





# NDB2LE Series Residual Current Oper- ated Circuit Breakers

Edition 2016

**Nader**

## 1. Product Overview

		
Product models	NDB2LE-25	NDB2LE-63
Rated voltage	AC230/240V	AC230/240V(1PN、2P), AC380/400/415V(3PN、3P、4P)
Rated current	10A、16A、20A、25A	1A、2A、4A、6A、10A、16A、 20A、25A、32A、40A、50A、63A
Rated residual operating current	30mA	30mA、50mA、100mA、300mA
Product certification	CCC	CCC

## 2. Product Features

### ● Scope of application and purpose

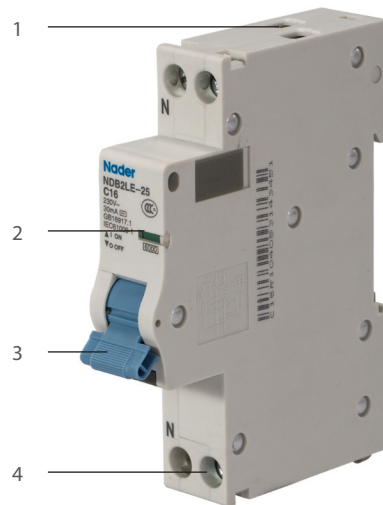
NDB2LE series residual current operated circuit breakers prevent earth leakage, direct or indirect contact electric shock and other faults, and are applicable to low-voltage terminal power distribution in such fields as industry, civil construction, energy, communication and infrastructure. They provide short-circuit protection, overload protection, leakage protection and isolation protection.

### ● Design features

- ◆ Design of visual window: Making the product opening/closing state clearly visible
- ◆ Auxiliary linkage mechanism: Signal output, opening and closing indication

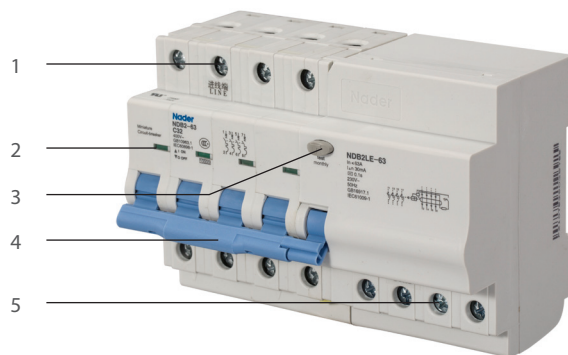
## ● Structural features

- ◆ NDB2LE-25 external structural drawing



- 1: Input terminal
- 2: Status indicator lamp
- 3: Operating handle
- 4: Outgoing line terminal

- ◆ NDB2(UL489) Structures and features of the product



- 1: Input terminal
- 2: Status indication window
- 3: Test button
- 4: Operating handle
- 5: Outgoing line terminal

## ● Meeting the following standards

- ◆ GB16917.1 Residual current operated circuit breakers (RCBO) with overcurrent protection for household and similar uses - Part 1: General rules
- ◆ IEC 61009-1 Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses(RCBOs)-Part 1 : General rules

## 3. Application Scope

### ● Applicable environment

- ◆ Temperature of the working environment/storage temperature
  - ★ The temperature of the working environment of NDB2LE-25 products is  $-25^{\circ}\text{C}\sim+55^{\circ}\text{C}$ , the benchmark setting temperature is  $+30^{\circ}\text{C}$ , and for different temperature correction coefficients, see Table (1).
  - ★ The temperature of the working environment of NDB2LE-63 products is  $-25^{\circ}\text{C}\sim+55^{\circ}\text{C}$ , the benchmark setting temperature is  $+30^{\circ}\text{C}$ , and for different temperature correction coefficients, see Table (2).
  - ★ Storage temperature:  $-30^{\circ}\text{C} \sim +70^{\circ}\text{C}$ 。
- ◆ Altitude  
Installation site altitude  $\leq 2,000\text{m}$ .
- ◆ Relative humidity for operation/Relative humidity for storage  
The relative humidity of atmosphere is not more than 50% at the ambient air temperature of  $+40^{\circ}\text{C}$ ; at a lower temperature, a higher relative humidity is allowed, for example, 90% at  $20^{\circ}\text{C}$ . Special measures should be taken to deal with occasional condensation due to temperature change.

