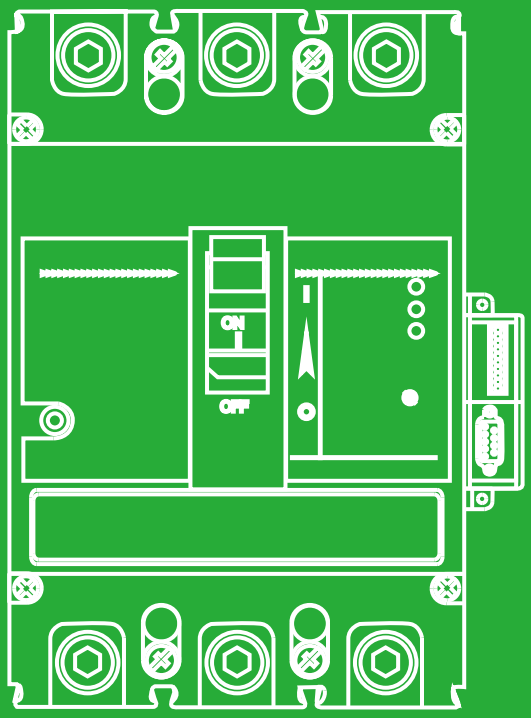
PRODUCT SELECTION MANUAL

MCCB

Moulded Case Circuit Breaker

ODM & OEM



LVMA

LVMA IMPORT AND EXPORT

Every component product has been strictly inspected

Enterprise brief introduction

www.lvma-ele.com

LVMA Electric Co., Ltd. is one of the leading high-tech companies specialized in the research, development, production and global marketing of high & low voltage electrical appliances and new energy products.

These products include full series of automatic transfer switch,moulded case circuit breaker, load isolation switch, air circuit breaker, vacuum circuit breaker, transformer, switchgear and complete sets of equipment. In addition, we have obtained IEC60947, RoHS, CE, GB/T45001/IS045001, 3C certificates.

Based on 7S methodology, Lvma company highlights the quality of each product. Every key procedure is strictly tested, and each main production line has automated testing equipment for withstand voltage detection, integrated detection, aging test, final inspection, life-time testing, with our own laboratories for components and finished products detection.

Ye Jinfei, the company's founder with over 40 years experience in technology research and development, participated in the formulation of China ATS GB standard and owned three manufacturing factories.

The company has an advanced R&D team of nearly 40 engineers, holding more than 40 valuable patents. Around 20 global marketing managers with professional service capabilities, maintaining long-term cooperation with top-ranking world clients. Market coverage: Europe, Middle East, South America, Southeast Asia & Africa etc. Our products have been widely recognized by customers.

LVMA Import and Export Co.,Ltd. is the subsidiary corporation of Lvma Electric Co., Ltd.

LMM1 SERIES

Moulded Case Circuit Breaker

Overview

The circuit breaker has a rated insulation voltage of up to 1000V and is applicable to distribution network circuit of AC 50Hz, rated working voltage up to 400V and rated working current up to 1600A, for power distribution and for protecting circuits and power equipment from overload, short-circuit, and undervoltage faults. It can also be used for the protection from infrequent starting, overload, short-circuit, and undervoltage of the eletromotor.

This circuit breaker features a compact size, high breaking capacity, and short flying-arc, making it an ideal product for users. It can be installed vertically (upright) or horizontally (flat).

This circuit breaker complies with standard IEC 60947-2 and GB/T 14048.2.

Suitable working environment and installation condition

- Altitude: less than 2000m
- Ambient medium temperature: -5°C ~ + 40 °C (+ 45 °C for shipping products)
- Can withstand moist air
- Can withstand mold
- Can withstand nuclear radiation
- Max. Inclination: 22.5°
- Can still work reliably if the product subjects to the normal vibration from ships
- Can still work reliably if the product subjects to the earthquake (4g)
- Put in the place without explosion danger and conductive dust, and free from gases or conductive dust that could corrode metal or damage insulation.
- Put in the place without sleet

Circuit Breakers codes and Implications

LMM 1-□□□/□□□□

- N-pole type ABCD
- Application code
- Trip mode and accessory code
- No. of poles
- Operation mode
- Rated limit short circuit breaking capacity class
- Rated frame current
- Design No.
- Moulded Case Circuit Breaker
- Enterprise code

Note:

1. According to the rated limit short circuit breaking capacity, it can be divided into S type(standard type), M type (relatively high breaking capacity type).
2. None=Handle direct operation, P=Electric operation, Z=Rotating handle operation
3. None=Circuit breaker for power distribution, 2=Motor protection
4. According to the number of product poles, there are three poles and four poles. There are four types of neutral pole (N pole) in four-pole products:

Type A: N pole do not install over-current release, and N pole electrifies all the time, at the same time, N pole does not open and close together with other three poles.

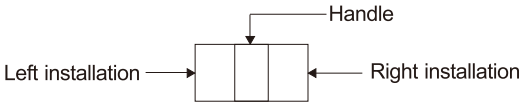
Type B: N pole do not install over-current release, and N pole opens and closes together with other three poles (N pole closes first, then opens)

Type C: N pole installs over-current release, and N pole opens and closes together with other three poles (N pole closes first, then opens).

Type D: N pole installs over-current release, and N pole electrifies all the time, at the same time, N pole does not open and close together with other three poles.

Release mode and accessory code

◆ Release mode and internal accessory



□ Alarm contact
■ Aux contact
● Shunt release
○ Undervoltage release (UVT)
→ Lead wire direction

Code	Accessory name	Model / No. of poles	LMM1-63 LMM1-125	LMM1-250	LMM1-400	LMM1-630	LMM1-800	LMM1-1600(1250)
			3,4	3,4	3,4	3,4	3,4	3,4
208、308	Alarm contact		□	□	□	□	□	□
210、310	Shunt release		●	●	●	●	●	●
220、320	Auxiliary contact		■	■	■	■	■	■
230、330	Under-voltage release		○	○	○	○	○	○
240、340	Shunt auxiliary contact		● ■	● ■	● ■	● ■	● ■	■ ●
250、350	Shunt release UVT		● ○	● ○	● ○	● ○	● ○	——
260、360	Two sets of auxiliary contacts		■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
270、370	Auxiliary contact UVT		■ ○	■ ○	■ ○	■ ○	■ ○	■ ○
218、318	Shunt alarm contact		● □	● □	□ ●	□ ●	□ ●	□ ●
228、328	Auxiliary alarm contact		■□	■□	■□	■□	■□	——
238、338	UVT alarm contact		□ ○	□ ○	□ ○	□ ○	□ ○	——
248、348	Shunt auxiliary alarm contact		● ■□	● ■□	■□ ●	■□ ●	■□ ●	——
268、368	Two sets of aux contacts + alarm contact		■□ ■	■□ ■	■□ ■	■□ ■	■□ ■	——
278、378	Aux contact UVT alarm contact		■□ ○	■□ ○	■□ ○	■□ ○	■□ ○	——

Note:

◆ 200: Indicates a circuit breaker with only an electromagnetic release; 300: Indicates a circuit breaker with a thermal-magnetic release; 000: Indicates a circuit breaker without an overcurrent release (isolation switch).

