

Shanghai Liangxin Electrical Co., Ltd.

Product Specification of Meter External Circuit Breaker

(IPD-ENG-DEV-T20 A0 2014-04-01)

Product Name: Meter External Circuit Breaker

Product Model: NDB2F-125

Date: 2018-11-13

Prepared by	<u>Zhang Wei</u>	Date	<u>2018-11-13</u>
Reviewed by	<u>Feng Hongbao</u>	Date	<u>2018-11-13</u>
Approved by	<u>Duan Hui</u>	Date	<u>2018-11-13</u>

Revision History					
Version	Revision Reason/Content	Implementation Date	Prepared by	Reviewed by	Approved by
0	New addition	20160621	Zhou Juan	Cao Wenqu	Duan Hui
1	Update of the product specification	20180130	Zhang Wei	Feng Hongbao	Duan Hui
2	Update of the product picture	20180511	Zhang Wei	Feng Hongbao	Duan Hui
3	Layout update	20181017	Zhang Wei	Feng Hongbao	Duan Hui
4	Design code changed to the design SN	20181113	Zhang Wei	Feng Hongbao	Duan Hui

1. Product Overview

NDB2F-125 meter external circuit breaker is specially developed to solve the problem of the prepaid meter external circuit breaker failing to be closed automatically. The product adopts a miniature circuit breaker with the short circuit overload protection as the main switch, which is equipped with an ultra-small intelligent electric operating mechanism featuring a microprocessor. It controls the on/off state of the circuit breaker automatically through detection of the control signal, providing automatic control, on/off state feedback and other functions of the circuit breaker.

2. Picture of the Product



2P



4P

3. Specification and Model Description

ND	B	☐	F	—	☐	/	☐	/	☐	☐	☐
Nader	Miniature circuit breaker	Design SN	Prepaid automatic closing	Shell frame level 125A	Tripping characteristics Type C	Rated current 40A, 50A 63A, 80A 100A, 125A	Number of poles 2P 4P	M: Electric-operation handle Sealed None: Electric-operation handle Exposed			
Low-voltage electrical appliance											

4. Main Technical Parameters

• Electrical parameters

Parameter name	Description of the specific parameters	
Specification	NDB2F-125	
Wiring mode	2P single phase	4P three-phase four-wire system
Rated operational voltage (V)	AC230/AC240	AC400/AC415
Rated current (A)	40A, 50A, 63A, 80A, 100A, 125A	
Control loop power voltage (V)	220VAC/50Hz	
Frequency	50/60Hz	
Rated insulation voltage (V)	500	
Power-on delay t	$8s \leq t \leq 7s$	
Remote automatic closing time	$\geq 3s$	
Remote automatic opening time	$\geq 2s$	
Mechanical life (times)	10000	
Electrical life (times)	6000	
Rated impulse withstand voltage	6kV	
Pollution level	2	
Ingress protection	IP20	
Working environment (°C)	-40~+70	

• Applicable standards

This product is designed in accordance with GB/T10963.1 and IEC60898-1, Q/GDW 11421.

5. Action Process

Manual control mode: The control mode of remote automatic opening and manual closing;

Automatic control mode: The control mode of remote automatic opening and closing;

Process from closing to opening: After receiving the opening command, the circuit breaker will be opened automatically and render the movable contact in the off position, which can't be closed manually;

Process from opening to closing: After receiving the closing command in the manual control state, the circuit breaker can't be closed automatically, but only to be closed manually; after receiving the closing command in the automatic state, the circuit breaker can be closed automatically.

Status Control Table of Circuit Breaker

No.	Phase Line	Control Signal Line	Initial State	State after Action	Remarks
1	AC220V	↑	Off	On	(Jump from 0V to AC220V) Receiving the closing signal
2	AC220V	AC220V	On	Off	Manual opening
3	AC220V	AC220V	Off	On	Manual closing
4	AC220V	↓	On	Off	(Jump from AC220V to 0V) Receiving the

					opening signal
5	AC220V	↓	Off	Off	(Jump from AC220V to 0V) Receiving the opening signal
6	AC220V	0V	Off	Off	0V control signal without closing (manual)
7	AC220V-0-AC220V	AC220V	On	On	In the on-state before power failure, power-on again after power failure without closing followed by opening
8	AC220V-0-AC220V	AC220V	Off	Off	In the off-state before power failure, power-on again after power failure without closing or opening followed by closing
9	0V	/	Off	Off	Keep its original state with the power failure
10	0V	/	On	On	Keep its original state with the power failure

6. Normal Working Environment

- Ambient temperature: $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$
- Relative air humidity: $\geq 95\%$
- Altitude: $\geq 2000\text{m}$
- The product is applicable in an environment with pollution class II
- Working site without obvious vibration and shock
- High-altitude Derating Factor Table