### ● Pollution grade

2poles.

### ● Protection grade

Product protection grade: IP20.

### ● Installation way

Installed on the TH35mm  $\times$  7.5 standard guide rail

### ● Installation direction

- ◆ Vertical installation, with the gradient between the installation plane and the vertical plane  $\leq \pm 5^{\circ}$
- ◆ Horizontal installation.

### ● Environmental protection requirements

Products meet the RoHS standard.

## 4. Technical Characteristics of the Product

### 4.1 Description of specifications and models

Serial No.	Serial No. name	Code explanation	
1	Enterprise code	ND : <b>Nader</b> brand low-voltage apparatus	
2	Model	B : Miniature Circuit Breakers	
3	Design serial No.	2	
4	Electric leakage	L: Leakage function code (30mA)	L: Leakage function code (30mA, 50mA, 100mA, 300mA)
5	Tripper type	E: Electronic tripper	
6	Frame grade	25A	63A
7	Tripping type	C: Instantaneous tripping range 5In ~ 10In ;	B: Instantaneous tripping range 3In ~ 5In ; C: Instantaneous tripping range 5In ~ 10In ; D: Instantaneous tripping range 10In~14In;
8	Rated current	6A, 10A, 16A, 20A, 25A	1A, 2A, 4A, 6A, 10A, 16A, 20A, 25A, 32A, 40A, 50A, 63A
9	Number of poles	1PN	1PN、2P、3PN、3P、4P

## 4.2 Technical Parameters

Model	NDB2LE-25	NDB2LE-63
Rated voltage Ue	AC230/240V	AC230/240V(1PN、2P), AC380/400/415V(3PN、3P、4P)
Rated current In	6A、10A、16A、20A、25A	1A、2A、4A、6A、10A、16A、 20A、25A、32A、40A、50A、63A
Residual current tripper type	Type AC, electronic type	Type AC, electronic type
Rated residual operating current I <sub>Δn</sub> (mA)	30	30、50、100、300
Rated insulation voltage Ui	AC500V	AC500V
Rated ultimate short-circuit breaking capacity I <sub>cn</sub>	6kA	10kA
Rated running short-circuit breaking capacity I <sub>cs</sub>	6kA	10kA
Rated residual making and breaking capacity I <sub>Δm</sub>	500A	630A
Rated operating frequency (Hz)	50/60	50/60
Electromechanical life	10000次	10000次
Wiring mode and wiring capacity	<ul style="list-style-type: none"> <li>★ Tunnel type wiring terminal</li> <li>★ Terminal wiring area: Applicable to (1~16) mm<sup>2</sup> wires</li> <li>★ Terminal screw is M4, with torsional torque of 1.2N.m</li> </ul>	<ul style="list-style-type: none"> <li>★ Tunnel type wiring terminal</li> <li>★ Terminal wiring area: Applicable to (1~35) mm<sup>2</sup> wires</li> <li>★ Terminal screw is M5, with torsional torque of 2.5N.m</li> </ul>

### ● Temperature correction coefficient table (1)

Ambient temperature Correction current Rated current	-35	-30	-25	-20	-15	-10	-5	-0	5	10	15
10	12.25	12.08	11.91	11.73	11.55	11.37	11.18	11.00	10.80	10.61	1.06
16	19.42	19.15	18.89	18.62	18.35	18.07	17.79	17.50	17.21	16.92	3.22
20	24.33	24.00	23.67	23.33	22.98	22.63	22.27	21.91	21.54	21.17	6.42
25	30.42	30.00	29.58	29.16	28.73	28.29	27.84	27.37	26.93	26.46	11.01

