G: 50~127V U: 110~240V N: 380~415V				

Working Condition


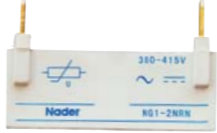
- > Ambient temperature:
Storage: -60°C~+70°C; Operating: -25°C~+60°C
- > Altitude: ≤3000m
- > The relative humidity does not more than 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% humidity at 20°C. Special measures are necessary in case of

occasional condensation due to variations in temperature.

- > Installation conditions:
 - Clipping-on or mounting on coil terminals of NDC1(Z) series AC contactor or NDJ1(Z) series contactor-type relay.
 - Installation category: II

Main Specification

- > RC circuits (resistor-capacitor)
 - Voltage limited to 3 Uc maximum and oscillating frequency limited to 400Hz.
 - Slight increase in drop-out time (1.2 to 2 times the normal time).
- > Varistors (peak limiting)
 - Protection provided by limiting the transient voltage to 2 Uc max.
 - Slight increase in drop-out time (1.1 to 1.5 times the normal time).
- > Diodes
 - No over voltage or oscillating frequency
 - Increase in drop-out time (6 to 10 times the normal time).

Mounting Method	Protection Type	Rated Control Circuit Voltage	Model	Matching Contactor or Relay
Clip-on  Clipping on to coil terminals A1 and A2. The overall size of the contactor remains unchanged.	Varistors	24V-48V AC/DC	NG1-1NRE	NDC1(Z)-09~38, NDJ1(Z)
		50V-127V AC/DC	NG1-1NRG	NDC1(Z)-09~38, NDJ1(Z)
		110V-240V AC/DC	NG1-1NRU	NDC1(Z)-09~38, NDJ1(Z)
Screw mounting  Mounting at the top of the contactor on coil terminals A1 and A2.	Varistors	24V-48V AC/DC	NG1-2NRE	NDC1-09~95, NDC1Z-09~38, NDJ1(Z)
		50V-127V AC/DC	NG1-2NRG	NDC1-09~95, NDC1Z-09~38, NDJ1(Z)
		110V-240V AC/DC	NG1-2NRU	NDC1-09~95, NDC1Z-09~38, NDJ1(Z)
		380V-415V AC/DC	NG1-2NRN	NDC1-09~95, NDC1Z-09~38, NDJ1(Z)
	RC circuits	24V-48V AC	NG1-2RCE	NDC1-09~95, NDJ1
		50V-127V AC	NG1-2RCG	NDC1-09~95, NDJ1
		110V-240V AC	NG1-2RCU	NDC1-09~95, NDJ1
Diodes	380V-415V AC	NG1-2RCN	NDC1-09~95, NDJ1	
	24V-220V DC	NG1-2DC	NDC1Z-09~38, NDJ1Z	

Dimension

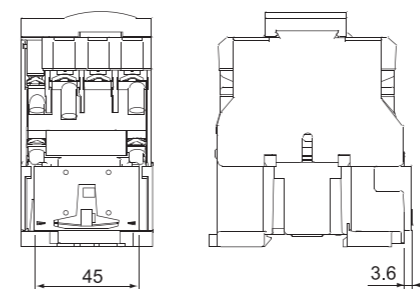


Diagram 1: Dimensions when clipping NG1-1 coil suppressor module on contactor or relay

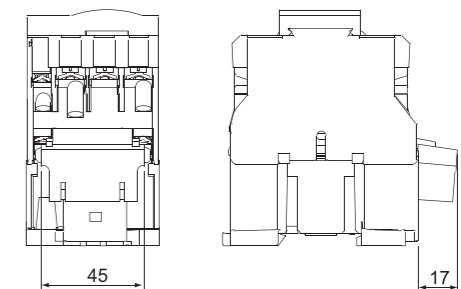


Diagram 2: Dimensions when mounting NG1-2 on contactor or relay with screw.

Ordering Notice

- > Full model of coil suppressor module
- > Protection type, mounting method, rated control circuit voltage
- > Quantity

For example: NG1-1NRU 10PCS

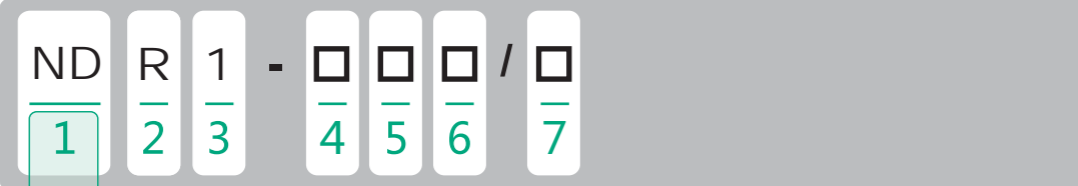
Means: Clip-on type NG1 coil suppressor module. Protection type is varistors. Rated control circuit voltage is 110V~240V.

