

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 hot-humid climate				

> 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℃~+80℃(Storage); -25℃~+60℃(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℃. Higher relative humidity may be permitted at lower temperature, such as 90% humidity at 20℃. 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.

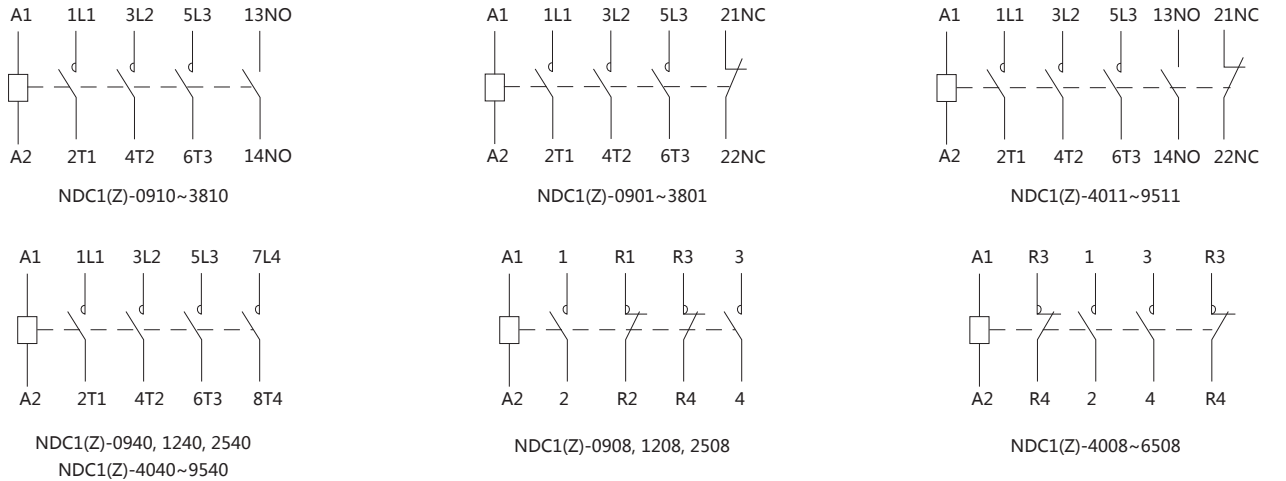
Product Features

- > 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

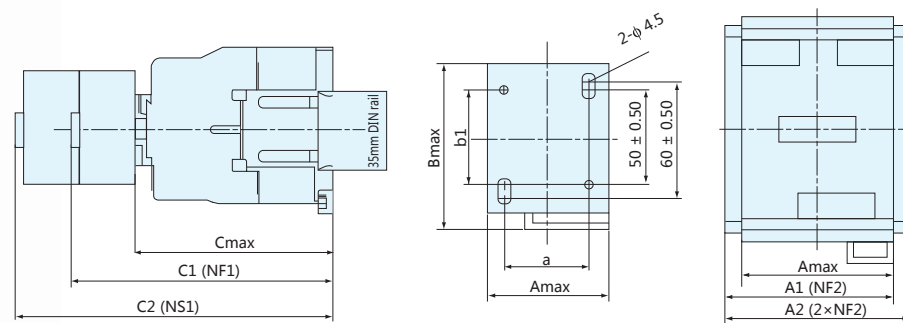
Type			NDC1 (Z)-09	NDC1 (Z)-12	NDC1 (Z)-18	NDC1 (Z)-25	NDC1 (Z)-32	NDC1 (Z)-38	NDC1 (Z)-40	NDC1 (Z)-50	NDC1 (Z)-65	NDC1 (Z)-80	NDC1 (Z)-95	
Parameters														
Rated current (A) I _e (AC-3)	400V		9	12	18	25	32	38	40	50	65	80	95	
	690V		6.6	8.9	12	18	21	21.5	34	39	42	49	49	
Conventional thermal current (A) I _{th}			25	25	32	40	50	50	60	80	80	125	125	
Rated insulation voltage (V) U _i			690											
Rated operational voltage (V) U _e			380/400					660/690						
AC-3 (6I _e , I _e)	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 (6I _e , 6I _e)	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) I _e	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	
Auxiliary contact	Conventional thermal current (A) I _{th}		10											
	Electrical life (times)	AC-15 (360VA)	100×10 ⁴					80×10 ⁴			60×10 ⁴			
		DC-13 (33W)												
	Min. load connected		24V 10mA											
Coil	Rated control circuit voltage (V) U _s		AC(50Hz,50Hz/60Hz): 24, 36, 48, 110, 220, 380, 400; DC: 24, 48, 110, 220											
	Pick-up voltage		85%U _s ~ 110%U _s											
	Drop-out voltage		20%U _s ~ 75%U _s (AC); 10%U _s ~ 75%U _s (DC)											
	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