Ambient temperature Correction current Rated current	20	25	30	35	40	45	50	55	60	65	70
10	10.41	10.21	10	9.79	9.57	9.35	9.13	8.89	8.66	8.41	8.16
16	16.62	16.31	16	15.68	15.36	15.03	14.69	14.34	13.98	13.62	13.24
20	20.79	20.40	20	19.60	19.18	18.76	18.33	17.89	17.43	16.97	16.49
25	25.98	25.50	25	24.49	23.98	23.45	22.91	22.36	21.79	21.21	20.61

● Temperature correction coefficient table (2)

Ambient temperature Correction current Rated current	-35	-30	-25	-20	-15	-10	-5	-0	5	10	15
1	1.27	1.25	1.23	1.21	1.19	1.17	1.15	1.13	1.10	1.08	1.06
3	3.89	3.83	3.76	3.70	3.64	3.57	3.50	3.44	3.37	3.30	3.22
6	7.70	7.58	7.46	7.34	7.21	7.09	6.96	6.83	6.70	6.56	6.42
10	13.89	13.62	13.35	13.07	12.81	12.53	12.23	11.93	11.63	11.33	11.01
16	20.78	20.43	20.08	19.75	19.40	19.05	18.70	18.33	17.96	17.58	17.20
20	25.67	25.28	24.88	24.47	24.06	23.64	23.22	22.78	22.34	21.89	21.43
25	32.21	31.72	31.22	30.70	30.18	29.65	29.10	28.55	27.98	27.41	26.82
32	41.04	40.46	39.82	39.17	38.51	37.84	37.15	36.47	35.75	35.03	34.30
40	51.63	50.86	50.04	49.21	48.37	47.51	46.63	45.74	44.83	43.90	42.95
50	64.92	63.97	62.92	61.86	60.77	59.67	58.54	57.40	56.23	55.05	53.81
63	83.48	82.06	80.64	79.19	77.72	76.22	74.70	73.14	71.54	69.91	68.24

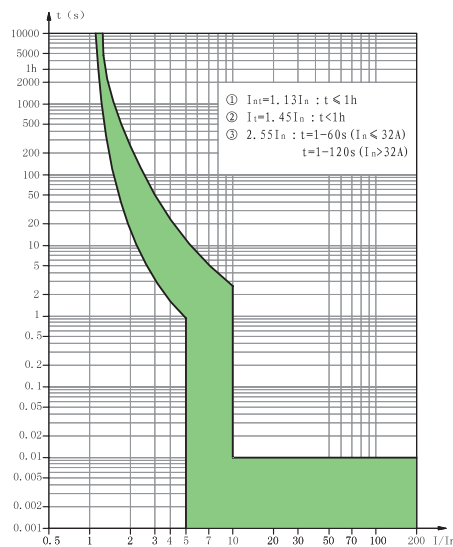
Ambient temperature Correction current Rated current	20	25	30	35	40	45	50	55	60	65	70
1	1.05	1.02	1.00	0.97	0.94	0.91	0.89	0.86	0.83	0.80	0.77
3	3.14	3.06	3.00	2.92	2.84	2.76	2.67	2.58	2.49	2.38	2.27
6	6.27	6.14	6.00	5.84	5.68	5.52	5.36	5.19	5.0	4.83	4.64
10	10.67	10.34	10.00	9.63	9.24	8.85	8.45	8.01	7.55	7.03	6.55
16	16.80	16.40	16.00	15.55	15.11	14.66	14.20	13.71	13.21	12.70	12.75
20	20.96	20.47	20.00	19.47	18.95	18.42	17.87	17.30	16.71	16.10	15.47
25	26.22	25.61	25.00	24.33	23.67	23.00	22.28	21.56	20.80	20.02	19.21
32	33.54	32.77	32.00	31.17	30.34	29.45	28.60	27.69	26.75	25.78	24.77
40	41.98	40.99	40.00	38.93	37.85	36.75	35.61	34.43	33.21	31.95	30.63
50	52.56	51.28	50.00	47.82	46.24	44.81	43.33	41.81	40.23	38.58	35.77
63	66.53	64.78	63.00	60.11	58.19	56.21	54.16	52.03	49.81	47.50	43.05