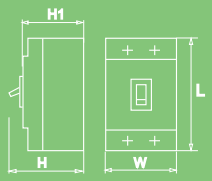
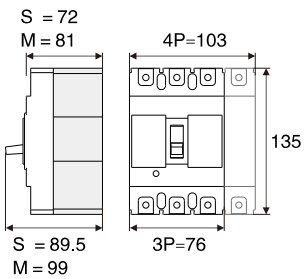
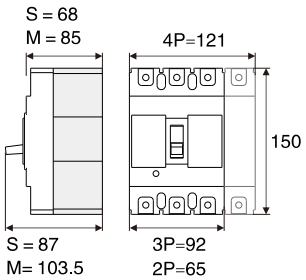
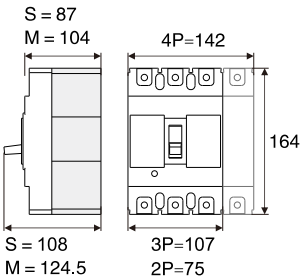
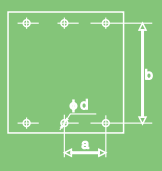
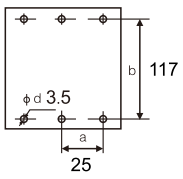
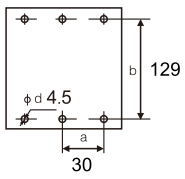
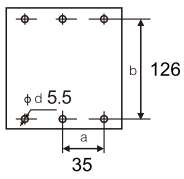
◆ For MM1-125 and MM1-250 two-pole products, only 210/310/220/320/230/330 are available. For MM1-63/125/250 four-pole circuit breakers, there are no 240/340/360/260/268/368 options when the N-pole is of type A or D.

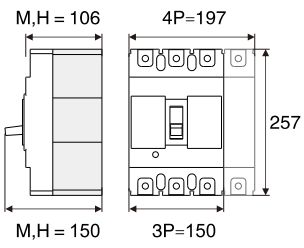
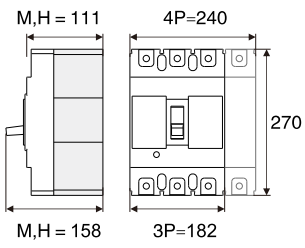
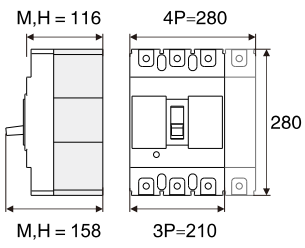
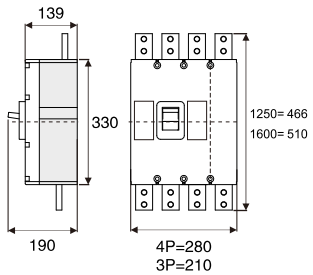
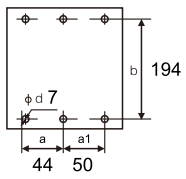
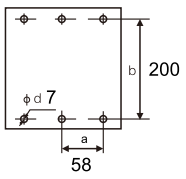
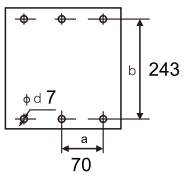
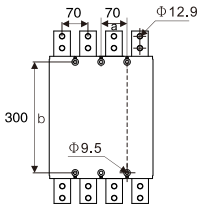
◆ For MM1-400, MM1-630, and MM1-800, the auxiliary contacts for the 248/348/278/378 models consist of one set (1NO+1NC). For the 268/368 models, the auxiliary contacts consist of three sets (3NO+3NC). The number of auxiliary contacts for other models is two sets for MM1-400 and above, and one set for models below MM1-250.

◆ For MM1-63, MM1-125, and MM1-250, models 220/320/240/340/270/370 can provide two sets of contacts (2NO+2NC), while models 260/360 can provide three sets of contacts (3NO+3NC). Please specify when placing an order.

