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NDM2L系列塑壳断路器 产品说明书 NDM2L Series MCCB Product Manual

Nader 良信

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V2.0

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1. 适用范围与用途/ Application scope

本断路器主要应用于交流 50/60Hz, 工作电压至 AC380/400/415V, 工作电流至 630A 的电路中作不频繁转换及电动机不频繁启动之用。断路器具有过载、短路和欠电压保护功能, 能保护线路及电源设备不受损坏, 同时还可以对过电流保护不能检测的长期存在的地故障可能引起的火灾危险和人身触电提供保护。下进线产品只能用于下进线场景下使用, 上进线只能用于上进线场景使用。

The breaker is mainly applied to infrequent changeover in a circuit with alternate current of 50/60Hz, working voltage of AC380V/400V/415V and working current to 630A, and to the infrequent start of electric motor. The breaker has overload, short circuit and undervoltage protection functions that can prevent the line and power unit from being damaged while protecting the possible fire danger and electric shock by the long-term failure of ground connection which fails to be detected by overcurrent protection.

2. 型号说明/ Model and implication

[illegible]

10	剩余电流脱扣器类型 Residual current release type	V: V型剩余电流脱扣器 V: Type V residual current release W: W型剩余电流脱扣器 W: Type W residual current release
11	极数 Number of poles	3, 4
12	脱扣器代号 Release code	3: 复式脱扣器 3: Complex tripper
13	附件代号 Accessory code	参见表 1 See Table 1
14	用途代号 Application code	无代号: 配电型 No code: Power distribution type
15	4极产品中N极(中性极)形式 N-pole (neutral pole) type of the 4P product	A: N极不安装过电流脱扣器, 且N极始终接通 A: The N-pole isn't installed with an overcurrent release, but always connected B: N极不安装过电流脱扣器, 且N极与其他三极一起合分 B: The N-pole isn't installed with an overcurrent release, but on-off with the other three poles C: N极安装过电流脱扣器, 且N极与其他三极一起合分 C: The N-pole is installed with an overcurrent tripper, and on-off with the other three poles
16	额定电流 Rated current	见表 2 See Table 2
17	接线方式 Cabling type	无代号: 常规产品 No code: Normal product P: 联接排 P: Connection busbar X: 下进线(需定制专用品号) X: lower input(customized special item number is required) 上进线(默认描述不体现) Upper input (default description does not reflect)

注:
1、操作方式为电动操作、手动操作时, 剩余动作电流档位、剩余电流动作时间档位、漏电指示按钮无法调节;
2、漏电产品默认只可以上进线使用, 如需下进线需要定制专用品号, 且4极产品N极是A型的产品任何工况都不允许下进线
Note:
1、When the operation mode is electric operation or manual operation, the residual action current gear, residual current action time gear, and leakage indication button can't be adjusted;
2、By default, leakage products can only be used with the incoming line. If you need the incoming line, you need to customize the special product number, and the N pole of the 4-pole product is an A-type product. Any operating condition is not allowed to use the incoming line.

表 1/Table1: 附件代号/Codes for accessory

代号/Code	附件名称/Description of accessories
00	/
10	分励脱扣器/Shunt tripper
20	双辅助触头/Double auxiliary contacts
21	单辅助触头/Single auxiliary contact
30	欠电压脱扣器/Under-voltage tripper
40	分励脱扣器、双辅助触头/Shunt tripper, Double auxiliary contacts
41	分励脱扣器、单辅助触头/Shunt tripper, Single auxiliary contact
60	二组双辅助触头/Two groups of Double auxiliary contacts
61	二组单辅助触头/Two groups of Single auxiliary contact
62	双辅助触头、单辅助触头/Double auxiliary contacts, Single auxiliary contact
70	欠电压脱扣器、双辅助触头/Under-voltage tripper, Double auxiliary contacts
71	欠电压脱扣器、单辅助触头/Under-voltage tripper, Single auxiliary contact
08	报警触头/Alarm contact
28	双辅助触头、报警触头/Double auxiliary contacts, alarm contact
58	辅助与报警触头/Auxiliary and alarm contacts
68	双辅助触头、辅助与报警触头/Double auxiliary contacts /Auxiliary and alarm contacts