## 4.3 Product Tripping Curve

### ● NDB2LE-25 tripping curve

C-type curve

- ★ Protection of conventional load and power distribution cable
- ★ Rated current: 10A~25A
- ★ Tripping characteristic: Instantaneous tripping range  $5I_n \sim 10I_n$

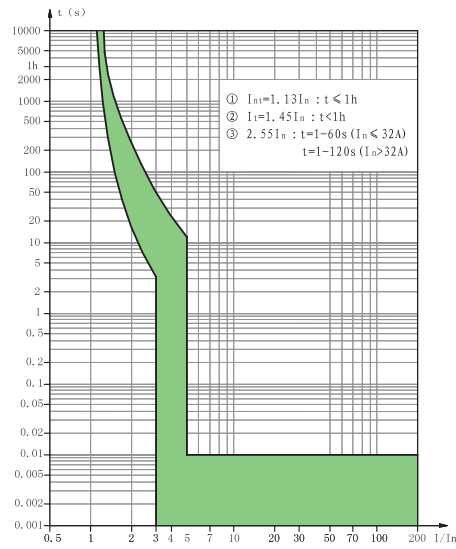




● NDB2LE-63 tripping curve

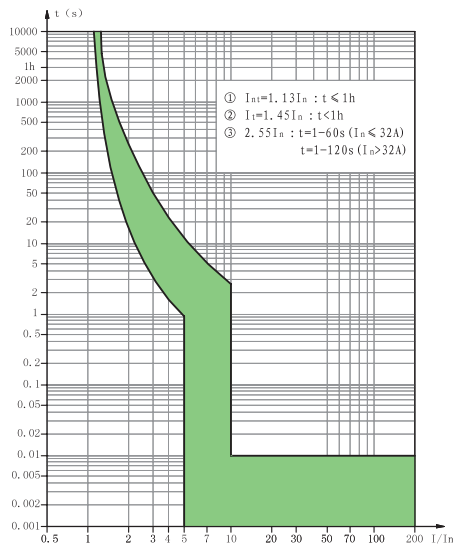
B-type curve

- ★ Protection of non-inductive or micro-inductive circuit
- ★ Rated current: 1A ~ 63A
- ★ Tripping characteristic: Instantaneous tripping range  $3I_n \sim 5I_n$



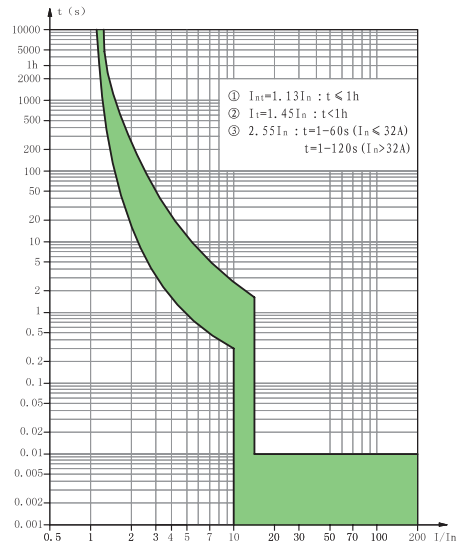
C-type curve

- ★ Protection of conventional load and power distribution cable
- ★ Rated current: 1A ~ 63A
- ★ Tripping characteristic: Instantaneous tripping range  $5I_n \sim 10I_n$