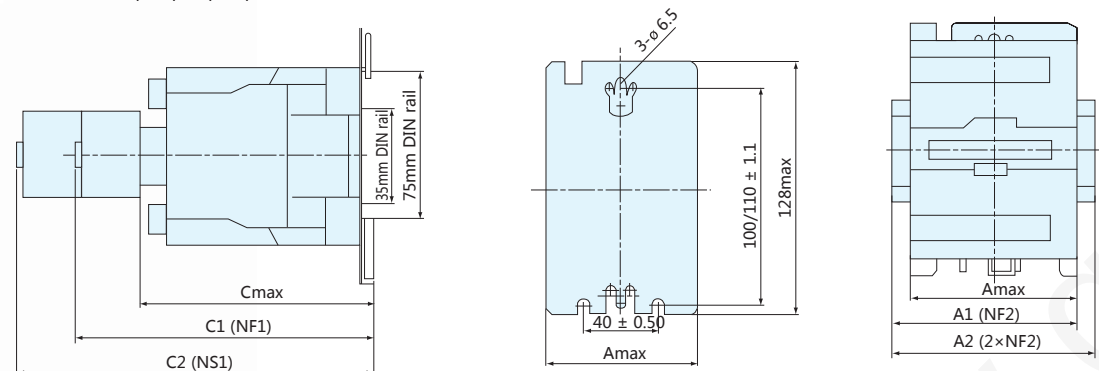
NDC1-09, 12, 18, 25, 32, 38 (3P&4P)



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

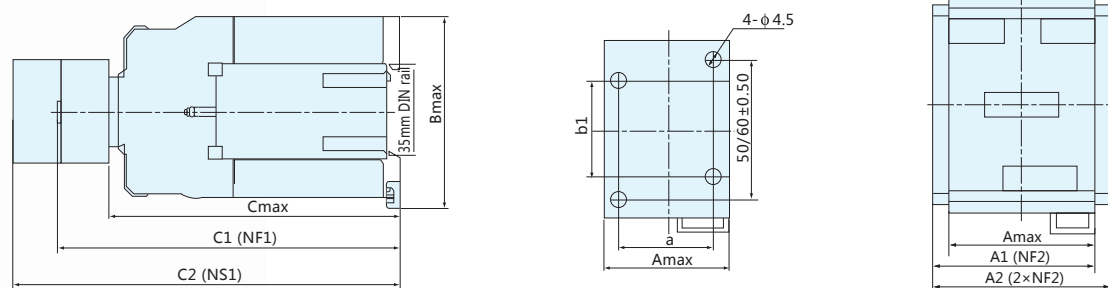
NDC1-40, 50, 65, 80, 95



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

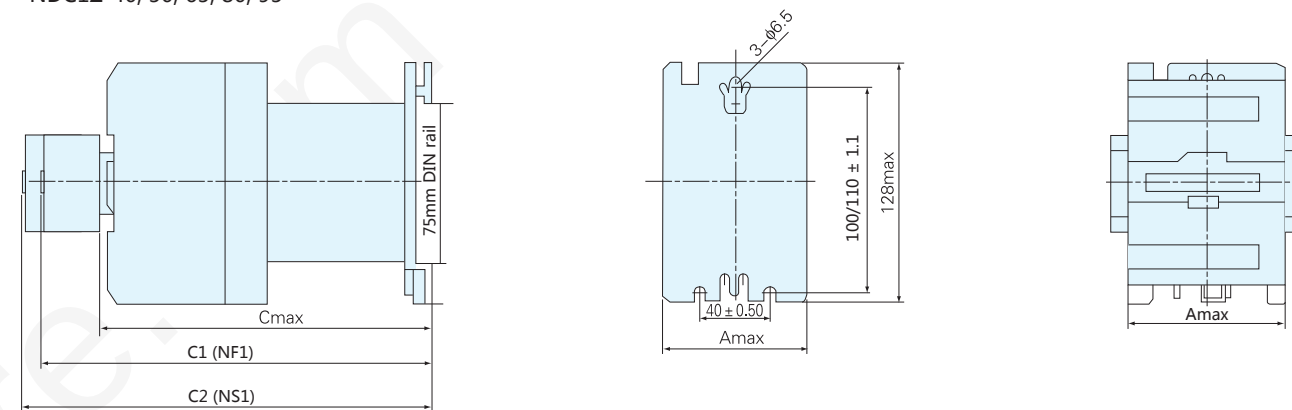
NDC1Z-09, 12, 18, 25, 32, 38 (3P&4P)



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	-	-	184	213	233
NDC1Z-8011, 9511	86	-	-			
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 rated 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

