

Shanghai Liangxin Electrical Co., Ltd.

Product Specification of NDB1-40

(IPD-ENG-DEV-T20 A1 2016-09-23)

Product Name: Miniature Circuit Breaker

Product type: NDB1-40

Date: 20220720

Prepared	<u>Liu Xiangqian</u>	Date	<u>2022-07-20</u>
Reviewed	<u>HuoZhiqiang</u>	Date	<u>2022-07-20</u>
Approved	<u>DuanHui</u>	Date	<u>2022-07-20</u>

Revision information					
Version	Revised contents and reasons	Date	Prepared	Reviewed	Approved
0	Initial issue	20170606	Niting	ZhangYang	DuanHui
1	Shape dimension adjustment	20180719	ZhaoQing	ZhangYang	ZhangYang
2	Format adjustment	20181030	ChenBo	HuoZhiqiang	DuanHui
3	Version update	20210318	Liu Xiangqian	Zhu Tongxiong	Huo Zhiqiang
4	Change of noun interpretation	20220720	Liu Xiangqian	Huo Zhiqiang	DuanHui

1、Application Scope

- Short -circuit protection
- Over-load protection
- Isolation

NDB1-40 dedicated to the low voltage power distribution system of industrial, buildings, energy, communications and infrastructure. The MCB can cut off phase and neutral lines at the same time, whereas the neutral line should not provide protection.

2、Product Pictures



3、Model and implication

ND	B	1	—	40	C	16	
Nader	Breaker	Design Code	Frame Rate(A)	Trip curve	Rated current(A)	Empty=1P+N	
			40	B	2, 4,6, 10, 16,		
				C	20, 25 ,32,40		
				D			

4、Technical Parameters

- Electrical parameters
 - Rated working Voltage: AC230/240V
 - Rated Frequency: 50/60Hz
 - Rated Current: 2A, 4A, 6A, 10A, 16A, 20A, 25A, 32A, 40A

- Rated short-circuit breaking capacity (I_{cn}): 6000A
- Service short-circuit breaking Capacity (I_{cs}): 6000A
- Impulse Withstand Voltage: 4kV
- Rated insulation voltage: 500V
 - Instantaneous Tripping Characteristic: B、C、D
- Mechanical and Electrical life:
 - Mechanical Life : 20000 times
 - Electrical Life : 10000 times
- Isolation function
 - Practical breaking instructions
 - View window within the green identification said contact in the off position
- Wiring
 - Tunnel terminals
 - The wiring capacity: 1~10mm² conducting wire
 - Terminal screw: M4; Recommended tightening torque: 1.2N.m
- Protection Degree
 - Noumenon protection grade: IP20
 - Install in the distribution box: IP40
- Tripping curve
 - B type curve
 - Protect the load with small short-circuit current (such as non-inductive or micro-inductive circuit)
 - Rated Current: 2A~40A
 - tripping characteristic: The instantaneous tripping range $3I_n \sim 5I_n$
 - C type curve
 - Protect normal load and distribution wire cable
 - Rated Current: 2A~40A
 - tripping characteristic: The instantaneous tripping range $5I_n \sim 10I_n$
 - D type curve
 - Protect starting current big impact load (Such as motor, transformer)
 - Rated Current: 2A~40A
 - tripping characteristic: The instantaneous tripping rang $10I_n \sim 14I_n$

5、Standard Working Condition

- Ambient temperature: -40℃~+70℃
- Storage ambient temperature: -40℃ ~ +80℃

●Heat and humidity resistance: The relative air humidity $\leq 95\%$ at the temperature of $+55^{\circ}\text{C}$

●Altitude: $\leq 2000\text{m}$, If you need to use at higher altitude, you can refer to the company's mini-circuit breaker requirements for capacity reduction. It can refer to the technical requirements of GB/T20645 low voltage electric appliance for high altitude under special environmental conditions.

●Pollution degree: 2

●Able to be affected by salt fog and oil mist

●In the medium without explosion risk, and the medium is not enough to corrode metal and destroy the insulation of the gas and conductive dust

●In places where there is no rain or snow

●Lower capacity coefficient table above 2000 meters above sealevel

Height above sea level (km)	Rated current	Rated voltage	Rated frequency voltage tolerance	Breaking Capacity	Breaking Capacity and Electrical life	Remarks
2	In	Ue	1.00	1.00	1.00	
3	0.97In	Ue	0.89	0.89	0.83	
4	0.94In	Ue	0.80	0.80	0.71	
5	0.90In	Ue	0.73	0.73	0.63	

●Temperature Derating

Correcting current (A)	Ambient temperature (°C)	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15
2		2.45	2.41	2.38	2.35	2.32	2.29	2.26	2.23	2.2	2.17	2.13	2.1
4		4.94	4.87	4.81	4.75	4.68	4.62	4.55	4.49	4.42	4.35	4.29	4.22
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

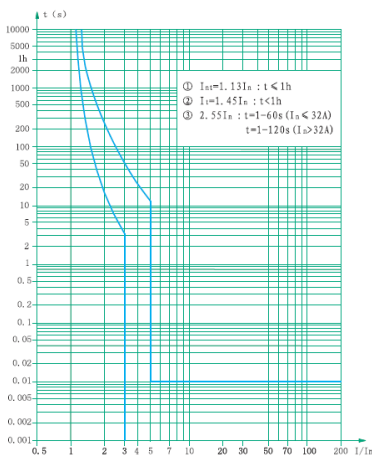
Correcting current (A)	Ambient temperature (°C)	20	25	30	35	40	45	50	55	60	65	70
2		2.07	2.03	2.00	1.96	1.93	1.89	1.86	1.82	1.82	1.74	1.7
4		4.15	4.07	4.00	3.93	3.85	3.77	3.69	3.61	3.61	3.44	3.36
6		6.27	6.14	6.00	5.84	5.68	5.52	5.36	5.19	5.01	4.83	4.64
10		10.67	10.34	10.00	9.63	9.24	8.85	8.45	8.01	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	12.15
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

