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NDC1M-09~95系列 Product type& Product Name 产品说明书



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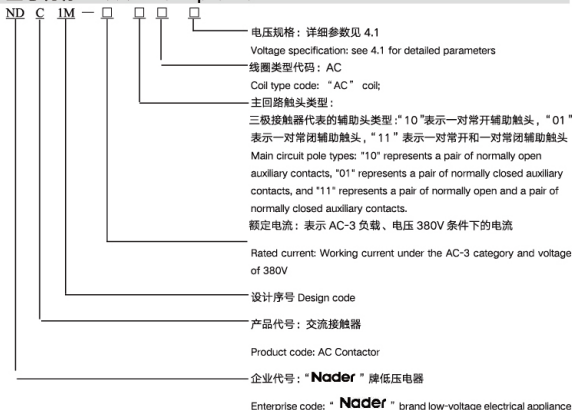
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1. 适用范围与用途/ Application scope

NDC1M-09~95 系列交流接触器 (以下简称接触器) , 主要用于交流 50Hz (或 60Hz) , 额定绝缘电压为 690V , 在 AC-3 使用类别下额定工作电压为 380V 时额定工作电流为 9A~95A 的电路中 , 供远距离接通与分断电路及频繁启动、控制交流电动机 ; 用于 AC-1 使用类别下 , 交流 50Hz (或 60Hz) , 额定工作电压为 690V , 额定工作电流为 20A~125A 的交流电路中 ; 并可与适当的热过载继电器组成电磁启动器 , 以保护可能发生的负荷电路。

NDC1M-09 ~ 95 series AC contactor (hereinafter referred to as contactor) is mainly used in AC 50Hz (or 60Hz) , rated insulation voltage of 690V , in AC-3 using the category rated working voltage of 380V rated operating current of 09 ~ 95A circuit for remote making and breaking circuit and frequent starting , controlling the AC motor ; and with the appropriate thermal overload relays electromagnetic starter to protect the possible overload circuits .

2. 型号说明/ Model and implication



3. 技术参数/ Main technical parameters

3.1 主产品技术参数 Main technical features

型 号		NDC1 M-09	NDC1 M-12	NDC1 M-18	NDC1 M-25	NDC1 M-32	NDC1 M-38	NDC1 M-50	NDC1 M-65	NDC1 M-80	NDC1 M-95	
额定工作 电压 U _e /A	AC-3 415V	9	12	18	26	32	38	40	50	65	80	95
额定电流 I _a /A	AC-4 415V	3.5	5	7.7	8.5	12	13.9	18.5	24	28	37	44
约定发热功率 P _n /W		20	20	25	40	50	50	60	80	80	125	125
额定绝缘电压 U _i /V		690										
冲击耐受电压 U _{imp} /kV		6										
额定工作电压 U _s /V		220/380										
额定接通/分断能力		AC-3 负载：10e/8le; AC-4 负载：12le/10le										
AC-3 (6le, 1e)	电寿命/(次)	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
	操作频率 h ⁻¹	1200	1200	1200	1200	600	600	600	600	600	600	600
AC-4	电寿命/(次)	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
(6le, 6le)	操作频率 h ⁻¹	300						800×10 ⁴			600×10 ⁴	
机械寿命/(万次)		1000×10 ⁴						800×10 ⁴			600×10 ⁴	
额定短时耐受 电流 I _k , 短路 电流 <4kV, 以 后为额定值	1s	210	210	240	380	430	330	320	810	900	990	1100
	10s	105	105	145	240	260	310	420	400	520	640	800
	60s	61	61	84	120	138	150	165	208	260	320	400
	10min	30	30	40	50	60	60	72	84	110	135	135
额定 SCPD 型号		RT16-00										
额定电流 A		20	20	20	25	50	50	80	80	80	125	125
额定有限制短路电流 I _{sc} (kA)		60										
约定自由热效应电 流 I _{ad} (A)		10										
辅助触头	电寿命/ (360VA) 次	100×10 ⁴				80×10 ⁴				60×10 ⁴		
	AC-15 (360VA) DC-13 (33W)											
	可连接最小负载	17V 6mA										
	额定控制电压 U _s V	详见表 1										
	额定电压范围	65%U _s ~120%U _s (U _s <40℃) 80%U _s ~110%U _s (U _s <60℃) 100%U _s (60℃~U _s >70℃)										
线圈	释放电压范围	20%U _s ~60%U _s (交流)										
	50Hz 交流 过零 速率 VA	启动	65	65	65	110	110	110	200	200	200	200
	VA	启动	8	8	8	11	11	11	20	20	20	20
	非额定 线圈 头数	1 根	1.5/4	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	4/60
	有额定 线圈 头数	2 根	1.5/4	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	4/25
接线端子 可弯曲侧 mm ² (mm ² max)	有额定 线圈 头数	1 根	1.5/4	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	4/60
	有额定 线圈 头数	2 根	1.5/4	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	4/16
	非额定 线圈 头数	1 根	1.5/4	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	4/60
	有额定 线圈 头数	2 根	1.5/4	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	4/25
	有额定 线圈 头数	2 根	1.5/4	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	2.5/10	4/25
O 型接线端子 ^{2,2}		-	-	-	-	-	-	-	-	-	-	-