Altitude (km)	Rated working current	Maximum operating voltage	Rated power frequency withstand voltage	Rated impulse withstand voltage	Rated short-circuit breaking capacity and electrical life	Remarks
2	In	Ue	1.00	1.00	1.00	
3	0.99In	Ue	0.89	0.89	0.83	
4	0.96In	Ue	0.80	0.80	0.71	
5	0.94In	Ue	0.73	0.73	0.63	

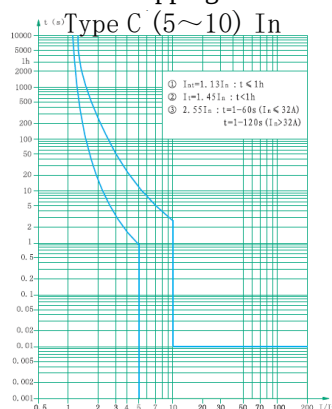
- Temperature Derating Factor Table

Ambient temperature Correction current (A) Rated current (A)	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15
1	1.29	1.27	1.25	1.23	1.21	1.19	1.17	1.15	1.13	1.10	1.08	1.06
3	3.97	3.89	3.83	3.76	3.70	3.64	3.57	3.50	3.44	3.37	3.30	3.22
6	7.96	7.70	7.58	7.46	7.34	7.21	7.09	6.96	6.83	6.70	6.56	6.42
10	14.15	13.89	13.62	13.35	13.07	12.81	12.53	12.23	11.93	11.63	11.33	11.01
16	21.10	20.78	20.43	20.08	19.75	19.40	19.05	18.70	18.33	17.96	17.58	17.20
20	26.04	25.67	25.28	24.88	24.47	24.06	23.64	23.22	22.78	22.34	21.89	21.43
25	32.91	32.21	31.72	31.22	30.70	30.18	29.65	29.10	28.55	27.98	27.41	26.82
32	41.67	41.04	40.46	39.82	39.17	38.51	37.84	37.15	36.47	35.75	35.03	34.30
40	52.43	51.63	50.86	50.04	49.21	48.37	47.51	46.63	45.74	44.83	43.90	42.95
50	66.10	64.92	63.97	62.92	61.86	60.77	59.67	58.54	57.40	56.23	55.05	53.81
63	84.40	83.48	82.06	80.64	79.19	77.72	76.22	74.70	73.14	71.54	69.91	68.24

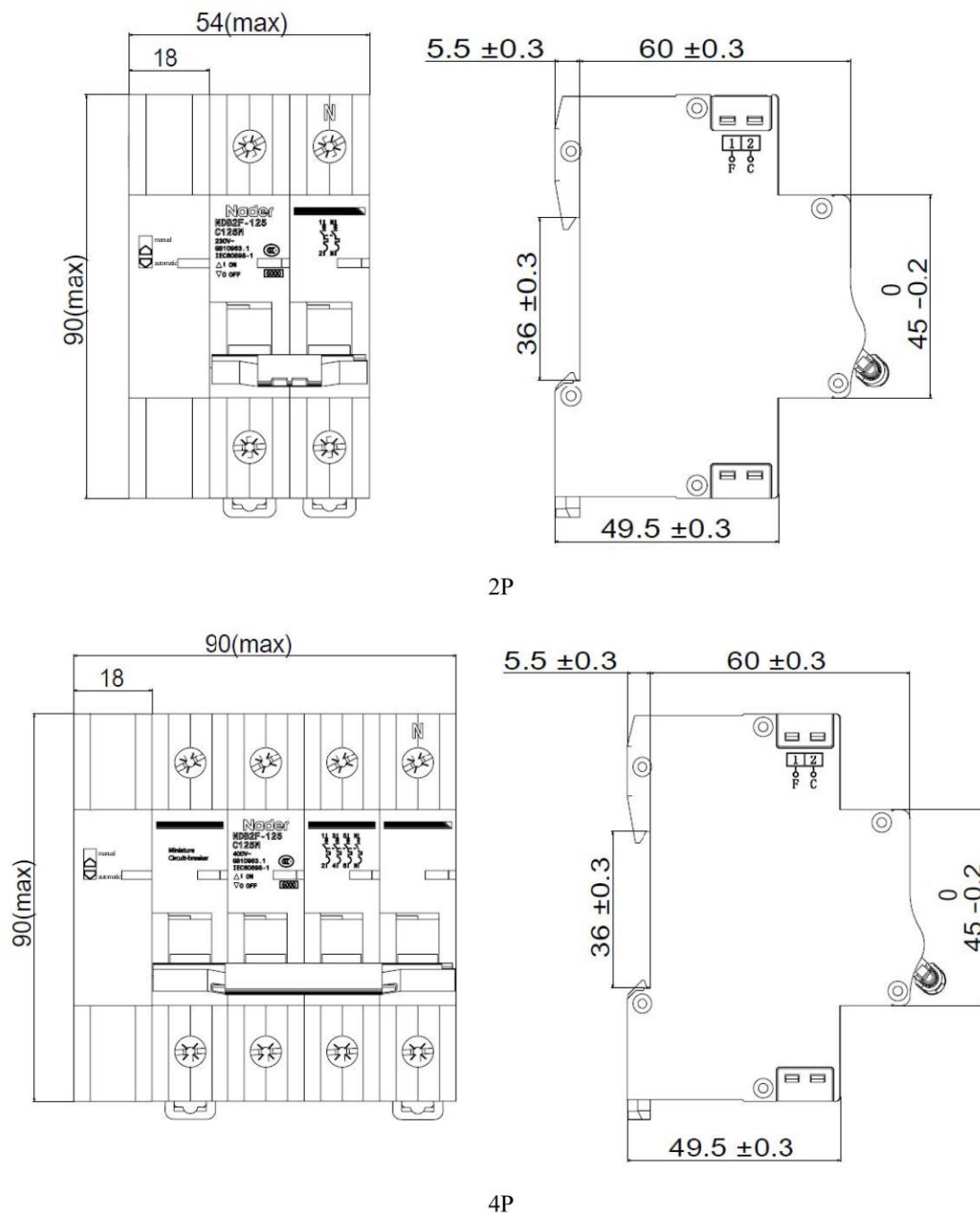
Ambient temperature Correction current (A) Rated current (A)	20	25	30	35	40	45	50	55	60	65	70
1	1.05	1.02	1.00	0.97	0.94	0.91	0.89	0.86	0.83	0.80	0.77
3	3.14	3.06	3.00	2.92	2.84	2.76	2.67	2.58	2.49	2.38	2.27
6	6.27	6.14	6.00	5.84	5.68	5.52	5.36	5.19	5.01	4.83	4.64
10	10.67	10.34	10.00	9.63	9.24	8.85	8.45	8.01	7.55	7.06	6.55
16	16.80	16.40	16.00	15.55	15.11	14.66	14.20	13.71	13.21	12.70	12.25
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	29.48	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