●Side-by-side volume reduction coefficient table

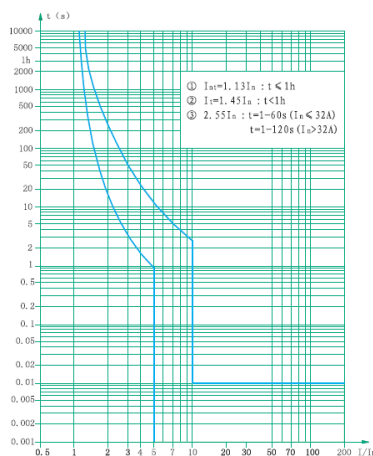
Number of products placed side by side	1	2~3	4~5	6~9	10
Current derated coefficient	1	0.9	0.8	0.7	0.6

6、Tripping characteristic

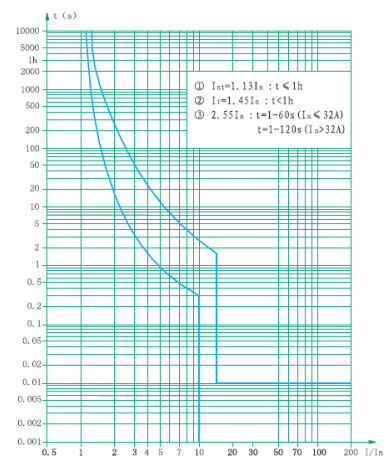
Type B (3~5) In



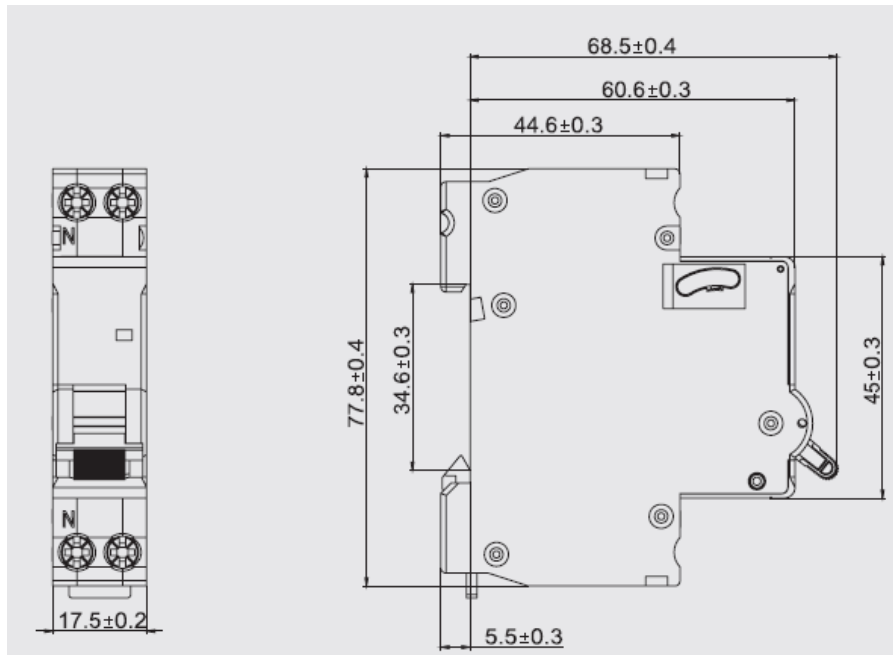
Type C (5~10) In



Type D (10~14) In



7、Shape dimension & Dimension



8、Mounting Method

Modular construction, can be installed in TH35mm x 7.5 standard guide rail.

9、Packaging and storage

Quantity:12PC/box, Packing boxes of products should be stored in the air circulation and relative humidity is not more than 80% and the temperature is not higher than + 80 °C, Not less than - 40 °C in the air around without acid, alkali or other corrosive gases stored in the warehouse. In the above conditions, the storage period since the production date not more than three years.

10、Environmental Protection Requirements

Comply with the requirements of RoHS directives.

11、Accessory list and installation

- OF1Auxiliary Contact Be installed to the left side of NDB1-40 MCB to indicate the tripping status of the breaker.
- SD1Alarm Contact Be installed to the left side of NDB1-40 MCB to indicate the fault tripping status of the breaker.
- MX+OF1Shunt Release Be installed to the left side of NDB1-40 MCB, remotely controls the breaker opening and indicates the breaker tripping status.
- GQ1AOver&Under Voltage Tripping Device Be installed to the left side of NDB1-40 MCB, used for circuit of work voltage less than AC230V,which has defensive function such as over-voltage protection (G1A)、low-voltage protection (Q1A)、over&low-voltage protection (GQ1A) ,at the same time,no-tripping when power down;
- FF1Double Auxiliary Contact Be installed to the left side of NDB1-40 MCB to indicate the tripping status of the breaker
- FS1 Auxiliary and Alarm Contact Be installed to the left side of NDB1-40 MCB to indicate the fault tripping status of the breaker.

12、Notes

- 1、The user should responsible for the quality problem caused by taking the products apart or adjust the tripping parameters without permission.
- 2、Touch the uninsulated bare part is not allowed when breaker is in energized state.
- 3、The user should responsible for the quality problem caused by debugging the peculiarity of the MCB arbitrarily.
- 4、Make sure reliable connection to prevent the abnormal heating of terminals. That can cause fault operation of breakers or terminal damage.
- 5、Please remove the cover before installation, details please refer to 《OF1、SD1、MX+OF1 GQ1A、FF1 and FS1 Product Specification》.