

Product Specification of NDM3A

Product Name:Molded Case Circuit

Product Model:NDM3A

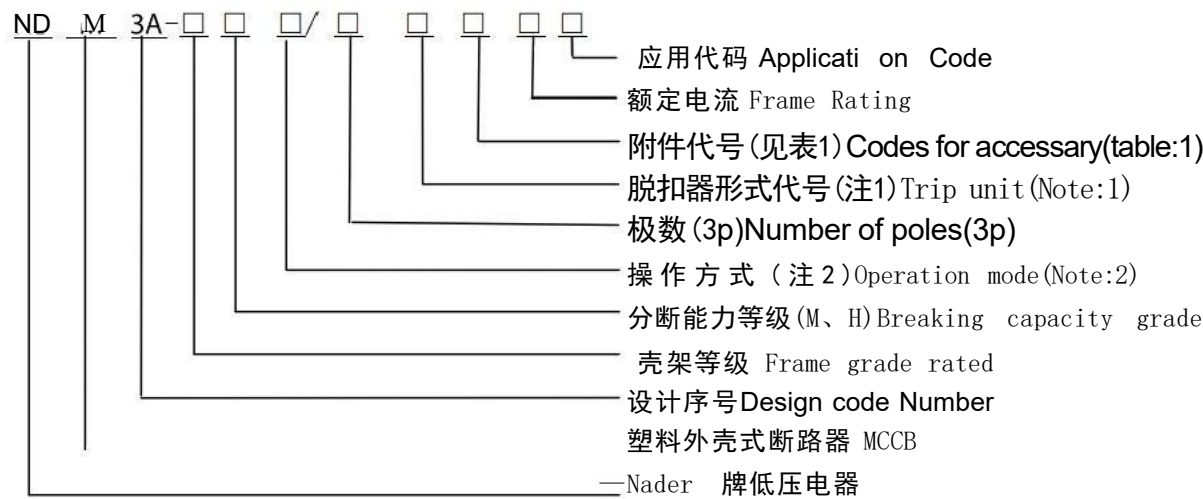
1、适用范围与用途 Applicable range and intended use

NDM3A 系列塑壳产品适用于交流50Hz （或 60Hz） 的电路中做不频繁转换及电动机不频繁启动之用。其额定工作电压至AC1000V。 断路器具有过载、短路和欠电压保护功能，能保护线路和电源设备不受损坏。

NDM3A series of moulded case circuit breakers will be suitable for in-frequency switching of circuits and starting of motors in 50Hz/60Hz circuit. The rated working voltage is up to AC 1000V. The breaker has functions of overload protection, short circuit protection and undervoltage protection which can protect circuit and electrical power unit properly.

本产品符合标准/The breaker meets the criterions:GB14048.2-2008

2、型号说明 Model Description



注1: 0: 无脱扣器, 2: 仅有瞬时脱扣器, 3: 复式脱扣器
Note1: For trip unit, "0" represents frame only without trip unit, "2" represents magnetic only, "3" represents both thermal and magnetic
注2: 手柄操作无代号, P: 表示电动操作, Z: 表示手动操作
Note2: For operation method, no code represents direct handle operation, "P" represents motor operation, "Z" represents rotary handle operation.

表/table 1 附件代号/Accessory Code

代号 Code	附件名称/Description of accessories
10	分励脱扣器/Shunt release
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 release
40	分励脱扣器和双辅助触头/Shunt release, Double auxiliary contacts

代号 Code	附 件 名 称/Description of accessories
41	分励脱扣器和单辅助触头/Shunt release,Single auxiliary contact
50	分励脱扣器和欠电压脱扣器/Shunt release,Under-voltage release
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	双辅助触头和单辅助触头/Double auxiliary contacts,Single auxiliary contact
70	欠电压脱扣器和双辅助触头/Under-voltage release,Double auxiliary contacts
71	欠电压脱扣器和单辅助触头/Under-voltage release,Single auxiliary contact
08	报警触头/Alarm contact
18	分励脱扣器和报警触头/Shunt release,alarm contact
28	双辅助触头和报警触头/Double auxiliary contacts,alarm contact
38	欠电压脱扣器和报警触头/Under-voltage release,alarm contact
48	分励脱扣器和辅助与报警触头/Shunt release,Auxiliary and alarm contacts
58	辅助与报警触头/Auxiliary and alarm contacts
68	双辅助触头和辅助与报警触头/Double auxiliary contacts /Auxiliary and alarm contacts
78	欠电压脱扣器和辅助与报警触头/Under-voltage release and alarm contact

