

	文件名称 Document name	使用说明书 Operation instruction	文件编号 Document No.	NDT240018
	产品型号及名称 Product Model and Name	NDD1 系列电动机保护断路器 NDD1 thermal overload relay	版 次 Version	第 5 版 Version 5
			实施日期 Implementation Date	20181015

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NDD1 系列

NDD1 series

电动机保护断路器使用说明书

Motor protection circuit breaker operation instruction

Nader 良信电器

编制/日期 Prepared by/Date	夏昌慧 Xiachanghui 20181015	审核/日期 Reviewed by/Date	路晓苗 Luxiaomiao 20181015	批准/日期 Approved by/Date	刘长友 Liuchangyou 20181015
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文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
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修订记录

Revision History

版次 Version	修订内容 Revision Description	修订日期 Revision Date	修订人员 Revised By
0	新增 New addition	2012-3-26	谢强强 Xieqiangqiang
1	NDD1-32/80 文件合并内容 Merged NDD1-32/80 document contents	2012-3-26	谢强强 Xieqiangqiang
2	产品工作环境温度、海拔范围修订 Amendment of the product's operating ambient temperature and altitude range	2013-11-01	陈华勇 Chenhuayong
3	VI 版式变更 VI format change	2016-04-25	陈华勇 Chenhuayong
4	型号变更 The model change	2017-01-19	李祥雨 Lixiangyu
5	1) 增加螺钉接线扭矩; 2) 修订表 2、3 中延 时保护特性 1.5 In 的预定时间。 1) Add screw connection torque; 2) Revision table2、3 Time-delay protection features 1.5 In Preset Time	2018-10-15	夏昌慧 Xiachanghui

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
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一、适用范围与用途 Application Scope and Purpose

NDD1 系列电动机保护断路器（以下简称断路器）适用于接入交流 50/60Hz，额定电压至 690V，额定电流至 80A 的电路中，作为三相笼型异步电动机过载、短路和三相不平衡保护及不频繁的起动控制之用，可用作配电线路保护和频繁的负载转换，还可当隔离器使用。断路器同时还能与辅助触头、报警触头、分励和欠压脱扣器附件配合使用，实现远程控制和指示。

The NDD1 series of motor protection circuit breakers (referred to as circuit breakers) apply to be put in the circuit with the AC 50/60Hz, the rated voltage to 690V and the rated current to 80A for the overload, short circuit and three-phase imbalance protection as well as infrequent starting control of the three-phase cage asynchronous motor, which are also used as isolators for the distribution line protection and infrequent load transfer. The circuit breakers can also be used with auxiliary contacts, alarm contacts, shunt and under-voltage release accessories for achieving the remote control and indication.

二、型号说明 Model Description



注：产品的极数只有三相/Note: There are three poles for the product pole number.

三、技术参数 Technical Parameters

表 1 基本技术参数/Basic Technical Parameters

参数		型号/ Model	NDD1-32	NDD1-80
使用类别 Utilization category		GB14048.2	A	A
		GB14048.4	AC-3	AC-3
额定工作电压/Rated working voltage (V)			380、400、415、690	380、400、415、690
额定绝缘电压/Rated insulation voltage (V)			690	690
额定工作频率/Rated operational frequency (Hz)			50/60	50/60
额定冲击耐受电压/Rated impulse withstand voltage (kV)			6	6
单极功耗/Power consumption of a pole (W)			2.5	8
电气寿命/Electric durability			60000	10000
机械寿命/Mechanical durability			60000	17000
操作频率/Frequency of operation (times/h)			120	120
脱扣级别/Tripping level			10A	10A
接线端子可接线能力 mm ² (min/max) Connection capacity of terminals	硬线/Solid cable		2×1 / 2×6	1×2.5 / 1×35
	无接线端子的软线 Flexible cable without cable end		2×1.5 / 2×6	1×4 / 2×16
	带接线端子的软线 Flexible cable with cable end		2×1 / 2×4	
接线扭矩 (N.m) /Connection torque	断路器主电路/ Circuit break main contactor		1.5	8
	断路器附件/ Circuit break assessories		0.8	