## D-type curve

- ★ Protection of industrial power distribution system
- ★ Rated current: 1A ~ 63A
- ★ Tripping characteristic: Instantaneous tripping range  $10I_n \sim 14I_n$



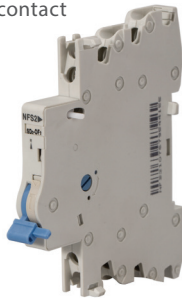
## 5. Accessories

### ● List of accessories

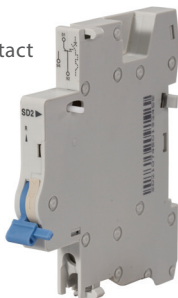
Auxiliary contact  
OF2



Auxiliary alarm contact  
NFS2



Alarm contact  
SD2



Overvoltage and  
under-voltage tripper  
NGQ2A



Shunt tripper  
MX+OF2



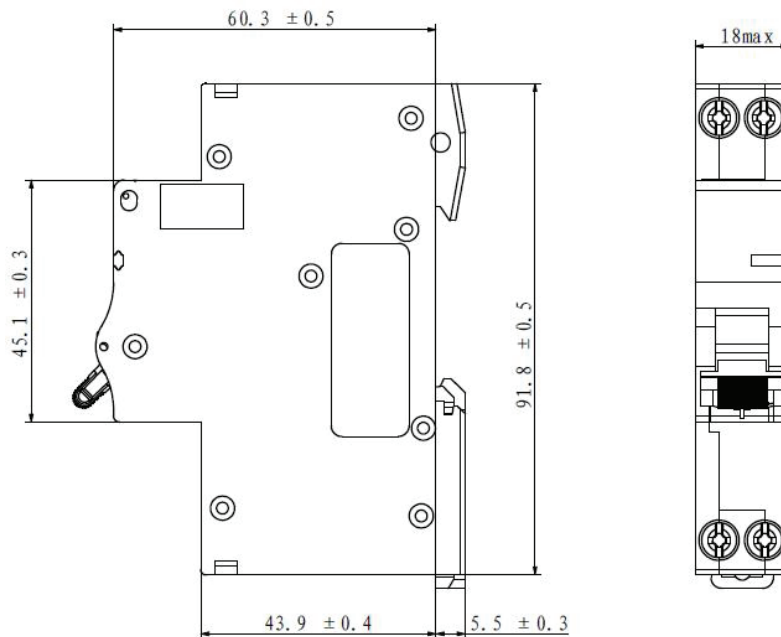
## ● NDB2LE-63 accessories forms

Serial No.	Name	Model and specification	Function and number of loading
1	Auxiliary contact	OF2	Loaded on the left side of a miniature circuit breaker to indicate the On/Off state of the circuit breaker; 3 can be loaded at most
2	Alarm contact	SD2	Loaded on the left side of a miniature circuit breaker to indicate the fault trip state of the circuit breaker; 3 can be loaded at most
3	Shunt tripper	MX+OF2	Loaded on the left side of a miniature circuit breaker to indicate the On/Off state of the circuit breaker; 1 can be loaded at most
4	Auxiliary alarm contact	NFS2	Loaded on the left side of a miniature circuit breaker to indicate the On/Off and fault tripping state of the circuit breaker; 3 can be loaded at most
5	Overvoltage and under-voltage tripper	NGQ2A	Loaded on the left side of a miniature circuit breaker to indicate the On/Off and fault tripping state of the circuit breaker; 2 can be loaded at most