7. Tripping Characteristics

- Type C curve
- Rated current: NDB2F-125: 40A~125A
- Tripping characteristics: Range of instantaneous tripping $5I_n \sim 10I_n$



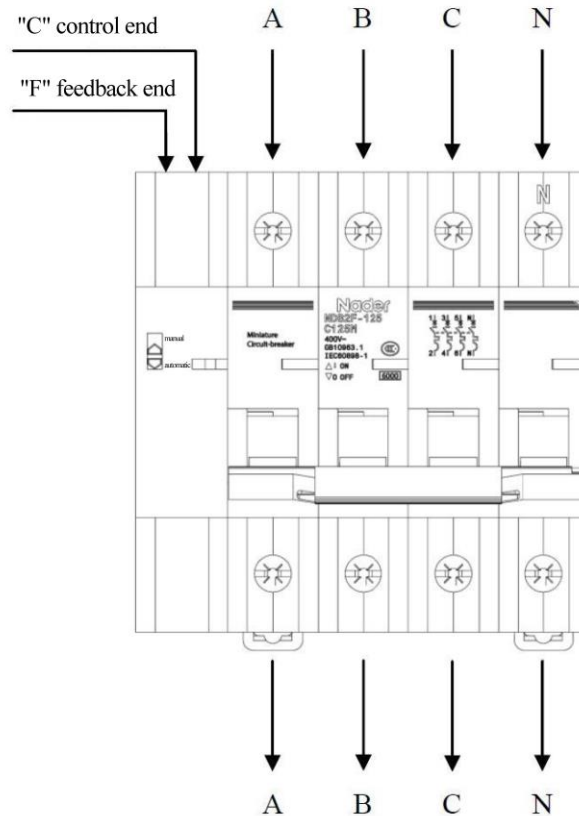
8. Product Outline and Installation Dimensions



9. Installation Mode

Based on the modular structure, it can be easily installed on the TH35mm×7.5 standard guide.

10. Product Wiring Diagram



11. Packaging and Storage

Maximum packaging quantity: (2P product: 5 pieces/box, 4P product: 3 pieces/box). The packaged products should be stored in a warehouse with the air ventilation and the relative humidity less than 70%, the temperature between 0°C and +40°C and the atmospheric pressure between 86kPa and 106kPa. No acidic, alkaline or other corrosive gas exists in the ambient air in the warehouse. Under the above conditions, the storage period shall be no more than three years since the manufacturing date.

12. Assembled Accessories

None

13. Precautions

1. Any quality problem due to disassembly without permission will be the liability of the user;
2. Under the energized operation state, do not touch the exposed portion of the uninsulated parts on the circuit breaker with bare hand;
3. Do not commission the characteristics of the circuit breaker randomly; the manufacturer shall not be responsible for any quality problem caused;
4. Wiring must be reliable to prevent the malfunction of the circuit breaker or terminal burning due to the abnormal heat generation on the terminal;
5. Do not test the insulation resistance of the product or carry out power frequency withstand voltage tests directly or indirectly with a megger or similar devices on the product so as to avoid damage to the product. If required by users, our company can provide an effective proof of the conformance test;
6. In case of insulation resistance test on the project line, do not connect the product so as to avoid misunderstanding of the product quality or damage to the circuit board.