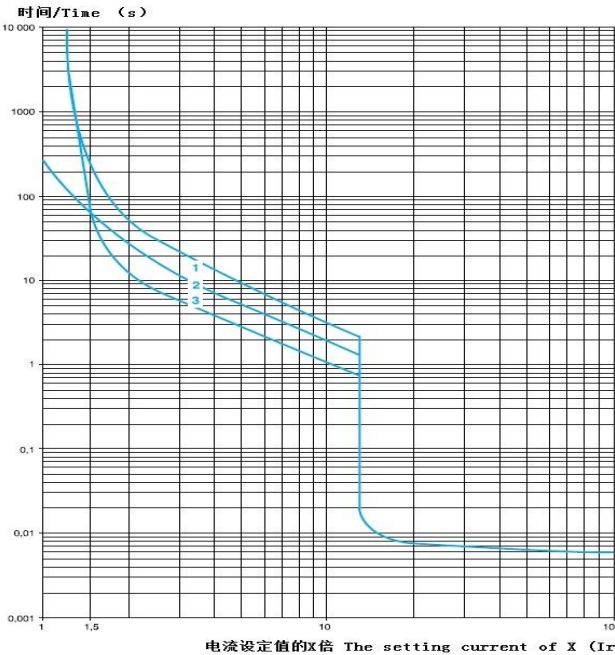
文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
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表 2 NDD1-32 动作特性参数表/Action Features Parameters

项目 Item	序号 No.	试验电流 Test Current	预定时间 Preset Time	起始状态 Initial State	预期结果 Expected Results	附注 Notes
延时保护特性 20±2℃ Time-delay protection features 20±2℃	a	1.05I _n	t≥2h	冷态 Cold state	不脱扣 Non-tripping	
	b	1.2I _n	t<2h	热态 Warm state	脱扣 Tripping	紧接 a 项试验 5s 内电流稳定升到规定值 The current rises to the specified value steadily within 5s following the test in Item a
	c	1.5I _n	t≤4min	热态 Warm state	脱扣 Tripping	1 倍整定电流达到热平衡后开始 The 1x setting current starts after reaching the thermal balance
	d	7.2I _n	2s<t≤10s	冷态 Cold state	脱扣 Tripping	脱扣等级 10A 级 Tripping level: Level 10A
瞬时保护特性 Instantaneous protection features	e	7.68I _n	t≥0.2s	冷态 Cold state	不脱扣 Non-tripping	I _n <0.25A
		11.52I _n	t<0.2s	冷态 Cold state	脱扣 Tripping	
	f	9.6I _n	t≥0.2s	冷态 Cold state	不脱扣 Non-tripping	I _n ≥0.25A
		14.4I _n	t<0.2s	冷态 Cold state	脱扣 Tripping	
断相保护 20±2℃ Open-phase protection 20±2℃	g	两极 1.0I _n 一极 0.9I _n 2P 1.0I _n 1P 0.9I _n	t≥2h	冷态 Cold state	不脱扣 Non-tripping	
	h	两极 1.15I _n 一极不通电 2P 1.15I _n 1P without electricity	t<2h	热态 Warm state	脱扣 Tripping	紧接 g 项试验 5s 内电流稳定升到规定值 The current rises to the specified value steadily within 5s following the test in Item g

NDD1-32 电流时间特性曲线 20±2℃

NDD1-32 current/time characteristic curve 20±2℃



- 1、从冷态开始 3 极
3P starting from the cold state
- 2、从冷态开始 2 极
2P starting from the cold state
- 3、从热态开始 3 极
3P starting from the warm state

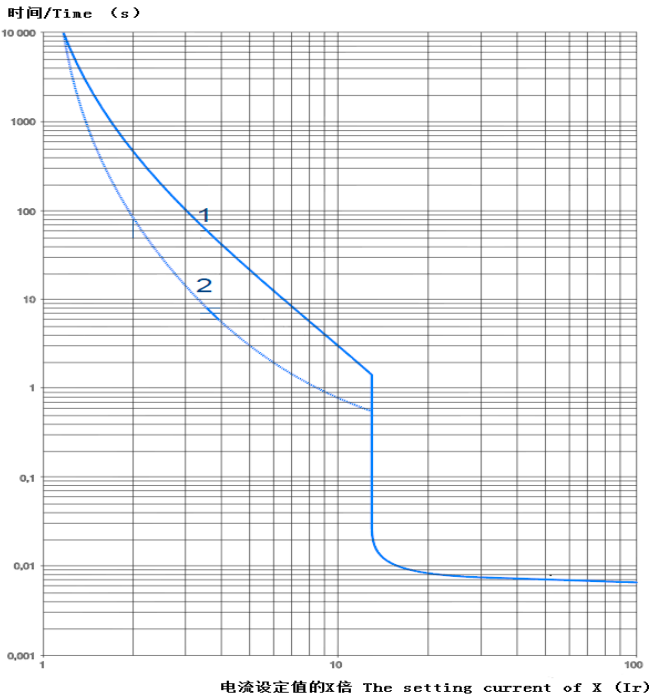
文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
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表 3 NDD1-80 动作特性参数表/Action Features Parameters