NDR1 Series Electronic Thermal Overload Relay

Application

- > NDR1 series electronic thermal overload relay is used to protect 3-phase AC circuit and motor against overload, long time starting, phase default and imbalance current among phases. 3-phase thermal overload relay is used to protect motor and adjustable between 0.1A~95A.
- > Manual reset or auto reset. With temperature compensation.
- > Precise tripping with tripping indication and overload alarm functions.
- > With bi-stable function outputting mechanism.
- > AC power supply, good reliability.

Model and Implication



No.	Implication	NDR1
1	Brand code	ND Nader
2	Product code	R Electronic thermal overload relay
3	Design code	1
4	Code of matching contactor	Please refer to Table 1.
5	Reset method	A: Auto reset; M: Manual reset
6	Code of relay setting range	Please refer to Table 1.
7	Rated supply voltage	AC (50Hz/60Hz): 110V, 220V, 380V

Standards and Certificates

- > IEC60947-1, IEC60947-4, GB14048.4, GB14048.5;
- > TÜV, CE, CCC.

Working Condition

> Environment

- a) Ambient temperature: -40°C~+70°C (Storage); -25°C~+60°C (Operating).
- b) Altitude: ≤2000m
- c) The relative humidity does not exceed 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% relative humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.

> Installation condition

- a) Overload relay should be directly mounted beneath NDC1 serious contactors, screw mounting and TH35 DIN rail installation are possible when used with panel mount adapter.
- b) No significant shock or vibration.
- c) Installation category: III

Thermal Overload Relays Used with Fuse

Table 1

Relay Setting Range	Fuse Type Used with Thermal Overload Relay		Recommended Matching Contactor Type (For Direct Mounting Beneath Contactor)	Thermal Overload Relay Model
	aM	gG		
(A)	(A)	(A)	NDC1-	
0.1~0.16	0.25	2	09~38	NDR1-38A11 or NDR1-38M11
0.16~0.25	0.5	2	09~38	NDR1-38A12 or NDR1-38M12
0.25~0.40	1	2	09~38	NDR1-38A13 or NDR1-38M13
0.40~0.63	1	2	09~38	NDR1-38A14 or NDR1-38M14
0.63~1	2	4	09~38	NDR1-38A15 or NDR1-38M15
1~1.6	2	4	09~38	NDR1-38A16 or NDR1-38M16
1.6~2.5	4	6	09~38	NDR1-38A17 or NDR1-38M17
2.5~4	6	10	09~38	NDR1-38A18 or NDR1-38M18
4~6	8	16	09~38	NDR1-38A21 or NDR1-38M21
5.5~8	12	20	09~38	NDR1-38A22 or NDR1-38M22
7~10	12	20	09~38	NDR1-38A23 or NDR1-38M23
9~13	16	25	09~38	NDR1-38A24 or NDR1-38M24
12~18	20	35	12~38	NDR1-38A25 or NDR1-38M25
17~25	25	50	18~38	NDR1-38A26 or NDR1-38M26
23~32	40	63	25~38	NDR1-38A27 or NDR1-38M27
30~40	40	80	32~38	NDR1-38A28 or NDR1-38M28
23~32	40	63	40~95	NDR1-95A31 or NDR1-95M31
30~40	40	100	40~95	NDR1-95A32 or NDR1-95M32
37~50	63	100	40~95	NDR1-95A33 or NDR1-95M33
48~65	63	100	50~95	NDR1-95A34 or NDR1-95M34
55~70	80	125	65~95	NDR1-95A35 or NDR1-95M35
63~80	80	125	65~95	NDR1-95A36 or NDR1-95M36
80~95	100	160	80~95	NDR1-95A37 or NDR1-95M37