LMM1
Series Moulded Case Circuit Breaker

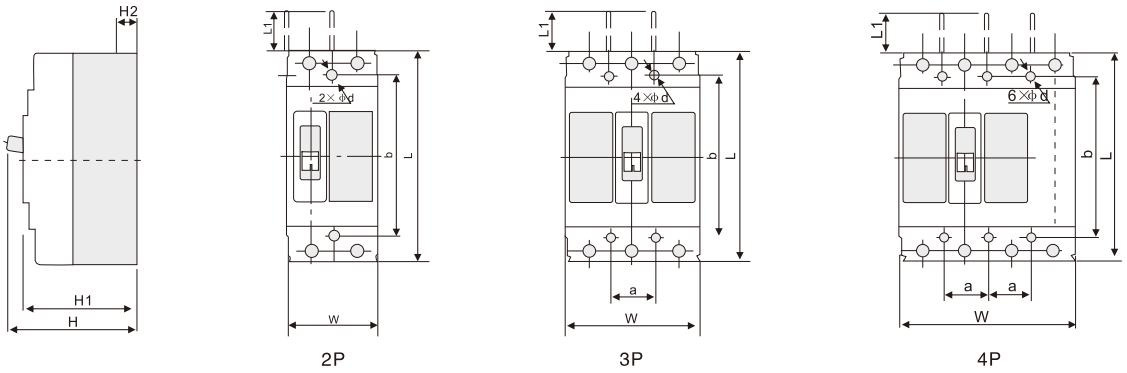
Main technical parameters

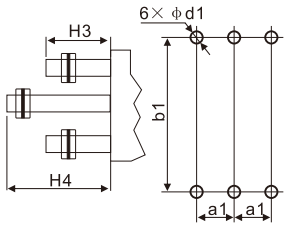
										
Model		LMM1–63			LMM1–125			LMM1–250		
Rated frame current Inm (A)		63			125			250		
Rated current In (A)		10、16、20、25、32、40、50、63			16、20、25、32、40、50、63、80、100、125			100、125、140、160、180、200、225、250		
Rated voltage Ue (V)		AC400			AC400 (2P:230V)			AC400 (2P:230V)		
Rated insulation voltage Ui (V)		AC800			AC800			AC800		
No. of poles		3,4			2,3,4			2,3,4		
Rated limit short-circuit breaking capacity class		S		M	S		M	S		M
Rated limit short-circuit breaking capacity Icu (kA)		12	18	35	12	35	50	12	35	50
Rated service short-circuit breaking capacity Ics (kA)		6	12	22	6	22	35	6	22	35
Operation life (cycle)	NO	4500			3000			2500		
	OFF	8500			7000			6500		
Arcing distance (mm)		0、⩽50			0、⩽50			⩽50		
Outline dimensions (mm)										
										
Installation dimensions (mm)										
										

							
LMM1–400		LMM1–630		LMM1–800		LMM1–1600(1250)	
400		630		800		1600	
225、250 315、350、400		400、500、630		630、700、800		800、1000、 1250、1600	
AC400		AC400		AC400		AC400	
AC800		AC800		AC800		AC1000	
3,4		3,4		3,4		3,4	
	M		M		M		
35	65	35	65	35	65	65	
22	45	22	50	22	50	50	
1500		1500		1000		500	
4000		4000		2500		2500	
⩽100		⩽100		⩽100		⩽120	
							
							

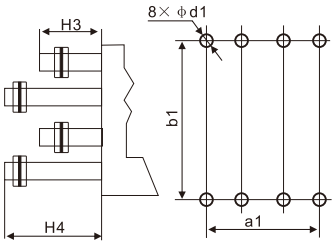
LMM1 Outline and installation dimensions

◆ Outline and installation dimensions of fixed front-connected and rear-connected wiring





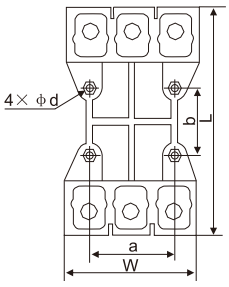
3-pole rear-connected wiring size

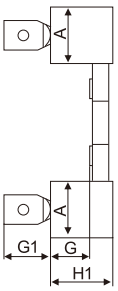


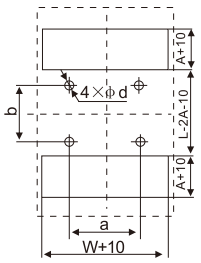
4-pole rear-connected wiring size

Model	No. of poles	Outline dimensions (mm)						Installation dimensions (mm)			Rear-connected wiring size (mm)				
		L	L1	W	H	H1	H2	a	b	ϕd	a1	b1	d1	H3	H4
LMM1–63S	3	135	21	76	89.5	72	18	25	117	3.5	25	117	18	52	75
	4			103				50							
LMM1–63M	3			76	99	81	28	25							
	4			103				50							
LMM1–125S	2	150	51	65	87	68	24	…	129	4.5	30	132	22	65	100
	3			92				30							
	4			121				60							
LMM1–125M	2			65	103.5	85	23	…							
	3			92				30							
	4			121				60							
LMM1–250S	2	164	64	75	108	87	24	…	126	5.5	35	144	24	70	110
	3			107				35							
	4			142				70							
LMM1–250M	2			75	124.5	104	24	…							
	3			107				35							
	4			142				70							
LMM1–400	3	257	105	150	153	106	38	44	194	7	48	224	32	48.5	108.5
	4			197				94							
LMM1–630	3	270	105	182	157	111	43	58	200	7	58	234	40	70	120
	4			240				116							
LMM1–800	3	280	105	210	158	116	42	70	243	7	70	243	48	75	125
	4			280				140							

◆ Outline and installation dimensions of plug-in rear connection







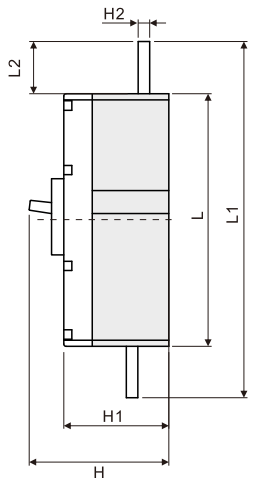
Mounting hole opening size

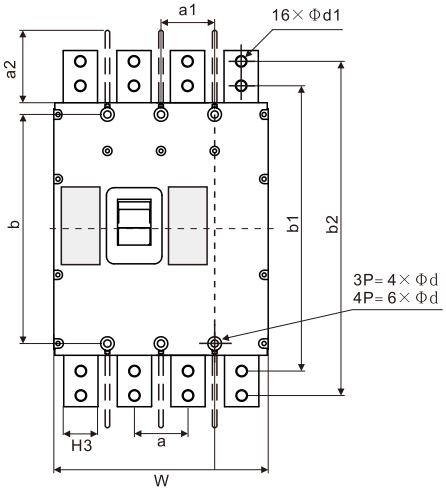
Unit (mm)

Model	W	L	A	H1	G	G1	a	b	d
LMM1–63	75	135	18	28	18	16	50	60	5.5
LMM1–125	91	168	38	50	33	28	60	56	6.5
LMM1–250	107	186	46	50	33	37	70	54	6.5
LMM1–400	149	280	55	60	38	46	60	129	8.5
LMM1–630	182	300	65	60	39	50	100	123	8.5
LMM1–800	212	305	62	87	60	22	90	146	11

LMM1-1600(1250) Outline and installation dimensions

◆ Outline and installation dimensions of front-connected wiring of circuit breaker

