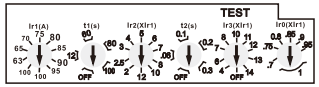
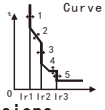
b: Adjustment of long-time delay operating time t1, adjustable in 4 steps;
c: Adjustment of short-circuit short-time delay operating current Ir2, adjustable in 10 steps;
d: Adjustment of short-time delay operating time t2, adjustable in 4 steps;
e: Adjustment of short-circuit instantaneous operating current Ir3, adjustable in 10 steps;
f: Adjustment of pre-alarm operating current Ir0, adjustable in 7 steps.

NLM1E-125, In=100A Electronic Trip Unit

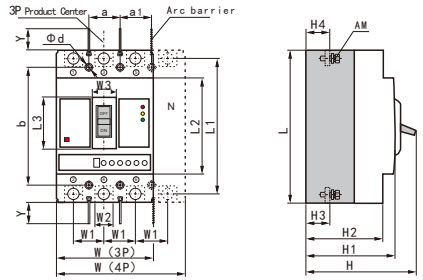


ETU. Protection Characteristic Curve



6. External and Installation Dimensions

NLM1E-125、250、400、630、800 Front Wiring Installation Dimensions



Model		NLM1E-125	NLM1E-250	NLM1E-400	NLM1E-630	NLM1E-800
Installation Dimensions (mm)	a/a1	30	35	44/50	58	70
	b	129	126	194	200	243
	Φd	Φ4.5	Φ4.5	Φ7	Φ7	Φ7

Model	Pol.	Overall Dimensions (mm)												
		W	W1	W2	W3	L	L1	L2	L3	H	H1	H2	H3/H4	AM	Y
M1E-125M/H	3P	92	30	16	28	150	132	102	54	112	82	82	28	M8	50
	4P	122													
M1E-250M/H	3P	107	35	22	27	165	144	102	54	112	94	85	23	M8	60
	4P	142													
M1E-400M/H (UR630)	3P	150	48	30	60	257	224	174	82	151	112	98	37/39	M10	110
	4P	198													
M1E-630M/H	3P	182	58	40	66	270	234	185	82	158	116	105	41/44	M12	110
	/	/													
M1E-800M/H M1E-630	3P	210	70	44	66	280	243	202	75	158	119	104	44/41	M12	110
	4P	280													

Note 1: Dimension W2 is the recommended maximum width for user wiring.
Note 2: AM denotes user connecting screws.
Note 3: For 4-pole products, it is recommended to adopt four mounting holes (a+a1) for installation.

7. Installation, Usage and Notes

a: The circuit breaker shall be in good appearance, and capable of normal opening and closing operation at no-load.
b: The rated values of the circuit breaker and accessories shall comply with the operating conditions of the installation site.
c: All protection characteristics of the circuit breaker have been calibrated before delivery. Users are not allowed to adjust them arbitrarily.
d: Internal accessories of the circuit breaker shall be installed and adjusted by the manufacturer before use. If installed by the user, the operation must be performed by professional personnel.
e: Verify correct wiring; all terminal connections and fixing screws shall be tightly fastened without looseness.
f: Check that arc barriers are installed in place. Toggle the operating handle, which shall operate flexibly.
g: The circuit breaker handle has three positions, indicating Closed, Open and Tripped respectively. When the handle is at the tripped position, pull the handle backward to reclose the breaker, then perform closing operation.
h: Refer to the table below for the recommended cross-sectional area of connecting wires for the circuit breaker.

In(A)	16 20	25	32	40 50	63	80	100	125	160	180 225	250	315 350	400
S(mm²)	2.5	4	6	10	16	25	35	50	70	95	120	185	240

In(A)	Copper conductor		Copper busbar	
	QTY	S(mm²)	QTY	S(mm²)
500	2	150	2	30×5
600	2	185	2	40×5
700 800	2	240	2	50×5

8. Ordering Instructions

When placing an order, the user shall specify the circuit breaker model, specification, number of poles, operating mode, rated current of trip unit, selected accessories and accessory supply voltage, as well as the order quantity. Example: Order NLM1E-250, 3-pole, type M, rated current 250A, with shunt trip AC220V, total 20 sets.
Filling format: NLM1E-250M/3310/250A / Shunt Trip AC220V / 20 Sets.