3、技术参数 Technical parameters

表/table 2

型号/Type		NDM3A-250		NDM3A-400		NDM3A-630	
极数/Number of poles		3					
额定电流 /Frame Rating In(A)		63、80、100、125、 140、160、180、200、 225、250		225、250、 315、350、 400		400、500、630	
额定绝缘电压/Rated insulation voltage(V)		1140					
分断能力级别Breaking capacity level		H	M	M	M		
额定工作电压 /Rated voltage Ue(V)		AC800	AC550	AC600	AC690	AC800	AC1000
额定极限分断能力/Rated ultimate breaking capacity Icu(kA)	AC550V		50	50	50	50	
	AC600V		42	42	42	42	
	AC690V		35	35	35	35	
	AC800V	36.5	30	30	30	30	
	AC1000V		12	12	12	12	
额定运行分断能力/Rated operating short circuit breaking capacity Ics(kA)	AC550V		50	50	50	50	
	AC600V		42	42	42	42	
	AC690V		35	35	35	35	
	AC800V	30	23	23	23	23	
	AC1000V		12	12	12	12	
机械寿命/mechanical life		20000	20000	10000	10000	10000	
电 气 寿 命 /electrical life	AC550V		5000	4000	4000	4000	
	AC600V		3000	2500	2500	2500	
	AC690V		2000	2000	2000	2000	
	AC800V	1500	1500	1500	1500	1500	
	AC1000V		1000	1000	1000	1000	

型号/Type	NDM3A-250	NDM3A-400	NDM3A-630
工作温度/working temperature	-40~70℃		
基准温度/fiducial temperature	+40℃		
污染等级/Pollution degree	3		
防护等级/protection class	IP20		
外形尺寸/outline dimensions(mm)	113×165×103	150×257× 104.5	182 ×270 × 108.5

4、工作环境 Working Environment

1) 海拔/Altitude:≤2000 m。

2) 环境温度/Ambient temperature:-40~+70℃。

3) 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: 25℃时相对湿度可达80%, 对于因温度变化所产生的凝霜应采取相应的措施。

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.

4) 能耐受潮湿空气的影响/Resisting the effects by humid air.

5) 能耐受盐雾、油雾的影响/Resisting effects by salt mist and oil mist.

6) 能耐受霉菌的影响/Resisting the effects by mould.

7) 断路器接至主回路的安装类别为: III, 断路器不接至主回路的安装类别为: II。

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 .

8) 污染等级为3级/Pollution degree:3.

9) 在无爆炸危险的介质中, 且介质无足以腐蚀金属和破坏绝缘的气体与导电尘埃的地方。

Service place without explosive media,gas and dust which are corrosive and conductive.

10) 在没有雨雪侵袭的地方/Be mounted free from rain and snow.

11) 当用户使用条件较上述严酷时应与制造商协商。

Should consult with the manufacturer when the working conditions are harsher.

12) 储存环境/Storage environment

项目/Item	规范/Description
周围温度/Ambient temperature	-40℃~ +75℃
相对湿度/Relative humidity	25℃ (Ambient temperature)≤80%

13) 产品降容系数表/Product derating coefficient table

表/Table 3塑壳式断路器降容系数表/Molded Case Circuit Breaker Derating Coefficient Table

	型号/Type	温度/Temperature						
		40℃	45℃	50℃	55℃	60℃	65℃	70℃
降容系数 Derating Coefficient	NDM3A-250	1	0.982	0.963	0.944	0.924	0.904	0.882
	NDM3A-400	1	0.981	0.962	0.942	0.922	0.901	0.879
	NDM3A-630	1	0.979	0.958	0.937	0.915	0.893	0.871

注：当使用环境温度低于40℃时，产品可正常使用，不存在降容。

Note:When ambient temperature is less than 40℃,breaker can be used normally,without any derating.

