

上海良信电器股份有限公司

**Shanghai Liangxin Electrical Co., Ltd.**

(NDD1 系列电动机保护断路器)

**(Product type& Product Name)**

## 产品规格书

## Product Specification

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| 1    | 表 4 分断能力提升到 100kA 的参数更新；<br>增加附件安装示意图；增加外形及安装尺寸<br>的公差 | 20221010   | 夏昌慧 | 曹艳阳 | 崔晓明 |
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## 1. 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、三相不平衡和断相保护及不频繁的起动控制之用，可用作配电线路保护和不频繁的负载转换，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 three-phase imbalance protection and phase interruption 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.

## 2. 产品图片/ Product Pictures

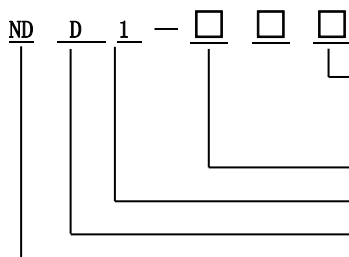


Figure 1 NDD1-32



Figure 2 NDD1-80

## 3. 规格型号说明/Model and implication



规格代号 Specification code  
操作方式代号, A 表示按键操作式  
Operation mode code, A representing the button operation mode  
壳架等级额定电流 (A) Rated current of housing (A)  
设计序号 Design SN  
电动机保护断路器 Motor protection circuit breaker  
“LAZZEN”牌低压电器 “LAZZEN” Low-voltage

## 4. 主要技术参数/ Main technical parameters

表 1 基本技术参数/Basic Technical Parameters

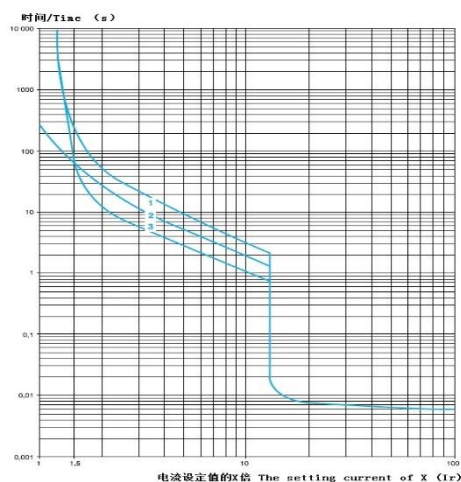
| 参数                                                                               |                                                 | 型号/ Model                                                  | NDD1-32         | NDD1-80         |
|----------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------|-----------------|-----------------|
| 使用类别<br>Utilization                                                              | 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<br>mm <sup>2</sup><br>(min/max)<br>Connection capacity<br>of terminals | 硬线/Solid cable                                  |                                                            | 2×1 / 2×6       | 1×2.5 / 1×35    |
|                                                                                  | 无接线端子的软线<br>Flexible cable without<br>cable end |                                                            | 2×1.5 / 2×6     | 1×4 / 2×16      |
|                                                                                  | 带接线端子的软线<br>Flexible cable with cable<br>end    |                                                            | 2×1 / 2×4       |                 |
| 符合标准<br>Standard of<br>Conformity                                                |                                                 | GB/T14048.2、GB/T14048.4、IEC60947-2、IEC60947-4-1、EN 60947-3 |                 |                 |