9. Company Commitment

Within 18 months from the production date of the product, under the conditions of normal transportation, storage, maintenance and use by the customer, if the product cannot operate properly due to manufacturing quality defects, our company shall provide three guarantees warranty service.

With continuous technical improvement of products, all data shall be subject to the latest standards issued by our technical department. Any modifications shall be made without prior notice.

CHNAILE®
Product Certificate
Name : MCCB
Model : NLM1E Series
Date : See the nameplate
Inspector:
This product has passed inspection and is approved for release from the factory.
NAILE ELECTRIC CO.,LTD

CHNAILE®
Add: Dianhou Industrial Zone, Liushi, Yueqing, Wenzhou, Zhejiang, China
National Service Hotline 400-876-2389

CHNAILE®

User Manual

CHNAILE

NLM1E Series Electronic Molded Case Circuit Breaker

NAILE ELECTRIC CO.,LTD

1. Scope of Application

NLM1E Series Molded Case Circuit Breakers (hereinafter referred to as "the circuit breakers") are applicable to circuits with AC 50Hz, rated insulation voltage up to 1000V, rated operational voltage up to 690V, and rated current up to 800A. They are used for power distribution, infrequent switching of lines, and infrequent starting of motors. With functions including overload long-time delay, short-circuit short-time delay, short-circuit instantaneous, and undervoltage protection, they can protect lines and power equipment from damage. Featuring small size, high breaking capacity, short arcing distance, isolation function, and anti-vibration performance, they are ideal products for power distribution and motor protection.

The intelligent overcurrent trip unit of the circuit breaker adopts a microprocessor controller, providing three-stage protection characteristics: overload long-time delay protection, short-circuit short-time delay protection, and short-circuit instantaneous protection. All three overcurrent protection characteristics can be easily adjusted to meet the protection requirements of different loads. In addition, the circuit breaker also has functions such as operating current indication, overload pre-alarm indication, ground fault indication, and trip unit power supply indication.

The circuit breaker has an isolation function, indicated by the symbol: —/•—

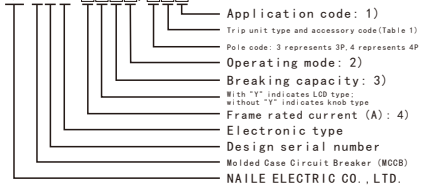
The circuit breaker complies with GB/T 14048.2 《Low-voltage switchgear and controlgear — Part 2: Circuit-breakers》

2. Working Environment

2.1 The altitude of the installation site shall be 2000 m or below (please consult the manufacturer for use at altitudes above 2000 m);
2.2 The upper limit of ambient air temperature is +40℃, the lower limit is -5℃, and the average value over 24 hours shall not exceed +35℃. Note: If the upper limit of ambient air temperature exceeds +40℃ or the lower limit is below -5℃, the product shall be used in accordance with the data given in the product catalogue and instruction manual, or in consultation with the manufacturer.
2.3 In a non-explosive atmosphere, where there are no gases or conductive dust sufficient to corrode metals or damage insulation; in a place protected from rain and snow.
2.4 The relative humidity of the atmosphere shall not exceed 50% at an ambient air temperature of +40℃; higher relative humidity is permitted at lower temperatures. The average maximum relative humidity in the wettest month is 90%, and the average minimum temperature in the same month is +25℃. Condensation on the product surface due to temperature changes shall be taken into account.
2.5 Pollution degree: 3. The circuit breaker can be installed vertically (upright mounting) or horizontally (sideways mounting).

3. Model and Its Meaning

NL M1 E-□□□□/□□□



Notes: 1. Application code: No code - for power distribution protection; 2 - for motor protection.
2. Operating mode: No code - direct handle operation; Z - rotary handle operation; P - motorized operation.
3. Breaking capacity: M - high breaking type; H - high breaking capacity type.
4. Frame size rated current (A): 125, 250, 400, 630, 800.