Main Specification

Type		NDR1-38	NDR1-95
Relay setting range	Depending on model	0.1A ~ 40A	23A-95A
Rated insulation voltage U_i	Comforming to IEC60947-4	690V	690V
Working voltageget frequency		50Hz/60Hz	50Hz/60Hz
Tripping class	Comforming to IEC60947-4	10	10
Reset	Depending on model	Manual or Auto	Manual or Auto
	Resetting time	Manual reset: reset immediately when pressing the button Auto reset: reset after 1 minutes after tripping due to fault	
Indicator	Green LED indicator Normal working: LED lights solid Overload pre-alarm (> 105% I_e): LED flashes Tripping indication: LED is off after tripping when it is energized.		
Protection against phase default	Trip in 2 seconds when phase default rate is above 70%		
Protection against imbalance among phase	Trip in 4 seconds above 50% when phase imbalance rate is above 50%		
"Stop" function	Press "Stop" button to operate NC contact. No effect on NO contact		
"Test" function	Move to "trip" position with a screwer to: 1) Simulate trip of thermal relay and operate NC and NO contacts; 2) Check the wiring of control circuit.		
Wiring capacity	One flexible conductor without cable end	Sectional area (Min. ~ Max.)	1.5mm ² ~10mm ²
	One flexible conductor with cable end		4mm ² ~35mm ²
	One solid conductor without cable end		4mm ² ~35mm ²
Tightening torque		1.85N.m	9N.m
Tripping curve	Indicating average operating time related to multiples of the current setting		
EMC radiation grade	Radio radiation transmission	Comforming to IEC60947-4, GB 4824	
	Radioactive radiation	Comforming to IEC60947-4, GB 4824	
EMC anti-disturbing grade	Static discharge	Comforming to IEC60947-4, GB 17626.2	
	Wireless frequency in electromagnetic field	Comforming to IEC60947-4, GB 17626.3	
	Fast instant state	Comforming to IEC60947-4, GB/T 17626.4	
	Surge instant state	Comforming to IEC60947-4, GB/T 17626.5	

Characteristic of Auxiliary Contact

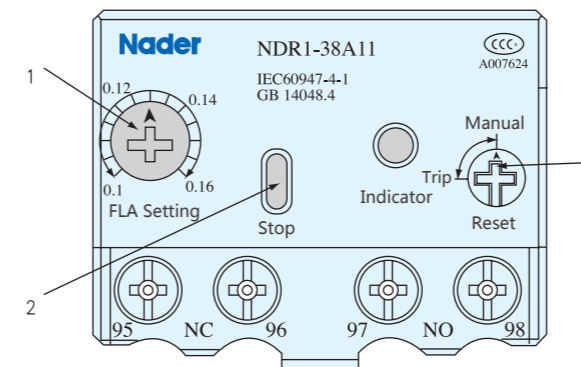
Conventional thermal current I_{th}		5A
Utilization category and controlling capacity		AC-15 400V/360VA DC-13 220V/33W
Protected by gl, BS fuse, maximum current		5A
Wiring capacity	One or two flexible conductor(s) without cable end	Sectional area (Min.~Max.)
	One or two flexible conductor(s) with cable end	
	One or two solid conductor(s) without cable end	
Tightening torque		1.2N.m

Characteristic of Supply Power

Supply voltage		AC110V, AC220V, AC380V (50Hz/60Hz)
Wiring capacity	One or two flexible conductor(s) without cable end	Sectional area (Min.~Max.)
	One or two flexible conductor(s) with cable end	
	One or two solid conductor(s) without cable end	
Tightening torque		1.2N.m

Special Function of Electronic Thermal Overload Relay

"FLA Setting" function

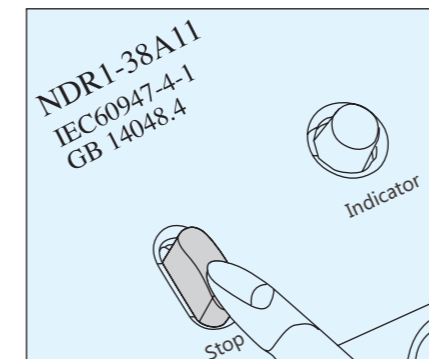


> Rotate setting dial 1 to adjust Full Load Ampere (FLA).

Note:

- 1) Limit the rotation within FLA range shown by arrow to avoid possible damage
- 2) To avoid wrong adjustment of FLA during operation of motor, only setted FLA before supply power is energized can be registered. Set FLA value when supply power is removed. New FLA setting will be registered when supply power is stored.

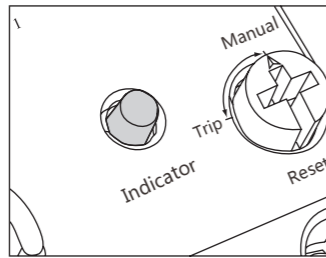
"Stop" function



> Press red button 2 to stop.

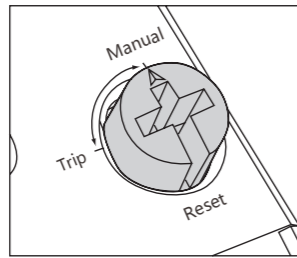
- ⊙ When press "Stop" button:
NC contact will open;
NO contact will not change state.
- ⊙ When release "Stop" button:
NC contact will return to close;
NO contact will not change state.