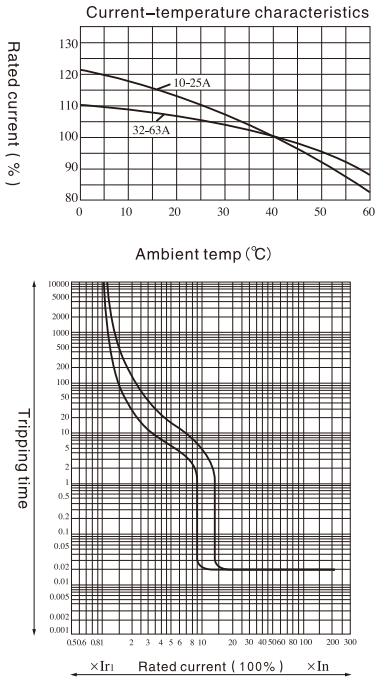




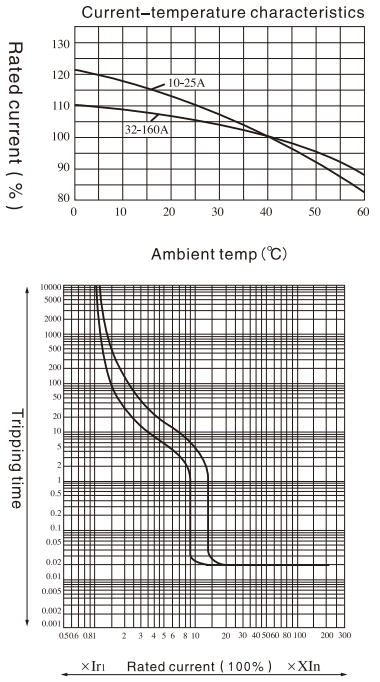
Model	No. of poles	Outline dimensions (mm)								Installation dimensions (mm)							
		L	L1	L2	W	H	H1	H2	H3	a	a1	a2	b	b1	b2	Φd	Φd1
LMM1–1250	3	330	466	68	210	190	139	14	45	70	70	107	300	370	436	9.5	12.9
	4	330	466	68	280	190	139	14	45	70	70	107	300	370	436	9.5	12.9
LMM1–1600	3	330	510	90	210	190	139	16	45	70	70	107	300	390	470	9.5	12.9
	4	330	510	90	280	190	139	16	45	70	70	107	300	390	470	9.5	12.9

Tripping characteristics curve

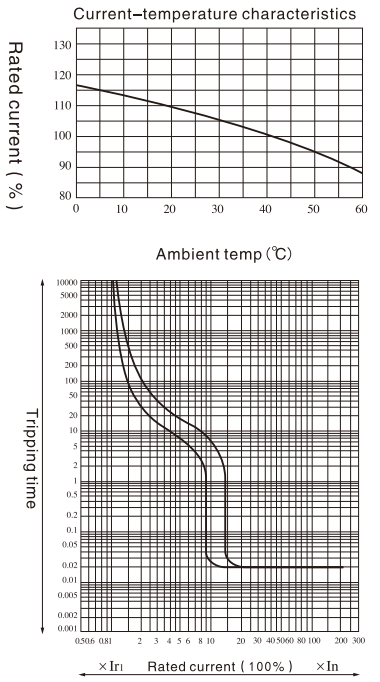
◆ Note: The characteristic curve is measured under the cold state and three-phase load



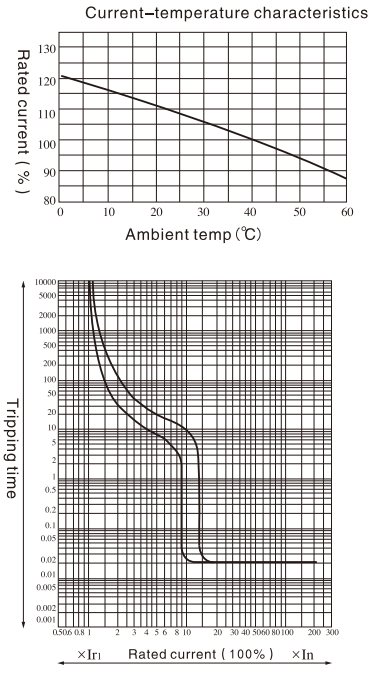
LMM1–63S、M Time / current characteristic curve



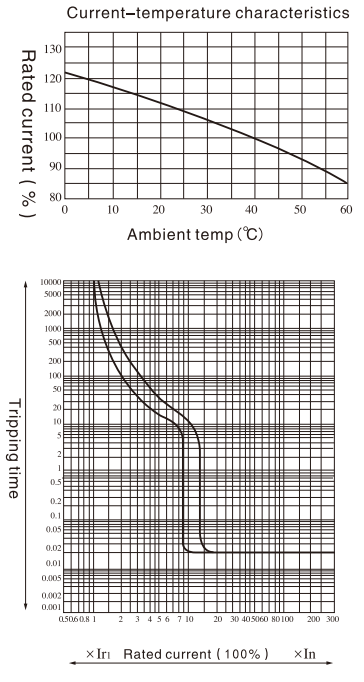
LMM1–125S、M Time / current characteristic curve



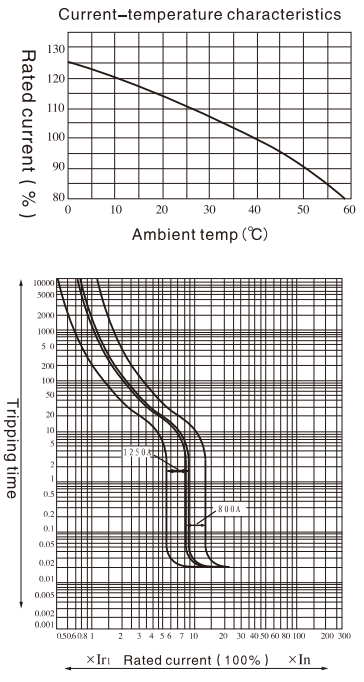
LMM1–250S、M Time / current characteristic curve



LMM1–400M Time / current characteristic curve



LMM1–630M Time / current characteristic curve



LMM1–800/1250 Time / current characteristic curve

Protection characteristics

◆ Trip performance

◆ For power distribution

Rated operating current of release (A)	Thermal release (reference temperature 40°C)		Operating current of electromagnetic release (A)	Remark
	1.05In (cold state) non-trip time (h)	1.30In (hot state) non-trip time (h)		
10<In≤63	≥1	<1	10In±20%	Distribution protection type Note: 1600A for 7In±20%
63<In≤125	≥2	<2	10In±20%	
125<In≤1600	≥2	<2	5In±20% 7In±20% 10In±20%	

Note: For rated currents below 160A, there is no 5In magnetic trip.