项目 Item	序号 No.	试验电流 Test Current	预定时间 Preset Time	起始状态 Initial State	预期结果 Expected Results	附注 Notes
延时保护特性 20±2℃ Time-delay protection features 20±2℃	a	1.05I _n	t≥2h	冷态 Cold state	不脱扣 Non-tripping	
	b	1.2I _n	t<2h	热态 Warm state	脱扣 Tripping	紧接 a 项试验 5s 内电流稳定升到规定值 The current rises to the specified value steadily within 5s following the test in Item a
	c	1.5I _n	t≤4min	热态 Warm state	脱扣 Tripping	1 倍整定电流达到热平衡后开始 The 1x setting current starts after reaching the thermal balance
	d	7.2I _n	2s<t≤10s	冷态 Cold state	脱扣 Tripping	脱扣等级 10A 级 Tripping level: Level 10A
瞬时保护特性 Instantaneous protection features	e	9.6I _n	t≥0.2s	冷态 Cold state	不脱扣 Non-tripping	
		14.4I _n	t<2s	冷态 Cold state	脱扣 Tripping	

NDD1-80 电流时间特性曲线 20±2℃

NDD1-80 current/time characteristic curve 20±2℃



- 1、从冷态开始 3 极
3P starting from the cold state
- 2、从热态开始 3 极
3P starting from the warm state

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
----------------------	-----------	---------------	--------------------	-----------------------------	----------

表 4 短路分断能力/Short-circuit breaking capacity

产品型号 Model	电流整定范围 (A) Current setting range	分断能力/Breaking capacity (kA) 380V/400V/415V		分断能力/Breaking capacity (kA) 690V	
		额定极限短路分断能力 /Ultimate short-circuit breaking capacity (Icu)	额定运行短路分断能力/Service short-circuit breaking capacity (Ics)	额定极限短路分断能力 /Ultimate short-circuit breaking capacity (Icu)	额定运行短路分断能力/Service short-circuit breaking capacity (Ics)
NDD1-32A01	0.1~0.16	80	80	80	80
NDD1-32A02	0.16~0.25	80	80	80	80
NDD1-32A03	0.25~0.4	80	80	80	80
NDD1-32A04	0.4~0.63	80	80	80	80
NDD1-32A05	0.63~1	80	80	80	80
NDD1-32A06	1~1.6	80	80	80	80
NDD1-32A07	1.6~2.5	80	80	3	2.25
NDD1-32A08	2.5~4	80	80	3	2.25
NDD1-32A10	4~6.3	80	80	3	2.25
NDD1-32A14	6~10	80	80	3	2.25
NDD1-32A16	9~14	15	7.5	3	2.25
NDD1-32A20	13~18	15	7.5	3	2.25
NDD1-32A21	17~23	15	6	3	2.25
NDD1-32A22	20~25	15	6	3	2.25
NDD1-32A32	24~32	10	5	3	2.25
NDD1-80A40	25~40	35	18	4	3
NDD1-80A63	40~63	35	18	4	3
NDD1-80A80	56~80	15	8	2	2

四、工作环境 Operating Environment

4.1 环境温度： 储存-40℃~+80℃；运行-30℃~+70℃；温度补偿-5℃~+40℃。

Ambient temperature: Storage: -40℃~+80℃; operating: -30℃~+70℃; temperature compensation: -5℃~+40℃.

4.2 海拔： 安装地点的海拔不超过 3000m。

Altitude: The altitude of the installation site doesn't exceed 3,000m.

4.3 环境条件： 应无会引起爆炸的介质，也无会腐蚀金属和破坏绝缘的有害气体和导电尘埃。

Environmental conditions: There shall be free from explosion hazardous media, harmful gases with metal corrosion and insulation destruction and conductive dusts.