3. 技术参数/ Main technical parameters

3.1 NDM2L主要技术参数 Main technical parameters of NDM2L

表 2/ Table 2

型号 Type	NDM2L-125		NDM2L-250		NDM2L-400		NDM2L-630
	NDM2L-125/AC	NDM2L-125/A	NDM2L-250/AC	NDM2L-250/A	NDM2L-400/AC	NDM2L-400/A	NDM2L-630/AC
极数 Number of poles	3, 4	4	3, 4	4	3, 4		3, 4
壳架等级额定电流 I _{nm} (A) Frame size I _{nm} (A)	125		250		400		630
额定电流 I _n (A) Rated current I _n (A)	16,20,25,32,40,50,63,80,100,125		100,125,140, 160,180,200, 225,250		225,250,315, 350,400		400,500,630
额定工作电压 U _e (AC) Rated voltage U _e (AC V)	380/400/415		380/400/415		380/400/415		380/400/415
额定绝缘电压 U _i (AC V) Rated insulation voltage U _i (V)	1000		1000		1000		1000
非延时剩余电流 I _{Δn} 档位 (mA) Non-time delay aftercurrent I _{Δn} gear (mA)	30, 100, 300, 500(V 型)	30, 100, 300, 500(V 型)	30, 100, 300, 500(V 型)	30, 100, 300, 500(V 型)	30, 100, 300, 500, 1000(V 型)	30, 100, 300, 500, 1000(V 型)	30, 100, 300, 500, 1000(V 型) 1A/3A/10A/30A (W 型)
延时剩余电流 I _{Δn} 档位 (mA) Delay aftercurrent I _{Δn} gear (mA)	100, 300, 500(V 型)	100, 300, 500(V 型)	100, 300, 500(V 型)	100, 300, 500(V 型)	100,300,500, 1000(V 型)	100,300, 500, 1000(V 型)	100, 300, 500, 1000(V 型) 1A/3A/10A/30A (W 型)
剩余电流动作时间 Δt 档位 (S) Accuation time Δt gear of aftercurrent (S)	0.5, 1.15, 2.15		0.5, 1.15, 2.15		0.5, 1.15, 2.15		0.5, 1.15, 2.15
额定极限短路分断能力 I _{cu} (kA) Rated ultimate breaking capacity I _{cu} (kA)	52.5(M/4P) 85(H)		52.5(M/4P) 85(H)		65(M/4P) 100(H)		65(M/4P) 100(H)
额定运行短路分断能力 I _{cs} (kA) Rated operating short circuit breaking capacity I _{cs} (kA)	35(M/4P) 50(H)		35(M/4P) 50(H)		42(M/4P) 70(H)		42(M/4P) 70(H)
飞弧距离 Arcing distance(mm)					≤50		
操作性能 Operation performance	电气寿命/Mechanical life 8000				电气寿命/Mechanical life 7500		
	机械免维护寿命 Electrical without maintenance 20000				机械免维护寿命 Electrical without maintenance 10000		
	机械免维护寿命 Electrical without maintenance 40000				机械免维护寿命 Electrical without maintenance 20000		

注：用于人身保护的剩余电流保护断路器额定剩余电流 I_{Δn} 为 30 mA 时，只能选定非延时。

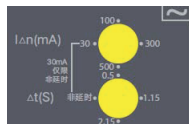
Note: When the rated residual current I_{Δn} of the residual current protective circuit breaker for physical protection is 30 mA, only non-delay can be selected.