注 1: 吸合电压范围为 50Hz 条件下数据, 若使用 60Hz 电压则最低吸合电压增加 20%U_{is}。

表 1: 额定控制电源电压

产品型号	可透载控制电源电压 Us /V AC (50Hz/60Hz)
NDC1M-09/12/18	24, 36, 110, 220, 240, 380, 415
NDC1M-25/32/38	24, 36, 110, 220, 240, 380, 415
NDC1M-40/50/65	24, 36, 110, 220, 240, 380, 415
NDC1M-80/95	24, 36, 110, 220, 240, 380, 415

3.2 附件技术参数

3.2.1 辅助触头组 Auxiliary contact

参数	型号		NF1
额定绝缘电压 U _i V			690V
额定工作电压 U _e V			AC: 380 DC: 220
约定自由空气发热电流 I _{th} A			10A
额定工作电流 I _e A	AC-15	380V	0.95
		415V	0.95
		480V	0.5
		DC-13(33W)	0.15
可接通最小负载			17V/5mA
操作频率 h ⁻¹			2400
寿命	机械寿命 万次		1000
	电气寿命 万次		120
绝缘电阻 MΩ			10
工频			1890V/1min
接线端子可接线能力 mm ²	软线	1 根或 2 根	1/2, 5/4
(min/max)	硬线	1 根或 2 根	1/4
接线螺钉扭力矩 N · m			0.8-1.2

3.2.2 延时辅助触点模块（空气式）Time delay auxiliary contact

参数	型号	NS1
额定绝缘电压 Ui V		690V
额定工作电压 Ue V		AC: 380 DC: 220
约定自由空气发热电流 Ith A		10A
额定工作电流 Ie A	AC-15(360VA)	0.95
	DC-13(33W)	0.15
可接通最小负载		17V/5mA

操作频率 h ⁻¹		1200
寿命	机械寿命 万次	300
	电气寿命 万次	50
绝缘电阻 MΩ		10
工频耐压 (V)		1890V/1min
延时重复误差		±5%
延时稳定性误差		±15%
温度误差		±0.3%
接线端子可接线能力 mm ² (min/max)	软线 1 根或 2 根	1/2.5/4
	硬线 1 根或 2 根	1/4
接线螺钉扭矩 N·m		0.8 ~ 1.2

3.2.3 线圈浪涌抑制模块 Coil surge suppression module:

安装方式	保护形式	配用线圈电压	规格型号	配合使用接触器	主要性能指标
插入式：插入安装在接触器线圈的 A1、A2 端子上	压敏电阻	AC 24V~48V	NG1-2NRE	NDC1M-09~95	a)最高瞬态过电压限制为 3UC,最大振荡频率限定 400Hz。 b)接触器释放时间约为正常释放时间的 1.2 至 2 倍。
		AC 50V~127V	NG1-2NRG	NDC1M-09~95	
		AC 110V~240V	NG1-2NRU	NDC1M-09~95	
		AC 380V~415V	NG1-2NRN	NDC1M-09~95	
	阻容电路	AC 24V~48V	NG1-2RCE	NDC1M-09~95	

注：NF1/NS1 二者只能选其一；NG1 需按照对应规格选择一种安装方式。

4. 工作环境/ Stand working conditions

1. 适用环境 Application Environment

使用环境温度/存储温度 Ambient temperature/storage temperature

标准使用环境温度：-25℃ ~ +40℃；Standard use of ambient temperature -25℃ ~ +40℃

极限使用环境温度：-40℃ ~ +70℃；Limit the use of ambient temperature -40℃ ~ +70℃

存储温度：-60℃ ~ +80℃；Storage temperature -60℃ ~ +80℃

使用海拔 Altitude

正常使用海拔高度：≤3000 米；Normal use Altitude: ≤3000 meters;

极限使用海拔高度：≤5000 米；Limit use Altitude: ≤5000 meters;

环境湿度要求 Environmental humidity

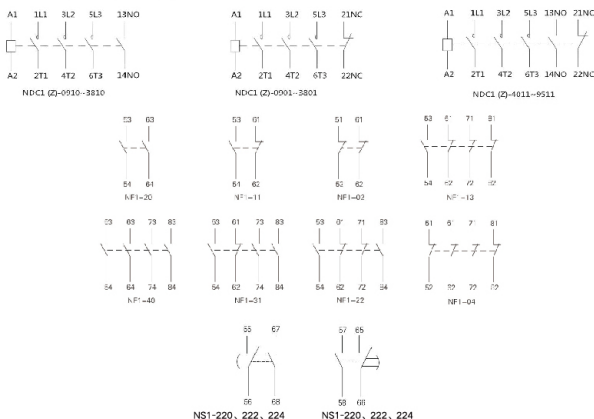
最高温度为 +40℃ 时，空气的相对湿度不超过 50%，在较低的温度下可以允许有较高的相对湿度，但由于温度变化偶尔产生的凝露应采取预防措施。

With the temperature of +40℃, the relative humidity in the installation location shall not exceed 50%. Under the lower temperature, the greater relative humidity is allowed. The special measures shall be taken to deal with the condensation caused by temperature change.

2. 污染等级 Pollution grade

3 级 Grade

5. 接线方式 (接线图) / Wiring Method



接线能力/Connecting Characteristics

Philips N° 2 十字螺丝刀	Slotted $\phi 5$ 一字螺丝刀	Rigid Solid 硬线		Flexible 软线		Cold-compacting Terminals 冷压端子处理		Tightening Torque 紧固力矩			Remarks 备注	
		One 一根	Two 两根	One 一根	Two 两根	One 一根	Two 两根	One 一根		N.m		L
												
		mm ²		mm ²		mm ²		a mm				
Main Terminal 主端子 mm ² /mm	NDC1 (Z)											
	NDC1 (Z)-09		1/4	1/4	1/4	1/4	1/2.5	8	1.7	7.5	3.5	
	NDC1 (Z)-18		1.5/6	1.5/6	1.5/6	1.5/6	1/6	1/6	10	1.7	9	3.5
	NDC1 (Z)-25		1.5/10	1.5/6	1.5/6	1.5/6	1/6	1/6	10	2.5	10	4
	NDC1 (Z)-32											
	NDC1 (Z)-50		2.5/10	2.5/10	1.5/10	2.5/10	1/10	1.5/6	12	2.5	12	4
Auxiliary (Call) Terminal 辅助(标号)端子	NDC1 (Z) NDC1 (Z)-6 40-38		1-4			1/4	1/2.5	8	1.7	7.5	3.5	