ND

C

1

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6

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 hot-humid climate

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

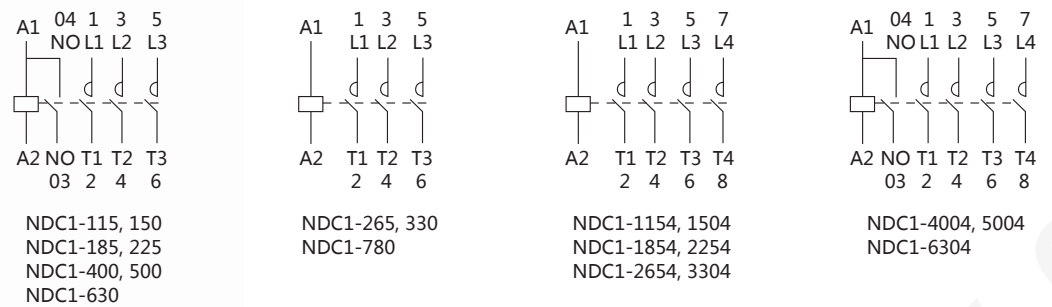
- > Ambient temperature:
-60°C~+80°C (Storage); -25°C~+60°C (Operating)
> Altitude: ≤3000m
> The relative humidity does not more than 50% at the temperature of +40°C. Higher relative humidity may be permitted at lower temperature, such as 90% relative humidity at 20°C. Special measures are necessary 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 ±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	Conventional thermal current (A) Ith			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	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											



Wiring Schematic



Dimension

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

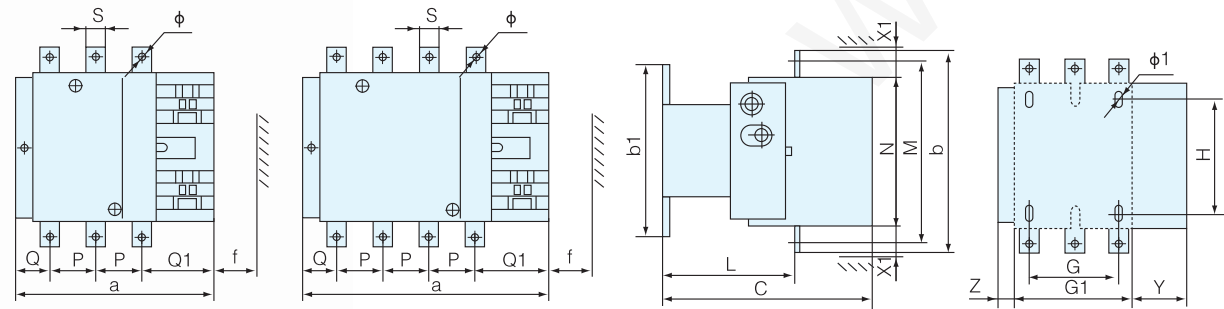


Table 1 Unit: mm

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).

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

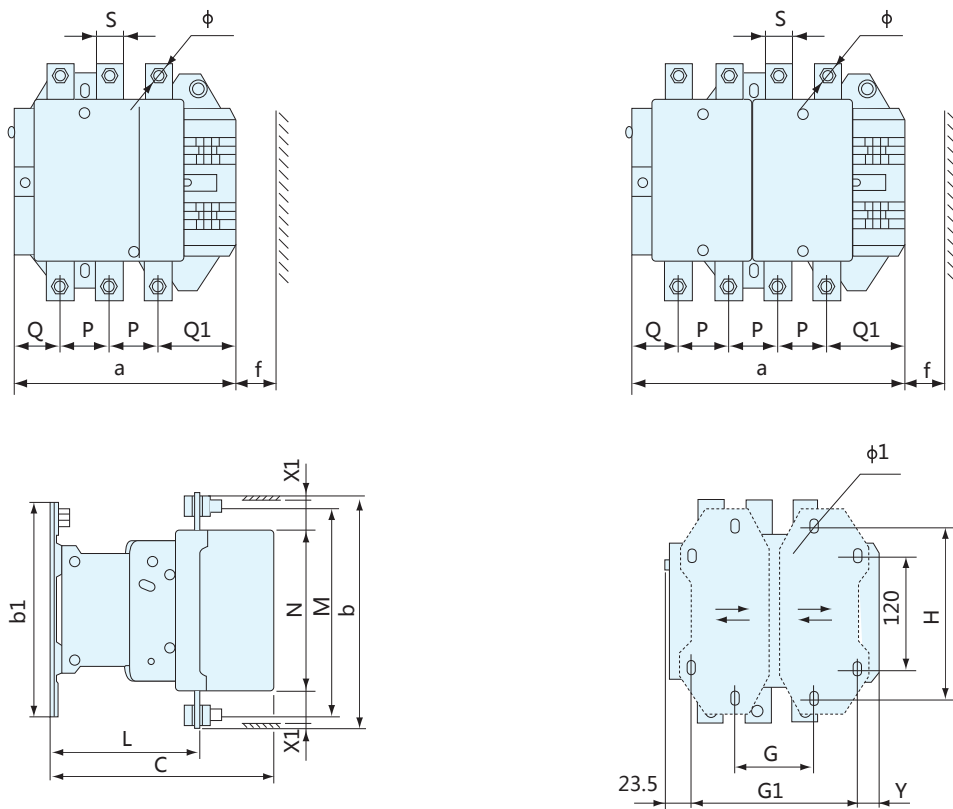


Table 2 Unit :mm

NDC1	a	P	Q	Q1	S	Φ	f	b	b1	M	N	c	L	G	G1	Φ1	H	Y	1	
																			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)