14) 高海拔降容系数/Derating coefficient in high altitude place

1: 海拔高度低于2km,不需要考虑降容；

1:When breaker was used in place less than 2km,derating is needless.

2: 海拔高度高于2km, 降容系数见下表：

2:When breaker was used in place higher than 2km,derating is necessary.

表/Table 4 高海拔降容系数表/Derating coefficient in high altitude place

海拔高度Altitude (m)	2000	2500	3000	3500	4000	4500	5000
工作电流修正系Rated operating current	In	In	0.980 In	0.972 In	0.963 In	0.95In	0.938 In
最大工作电压Rated working voltage (V)	1000	1000	1000	1000	1000	1000	1000
工频耐压Power frequency withstand voltage (V)	3500	3500	3150	2970	2700	2600	2380
绝缘电压Rated insulation voltage (V)	1140	1140	1140	1140	1140	1140	1140

15) 导体部分接线螺纹孔端子拧紧扭力值/Terminal torsion value for wiring thread hole in conductor section

表/Table5接线端子螺钉拧紧扭力值Torsion value forwiring termina

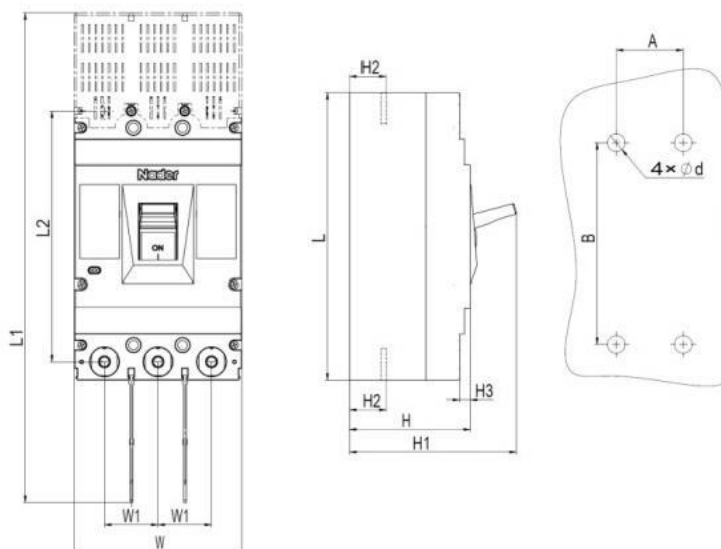
序号/No	壳架等级额定电流 Frame size rated current	螺纹直径/Thread diameter	扭力值/Torsion value(N · m)
1	250	M8	12
2	400	M10	20
3	630	M12	35

5、接线方式 Wiring

表/Table 6 连接导线采用的截面积和相适应的额定电流/sectional area and applicable rated current adopted in wiring

额定电流/ Rated current (A)	63	80	100	125 140	160	180 200 225	250	315 350	400	500	630	700 800
导 线 截 面 积 /Wire sectiona area (mm ²)	16	25	35	50	70	95	120	185	240	150 x2	185x 2	240 x2

6、外形及安装尺寸 Dimension



表/Table 7 外形及安装尺寸/Dimension单位: mm

型号/Type	W	W1	L	L1	L2	H	H1	H2	d	A	B
NDM3A-250	113	35	165	292.5	144	103	139.5	24	4.5	35	126
NDM3A-400	150	48	257	438.5	224	104.5	149.5	38	7	44	194
NDM3A-630	182	58	270	445	243	108.5	153	43	7	58	200

7、安装方式 Installation

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：

Insulation test has been already carried out on the breaker according to standard before leaving factory. Due to wire circuit,the following steps should be operated if insulation test is carried out on the breaker again.