6. 产品外形及安装尺寸/ Shape dimension & Dimension

外形尺寸与安装尺寸见下图 (卡尺与标准安装 35mm/75mm 卡轨及螺钉安装) 单位: mm

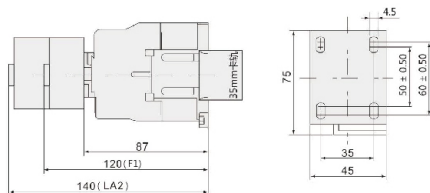


图1 NDC1M-09 ~ 18外形尺寸与安装尺寸

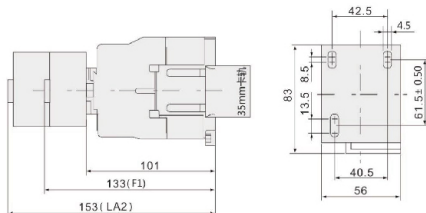


图2 NDC1M-25 ~ 38 外形尺寸与安装尺寸

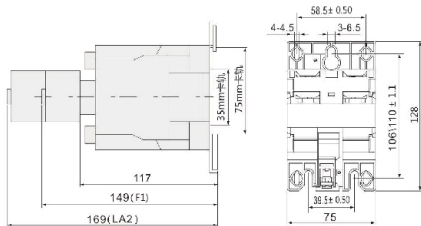


图3 NDC1M-4011 ~ 6511 外形尺寸与安装尺寸

注: 为保证接线端子的紧固性不建议使用经搪锡处理的软线。

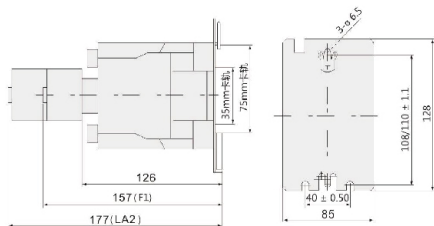


图4 NDC1M-8011 ~ 9511 外形尺寸与安装尺寸

7. 安装方式/ Mounting Method

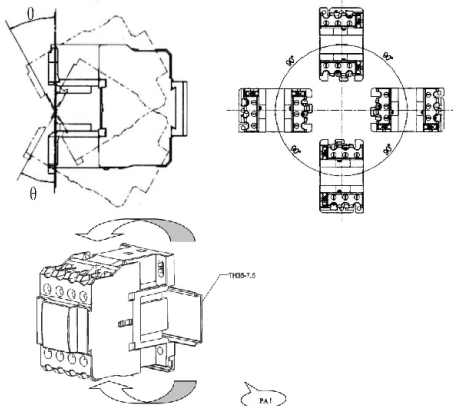
1、安装类别 Installation categories

III 类 (配电及控制水平级) class III (Class of power distribution and control)

2、安装方向 Installation direction

垂直安装, 安装面与垂直面的倾斜度为 θ : 标准安装 $\pm 5^\circ$, 极限安装 $\pm 30^\circ$ 。

Vertical installed, the tilt gradient with vertical face should be θ : standard installed $\pm 5^\circ$, limit installed $\pm 30^\circ$.

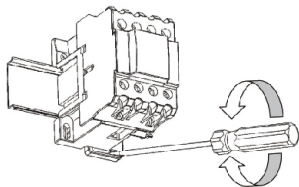


安装 Installation:

将接触器放在 35mm 标准卡轨上用力按下，当听到“啪”的响声时，说明接触器已经正确的安装到卡轨上了，轻微摇晃并推动接触器，可以在卡轨上移动到适当位置。如果不用卡轨安装，也可以用螺钉将接触器固定在所需要的位置上。

Installation:

Fit contactor on to the upper side of 35mm DIN track then push it to make it fit with the down side of DIN track. When there is a sound "PA", contactor is installed on the right position. Shake the product from side to side can speed up the installation. If there are no DIN track, contactor can be fixed on the right position with screws.