"Indication" function



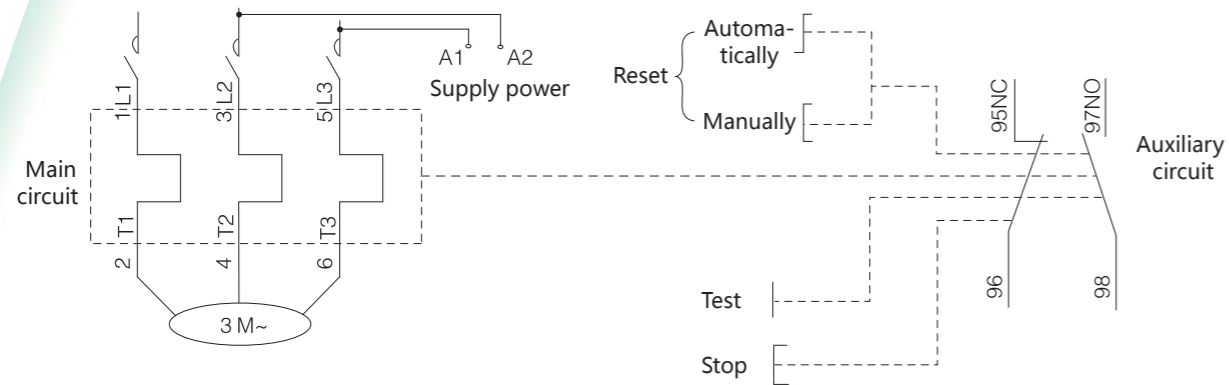
- > Green LED indicates relay's state.
- ⊙ LED lights solid: Normal operation, motor current not exceeding 105% of FLA setting.
- ⊙ LED flashes: Overload condition, presenting motor current exceeding 105% of FLA setting.
- ⊙ LED is off: Overload fault occurred and product tripped.

"Reset/Test" function

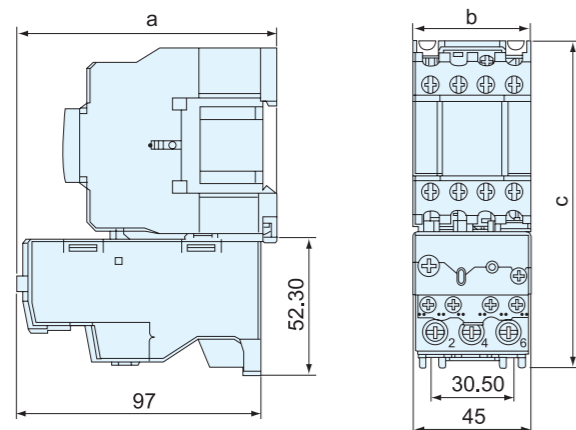


- > Reset button 3 includes test and manual reset functions.
- ⊙ Press on reset button, manual reset enabled when arrow set to "Manual".
- ⊙ Press on reset button and rotate to "Trip" position to simulate tripping. NC and NO contacts will change state. After tripping, set arrow to "Manual" and press on reset button to reset product manually.
- ⊙ Auto-reset relay can also be reset manually in the process of auto-reset.