3.2 剩余电流整定值设置、延时型时间设置开关示意图

3.2 Diagram of aftercurrent setting value setup and delay type time setup switch

(1) NDM2L-125、250、400、630 AC 型 AC type

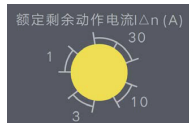
1 剩余电流整定值设置 Setup of aftercurrent setting value



NDM2L-125/250



NDM2L-400/630



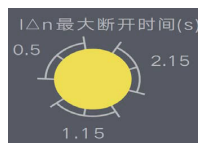
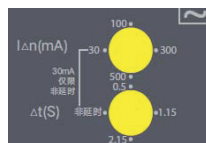
NDM2L-630

2 延时型时间设置 Delay type time setup

I_{Δn} 最大断开时间设置旋转开关示意图/Diagram of rotary switch for maximum break-up time

I_{Δn} Maximum opening time (s)

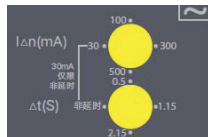
I_{Δn} Maximum opening time (s)



(2)NDM2L-125、250/A A型 A type

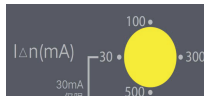
①延时型剩余电流、延时时间整定值设置

Delay type aftercurrent and delay time setting value setup



②非延时型剩余电流整定值设置

non-delay type aftercurrent setting value setup



4. 工作环境/ Stand working conditions

- 海拔 ≤ 2500m ;
- 环境温度 -35 ~ +70℃ ;
- 环境温度 +40℃时相对湿度不超过 50% ,较低温度可以有较高湿度,如 :20℃时相对湿度可达 90% ;
- 对于因温度变化所产生的凝霜应采取相应的措施 ;
- 能耐受潮湿空气的影响 ;
- 能耐受盐雾、油雾的影响 ;
- 能耐受霉菌的影响 ;
- 断路器接至主回路的安装类别为 III 类 , 断路器不接至主回路安装类别为 : II 类 ;
- 污染等级 : 3 级 ;
- 防护等级 : IP20 ;
- 无爆炸危险的介质中 , 且介质无足以腐蚀性金属和破坏绝缘的气体与导电尘埃的地方 ;
- 在没有雨雪侵袭的地方 ;
- 当用户使用条件较上述严酷时应与制造商协商 ;
- 储存环境 见表 3 ;
- 产品降容系数表 见表 4 ;
- 高海拔降容系数 见表 5 ;
- 导体部分接线端子/安装螺钉拧紧扭矩 见表 6 ;
- Altitude ≤ 2500m ;

- Ambient temperature : -35 ~ +70℃ ;
- The relative humidity of the air does not exceed 50% at 40℃. Higher relative humidity is permitted at lower temperature, such as 90% relative humidity at 20℃ ;
- The protective actions should be taken for frost which formed by variation of temperature ;
- Resisting the effects by humid air ;
- Resisting effects by salt mist and oil mist ;
- Resisting the effects by mould ;
- Installation category for the breaker which is connected to main circuit : III , Installation category for the breaker which is not connected to main circuit : II ;
- Pollution degree:3 ;
- Protection degree : IP20 ;
- Service place without explosive media, gas and dust which are corrosive and conductive ;
- Be mounted free from rain and snow ;
- Should consult with the manufacturer when the working conditions are harsher ;
- Storage environment 见表 3 ;
- Product derating coefficient table 见表 4 ;
- Derating coefficient in high altitude 见表 5 ;
- Terminal torsion value for wiring thread hole in conductor section 见表 6 ;

表 3/ table3

项目 Item	规范 Description
周围温度 Ambient temperature	-40℃ ~ +75℃
相对湿度 Relative humidity	(Ambient temperature at 25℃) ≤95%

表 4/ table4

塑壳式断路器降容系数表 Molded Case Circuit Breaker Derating Coefficient Table

序号 No.	壳架等级 额定电流 (A) Frame size rated current (A)	温度对应产品降容系数表 Derating coefficient table						
		40℃	45℃	50℃	55℃	60℃	65℃	70℃
1	125	1	0.977	0.954	0.931	0.907	0.883	0.858
2	250	1	0.982	0.963	0.944	0.924	0.904	0.882
3	400	1	0.981	0.962	0.942	0.922	0.901	0.879
4	630	1	0.979	0.958	0.937	0.915	0.893	0.871