① 用 500VDC兆欧表/500VDC tramegger

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连接板与外壳之间（外壳用金属箔覆盖）分别进行。

When breaker is broken up,insulation test is conducted separately between connecting panels 1-2, 3-4,5-6,connecting panels 1,3,5 and shell.

③ 对接至主电路的欠电压脱扣器，在进线与断路器外壳间。

Undervoltage tripper connected to the main circuit is arranged between intake wire and breaker shell.

④ 绝缘电阻不小于20MΩ/Insulation resistance is not less than 20MΩ.

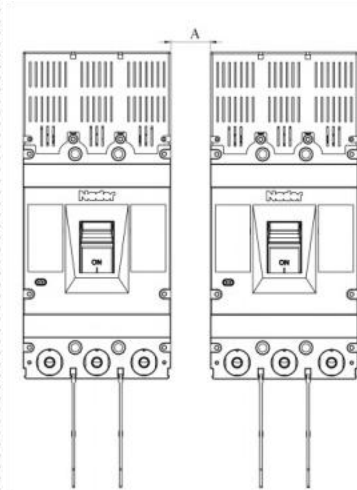
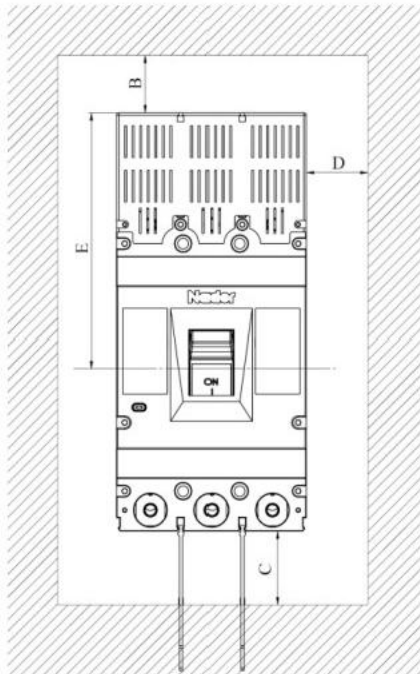
注：也可分离电子线路板后进行绝缘测试。

Notes:Insulation test could be operated after wire circuit is separated.

2) 安 装 /Install

请安装于金属等阻燃物上/Installed on metal flame retardant material.

①断路器安装安全间隙/circuit breaker Installed a safe distance



A:断路器之间/between the circuit breaker

B:端子盖到金属/terminal cover to the metal

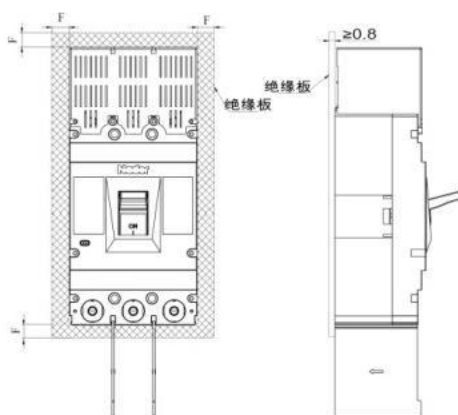
C:断路器端子到金属件/circuit breaker Terminal to the metal parts

D:断路器侧部到侧墙/circuit breaker side to the side of the wall

E:断路器中心到端子盖顶部/circuit breaker top center to the terminal Cover

②用户在使用时，断路器1、3、5端子侧应按图示配装端子罩，断路器2、4、6端子侧应配装相间隔板，并在断路器与金属安装板之间垫装绝缘板，绝缘板开孔尺寸同安装板，用户自备。

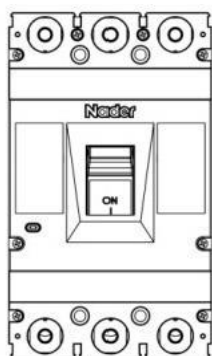
Users in the use,1/3/5 terminal side of circuit breaker should be Installed according to the graphicterminal cover,2/4/6 terminal side of circuit breaker should be equipped with phase partition, and between the circuit breaker and the metal plate pad insulation board,the user needs to prepare Insulation board hole size and mounting plate