◆ For motor protection

Rated operating current of release (A)	Thermal release (reference temperature 40°C)				Operating current of electromagnetic release (A)
	1.0In (cold state) non-trip time	1.20In (hot state) trip time (h)	1.50In (hot state) trip time (h)	7.20In (cold state) non-trip time (h)	
10<In≤1600	≥2	≤2	8min		12In±20%; 7In±20%

Power loss

◆ Circuit breaker power loss

Model	Electric current (A)	Three-pole total power loss (W)		
		Wiring before and after the board	Plug-in front connection	Plug-in rear connection
LMM1–63(S/M)Direct heating(10A~25A)	25	28	/	32
LMM1–125(S/M)Direct heating(16A~25A)	25	40	42	45
LMM1–63(S/M)Indirect heating(32A~63A)	63	20	/	24
LMM1–125(S/M)Indirect heating(32A~100A)	125	35	37	40
LMM1–250(S/M)	250	62	66	70
LMM1–400	400	115	120	125
LMM1–630	630	187	193	200
LMM1–800	800	262	/	300
LMM1–1600(1250)	1600	386	/	/

Derating factor

◆ Derating factor of circuit breaker ambient temperature change

Model	Derating factor (In)				
	+40℃	+45℃	+50℃	+55℃	+60℃
LMM1–63	1	0.94	0.88	0.81	0.74
LMM1–125	1	0.96	0.91	0.85	0.78
LMM1–250	1	0.97	0.94	0.90	0.86
LMM1–400	1	0.95	0.89	0.82	0.75
LMM1–630	1	0.94	0.88	0.82	0.76
LMM1–800	1	0.94	0.87	0.80	0.72
LMM1–1600(1250)	1	0.92	0.85	0.79	0.70

Note: The above derating factors are measured under the rated frame current.

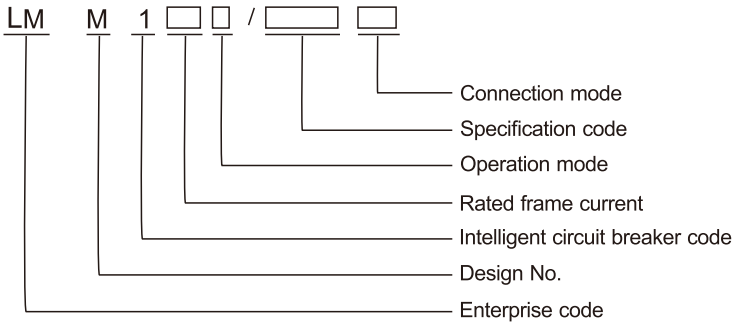
Applicable working environment

- The installation site and installation method are the same as those of LMM1 series moulded case circuit breaker
- Pollution degree: III
- The installation category of the main circuit of the circuit breaker is III, while the installation category for the auxiliary circuits and control circuits is II.

Installation method

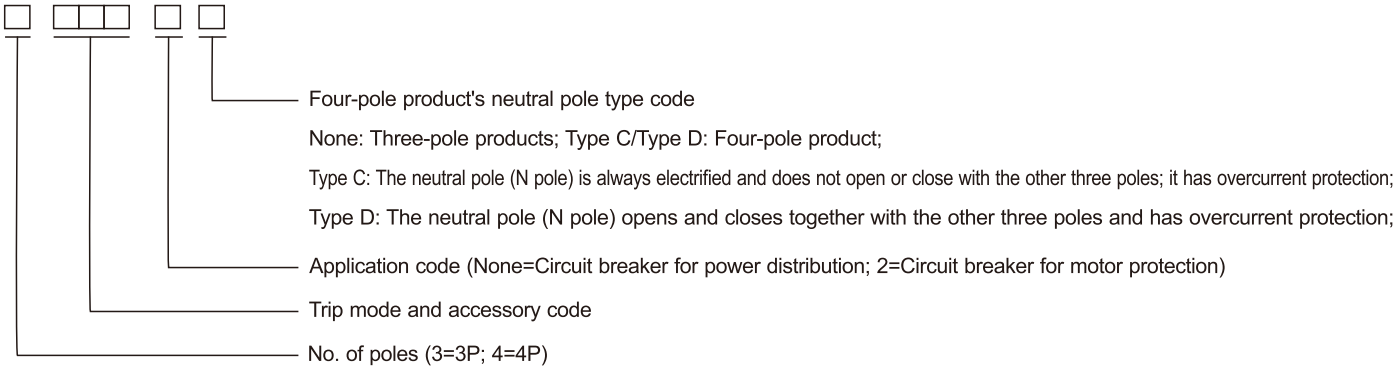
This series of circuit breakers is typically installed vertically, but can also be installed horizontally.

Model and Meaning



Note:

1. Wiring methods include frontplane wiring (can be unmarked), backplane wiring, and draw-out type wiring (indicated by C).
2. Specification code (composed of six digits)



Note:

3. Operation mode: None=Handle direct operation, Q=Rotating handle operation D=Electric operation
4. No intelligent type for rated frame current below 630A

Accessory code and internal assembly position

The internal accessory assembly positions are the same as those of the LMM1 series moulded case circuit breakers. Accessory codes: Change the "3" of the thermal-magnetic type to "4"; for example, the "Shunt Release" becomes 410.

Scope of application and main features

LMM1 series moulded case circuit breaker (hereinafter referred to as circuit breaker) is a new type of intelligent circuit breaker developed by our factory using international advanced design and manufacturing technology, and its rated insulation voltage is 800V. It's suitable for circuit of AC 50Hz, rated working voltage below 400V and rated working current up to 2500A for infrequent conversion. The circuit breaker has the function of overload, short circuit and undervoltage protection, which can protect the line and power equipment from damage.