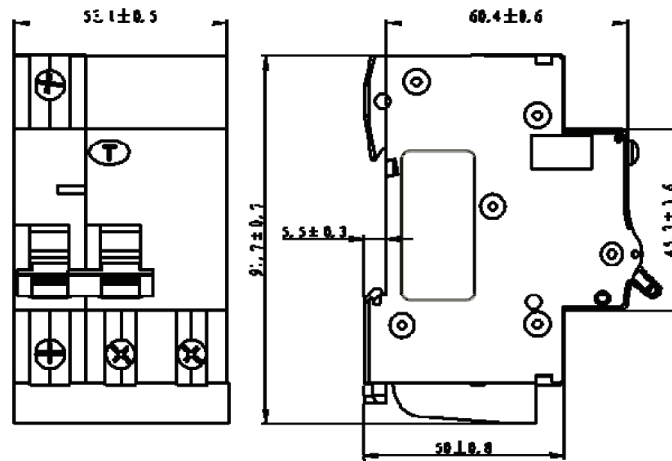
Note: For details of accessory parameters, see “OF2, SD2, MX+OF2, NFS2 and NGQ2A” samples

## 6. Outline and Installation Dimension

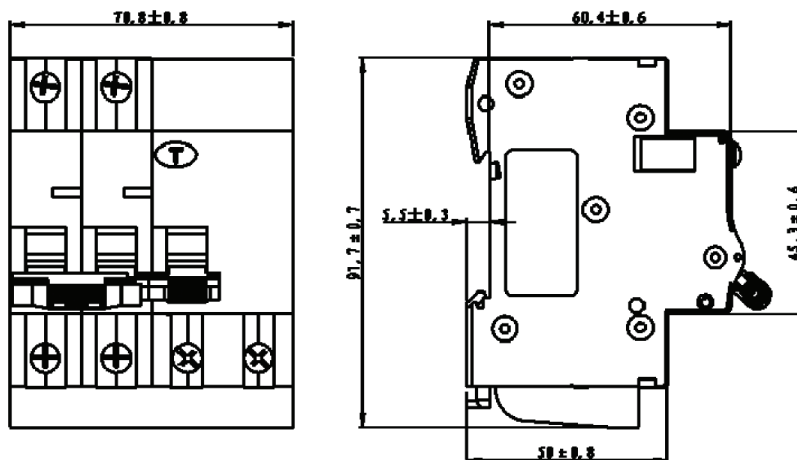
### 6.1 NDB2LE-25 Outline Dimension