4.4 污染等级 Pollution level: 3

五、断路器配合的附件 Supporting Accessories of Circuit Breakers

表 4 NDD1-32 断路器附件/Circuit Breaker Accessories

附件名称 Accessory name	安装位置 Installation position	附件代号 Accessory code	结构说明 Structure description	备注 Remarks
辅助触头 Auxiliary contact	顶装 Top mounting	F1-11D/D1-32	一常开、一常闭 One NO, one NC	每台断路器只能装 1 只 1 set can only be installed for each circuit breaker
		F1-20D/D1-32	二常开 Two NO	
	左装	F1-11Z/D1-32	一常开、一常闭	每台断路器最多装 2 只

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
----------------------	-----------	---------------	--------------------	-----------------------------	----------

	Left mounting		One NO, one NC 二常开 Two NO	Up to 2 sets can be installed for each circuit breaker
		F1-20Z/D1-32		
辅报触头 Auxiliary alarm contact	左装 Left mounting	FB1-1010Z/D1-32	报警一常开, 辅助一常开。 Alarm one NO, Auxiliary one NO.	每台断路器只能装 1 只 1 set can only be installed for each circuit breaker
		FB1-1001Z/D1-32	报警一常开, 辅助一常闭。 Alarm one NO, Auxiliary one NC.	
		FB1-0110Z/D1-32	报警一常闭, 辅助一常开。 Alarm one NC, Auxiliary one NO.	
		FB1-0101Z/D1-32	报警一常闭, 辅助一常闭 Alarm one NC, Auxiliary one NC.	
分励脱扣器 Shunt release	右装 Right mounting	FT1-11AY/D1-32	110~127V 50/60Hz	每台断路器只能装 1 只分励脱 扣器或者欠压脱扣器 1 shunt release or under-voltage release can only be installed for each circuit breaker
		FT1-22AY/D1-32	220~240V 50/60Hz	
		FT1-38AY/D1-32	380~415V 50/60Hz	
欠压脱扣器 Under-voltage release	右装 Right mounting	Q1-11AY/D1-32	110~127V 50Hz	
		Q1-20AY/D1-32	200 50Hz 200~220V 60Hz	
		Q1-22AY/D1-32	220~240V 50Hz 240~265V 60Hz	
		Q1-38AY/D1-32	380~415V 50Hz 400~440V 60Hz	
		Q1-41AY/D1-32	415~440V 50Hz 440~480V 60Hz	
		Q1-44AY/D1-32	440V 50Hz 440~480V 60Hz	
防水盒 Water-proof box		Z1-03/D1-32	IP55	断路器装防水盒内 The circuit breaker is installed in the water-proof box
信号灯 Signal light		XD1-G22/D1-32	220V~240V 50/60 Hz	绿灯/Green light
		XD1-G38/D1-32	380V~440V 50/60 Hz	绿灯/Green light

注：断路器左侧可同时安装 1 只左装附件产品 F1、FB1，要先装 FB1，后装 F1。

Note: Two sets of left-mounting accessories F1 and FB1 can be installed on the left side of the circuit breaker at the same time, with FB1 to be installed first and then F1.

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
----------------------	-----------	---------------	--------------------	-----------------------------	----------

表 5 NDD1-32 附件工作电路参数/Operating Circuit Parameters of NDD1-32 Accessories

触头类型 Contact type	工作功率和电流/ Operating power and current 交流操作/ AC operation AC-15				工作功率和电流/ Operating power and current 直流操作/ DC operation DC-13			
	额定工作电压 Ue V Rated operating voltage Ue V	正常工作功率 VA Operating power under normal conditions VA	异常情况偶然通断容量 VA Accidental on-off capacity under abnormal conditions VA	额定工作电流 Ie A Rated operating current Ie A	额定工作电压 Ue V Rated operating voltage Ue V	正常工作功率 VA Operating power under normal conditions VA	异常情况偶然通断容量 VA Accidental on-off capacity under abnormal conditions VA	额定工作电流 Ie A Rated operating current Ie A
左装辅助触头 F1, FB1 的辅助触头 Left-mounting auxiliary contacts F1 and FB1	48	300	3000	6	24	140	240	6
	110/127	500	7000	4.5	48	240	360	5
	230/240	720	13 000	3.3	60	180	240	3
	380/415	850	15 000	2.2	110	140	210	1.3
	440	650	13 000	1.5	220	120	180	0.5
	500	500	12 000	1	-	-	-	-
	690	400	9000	0.6	-	-	-	-
辅报触头 FB1 Auxiliary alarm contact FB1	24	36	220	1.5	24	24	100	1
	48	48	300	1	48	15	50	0.3
	110/127	72	450	0.5	60	9	50	0.15
	220/240	72	450	0.3	-	-	-	-
顶装辅助触头 F1 Top-mounting auxiliary contact F1	24	48	480	2	24	24	100	1
	48	60	600	1.25	48	15	50	0.3
	110/127	120	1270	1	60	9	50	0.15
	220/240	120	2400	0.5	-	-	-	-