◆ This series of circuit breakers has the features of compact structure, small volume, short fly-arc, complete external and internal accessories, etc

Overload long delay inverse time limit, short short delay fixed time limit, short circuit instantaneous action and other protection function parameters can be adjusted by the user, making it convenient and intuitive. This allows for selective protection and ensures more reasonable coordination between upstream and downstream circuit breakers in the power distribution network;

◆ The circuit breaker has operating current light column indication, the pre-alarm indication, the overload indication, etc.;

◆ Self-diagnostic functions with intelligent control;

◆ Trip test function with intelligent control;

◆ The transformer inside the intelligent circuit breaker can provide self-generated power supply, and when the three-phase current exceeds 0.4In, it can reliably achieve long delay, short delay and instantaneous protection;

◆ Thermal memory function

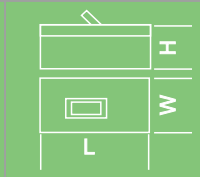
◆ Grounding protection function (4P products)

Compliant standards

This series of circuit breakers performs the following standards:

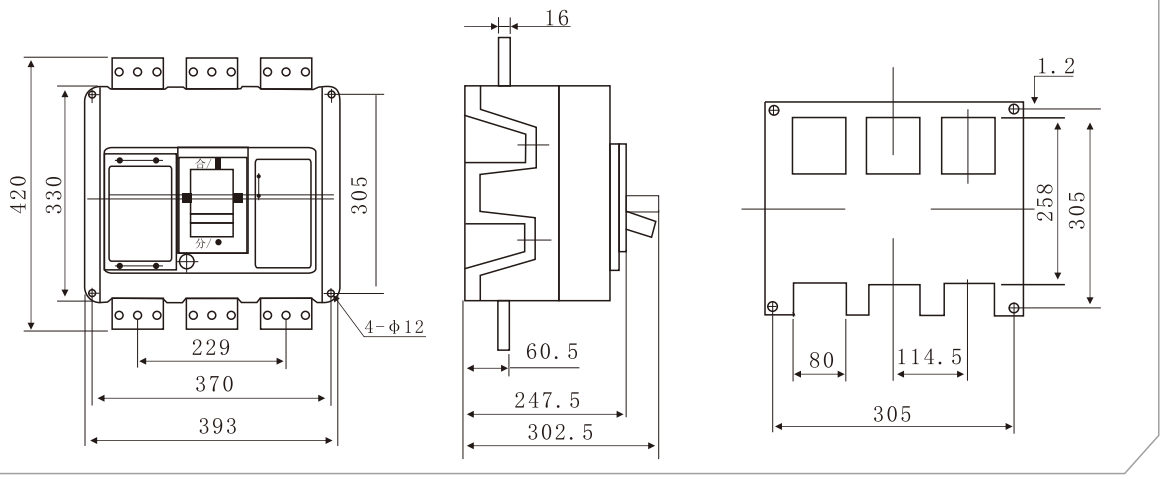
IEC60947-1 GB/T14048.1 *General Provisions*
IEC60947-2 GB14048.2-2001 *Low Voltage Circuit Breaker*
Appendix F: Additional Requirements for Circuit Breakers with Electronic Overcurrent Protection

Circuit breaker specifications and performance parameters

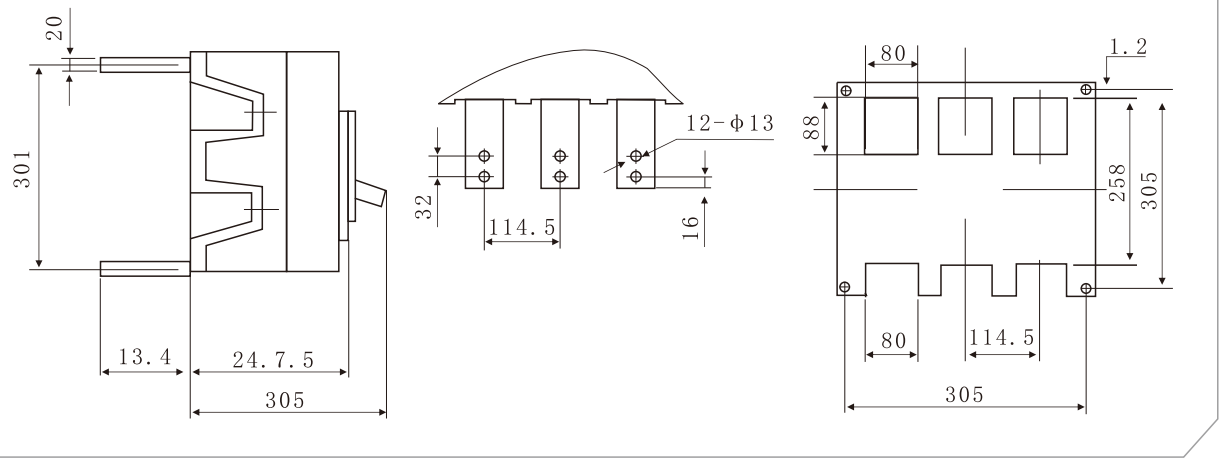
Shape				
Model		LMM1-2000	LMM1-2500	LMM1-3200
Rated frame current (Inm) A		2000	2500	3200
No. of poles		3	3	3
Rated current of circuit breaker (In) A		1250、1400、1600 1800、2000、2500	1250、1400、1600 1800、2000、2500	2500、2900、3200
Rated working voltage (Ue) V	AC			
Rated insulation voltage (Ui) V				
Rated limit breaking capacity Icu/kA	AC690V	35	35	35
	AC400V	100	100	100
Rated service breaking capacity Ics/kA	AC690V	35	35	35
	AC400V	75	75	75
Dimensions 	W	393	393	393
	L	330	330	330
	H	247.5	247.5	247.5
Connection mode	Frontplane wiring	☆	☆	☆
	Backplane wiring	☆	☆	☆
	Draw-out type wiring	☆	☆	☆
Accessories — Internal accessories	Undervoltage release	☆	☆	☆
	Shunt release	☆	☆	☆
	Auxiliary contact	☆	☆	☆
	Alarm contact	☆	☆	☆
Accessories — External accessories	Electric operating mechanism	☆	☆	☆
	Rotating handle operating mechanism	☆	☆	☆
Arcing distance (mm)		150	150	150
Weight (Kg)		46.5	49	49