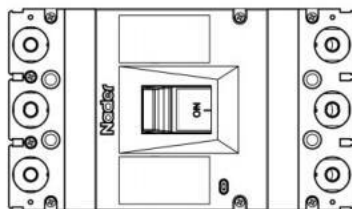
单位: mm

型号/Type	A	B	C	D	E	F
NDM3A-250	30	30	30	30	147	13
NDM3A-400	30	30	30	30	201	26
NDM3A-630	30	30	30	30	207.5	26

③断路器可垂直安装，也可以水平安装/the breaker can be Installed in vertical or horizontal mode.



垂直安装/Vertical



水平安装/Horizontal

8、附件说明 Accessories

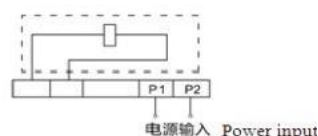
1) 欠压脱扣器/Undervoltage tripper

断路器带有欠压脱扣器时，应使欠压脱扣器先通电，断路器才允许合闸。

Breaker with undervoltage tripper should electrify the tripper before closing.

根据外挂欠电压模块上的接线端子编号接入电源（直流电源不必区分正负极）。

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



电源输入 Power input

欠压脱扣器接线图/Wiring diagram of shunt tripper

Power supply is connected to the tripper according to wiring terminal number of the add-on undervoltage module(no need to distinguish positive and negative for direct current).

When supply voltage lowers to be within 70%-35% of rated working voltage of the undervoltage tripper, the tripper can reliably break the breaker; when the supply voltage is lower than 35% of the rated working voltage, the tripper can prevent the breaker from closing; when the supply voltage is higher than 85% of the rated voltage, the undervoltage tripper can ensure reliable closing of the breaker.

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。



电源输入

分励脱扣器接线图

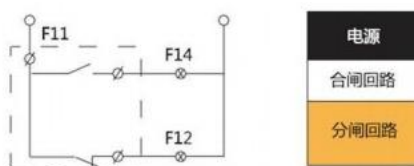
Wiring diagram of shunt tripper

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.

3) 辅助触头、报警触头/Auxiliary contact and alarm contact

表/Table 5辅助触头和报警触头的额定值/Specifications of auxiliary contact and alarm contact

名称/Name	壳架电流 Frame current (A)	约定发热电/Conventional thermal current, I_{th} (A)	AC400V时额定工作电流 / Rated operational current at AC400V, I_e (A)
辅助触头 Auxiliary contact	250	3	0.3
	400-630		0.4
报警触头 Auxiliary contact	250	3	0.3
	400-630		0.4

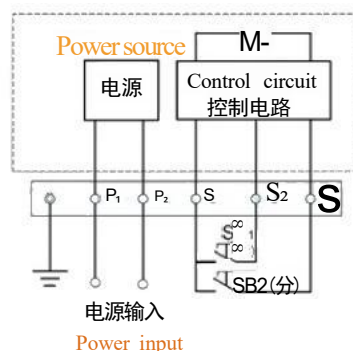


辅助触头接线图/Wiring diagram of auxiliary contact

4) 电动操作机构/Motor-operated mechanism

在外加电源情况下，可通过电动操作机构对断路器进行合、分操作。

Closing and opening of breaker can be realized through Motor-operated mechanism with additional power supply.



电动操作机构接线图/ Wiring diagram of motor-operated mechanism

5) 手动操作机构安装前，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100 mm；

Before installing the mechanism, first open holes at installation position of the operation handle in switch cabinet door. The distance between hole center and hinge should not exceed 100mm;

把已在面盖上固定好操作机构的断路器安置于安装板上，并稍作固定；

Install the breaker which has been fixed with the operation mechanism on surface cover on the installation board and fasten it slightly;

把操纵杆方轴固定于操作机构上安置方轴的方孔内；

Fasten the square shaft of the operation lever in square holes of the operation mechanism;