表 2 NDD1-32 动作特性参数表/Action Features Parameters

| 项目<br>Item                                                               | 序号<br>No. | 试验电<br>流<br>Test<br>Current | 预定时间<br>Preset<br>Time | 起始状态<br>Initial<br>State | 预期结果<br>Expected Results | 附注<br>Notes                                                                                                        |
|--------------------------------------------------------------------------|-----------|-----------------------------|------------------------|--------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------|
| 延时保<br>护特性<br>20℃<br>Time-<br>delay<br>protectio<br>n<br>features<br>20℃ | a         | 1.05In                      | t ≥ 2h                 | 冷态<br>Cold state         | 不脱扣<br>Non-tripping      |                                                                                                                    |
|                                                                          | b         | 1.2In                       | t < 2h                 | 热态<br>Warm state         | 脱扣<br>Tripping           | 紧接 a 项试验 5s 内电流稳定升到规定值<br>The current rises to the specified value steadily within 5s following the test in Item a |
|                                                                          | c         | 1.5In                       | t ≤ 2min               | 热态<br>Warm state         | 脱扣<br>Tripping           | 1 倍整定电流达到热平衡后开始<br>The 1x setting current starts after reaching the thermal balance                                |
|                                                                          | d         | 7.2In                       | 2s < t ≤ 10s           | 冷态<br>Cold state         | 脱扣<br>Tripping           | 脱扣等级 10A 级<br>Tripping level: Level 10A                                                                            |
| 瞬时保<br>护特性<br>Instantan<br>eous<br>protectio<br>n<br>features            | e         | 7.68In                      | t ≥ 0.2s               | 冷态<br>Cold state         | 不脱扣<br>Non-tripping      | In ≤ 0.25A                                                                                                         |
|                                                                          |           | 11.52In                     | t < 0.2s               | 冷态<br>Cold state         | 脱扣<br>Tripping           |                                                                                                                    |
|                                                                          | f         | 9.6In                       | t ≥ 0.2s               | 冷态<br>Cold state         | 不脱扣<br>Non-tripping      | In > 0.25A                                                                                                         |
|                                                                          |           | 14.4In                      | t < 0.2s               | 冷态<br>Cold state         | 脱扣<br>Tripping           |                                                                                                                    |

|                                                    |   |                                                                    |             |                  |                     |                                                                                                                    |
|----------------------------------------------------|---|--------------------------------------------------------------------|-------------|------------------|---------------------|--------------------------------------------------------------------------------------------------------------------|
|                                                    |   | 14.4In                                                             | $t < 2s$    | 冷态<br>Cold state | 脱扣<br>Tripping      |                                                                                                                    |
| 断相保护<br>20±2℃<br>Open-phase<br>protection<br>20±2℃ | g | 两极<br>1.0In<br>一极<br>0.9In<br>2P<br>1.0In<br>1P<br>0.9In           | $t \geq 2h$ | 冷态<br>Cold state | 不脱扣<br>Non-tripping |                                                                                                                    |
|                                                    | h | 两极<br>1.15In<br>一极不通电<br>2P<br>1.15In<br>1P<br>without electricity | $t < 2h$    | 热态<br>Warm state | 脱扣<br>Tripping      | 紧接 g 项试验 5s 内电流稳定升到规定值<br>The current rises to the specified value steadily within 5s following the test in Item g |

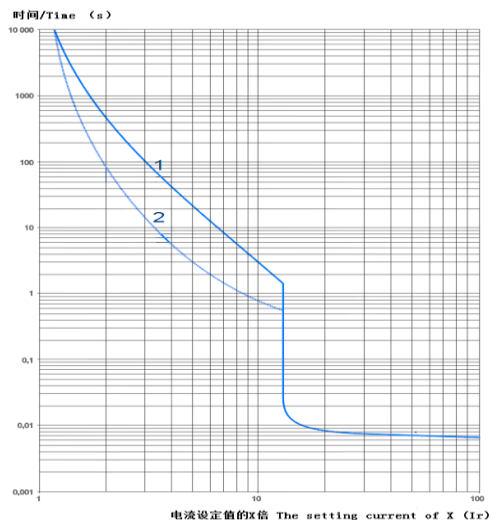
NDD1-32 电流时间特性曲线 20℃/NDD1-32 current/time characteristic curve 20℃