表 6 NDD1-80 断路器附件/Circuit Breaker Accessories

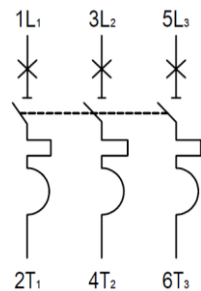
附件名称/Accessory name	附件规格/Accessory specification	与断路器配合 Coordination with the circuit breaker
右装辅助触头 Right-mounting auxiliary contact	F1-11Y/D1-80 (1NO,1NC) F1-21Y/D1-80 (2NO,1NC) F1-20Y/D1-80 (2NO)	同时仅能选1个 Only 1 can be selected simultaneously
报警触头/Alarm contact	BJ1-10/D1-80 (1NO) BJ1-01/D1-80 (1NC)	同时仅能选1个 Only 1 can be selected simultaneously
分励脱扣器/Shunt release	FT1-22A/D1-80, AC220/240V FT1-38A/D1-80, AC380/415V	
欠压脱扣器/Under-voltage release	Q1-22A/D1-80, AC220/240V Q1-38A/D1-80, AC380/415V	

表 7 NDD1-80 断路器附件的主要技术参数/Main Technical Parameters of NDD1-80 Circuit Breaker Accessories

辅助及报警触头 Auxiliary and alarm contacts	工作电路 Operating circuit	工作电压/工作电流 (额定值) Working voltage/current (rated value)	
F1、BJ1/D1-80	AC-15	48V/6A,220V~240V/3.5A,380V~415V/2A	
	DC-13	24V/6A,48V/5A,110V/1.5A	
脱扣器/Release	额定工作电压 Rated working voltage	闭合电压 Closing voltage	断开电压 Off voltage
FT1/D1-80	AC 220/240V; 380V/415V	—	70%~110%
Q1/D1-80	AC 220/240V; 380V/415V	85%~110%	70%~35%

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
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六、断路器接线图 Wiring Diagram of Circuit Breaker



七、外形尺寸和安装尺寸 External Dimensions and Installation Dimensions

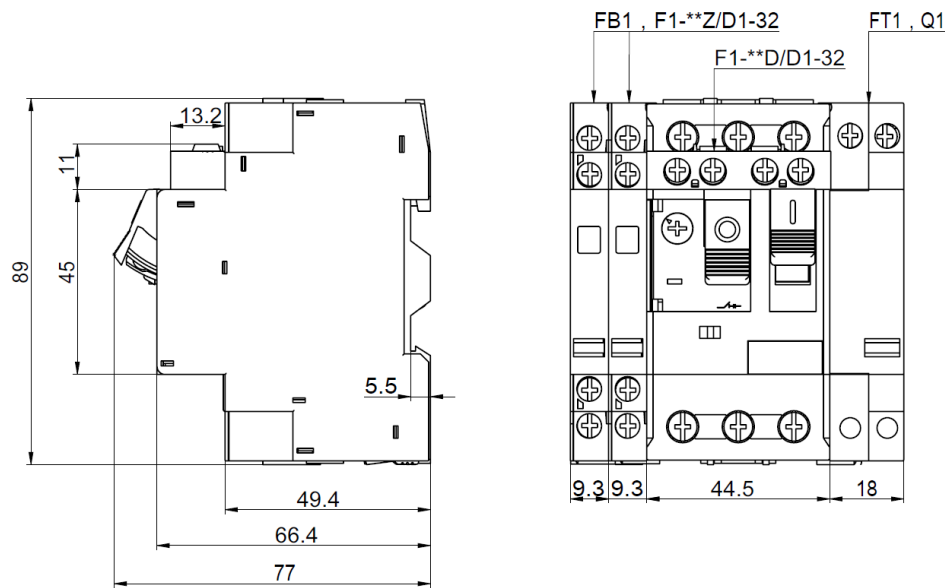


图 1 NDD1-32 断路器及配合侧挂附件的外形及安装尺寸

Figure 1 Outline and Installation Dimensions of NDD1-32 Circuit Breaker and Coordinated Side-hanging Accessories