关上开好孔的门板，调整断路器的位置，使方轴中心与手柄开孔中心一致；

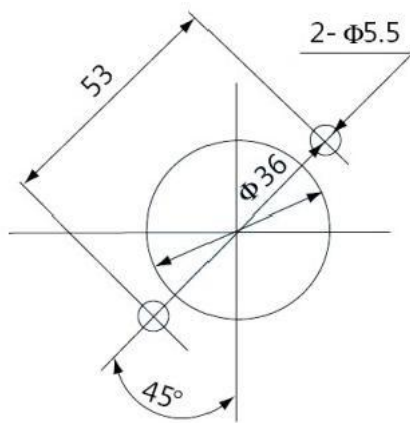
Close the door panel with holes, adjust position of breaker to align the shaft center with handle hole center;

打开开关柜门板，当转动手柄“OFF”指示在水平位置时固定好手柄；

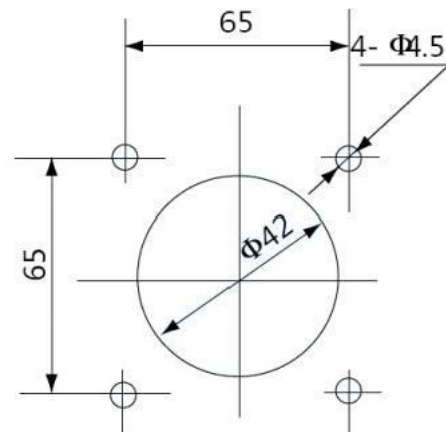
Open the door panel of switch cabinet. Rotate the handle to horizontal OFF position and fasten it there.

合上安装好转动手柄的开关柜门板，试着操作手柄，转动应灵活自如，并且手柄在水平位置时断路器应分闸，手柄在垂直位置时，断路器应合闸；

Close the door panel after installing the handle. Try to rotate the handle to see if it can rotate freely and if the breaker opens when it is in horizontal position and close when in vertical position.



A 型手柄开孔图



F 型手柄开孔图

9、使用与维护 Usage and maintenance

使用/Usage

- 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。

Do not adjust the characteristic and accessories of the breaker by yourself.

- 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。

The handle of the breaker can be placed in three position which are CLOSED, OPEN and FREE TRIP individually. When the handle is in the position of FREE TRIP. It should be turned in direction of OPEN at this moment. Then the breaker can be re-latched and closed.

- 3) 维护检查必须有专业技术人员负责。

Maintenance checks should be done by specialized technical personnel.

- 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。

User should use internal and external accessories provided by Nader so as to endure their quality; Nader should not be held reliable for purchase of accessories from other companies or authorized modifications.

维护/maintenance

◆维护检查必须有专业技术人员负责。

Maintenance checks should be done by specialized technical personnel.

◆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。

User should use internal and external accessories provided by Nader so as to endure their quality; Nader should not be held reliable for purchase of accessories from other companies or authorized modifications.

在执行维护操作前，必须先完成下列操作/Follow following steps before conducting maintenance:

1)使断路器分闸)/Open the breaker;

2) 断开电源与断路器的连接(包括主电路、辅助电路);

Disconnect power supply and breaker (including main circuit and auxiliary circuits);

3)将断路器从安装位置上卸下(一般用于插入式，固定式最好也如此)。

Remove the breaker from its installation position (normally for plug-in installation; it is recommended to do so for a fixing one).

断路器维护在正常操作条件下每年一次，在非正常条件下每半年一次，以下为维护内容/Maintenance of breaker is carried out yearly under normal use and every six months under abnormal use. The maintenance include following procedures:

1) 再扣断路器，合、分断路器，在断路器合闸时用脱扣按钮使断路器脱扣，往复操作5次，断路器应能可靠进行再扣、合、分、脱扣动作；

Re-trip the breaker, close and open the breaker, use tripping button to trip the breaker when it is closed; repeat for 5 times to check that the breaker can reliably re-trip, open, close and trip;

2 清除断路器表面及连接处的灰尘(用清洁、干燥的抹布擦拭);

Clean dust on breaker surface and connections(wipe with clean and dry cloth);

3) 清洁隔弧板，如必要则需要更换隔弧板；

Clean the flash barrier; replace it if necessary;

4) 绝缘测试(见5.1)/carry out insulation test (see Section 7.1).