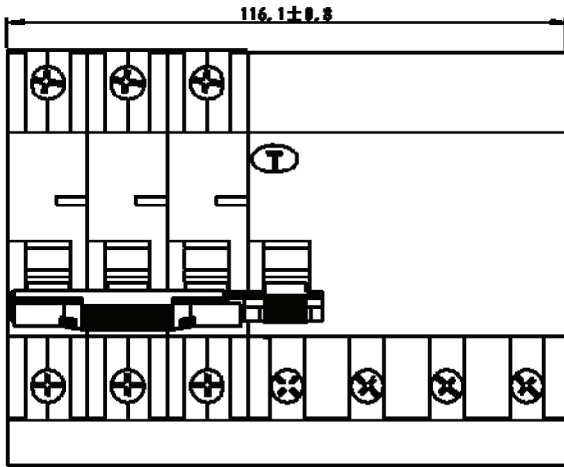
## 6.2 NDB2LE-63 Outline Dimension



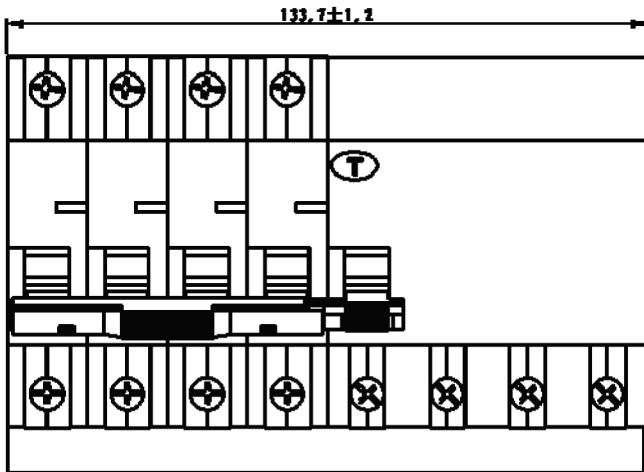
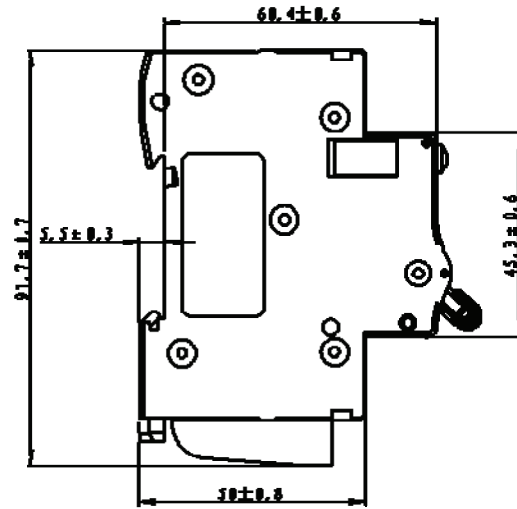
1PN



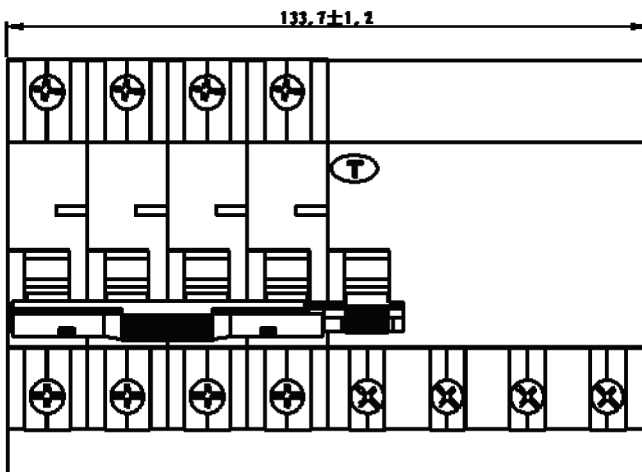
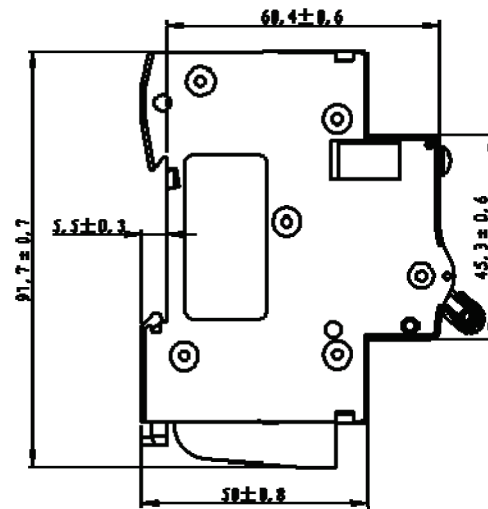
2P