Wiring Schematic

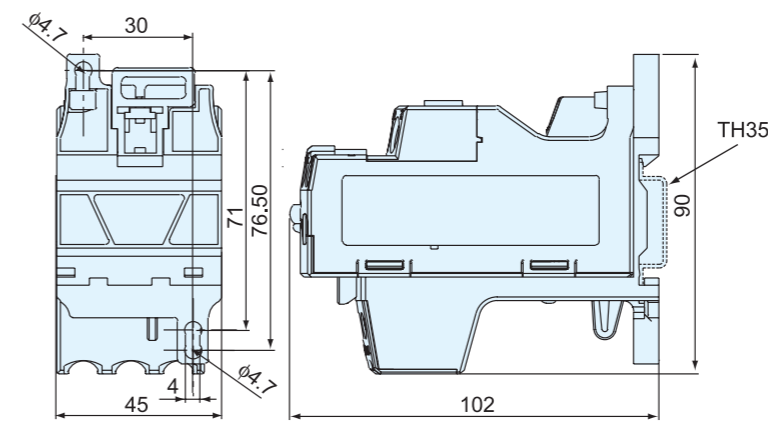


Dimension

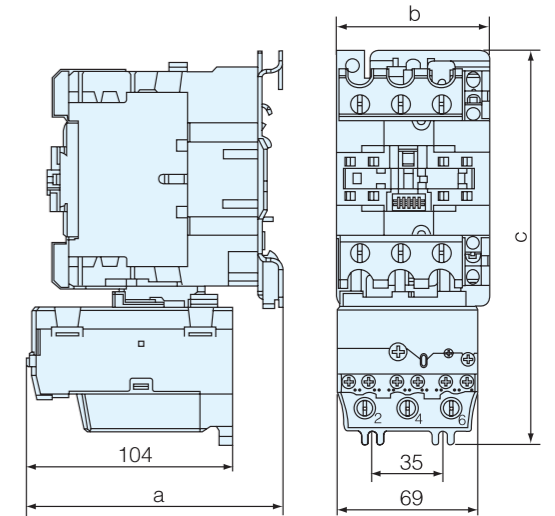


NDR1-38 Direct mounting beneath contactor

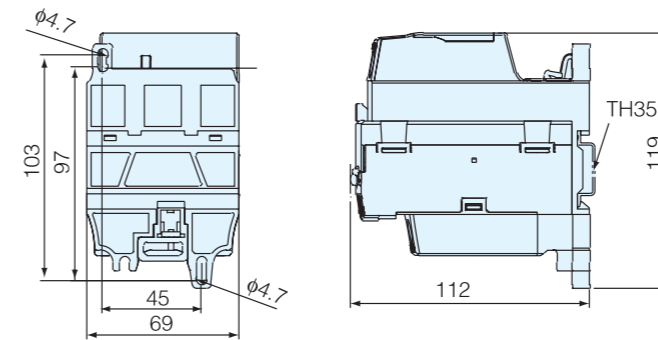
Type of Contactor	a	b	c
NDC1-09/12	103	45	127
NDC1-18	103	45.5	127
NDC1-25	115	57	136
NDC1-32	115	57	136
NDC1-38	115	57	136



NDR1-38 Independent mounting with DIN rail and screw



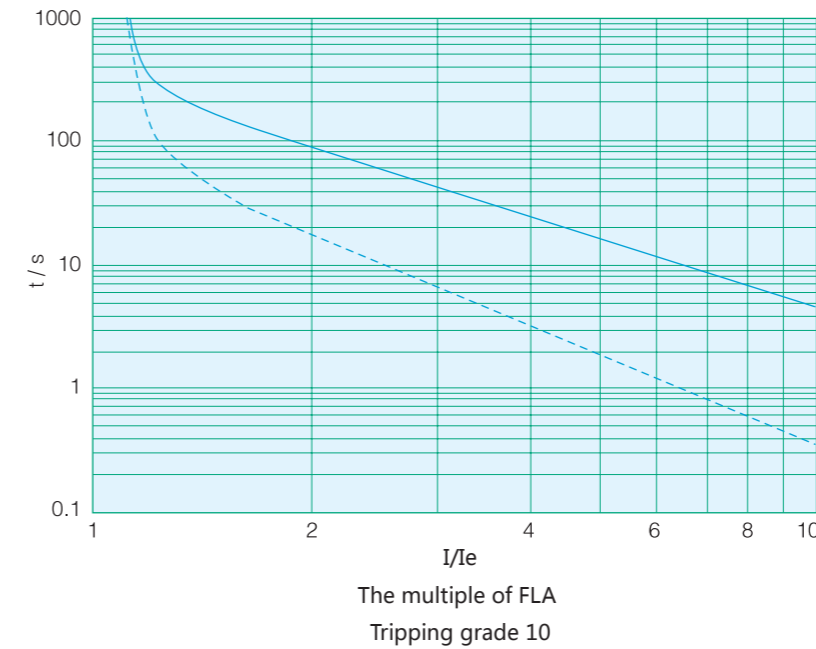
NDR1-95 Direct mounting beneath contactor



NDR1-95 Independent mounting with DIN rail and screw

Tpe	a	b	c
NDC1-40/50/65	128	74.5	195
NDC1-80/95	134	84.5	200

Tripping Curve (Classe 10)



The tripping time between the beginning of cold state and the balance among three phase

The tripping time between the beginning of hot state and the balance among three phase

Attention

- > Set FLA in advance.
- > Check if the power (in compliance with requirement of controlling power Us) is connected to terminal A1, A2.
- > Press down manual reset button to ensure reset of relay after checking wiring.

Ordering Notice

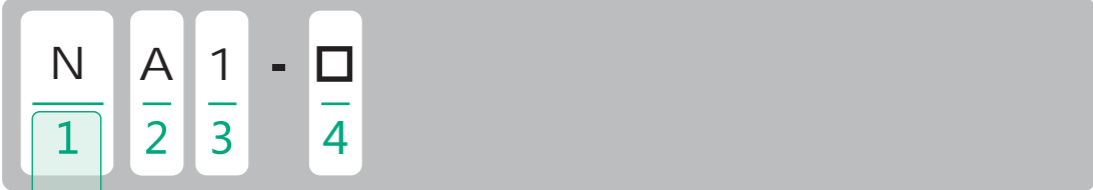
- Please specify the following information when placing an order:
- > Full model of the electronic thermal overload relay
 - > Relay setting range, supply power voltage and reset method
 - > Quantity
- For example: NDR1-38M26/AC220V 100PCS
- Means: NDR1-38 type electrical thermal overload relays which match with NDC1-09-38 AC contactors and are reset manually. Relay setting range is from 17A~25A and supply power voltage is AC220V. Quantity is 100 pieces.