表 5/ table5

塑壳断路器海拔降容系数表

Molded Case Circuit Breaker Derating Coefficient Table in High altitude Place

海拔高度(m) Altitude(m)	2000	2500	3000	3500	4000	4500	5000
工作电流修正系数 Rated working current	1	1	0.98	0.97	0.95	0.94	0.93
工频耐压(V) Power frequency withstand voltage(V)	3500	3500	3150	3000	2800	2650	2500
绝缘电压(V) Isolation voltage(V)	1000	1000	900	850	810	770	730

表 6/ table 6

接线端子/安装螺钉拧紧扭矩值 Torsion value for wiring terminal

序号 No.	壳架等级额定电流(A) Frame size rated current	螺栓直径(mm) Thread diameter	扭力矩(N.m) Torsion value
1	125、250	M8	12
		M4	1.5
2	400	M10	20
		M6	6
3	630	M12	28
		M6	6

5. 接线方式(接线图)/ Wiring Method

表 7/table7

连接导线采用的截面积和相应的额定电流

sectional areas of connecting wires and corresponding rated current, see the following table

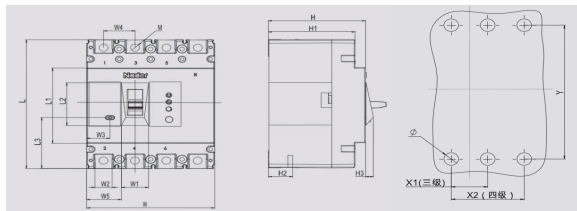
额定电流(A) Rated current(A)	16 20	25	32	40 50	63	80	100	125 140	160	180 200 225	250	315 350	400
导线截面积 Wire sectional area(mm ²)	2.5	4.0	6.0	10	16	25	35	50	70	95	120	185	240

额定电流(A) Rated current(A)	电缆线截面积 Cable cross-sectional area		铜排尺寸 Copper bar size	
	数量 Quantity	截面积(mm ²) Cross-section area(mm ²)	数量 Quantity	尺寸(mm:mm) Cross-section area(mm:mm)
500	2	150	2	30x5
630	2	185	2	40x5

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

外形尺寸与安装尺寸板前接线见表 8、9 External dimensions and installation dimensions of front-panel wire are illustrated in Tables 8, 9

NDM2L-125、250



NDM2L-400、630

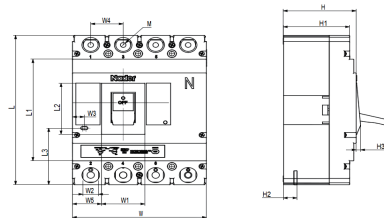


表 8 外形尺寸与安装尺寸

Table 8 External dimensions and installation dimensions

型号 Type	外形尺寸(mm) External dimensions																	安装尺寸(mm) Installation dimensions					
	L	L1	L2	L3	W		W1	W2	W3	W4	W5	H	H1	H2	H3	M	Y	X1	X2	Ø			
					3P	4P																	
NDM2L-125	150	88	50	59	92	122	26	18	22	30	33	92.5	82.5	29	7.5	8	129	30	60	4.5			
NDM2L-250	165	102	50	67	107	142	29	23	11	35	39	90.5	85.5	23	6.5	8	126	35	70	4.5			
NDM2L-400	257	175	88	97	150	198	64	32.5	17.5	48	43	107	97.5	38.5	6.5	10	194	44	94	7			
NDM2L-630	280	204	88	116	210	280	64	44	52	70	73	116.5	104	40/港 41/台	7	12	243	70	140	7			

安装板开孔 Holing installation panel

板前接线(X-X、Y-Y为三极断路器中心) Front-panel wire(X-X, Y-Y is the centre of three-pole breaker)

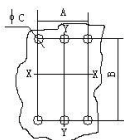


表 9 外形尺寸与安装尺寸

Table 9 External dimensions and installation dimensions

型号 Type		NDM2L-125	NDM2L-250	NDM2L-400	NDM2L-630
安装板开孔尺寸 (mm) Holing size of installation panel	A	60	70	94	140
	B	129	126	194	243
	C	4.5	4.5	7	7

注：未注公差尺寸的极限偏差按 GB/T 1804-C。

Note: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-C.