Table 1 Trip Unit and Accessory Codes

Accessory Name	Accessory Code	NLM1E-125 NLM1E-250		NLM1E-400		NLM1E-630 NLM1E-800	
		3P	4P	3P	4P	3P	4P
No accessory	300	√	√	√	√	√	√
Alarm contact	308	√	√	√	√	√	√
Shunt release	310	√	√	√	√	√	√
Auxiliary contact	320	√	√	√	√	√	√
Undervoltage release	330	√	√	√	√	√	√
Shunt release + Auxiliary contact	340	√	√	√	√	√	√
Shunt release + Undervoltage release	350	—	√	—	√	√	√
Two sets of auxiliary contacts	360	√	√	√	√	√	√
Auxiliary contact + Undervoltage release	370	—	√	—	√	√	√
Shunt release + Alarm contact	318	√	√	√	√	√	√
Auxiliary contact + Alarm contact	328	√	√	√	√	√	√
Undervoltage release + Alarm contact	338	—	√	—	√	√	√
Shunt release + Auxiliary contact + Alarm contact	348	√	√	√	√	√	√
Two sets of auxiliary contacts + Alarm contact	368	—	√	—	√	√	√
Auxiliary contact + Undervoltage release + Alarm contact	378	—	√	—	√	√	√

4. Main Technical Performance and Parameters

Table 2 Main Technical Performance and Parameters

Tech. Parameters \ Frame Size			125	250	400	630	800
Poles			3P、4P	3P、4P	3P、4P	3P、4P	3P、4P
Frame size rated current(A)			125	250	400	630	800
In(A)			32、63 125 step adjustable	100～250 step adjustable	160～400 step adjustable	252～630 step adjustable	320～800 step adjustable
Ue(V)			400/440V、660/690V				
Ui(V)			1000V				
Uimp(kV)			12kV				
Selectivity Category			A	B	B	B	B
Icu(kA)	400V 440V	M	50	50	65	70	70
		H	65	85	85	85	85
	660V 690V	M	15	15	20	30	30
		H	15	15	20	30	30
Ics(kA)	400V 440V	M	35	35	50	50	50
		H	50	65	65	70	70
	660V 690V	M	10	10	15	15	15
		H	10	10	15	15	15
Icw/1s(kA)		M	3	5	10	10	10
		H	3	5	10	10	10
Operating cycles (times)	Electrical Endurance		3000	3000	2000	1000	1000
	Mechanical Endurance		10000	10000	8500	5000	5000

Note: The rated current of the NLM1E-400 enhanced capacity type can reach 630A. Its outline and mounting dimensions are identical to those of the NLM1E-400.

5. Protection Characteristics

4.1 Long-time Delay Overcurrent Protection Characteristic

	Current		Operating time							
For distribution	1.05Ir1		Will not trip within 2 hours							
	1.3 Ir1		≤1h Trip							
	2Ir1	Setting time T1(s)	Inm=125、250A				Inm=400、630、800A			
			12	60	80	100	12	60	100	150
For motor protection	1.05Ir1		Will not trip within 2 hours							
	1.2 Ir1		≤1h Trip							
	1.5Ir1	Tripping Time T1(s)	21.3	107	142	178	21.3	107	178	267
	2Ir1	Setting time T1(s)	12	60	80	100	12	60	100	150
	7.2Ir1	Tripping Time T1(s)	0.93	4.63	6.17	7.12	0.93	4.63	7.72	11.6
	Trip Class		–	10	10	20	–	10	20	30

Note: 1. The operating time conforms to $I^2T1=(2Ir1)^2t1$ ($1.2Ir1 \leq I \leq Ir2$).
2. The tolerance of the operating time is ±20%.
3. The return time shall not be less than 70% of the operating time.

4. 2 Short-time Delay Characteristic

Current			Tripping Time			
In			125、250、400、630、800			
Ir2≤I<1.5Ir2		Inverse Time	$I^2T2=(1.5Ir1)^2t2$			
1.5Ir2≤I<Ir3	Definite Time	Setting Time2(s)	0.06	0.1	0.2	0.3
		Tolerance(s)	±0.02	0.03	±0.04	±0.06
		Return Time(s)			0.14	0.21

Note: Tolerance for inverse-time tripping time±20%

4. 3 Instantaneous Tripping Characteristic

In	125、250	400、630、800
Ir	Ir3=(4 6 7 8 10 11 12 13 14)Ir1	Ir3=(4 6 7 8 9 10 11 12 14)Ir1
Tripping Characteristic	I≤0.85Ir3 No trip	I≥1.15Ir3 Trip

4.4 Controller Frame Rating Current, Setting Current and Panel Diagram (Example: NLM1E-125)
a: Overload long-time delay operating current Ir1, which can be set in up to 10 steps according to different rated currents of the circuit breaker;