5) 检查所有连接情况，用砂布擦除氧化物，用可溶解剂清洁，拧紧螺栓和螺母；

Check condition of all connections. Wipe away oxidations with abrasive cloth and clean with soluble agent. Screw bolts and nuts tight;

6) 如果断路器还装有其它内、外部附件，应逐一检查各个附件，以确保其处于正常工作状态。

If other internal or external accessories are installed in the breaker, check them one by one to ensure they are in normal working condition.

(按照8附件说明详细内容进行测试/carry out test according to detailed accessory descriptions).

10、注意事项 Precautions

1) 安装注意事项/Precautions in installation.

- a) 断路器本体固定在安装板上/Breaker body,bottom plate are mounted on the installation board.
- b) 与主电路连接必须由具有专业资格的人员进行配线作业；确认输入电源处在完全断开的情况下，才能进行配线作业；必须安装本体后再进行配线；断路器1、3、5端子接至变压器侧，2、4、6端子接至逆变器侧。

Connection with the main circuit,Wiring should be done by professional qualified personnel;Wiring should be done after confirmation of complete disconnection of input power supply;Wiring should be done after installation of breaker body.circuit breaker terminal side of 1,3,5 connected to the transformer,side of 2,4,6 connected to the inverter.

2) 运行注意事项/Precautions in operation

- a) 湿手不能操作断路器，否则可能发生电击事故。

Do not operate the breaker with wet hands,or electric shock would be resulted.

- b) 断路器不能频繁操作，否则会缩短断路器的使用寿命。

Frequent operation will shorten service life of the breaker

- c) 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。

For breaker with motor-operated mechanism,after it trips,the motor-operated mechanism should re-trip the breaker before it can be closed.

3) 保修期与售后服务/Aftersales service and warranty

本产品是在完善的品质管理体系下制造的，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 sophisticated quality management system.In case of fault,following warranty and after services clauses are applicable:

4) 保修期/Warranty

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18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。

On the premise of user's compliance with reservation and use specifications of the breaker, for breakers whose delivery date is within 18 months from now and whose seals are intact, Nader will repair or replace any of these breakers which are damaged or cannot work normally due to manufacture quality. However, as for faults caused by following reasons, Nader would repair or replace the breaker with a charge even it is still in warranty.

- a) 由于使用错误、自行改装及不适当的维修等原因;
Misuse, unauthorized modifications and improper repair, etc.
 - b) 超过标准规范的要求使用;
Use during which standards and specifications are violated.
 - c) 购买后由于摔落及安装过程中发生损坏等原因;
Damages caused by falling or improper installation, etc.
 - d) 地震、火灾、雷击、异常电压、其他天灾及二次灾害等原因
Natural disasters and secondary disasters such as earthquake, fire, thunder and abnormal voltage, etc.
- 5) 售后服务/Aftersales service
- a) 出现故障时, 请与供货商或本公司售后服务部门联系;
Contact distributor or Nader aftersales department in case of breaker fault.
 - b) 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;
Breakers in warranty will be repaired or replaced; for faults caused by manufacture of Nader, product will be repaired for free or even replace with a new one.
 - c) 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。
Repair or replacement of breaker with expired warranty: paid repair will be done after which breaker can function normally, or the breaker will be replaced with a charge.

11、订货须知 Ordering instructions

- 1) 用户务必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 confirm that he or she is familiar with technical files of this product, and place order by the “Ordering Specifications” form according to future application of breaker.
- 2) 如用户订货时对智能控制器保护参数不作要求, 本公司将按“智能控制器出厂整定值”表配置。
If customer has not put forward any requirement for protection parameters of intelligent controller, Nader will deliver the product in configurations specified in “Intelligent Controller Factory Settings”.