7. 安装方式/ Mounting Method

7.1 绝缘测试 Insulation test

本断路器出厂前已按标准规定绝缘测试。因断路器带有电子线路板，安装前如进行复测，必须按如下步骤：

The breaker has gone through specified standard insulation test before factory delivery. Because many PCBs are installed in the breaker, for re-testing, please conduct tests according to following procedures:

- (1) 用 500VDC 兆欧表。Use a 500VDC megameter.
- (2) 在断路器处于断开状态，对进出连接板 1-2、3-4、5-6 之间，和 1、3、5 连接板（3 个连接板用导线相连）与外壳之间（外壳用金属箔覆盖）分别进行。Place the breaker in open status, carry out test between 1-2, 3-4 and 5-6 connection boards, as well as between the 1, 3 and 5 connection boards (connected with wires) and the breaker shell (covered by metal foil).
- (3) 对接至主电路的欠电压脱扣器，在进线与断路器外壳间。Test should be done in position between incoming wire and breaker shell to test undervoltage release in the main circuit.
- (4) 绝缘电阻不小于 20 MΩ。Insulation resistance should not be lower than 20MΩ.

注：也可分离电子线路板后进行绝缘测试。

Notes: Insulation test can also be done after separation of PCBs.

7.2 安装 Installation

请安装于金属等阻燃物上。断路器可垂直安装，也可以水平安装。Please install the breaker on flame retardants such as metal, etc. It can be installed vertically or horizontally.

产品垂直安装时，安装面与垂直面的倾斜角度 $\leq \pm 22.5^\circ$ 。When the product is installed vertically, the angle of inclination between the installation surface and vertical surface shall be $\leq \pm 22.5^\circ$.

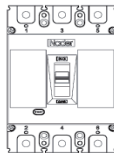


图 14.1：垂直安装
Fig.14.1 Vertical installation



图 14.2：水平安装
Fig.14.2 Horizontal installation

8. 附件说明书/ Accessory

8.1 欠电压脱扣器 Under-voltage release

断路器带有欠电压脱扣器时，应使欠电压脱扣器先通电，断路器才允许合闸。

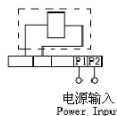
When the breaker has an under-voltage release, the under-voltage release should be electrified, and then the breaker allows switch on.

根据引出的导线编号借入电源(直流电源不必区分正负极)

Power supply is accessed according to lead-out wire number(anode and cathode of DC power supply are not differentiated).

当电源电压下降到欠电压脱扣器额定工作电压的 70% ~ 35% 范围内时，欠电压脱扣器能可靠的分断断路器；当电源电压低于欠电压脱扣器额定工作电压的 35% 时，欠电压脱扣器能防止断路器闭合；当电源电压高于欠电压脱扣器额定工作电压的 85% 时，欠电压脱扣器能保证断路器可靠闭合。

When power voltage declines to 70% ~ 35% of the rated working Voltage of undervoltage tripper, the undervoltage tripper can reliably break the breaker up; when power voltage is lower than the rated working voltage of undervoltage tripper by 35%, the undervoltage tripper can prevent the breaker from closing; when power voltage is higher than the rated working voltage of undervoltage tripper by 85%, the undervoltage tripper can guarantee the reliable closure of breaker.

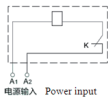


欠电压脱扣器接线图
Wiring Diagram of Undervoltage

8.2 分励脱扣器 Shunt tripper

根据引出的导线编号接入电源（直流电源不必区分正负极）。当分励脱扣器的外加电压介于额定控制电源电压的70%-110%之间时，能可靠分断断路器。

Power supply is connected to the shunt tripper according to outlet wire number (no need to distinguish positive and negative for direct current). When the added voltage of the shunt tripper is within 70%-110% of the rated control supply voltage, the tripper can reliably break the breaker.