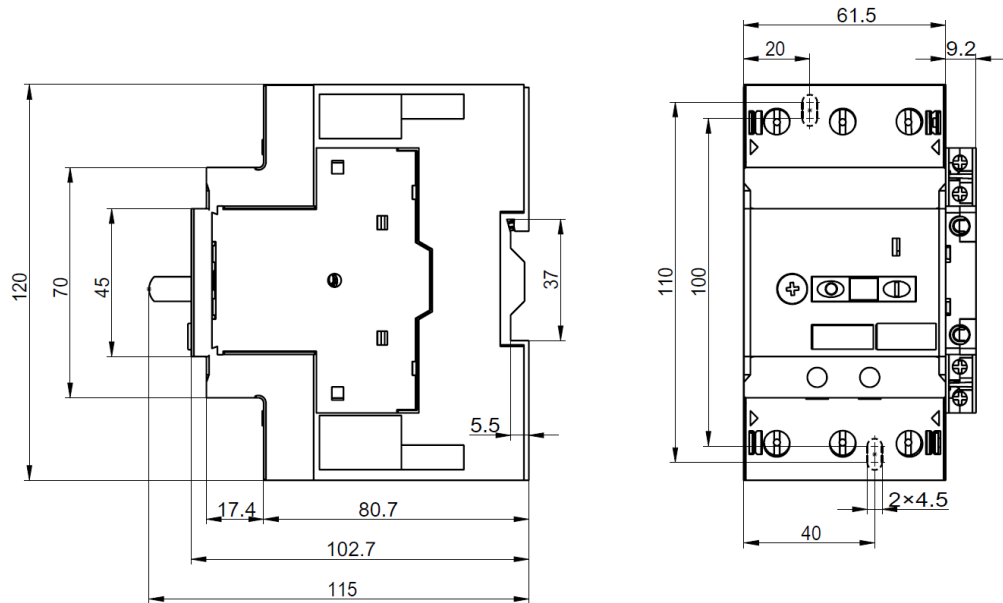


图 2 NDD1-80 断路器及配合侧挂附件的外形及安装尺寸

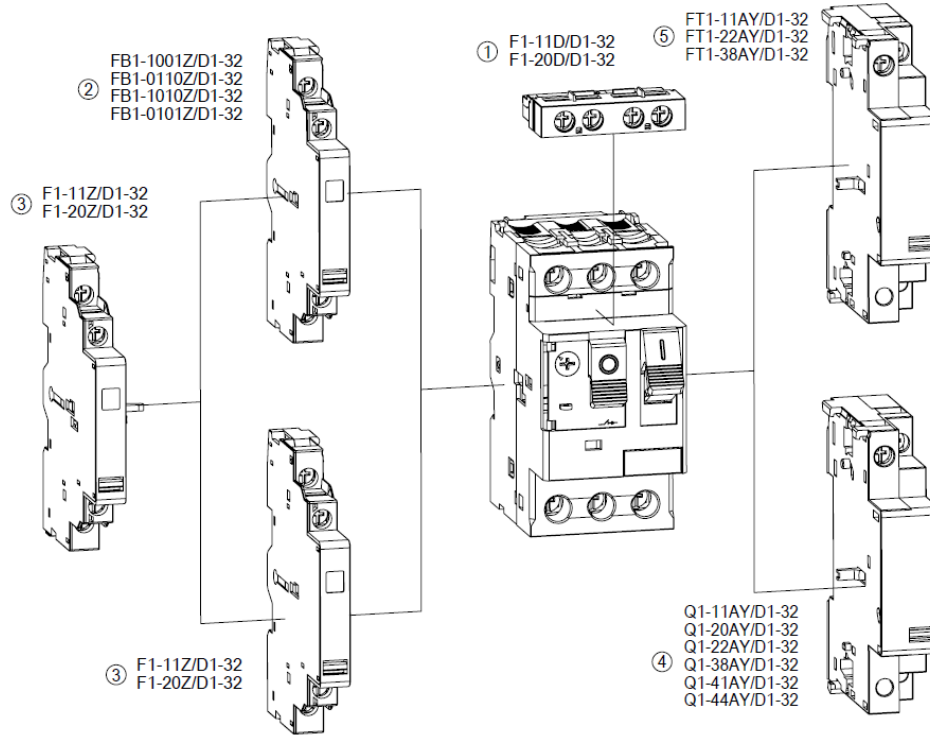
Figure 2 Outline and Installation Dimensions of NDD1-80 Circuit Breaker and Coordinated Side-hanging Accessories

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
----------------------	-----------	---------------	--------------------	-----------------------------	----------