NA1 Series Panel Mount Adapter

Application

- > Compatible with NDR1 series electronic thermal overload relay for NDR1' s independent mounting with 35mm DIN rail or screws.

Model and Implication



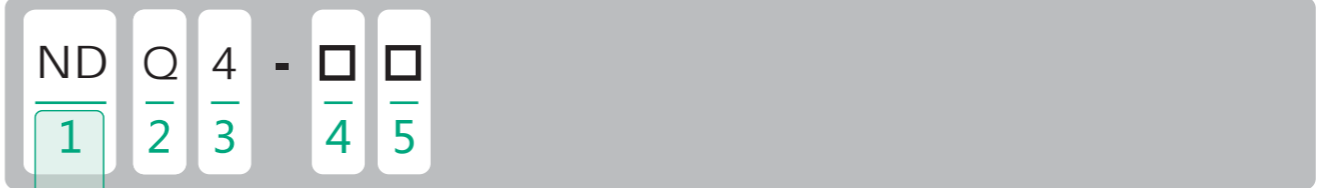
No.	Implication	NDR1
1	Brand code	N Nader
2	Product code	A Panel mount adapter
3	Design code	1
4	Matching contactor code	38: Matching with NDR1-38 series electronic thermal overload relay 95: Matching with NDR1-95 series electronic thermal overload relay

NDQ4 Series Star-delta Starter

Application

- > NDQ4 series star-delta starter (hereinafter "starter") is used in AC 50Hz/60Hz circuit with rated insulation voltage up to 690V, rated operational voltage of 400V and rated current up to 95A (phase current when delta connection) in AC-3 utilisation category. It is used to control 3-phase squirrel-cage motor which the power is 80kW and below. It is used to realize starting with the lower voltage by changing the stelled connection to delta. It can also be fitted with appropriated thermal relay to protect the circuit against possible overload .
- > This product does not suit for starting control of fast-start motor or inverse electro-motor. So it is not suitable for AC-4 utilisation category.

Model and Implication



No.	Implication	NDQ4
1	Brand code	ND Nader
2	Product code	Q Star-triangle starter
3	Design code	4
4	Basic model code	Please refer to Table 1.
5	Special application code	TH- Products used in wet and hot areas.

Model

- > Starter is the combination of three AC contactors, one pneumatic timer and one auxiliary contact groups (only for model up to NDQ4-40), which all are installed in an board with appropriate conductors (Please refer to Table 1).

Table 1 Main parts of star-delta starter

Model	Main circuit contactor			Recommended thermal overload relay		Power of controllable motor (kW)				Rated current (A) Ie (AC-3 400V)	Matching fuse NT00
	For isolation KM2	Δ operation KM3	Y operation KM1	Model	Relay setting range (A)	220V	400V	415V	690V		
NDQ4-12	NDC1-1210	NDC1-1201	NDC1-0901	NDR1-38A24 NDR1-38M24	9~13	5.5	11	11	11	20	25
NDQ4-18	NDC1-1810	NDC1-1801	NDC1-1201	NDR1-38A25 NDR1-38M25	12~18	7.5	15	15	22	31	35
NDQ4-25	NDC1-2510	NDC1-2501	NDC1-1201	NDR1-38A26 NDR1-38M26	17~25	11	18.5	22	25	43	50
NDQ4-32	NDC1-3210	NDC1-3201	NDC1-2501	NDR1-38A27 NDR1-38M27	23~32	15	25	25	30	55	63
NDQ4-40	NDC1-4011	NDC1-4011	NDC1-2501	NDR1-95A32 NDR1-95M32	30~40	18.5	33	37	37	69	80
NDQ4-50	NDC1-5011	NDC1-5011	NDC1-4011	NDR1-95A33 NDR1-95M33	37~50	25	45	45	55	86	100
NDQ4-65	NDC1-6511	NDC1-6511	NDC1-4011	NDR1-95A34 NDR1-95M34	48~65	30	59	59	59	112	125
NDQ4-80	NDC1-8011	NDC1-8011	NDC1-5011	NDR1-95A36 NDR1-95M36	63~80	40	75	75	75	138	160
NDQ4-95	NDC1-9511	NDC1-9511	NDC1-6511	NDR1-95A37 NDR1-95M37	80~95	40	80	80	80	164	200

- > The FLA of thermal overload relay should be setted as 0.58 times of the motor' s current value.