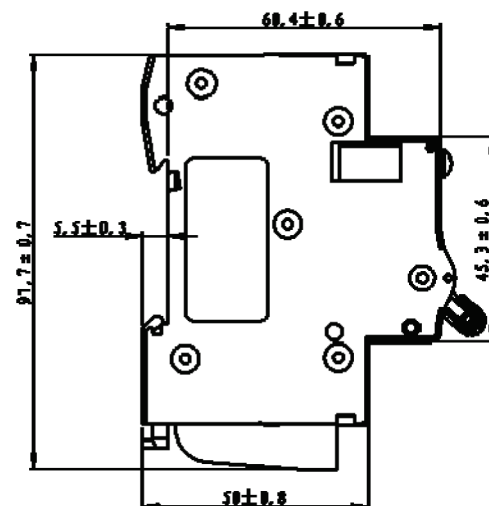
3P



3PN

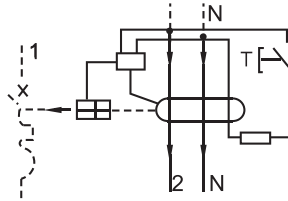


4P

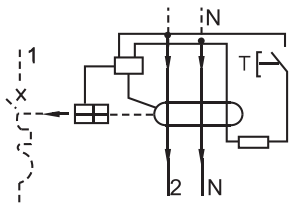


## 7. Electric Circuit Diagram

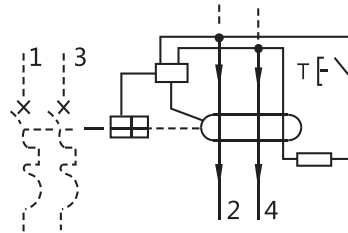
- N NDB2LE-25 electric circuit diagram



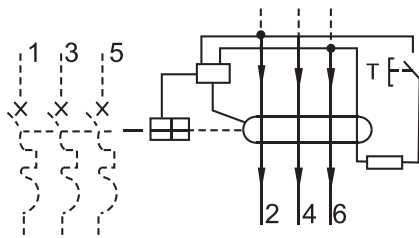
- NDB2LE-63 electric circuit diagram



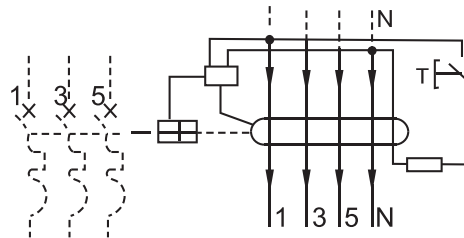
1PN electric wiring diagram



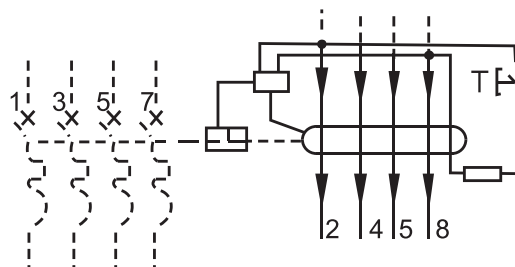
2P electric wiring diagram



3P electric wiring diagram



3PN electric wiring diagram



4P electric wiring diagram

## 8. Specifications for Ordering and Selection (Tick in )

User unit		Number of units ordered:	Date of order:
Frame grade	<input type="checkbox"/> NDB2LE-25 <input type="checkbox"/> NDB2LE-63		
Number of poles	NDB2LE-25: <input type="checkbox"/> 1PN NDB2LE-63: <input type="checkbox"/> 1PN <input type="checkbox"/> 2P <input type="checkbox"/> 3P <input type="checkbox"/> 3PN <input type="checkbox"/> 4P		
Rated operational voltage (V)	NDB2LE-25: <input type="checkbox"/> AC230/240 NDB2LE-63: <input type="checkbox"/> AC230/240 <input type="checkbox"/> AC380/400/415		
Rated operating current (A)	NDB2LE-25: 6, 10, 16, 20, 25 NDB2LE-63: 1, 2, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63		
Rated residual operating current $I_{\Delta n}$ (mA)	NDB2LE-25: <input type="checkbox"/> 30 NDB2LE-63: <input type="checkbox"/> 30 <input type="checkbox"/> 50 <input type="checkbox"/> 100 <input type="checkbox"/> 300		
Tripping type	NDB2LE-25 : <input type="checkbox"/> C: The instantaneous tripping range is $5I_n \sim 10I_n$ to protect conventional load and power distribution cable  NDB2LE-63 : <input type="checkbox"/> B: The instantaneous tripping range is $3I_n \sim 5I_n$ to protect non-inductive or micro-inductive circuit <input type="checkbox"/> C: The instantaneous tripping range is $5I_n \sim 10I_n$ to protect conventional load and power distribution cable <input type="checkbox"/> D: The instantaneous tripping range is $10I_n \sim 14I_n$ to protect the industrial power distribution system		