Shape and installation dimensions

LMM1-2000 frontplane wiring size

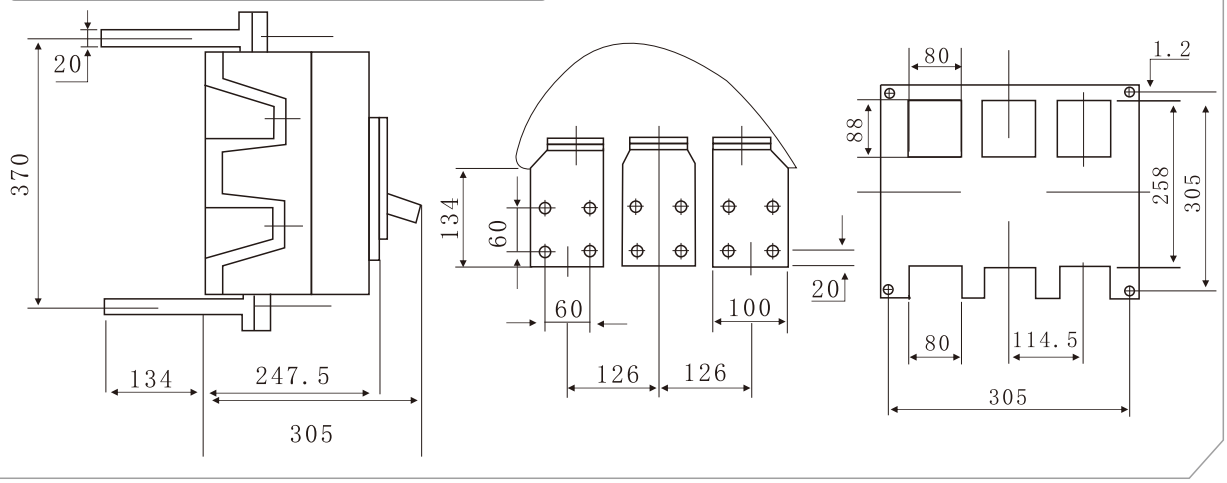


LMM1-2000 backplane wiring size

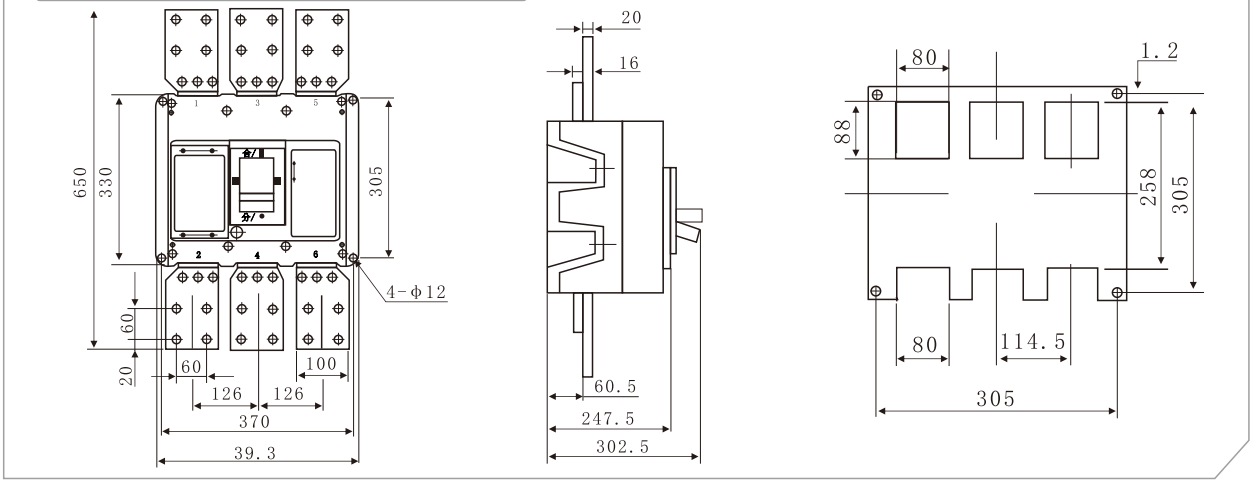


Shape and installation dimensions

LMM1-2500/3200 backplane wiring size



LMM1-2500/3200 frontplane wiring size



Use and maintenance

◆ The circuit breaker has a rated insulation voltage of up to 1000V and is applicable to distribution network circuit of AC 50Hz, rated working voltage up to 400V and rated working current up to 1600A, for power distribution and for protecting circuits and power equipment from overload, short-circuit, and undervoltage faults. It can also be used for the protection from infrequent starting, overload, short-circuit, and undervoltage of the eletromotor.

◆ This circuit breaker features a compact size, high breaking capacity, and short flying-arc, making it an ideal product for users. It can be installed vertically (upright) or horizontally (flat).

◆ This circuit breaker complies with standard IEC 60947-2 and GB/T 14048.2.

Ordering instructions

◆ Please indicate the model, specification and order quantity of the circuit breaker. When using undervoltage release, shunt release or electric operating mechanism, please indicate the voltage value of working voltage or control power supply voltage.

◆ For example: 10 sets of MM1-125S /3300 rear-connected wiring (front-connected wiring can be unmarked) with rated working current of 80A.

◆ Please state when the ambient temperature is under the following conditions: the upper limit exceeds + 40°C or the lower limit is lower than -5°C.

LMM1L SERIES

Moulded Case Earth Leskage Circuit Breaker

Overview

The circuit breaker has a rated insulation voltage of up to 1000V and is applicable to distribution network circuit of AC 50Hz, rated working voltage up to 400V and rated working current up to 1250A, for power distribution and for protecting circuits and power equipment from overload, short-circuit, and undervoltage faults. It can also be used for the protection from infrequent starting, overload, short-circuit, and undervoltage of the motor.

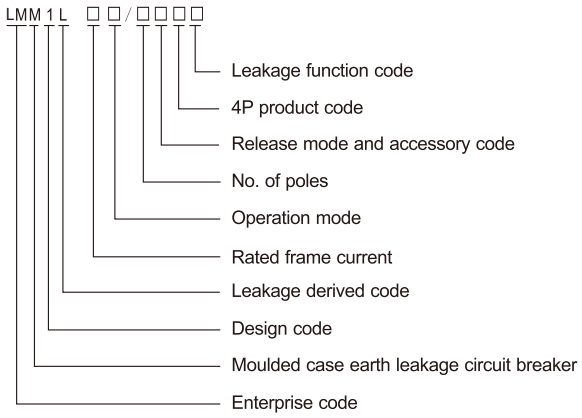
This circuit breaker features a compact size, high breaking capacity, and short flying-arc, making it an ideal product for users. It can be installed vertically (upright) or horizontally (flat).

This circuit breaker complies with standard IEC 60947-2 and GB/T 14048.2.