分励脱扣器接线图
Wiring diagram of shunt tripper

8.3 辅触头 Auxiliary contact

辅助触头和报警触头的额定值 Rated value of auxiliary contact and alarm contact

分 类 Category	壳架电流 (A) Frame current (A)	约定发热电流 Ith (A) Conventional thermal current (A)	额定工作电流 Ie (A) Rated working current for Ie (A)
辅助触头 Auxiliary contact	125、250、	3	1.5 (AC400V) 0.15(DC220V)
报警触头 Alarm contact	400、630	3	0.3(AC400V) 0.15(DC220V)

根据引出的导线编号接入相应外围控制电路 Be accessed to corresponding external control circuit according to lead-out wire

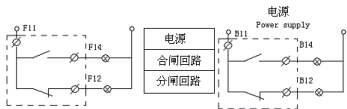


图 /Diagram 7-3

注：F11、F12、F14 为辅助触头接线端子 Notes: F11,F12,F14 are wiring terminals of auxiliary contact
B11、B12、B14 为报警触头接线端子 B11,B12,B14 are wiring terminals of alarm contact

8.4 断路器漏电报警单元模块的电气接线 Electric wire connection of the electric leakage alarm module of breaker

根据外挂漏电报警单元模块上的接线端子编号接入电源及相应外围控制电路

Be accessed to power and corresponding external control circuit according to wiring terminal number on the external electric leakage alarm module

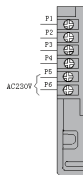
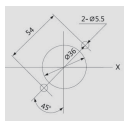


图 /Diagram 7-4

注：P1-P4 为引出线端子 Note: P1-P4 is lead-out wire terminal

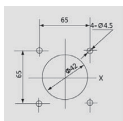
8.5 手动操作机构 Manual operating mechanism

① 安装前，安装操作手柄的开关柜门按图开好孔，开孔中心离铰链距离大于 200 mm
Before installation, a switch cabinet door for installing operating handle is holed in accordance with the diagram. Distance between the holed part and the hinge is greater than 100 mm.



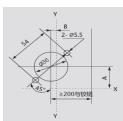
CS1-A 型手柄开孔图

CS1-A type holeing diagram of handle



CS1-F 型手柄开孔图

CS1-F type holeing diagram of handle



9. 使用和维护 / Application & Maintenance

1) 断路器各种特性及附件由制造厂整定，在使用过程中不可随意调节
onfigured by the manufacturer, all characteristics and accessories of the breaker are not adjustable.
2) 断路器手柄可以处于三个位置，分别表示闭合、脱扣、断开三种状态，当手柄处于脱扣位置时，要使断路器闭合就必须先向分闸方向扳动手柄使断路器再扣，然后合闸

Breaker handle can be put in three positions: closed, tripped and broken states. When the handle is in tripped position, the breaker can be closed only by pulling the handle in opening direction to fasten the breaker and then closing.

3) 维护检查必须有专业技术人员负责
Maintenance and check should be finished by professional technicians.

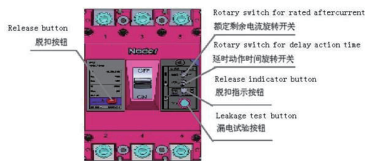
4) 用户如需选用内、外附件，按所订型号由本公司提供，以保证质量。如用户自行选购或改装，本公司不能负责

To guarantee quality, the company provide internal and external accessories to customer according to the subscribed type. The company is free from responsibility if the customer purchases or refits internal and external accessories by himself.

5) 产品外观 Product appearance

注意：NDM2L-400/630 系列产品在漏电流脱扣后，需要按下漏电指示钮，产品才能再扣及合闸

Note: NDM2L-400/630 series product can be fastened and closed by pressing leakage indication button in leakage tripping condition



6) 当产品带剩余电流保护报警单元模块时，按剩余电流试验按钮，断路器只报警不脱扣，或报警又脱扣。

When the product is equipped with the aftercurrent protection alarm unit module, press the aftercurrent test button, the breaker will give an alarm but not strip, or not only give an alarm but strip

10. 注意事项 / Notices

1) 断路器本体、底板（板后接线用）、底座（插入式接线用）固定在安装板上

Main body, baseboard (for back-panel wire connection), base (for insertion wire connection) of the breaker are fixed on an installation panel.