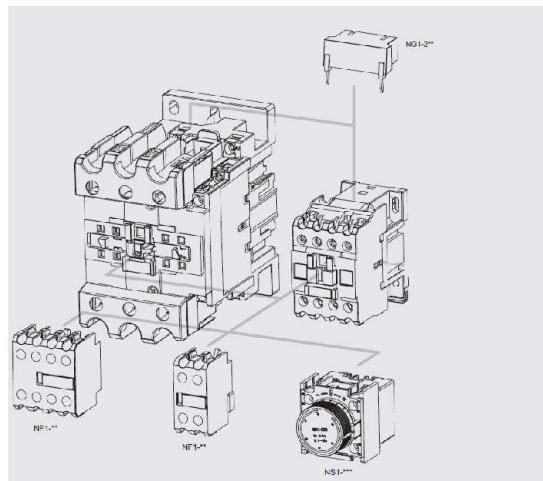
拆卸:

用一字螺丝刀将白色卡块撬起，即可将接触器从卡轨上取下。

Disassembly:

Use flat tip screwdriver to release the white fixing claw. Then pull contactor off the DIN track.

8. 附件说明书/ Accessory

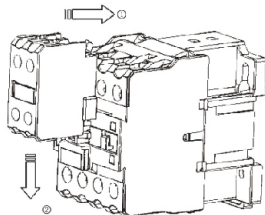


NF1-02	2 "NC"		
NF1-11	1 "NO"+1 "NC"		
NF1-20	2 "NO"		
NF1-04	4 "NC"	NG1-2RCE	24V~48V
NF1-13	1 "NO"+3 "NC"	NG1-2RCG	50V~127V
NF1-22	2"NO"+2 "NC"	NG1-2RCU	110V~240V
NF1-31	3"NO"+1 "NC"	NG1-2RCN	380V~415V
NF1-40	4 "NO"	NG1-2NRE	24V~48V
		NG1-2NRG	50V~127V
NS1-220	0.1~3S	NG1-2NRU	110V~240V
NS1-222	0.1~30S	NG1-2NRN	380V~415V
NS1-224	10~180S	NG1-2DC	24V~220V
NS1-320	0.1~3S		
NS1-322	0.1~30S	NF2-11	1 "NO"+1 "NC"
NS1-324	10~180S	NF2-20	2 "NO"

当要在顶部安装附件时，透明防护罩必须取掉，方法是①将一字螺丝刀插入透明防护罩和接触器之间
②压下螺丝刀手柄。

When installing accessories, the transparent cover of contactor normally is to be disassembled.

Method:①Put flat tip of screwdriver in the slot between the cover and the main body of contactor. ②Push down the handle of screwdriver.

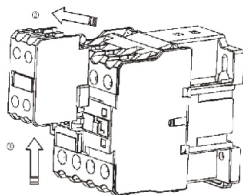


安装 NF1 系列辅助触头组：

- ①将 NF1 放在接触器面板相应的挂钩处；
- ②将 NF1 沿接触器本体方向向下移动，直到听到“啪”的响声。

Installation of NF1 series auxiliary contact group:

- ①Put NF1 on the corresponding position of bracket of contactor.
- ②Move NF1 down along the surface of main body until there is a sound "PA".



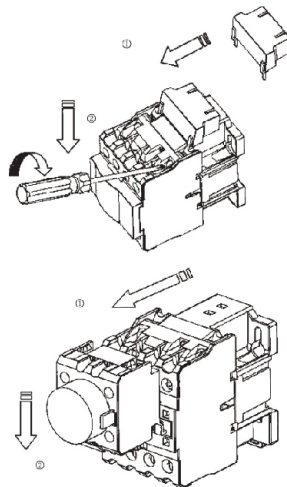
NF1 辅助触头组的拆卸：

- ①按下 NF1 下面的白色卡块使其解除与接触器的连接；

- ②沿接触器面板向上移动 NF1 直到与接触器分离。

Disassembly of NF1 series auxiliary contact group:

- ①Pull the fixing claw of NF1 to make it release from the contactor.
- ②Move NF1 up along the surface of main body.