八、附件的安装示意图 Installation Schematic Diagram of Accessories

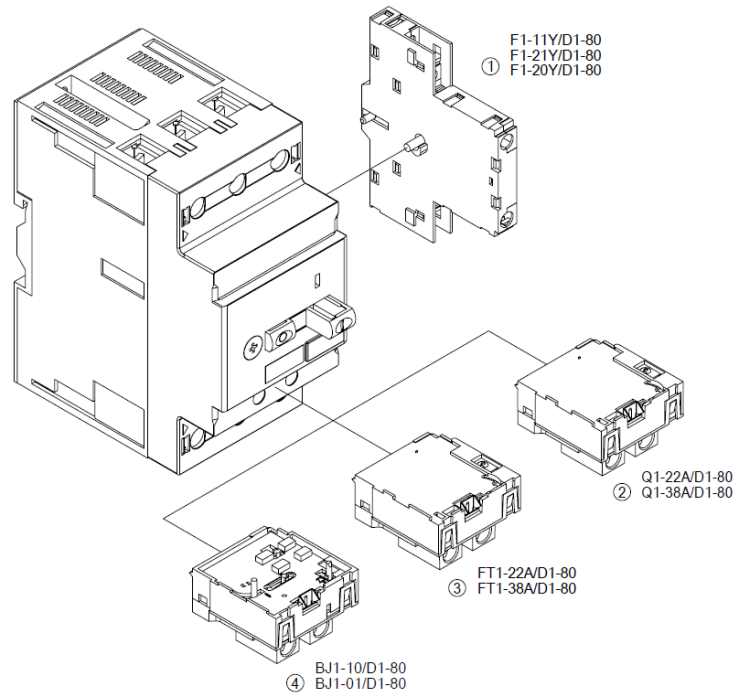
8.1 断路器与附件配合 (Q1、FT1、BJ1 附件不单独发货, 订购后由生产厂安装好后出厂)。

Coordination between the circuit breaker and accessories (Q1, FT1 and BJ1 accessories are not delivered separately, which will be and shipped from the factory upon installation after ordering).



NDD1-32 配合附件

NDD1-32 coordinated accessories

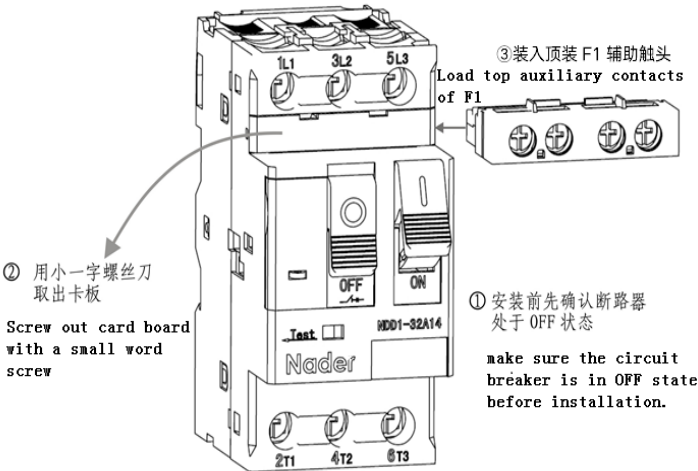


NDD1-80 配合附件

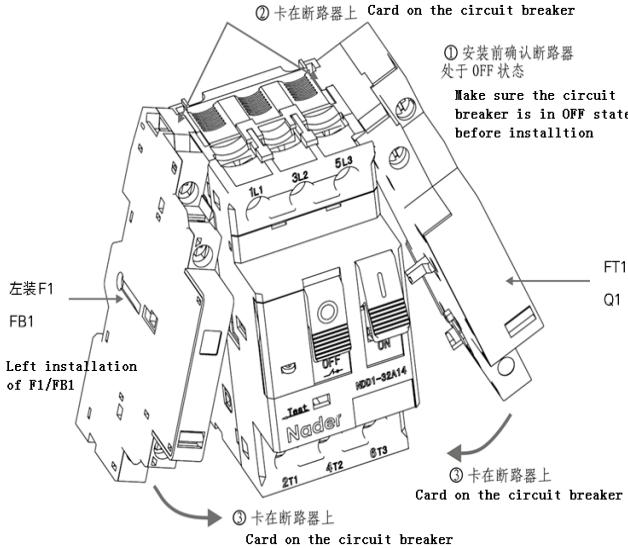
NDD1-80 coordinated accessories

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
----------------------	-----------	---------------	--------------------	-----------------------------	----------