Standards and Certificates

> IEC60947-4, GB14048.4; CCC.

Working Condition

- > Ambient temperature
Storage: -60°C~+80°C; Operating: -25°C~+60°C.
- > Altitude: ≤3000m
- > The relative humidity does not exceed 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% humidity at 20°C. Special measures are necessary in case of occasional condensation due to variations in temperature.
- > No significant shock or vibration.
- > Pollution degree: 3
- > Installation category: III
- > Screw mounting
- > Working hours
 - a) Eight hour
 - b) Around-the-clock working
 - c) Remittent periodical working: Rated operational frequency of starter is 30 times per hour. Max. Y operation time is 30s.

Product Features

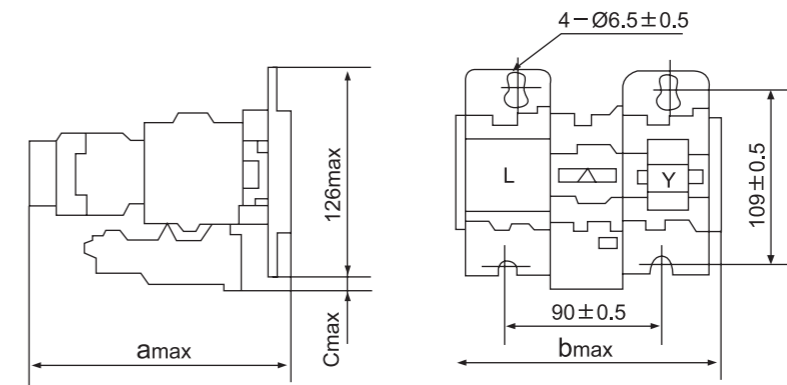
- > Direct operating mechanism, double breaking points
- > Protection degree: IP20

Main Specification

Model	NDQ4-12	NDQ4-18	NDQ4-25	NDQ4-32	NDQ4-40	NDQ4-50	NDQ4-65	NDQ4-80	NDQ4-95
Rated current (A) I _e (AC-3, 400V)	20	31	43	55	69	86	112	138	164
Rated insulation voltage (V) U _i	690								
Rated operational voltage (V) U _e	380/400, 660/690								
Electrical life (times) (AC-3, 400V)	4×10 ⁴	2.5×10 ⁴	2×10 ⁴				1.5×10 ⁴		
Operating frequency (h ⁻¹)	30								
Mechanical life (times)	30×10 ⁴								
Auxiliary contact	Rated operational voltage (V) U _e AC380, DC220 Conventional thermal current (A) I _{th} 10								
Coil	Rated control circuit voltage (V) U _s AC(50Hz, 50Hz/60Hz): 24, 36, 48, 110, 220, 380, 400								
	Pick up voltage U _s 85%U _s ~110%U _s								
	Drop out voltage U _s 20%U _s ~75%U _s								

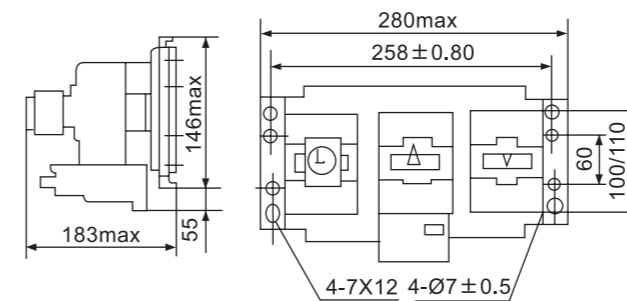
Dimension

NDQ4-12, 18, 25, 32

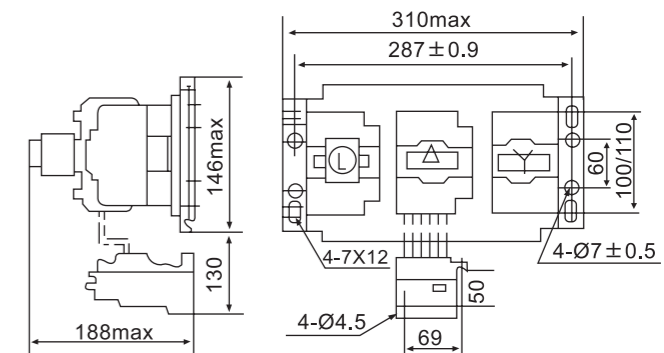


Model	a max	b max	c max
			Installing with NDR1
NDQ4-12	147	140	30
NDQ4-18	152		
NDQ4-25	163	170	
NDQ4-32	168	172	