2) 与主电路连接 Connected to main circuit

必须由具有专业资格的人员进行配线作业

Wiring operation should be carried out by professional technicians.

确认输入电源处在完全断开的情况下，才能进行配线作业

Wiring operation should be carried out only when input power supply is assured completely

broken.

必须安装本体后再进行配线

Wiring operation should be carried out after the main body is installed.

断路器配线必须符合上进下出，即 1,3,5 端子接电源线，2,4,6 端子接负载线，不允许倒进线

In wiring operation of the breaker, wire should be inserted from the top and pulled out from the bottom; that is to say, terminals 1,3,5 are connected to power wire, and terminals 2,4,6 are connected to load wire; wiring sequence is not allowed to be exchanged.

3) 不要安装在含有爆炸性气体的环境里，否则有引发爆炸的危险/Be mounted free from fire damp, otherwise there is explosion hazard.

4) 请勿安装在特别潮湿的地方/ Be mounted free from heavy dampness.

5) 不要安装在大于地磁场 5 倍的地方，否则断路器不能正常工作/ Be mounted free from place where external magnetic field is five times greater than earth magnetic field, otherwise the breaker can not work.

6) 不要安装在振动大于 5g 的地方/ Be mounted free from place where vibratin is greater than 5g.

7) 不要安装在气体介质能腐蚀金属和破坏绝缘的地方/ Be mounted free from place where gas media can corrode metal and damage insulation.

10.2 运行注意事项 Running precautions

1) 湿手不能操作断路器，否则可能发生电击事故。

Wet hand is forbidden to operate the breaker, otherwise there is electric shock hazard.

2) 断路器不能频繁操作，否则会缩短断路器的使用寿命。

The breaker cannot be operated frequently, otherwise its service life is shortened.

3) 带电动操作机构的断路器脱扣跳闸后，电操机构必须使断路器再扣，然后才能合闸。

If there are release and tripping operation occurred on the breaker with an electric operating mechanism, the breaker only can be closed after the electric operating mechanism fastened it again.

4) 在主电路通电状态下，对额定剩余动作电流型为非延时的断路器，手按模拟剩余电流动作试验按钮应立即脱扣（或只报警或报警又脱扣）；对延时型，手按试验按钮并保持所谓的延时时间值，断路器才脱扣（或只报警或报警又脱扣）。

At premis of electrifying the main circuit, the breaker should immediately trips (only alarms, or alarms and trips) when analog aftercurrent action test button is pressed if the rated residual operating current type is non-delay type; for delay type, the breaker trips (only alarms, or alarms and trips) when the test button is pressed and the delay time value is kept constant.

5) 断路器漏电脱扣后，此时需待线路漏电故障排除后，断路器方可合闸。

In case of leakage tripping, the breaker can be closed after the leakage error is solved.

6) 对用户选用漏电只报警不脱扣的断路器，发生漏报警后，也应及时排除线路故障。

7) 在断路器只报警 in case of leakage, wire error should be timely solved after leakage alarm.

7) 定期（1~3 个月）按试验按钮检查剩余电流保护是否正常；相邻各装有剩余电流保护断路器的电路负载端应有专用零线，不能共点使用，也不能在负载端 N 相上再接入 PE 线，否则会引起误动作；为限制剩余电流保护时的断电范围，一般要将上级剩余电流保护断路器的剩余电流动作时间设置为下级剩余电流保护断路器剩余电流动作时间大 0.2S 或更长。

Regularly (1~3 month(s)) press the test button to inspect whether the aftercurrent protection is normal; the adjacent circuit load end with aftercurrent protective circuit breaker shall have dedicated null line which should neither be shared nor access to PE line at the N phase of the

load end, or malfunction will be caused; in order to limit the outage range at the time of aftercurrent protection, the aftercurrent actuation time of the superior aftercurrent protective circuit breaker is generally set as 0.2S greater than that of the subordinate aftercurrent protective circuit breaker or longer.