安装和拆卸空气延时头 NS1：

安装和拆卸方法和 NF1 相同。

Installation and disassembly of NS1 pneumatic timer:

The same way as installation and disassembly method of NF1.

9. 使用和维护/ Application & Maintenance

- 1) 应按规定的条件和使用环境安装;
- 2) 安装前应该检查线圈的技术参数是否与控制电源相符;
- 3) 主回路接线螺栓和线圈接线螺钉需按规定力矩拧紧;
- 4) 应在主回路不带电的情况下, 先确认接触器可动部分不得卡住, 再使线圈通电分电和数次;
- 5) 必须确保灭弧罩正确安装后, 方可投入使用;
- 6) 触头的灭弧罩内部发黑是接触器运行后的正常情况, 不会影响产品的性能, 不要试图用砂纸或其他工具去掉黑色;
- 7) 出现非正常情况下时应请专业人员检查维修, 带电检修将会造成人员伤亡!
- 1) The product should be installed according to the specified conditions and using environment;
- 2) Before installing, check whether the technical parameter data of the coil is conformed to that of the control power supply;
- 3) The wiring bolts of the major loop and the wiring screws of the coils should be tightened to the regulated moment;
- 4) Under the condition that the main loop is uncharged, firstly rotate the movable part of the contact and guarantee no jamming, and then electrify the coils;
- 5) The product can be used on the condition that the arcing shield has been installed correctly;
- 6) It is normal situation that the inside of the contact and the arcing shield becomes black after the contact runs, which would not influence the property of the product. Therefore, don't try to remove the black by using the sand paper or other tools;
- 7) Ask professional staffs to check and repair the product when abnormal situation occurs. However, live line may cause casualties.

10. 注意事项/ Notices

- 1) 产品应安装在无显著摆动或振动的地方;
- 2) 接线必须可靠 (接线螺钉的拧紧力矩见下表 3), 防止因接线端出现异常发热造成接线端烧损。
- 1) The product shall be installed in a place without significant shaking or vibration;
- 2) The wiring must be reliable (see the table below for the tightening torque of the wiring screw) to prevent the terminal from burning due to abnormal heating at the terminal.

接线螺钉紧固扭力矩 Tightening torque of connecting screw

单位: N.m

型号规格	NDC1M-09~18	NDC1M-25~38	NDC1M-40~65	NDC1M-80~95	NDC1M-80~95
主端子紧固力矩	1.2	2.5	5	9	2.5~5
辅助&线圈端子紧固力矩	1.2	1.2	1.2	1.2	1.2

- 3) 线圈断电瞬间 A1, A2 回路间存在一个毫秒级的反向冲击电压根据线圈电压等级不同电压幅值在 0.5~1.2KV 之间, 请设计电路时注意该电压是否会对周边元器件产生干扰, 如需滤波可选配 NG1-2 系列滤波元件。
- 3) At the moment of power failure of the coil, there is a millisecond level reverse impulse voltage

between A1 and A2 circuits, and the voltage amplitude is between 0.5 and 1.2 KV according to the different voltage levels of the coil. Please pay attention to whether the voltage will interfere with the surrounding components when designing the circuit. If you need to filter, you can select NG1-2 series filter elements.

11. 订货须知/ Accessory list and installation

订货时应指明 In order need attention following:

- 1、接触器的全部型号及名称; entitle type of contactor;
- 2、控制线圈频率及电压; frequency and voltage of control coil;
- 3、订货数量 order volume

例如: NDC1-0910 AC220V 50/60Hz 交流接触器 10 台;

Example: AC contactor NDC1-0910 220V 50/60Hz 10 sets.

表示: 额定工作电流为 9A 交流接触器, 控制电压的频率为 50/60Hz, 电压为 220V, 订货数量 10 台。
Representing: order 10 sets of contactors with rated operational current of 9A, rated voltage of 220V and control voltage frequency of 50/60Hz.

- 4、特殊电压规格产品, 如客户需要可特殊订货。

Special voltage character product, can special customize if need.