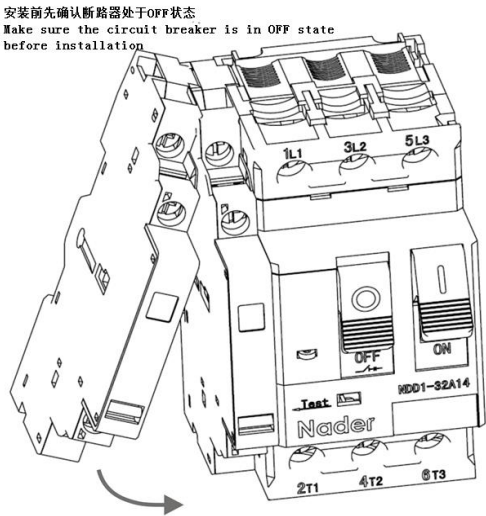
8.2 顶装辅助触头 Top-mounting auxiliary contact



8.3 左装辅助触头、辅报触头, Left-mounting auxiliary contact, auxiliary alarm contact, 右装分励、欠压脱扣器。right-mounting shunt and under-voltage releases.

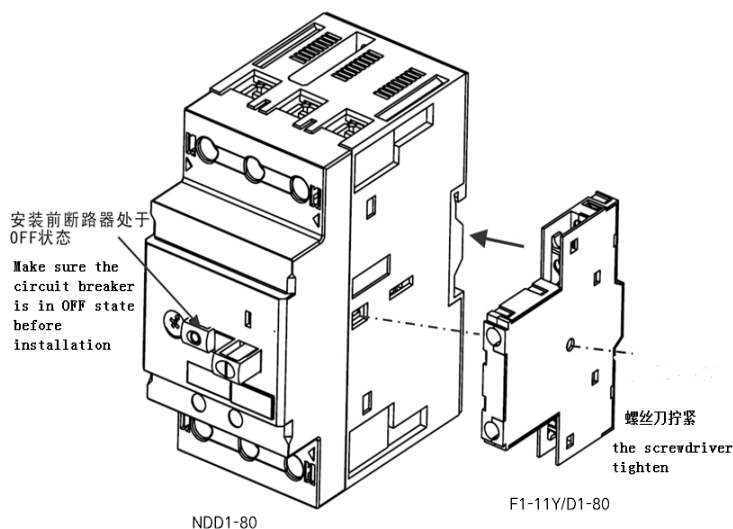


8.4 左装两只辅助触头 Two sets of left-mounting auxiliary contacts



文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
----------------------	-----------	---------------	--------------------	-----------------------------	----------

8.5 右装 NDD1-80 辅助触头 Right-mounting NDD1-80 auxiliary contact



九、安装条件 Installation Conditions

9.1 采用 TH35-7.5 标准安装导轨安装;

To be installed with the TH35-7.5 standard installation rail;

9.2 应安装使用在无明显摇动、冲击和振动的地方。

The product shall be installed and used in places without obvious shaking, impact or shock.

十、注意事项 Precautions

10.1 本断路器为免维护型，不得私自打开断路器进行维修，因私自拆开产品而引起的质量问题，责任自负；

This circuit breaker is maintenance-free. Therefore, do not open it for maintenance without authorization. A user must be responsible for addressing a product issue that occurs because the user disassembles the product without approval;

10.2 安装接线可靠，应防止接线不良导致接线端子异常发热，引起产品误脱扣或受损；

Reliable installation wiring is required to prevent the abnormal heat at the terminals due to poor wiring, thus resulting in the wrong tripping or damage of the product;

10.3 当断路器因故障电流而断开时，应先排除故障后再使断路器重新合闸；

When the circuit breaker is off due to the fault current, make it on again after troubleshooting;

10.4 整定工作电流大、小值的调节旋钮，如果需要调节，则调节时不能超出大、小值刻度范围；

For the adjustment knobs of the setting working current values, do not exceed the scale range of the size value if adjustment is required;

10.5 对要求辅助及报警触头满足容量小于 15V, 30mA 以下条件使用时，应作为特殊要求沟通生产厂商。

For use of the product under the conditions that the auxiliary and alarm contacts shall meet the capacity of less than 15V, 30mA, it shall be treated as special requirements through communication with the manufacturer.

文件编号 Document No.	NDT240018	版次 Version	第 5 版 Version 5	实施日期 Implementation Date	20181015
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