NDQ4-40, 50, 65

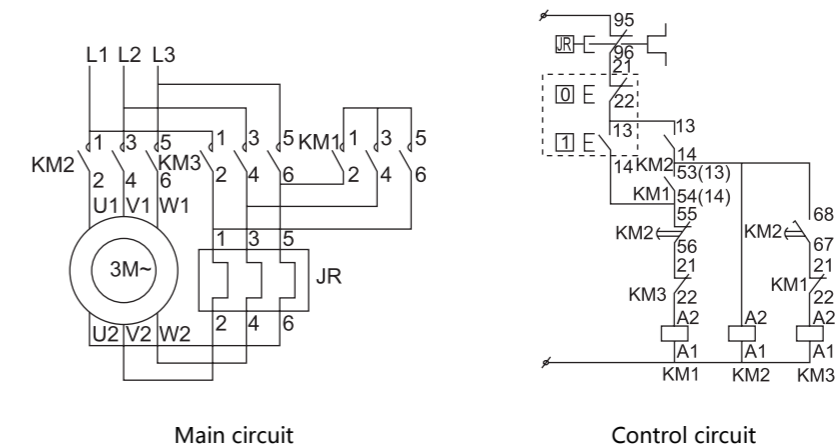


NDQ4-80, 95



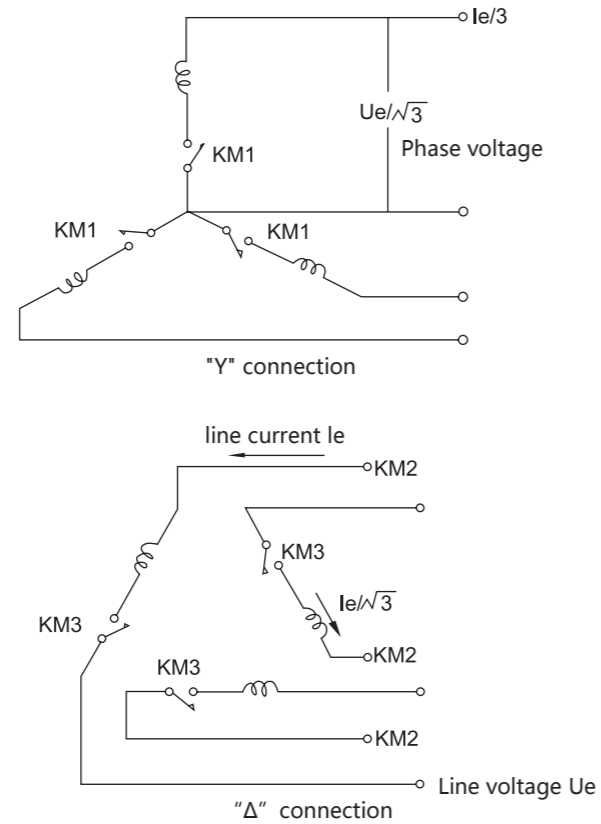
Wiring Schematic for Main Circuit and Control Circuit

Wiring schematic for main circuit and control circuit



The Starting Method of "Y-Δ"

When "Y-Δ" starts, the starting current should be 1/3 times of the full voltage starting current in order to cushion the impact to power and loads. After accelerating ,it will turn to the Δ connection and operate under the rated voltage. "Y" operation time is within 15s.



Wiring Capacity

Model	NDQ4-12		NDQ4-18		NDQ4-25		NDQ4-32		NDQ4-40		NDQ4-50		NDQ4-65		NDQ4-80		NDQ4-95		
Number of conductors	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
Wiring capacity (mm ²)	Flexible cable	2.5	2.5	4	4	4	4	6	6	10	10	16	16	16	16	50	25	50	25
	Solid cable	4	4	6	6	6	-	10	10	10	10	25	-	25	-	50	-	50	-

Model	NDR1-38A11~NDR1-38A18		NDR1-38A21~NDR1-38A28		NDR1-95A31~NDR1-95A37		Auxiliary Contact	
Number of conductors	2		2		1		1	2
Wiring capacity (mm ²)	Soft wire		6		25		2.5	2.5
	Hard wire		10		25		2.5	2.5

Ordering Notice

Please specify the following information when placing an order:

- > Full model of the starter
- > Rated control circuit voltage and frequency
- > Quantity

For example: NDQ4-12 220V 50Hz/60Hz 10PCS

Means: NDQ4-12 type star-delta starter with control circuit voltage of 220V (50Hz/60Hz).

Quantity is 10 pieces.

- > Starters with special voltage can be customized upon customers's requests.
- > Matching thermal overload relay is to be ordered separately.