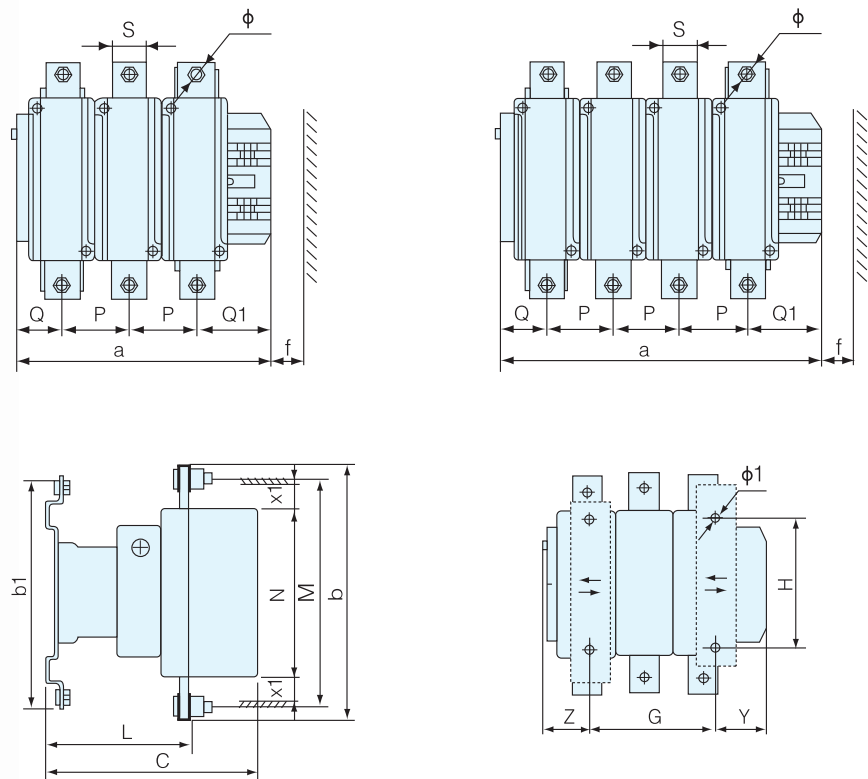


Table 3 Unit: mm

NDC1	a	P	Q	Q1	S	Φ	f	b	b1	M	N	c	L	G	H	Φ1	Z	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)

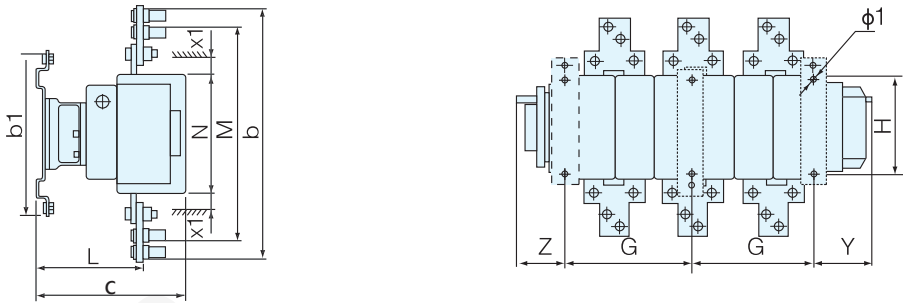
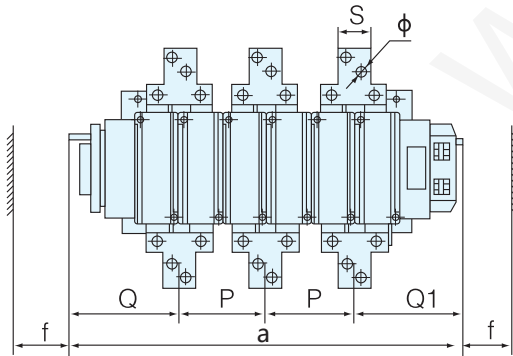


Table 4 Unit: mm

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 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
- > Quantity :
For example: AC contactor NDC1-115 220V 50Hz 10PCS
Means: Rated current is 115A under AC400V(AC-3), rated control circuit voltage is 220V (50Hz). 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.