10.3 试运行 Pilot run

① 按 10.1 10.2 条各项全部确认无异常情况后，可以进行试运行。

Carry out pilot run after all items in 10.1, 10.2 are assured normal.

视断路器安装场合，用户需要调整额定剩余动作电流和断开时间（非延时型断开时间不可调）

Rated residual operating current and break-up time (non-delay break-up time is not adjustable) should be adjusted in according to the installation occasion of breaker.

② 扳动操作手柄，投入电源。

Pull operation handle and access power supply.

③ 断路器主电路带电后，按紧急脱扣按钮，断路器应脱扣，操作手柄处于脱扣位置如果试运行都能满足，可投入运行。

At premise of electrifying the main circuit, the breaker trips when emergency tripping button is pressed and the operating handle is at tripping position. If all the conditions can be met in pilot run, the breaker can be put into operation.

10.4 保修期与售后服务 Warranty period and after-sales service

本产品是在完善的质量管理体系下制造的，当万一发生故障时，对保修期与售后服务特作如下说明：

This product is manufactured in a fine quality management system. In case of error, warranty period and after-sales service are explained in the followings:

10.5 保修期 Warranty period

在用户遵守保管和使用条件下，从本公司发货之日起，不超过 36 个月，断路器封印完好，产品如因制造质量问题而发生损坏或不能正常使用时，本公司负责无偿修理或更换。但是，如由于下述原因引起的故障，即使在保修期内亦作有偿修理或更换

The company is responsible for free maintenance or exchange within 36 months from the delivery date at the following premises: the user abides by preservation and use rules; seal on the breaker is complete; the product is damaged or cannot be used normally by reason of quality problem. However, maintenance or exchange should be paid in warranty period if the error is caused by any one the following reasons:

1) 由于使用错误、自行改装及不当的维修等原因。

Improper use, self refit, improper maintenance and so on.

2) 超过标准规范的要求使用。

Use out of the standard specification.

3) 购买后由于摔落及安装过程中发生损坏等原因。

Damage caused by falling off or installation after purchase.

4) 地震、火灾、雷击、异常电压、其他天灾及二次灾害等原因。

Earthquake, fire disaster, lightning stroke, abnormal voltage, other natural disaster, second disaster and so on.

10.6 售后服务 After-sales service

1) 出现故障时，请与供货商或本公司售后服务部门联系。

Please contact the manufacturer or the after-sales service department of company if there is an error.

2) 保修期内的修理或更换：由于本公司制造上的问题所造成的故障，作无偿修理，以至更换。

Maintenance or exchange in warranty period: free maintenance or exchange is allowed if the error is up to manufacture technique.

3) 超过保修期后的修理或更换：在修理后能维持功能的场合下，作有偿修理，否则可作有偿更换。

Maintenance or exchange out of warranty period: paid maintenance is operated if the function can be recovered, otherwise paid exchange is operated.

4) 非常感谢使用本公司生产的 NDM2L 系列具有剩余电流保护塑料外壳式断路器，敬请您在安装、电路连接(配线)、运行、维护检查前，熟读本说明书内容，以保证正确使用。使用时必须熟知有关安全知识和注意事项。

Thank you for using NDM2L series DC molded case circuit breaker with aftercurrent protection produced by our company. To guarantee proper usage, please read the instructions before installation, circuit connection (wire connection), operation and maintenance. Please make sure of knowing safety matter and precautions in use.

11. 订货须知/ Accessory list and installation

用户必须确认对本产品技术资料已有详细了解，并应根据断路器将来使用的场合，按“订货规范”表订货

Customer should have a knowledge of technical documents of this product and maker order by an "Ordering rule" table in accordance with the future practical use of breaker.