- 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

表 3 NDD1-80 动作特性参数表/Action Features Parameters

NDD1-80 电流时间特性曲线 20℃/NDD1-80 current/time characteristic curve 20℃



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

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

| 产品型号<br>Model | 电流整定<br>范围(A)<br>Current<br>setting<br>range | 分断能力/Breaking capacity (kA)<br>380V/400V/415V                              |                                                                       | 分断能力/Breaking capacity (kA)<br>690V                                    |                                                                       |
|---------------|----------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------|
|               |                                              | 额定极限短路分<br>断能力<br>/Ultimate<br>short-circuit<br>breaking<br>capacity (Icu) | 额定运行短路分<br>断能力/Service<br>short-circuit<br>breaking<br>capacity (Ics) | 额定极限短路分<br>断能力/Ultimate<br>short-circuit<br>breaking<br>capacity( Icu) | 额定极运行路分<br>断能力/Service<br>short-circuit<br>breaking<br>capacity( Ics) |
| NDD1-32A01    | 0.1~0.16                                     | 100                                                                        | 100                                                                   | 100                                                                    | 100                                                                   |
| NDD1-32A02    | 0.16~0.25                                    | 100                                                                        | 100                                                                   | 100                                                                    | 100                                                                   |
| NDD1-32A03    | 0.25~0.4                                     | 100                                                                        | 100                                                                   | 100                                                                    | 100                                                                   |
| NDD1-32A04    | 0.4~0.63                                     | 100                                                                        | 100                                                                   | 100                                                                    | 100                                                                   |
| NDD1-32A05    | 0.63~1                                       | 100                                                                        | 100                                                                   | 100                                                                    | 100                                                                   |
| NDD1-32A06    | 1~1.6                                        | 100                                                                        | 100                                                                   | 100                                                                    | 100                                                                   |
| NDD1-32A07    | 1.6~2.5                                      | 100                                                                        | 100                                                                   | 3                                                                      | 2.25                                                                  |
| NDD1-32A08    | 2.5~4                                        | 100                                                                        | 100                                                                   | 3                                                                      | 2.25                                                                  |
| NDD1-32A10    | 4~6.3                                        | 100                                                                        | 100                                                                   | 3                                                                      | 2.25                                                                  |
| NDD1-32A14    | 6~10                                         | 100                                                                        | 100                                                                   | 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                                                                     |

## 5. 正常工作环境/ Working conditions

5.1 环境温度: 储存-40℃~+80℃; 运行-20℃~+60℃; 温度补偿-5℃~+40℃。

Ambient temperature: Storage: -40℃~+80℃; operating: -20℃~+60℃; temperature compensation: -5℃~+40℃.

5.2 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.

5.3 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.

5.4 污染等级 Pollution level: 3

## 6. 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<br>Accessory name          | 安装位置<br>Installation position | 附件代号<br>Accessory code | 结构说明<br>Structure description                          | 备注<br>Remarks                                                                                                           |
|---------------------------------|-------------------------------|------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 辅助触头<br>Auxiliary contact       | 顶装<br>Top mounting            | F1-11D/D1-32           | 一常开、一常闭<br>One NO, one NC                              | 每台断路器只能装 1 只<br>1 set can only be installed for each circuit breaker                                                    |
|                                 |                               | F1-20D/D1-32           | 二常开<br>Two NO                                          |                                                                                                                         |
|                                 | 左装<br>Left mounting           | F1-11Z/D1-32           | 一常开、一常闭<br>One NO, one NC                              | 每台断路器最多装 2 只<br>Up to 2 sets can be installed for each circuit breaker                                                  |
|                                 |                               | F1-20Z/D1-32           | 二常开<br>Two NO                                          |                                                                                                                         |
| 辅报触头<br>Auxiliary alarm contact | 左装<br>Left mounting           | FB1-1010Z/D1-32        | 报警一常开，<br>辅助一常开。<br>Alarm one NO,<br>Auxiliary one NO. | 每台断路器只能装 1 只<br>1 set can only be installed for each circuit breaker                                                    |
|                                 |                               | FB1-1001Z/D1-32        | 报警一常开，<br>辅助一常闭。<br>Alarm one NO,<br>Auxiliary one NC. |                                                                                                                         |
|                                 |                               | FB1-0110Z/D1-32        | 报警一常闭，<br>辅助一常开。<br>Alarm one NC,<br>Auxiliary one NO. |                                                                                                                         |
|                                 |                               | FB1-0101Z/D1-32        | 报警一常闭，<br>辅助一常闭<br>Alarm one NC,<br>Auxiliary one NC.  |                                                                                                                         |
| 分励脱扣器<br>Shunt release          | 右装<br>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<br>或者欠压脱扣器<br>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<br>Under-voltage release  | 右装<br>Right mounting          | Q1-11AY/D1-32          | 110~127V 50Hz                                          |                                                                                                                         |
|                                 |                               | Q1-20AY/D1-32          | 200 50Hz<br>200~220V 60Hz                              |                                                                                                                         |
|                                 |                               | Q1-22AY/D1-32          | 220~240V 50Hz<br>240~265V 60Hz                         |                                                                                                                         |
|                                 |                               | Q1-38AY/D1-32          | 380~415V 50Hz<br>400~440V 60Hz                         |                                                                                                                         |
|                                 |                               | Q1-41AY/D1-32          | 415~440V 50Hz<br>440~480V 60Hz                         |                                                                                                                         |
|                                 |                               | Q1-44AY/D1-32          | 440V 50Hz<br>440~480V 60Hz                             |                                                                                                                         |
| 防水盒<br>Water-proof box          |                               | Z1-03/D1-32            | IP55                                                   | 断路器装防水盒内<br>The circuit breaker is installed in the water-proof box                                                     |
| 信号灯<br>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.



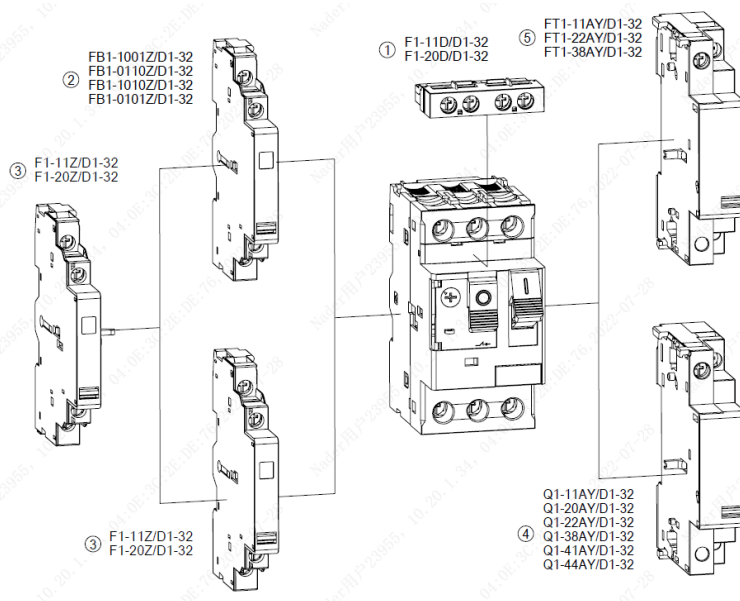


图 3 NDD1-32 断路器附件安装示意图

Figure 3 NDD1-32 Circuit Breaker Accessories

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

| 触头类型<br>Contact type                                                | 工作功率和电流/ Operating power and current<br>交流操作/ AC operation AC-15 |                                                           |                                                                          |                                             | 工作功率和电流/ Operating power and current<br>直流操作/ DC operation DC-13 |                                                           |                                                                          |                                             |
|---------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------|
|                                                                     | 额定工作电压 Ue V<br>Rated operating voltage Ue V                      | 正常情况工作功率 VA<br>Operating power under normal conditions VA | 异常情况偶然通断容量 VA<br>Accidental on-off capacity under abnormal conditions VA | 额定工作电流 Ie A<br>Rated operating current Ie A | 额定工作电压 Ue V<br>Rated operating voltage Ue V                      | 正常情况工作功率 VA<br>Operating power under normal conditions VA | 异常情况偶然通断容量 VA<br>Accidental on-off capacity under abnormal conditions VA | 额定工作电流 Ie A<br>Rated operating current Ie A |
| 左装辅助触头 F1, FB1 的辅助触头<br>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<br>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<br>F1                            | 24      | 48  | 480  | 2    | 24 | 24 | 100 | 1    |
|                                         | 48      | 60  | 600  | 1.25 | 48 | 15 | 50  | 0.3  |
| Top-mounting<br>auxiliary<br>contact F1 | 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<br>Coordination with the circuit breaker  |
|--------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------|
| 右装辅助触头<br>Right-mounting auxiliary contact | F1-11Y/D1-80 (1NO, 1NC)<br>F1-21Y/D1-80 (2NO, 1NC)<br>F1-20Y/D1-80 (2NO) | 同时仅能选1个<br>Only 1 can be selected simultaneously |
| 报警触头/Alarm contact                         | BJ1-10/D1-80 (1NO)<br>BJ1-01/D1-80 (1NC)                                 | 同时仅能选1个<br>Only 1 can be selected simultaneously |

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<br>Auxiliary and alarm contacts | 工作电路<br>Operating circuit | 工作电压/工作电流 (额定值)<br>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                                |

## 7. 产品外形及安装尺寸/ Outline and installation dimensions

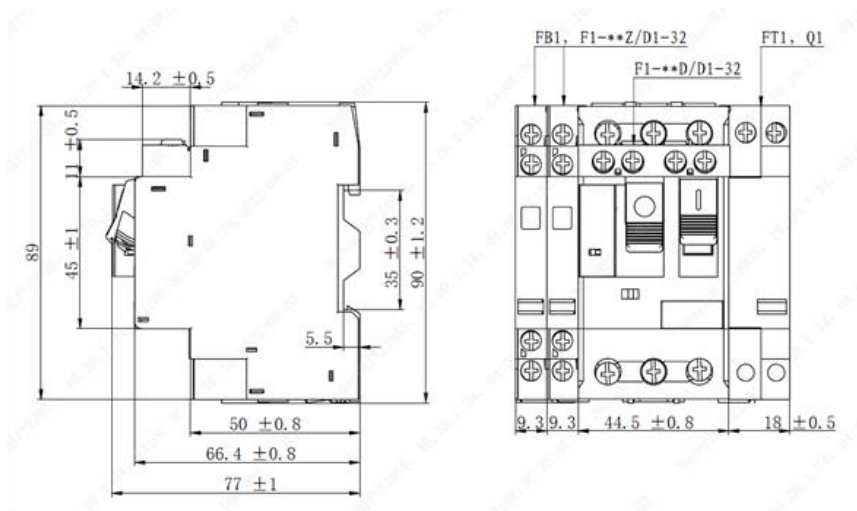


图 4 NDD1-32 断路器及配合侧挂附件的外形及安装尺寸

Figure 4 Outline and Installation Dimensions of NDD1-32 Circuit Breaker and Coordinated Side-hanging Accessories

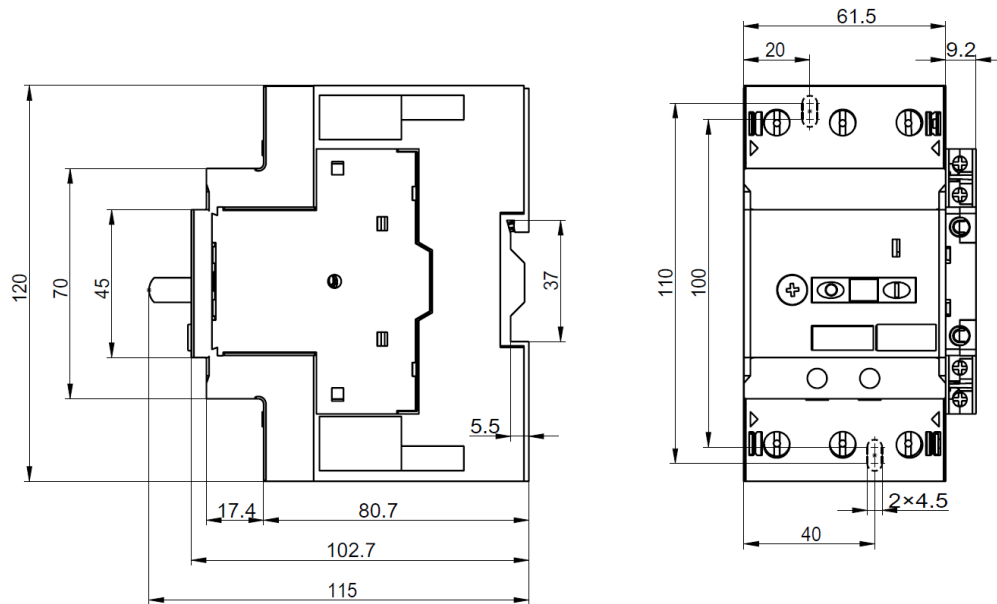
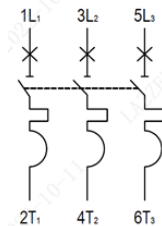


图 5 NDD1-80 断路器及配合侧挂附件的外形及安装尺寸

Figure 5 Outline and Installation Dimensions of NDD1-80 Circuit Breaker and Coordinated Side-hanging Accessories

## 8. 断路器接线图 Wiring Diagram of Circuit Breaker



## 9. 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.

## 10. 注意事项/ Notices

### 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 24V, 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 24V, 30mA, it shall be treated as special requirements through communication with the manufacturer.