Suitable working environment and installation condition

- Altitude: less than 2000m
- Ambient medium temperature: -5°C ~ + 40 °C (+ 45 °C for shipping products)
- Can withstand moist air
- Can withstand mold
- Can withstand nuclear radiation
- Max. Inclination: 22.5°
- Can still work reliably if the product subjects to the normal vibration from ships
- Can still work reliably if the product subjects to the earthquake (4g)
- Put in the place without explosion danger and conductive dust, and free from gases or conductive dust that could corrode metal or damage insulation.
- Put in the place without sleetn

Circuit breaker model and meaning



Note:

1) None=Handle direct operation, D=Electric operation, Z=Rotating operation

2) 3=3P; 4=4P

3) Type A: N pole do not install over-current release, and N pole electrifies all the time, at the same time, N pole does not open and close together with other three poles;

Type B: N pole do not install over-current release, and N pole opens and closes together with other three poles;

Type C: N pole installs over-current release, and N pole opens and closes together with other three poles;

Type D: N pole installs over-current release, and N pole electrifies all the time, at the same time, N pole does not open and close together with other three poles;

4) None=Leakage trip no alarm; Ⅰ=Leakage alarm and trip; Ⅱ=Leakage alarm no trip.

Main features

◆ Three-phase residual current protection: The MM1L circuit breaker provides ground fault protection. Unlike conventional residual current circuit breakers, which use two-phase power sampling for the leakage protection module, this series operates with three-phase. Even if any phase is missing, the leakage protection module can still function properly.

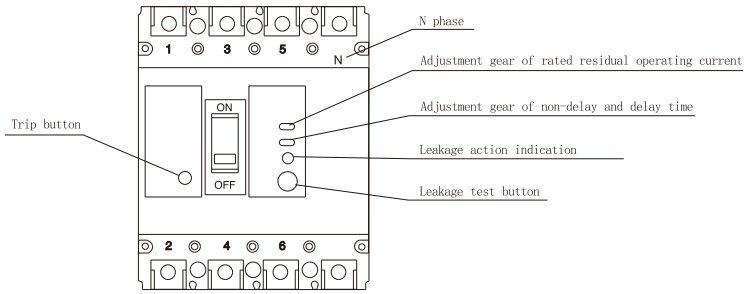
◆ Field-adjustable: The rated residual operating current I△n and residual current operating time (non-delay and delay) can be adjusted on-site based on actual conditions.

◆ Low voltage protection: Even when the phase voltage drops to 50V, the leakage protection module will still operate normally.

◆ Leakage alarm output function: When the residual current in the equipment or line reaches or exceeds the setting value, the circuit breaker equipped with a leakage alarm module outputs a passive contact signal to activate the corresponding alarm device.

◆ Installation interchangeability: The outline and installation dimensions are the same as those of the MM1 series circuit breakers that have the same specifications (The MM1L-630 is the same as MM1L-800), so the installation has good interchangeability.

Panel operation introduction



Main technical specifications

◆ Leakage action characteristics

Residual current	I△n	2I△n	5I△n	10I△n
Non-delay Max. breaking time (s)	0.2	0.1	0.04	0.04
Delay Max. breaking time (s)	0.5/1.15/2.15	0.35/1/2	0.25/0.9/1.9	0.25/0.9/1.9
Delay ultimate non-trip time △t (s)	--	0.1/0.5/1	--	--

Protection characteristics

◆ Trip performance

◆ For power distribution

Rated operating current of release (A)	Thermal release (Ambient temperature 40℃)		Operating current of electromagnetic release (A)	Remark
	1.05In (cold state) non-trip time (h)	1.30In (hot state) trip time (h)		
10≤In≤63	≥1	<1	10In±20%	Distribution protection type
63<In≤100	≥2	<2	10In±20%	
100<In≤1250	≥2	<2	10In±20%; 7In±20%	

◆ For motor protection

Rated operating current of release (A)	Thermal release (Ambient temperature 40℃)				Operating current of electromagnetic release (A)
	1.0In (cold state) non-trip time	1.20In (hot state) trip time (h)	1.50In (hot state) trip time (h)	7.20In (cold state) non-trip time (h)	
10<In≤1250	≥2	≤2	8min	6S<Tp≤20s	12In±20%; 7In±20%

Protection characteristics

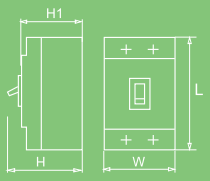
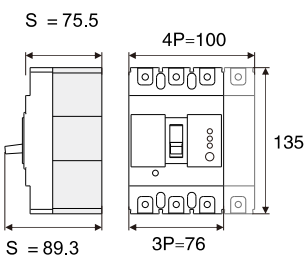
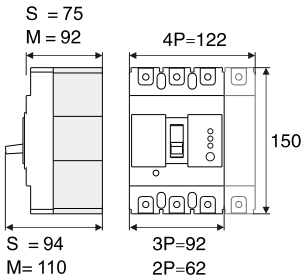
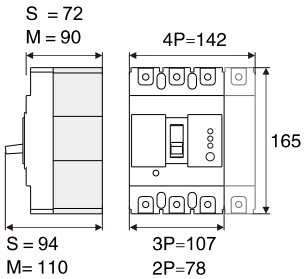
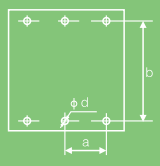
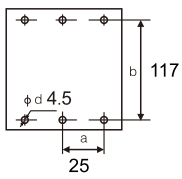
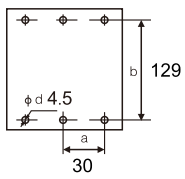
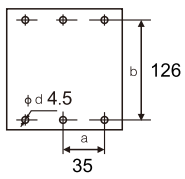
◆ Circuit breaker power loss reference table

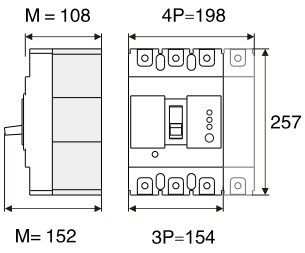
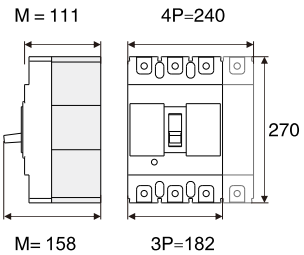
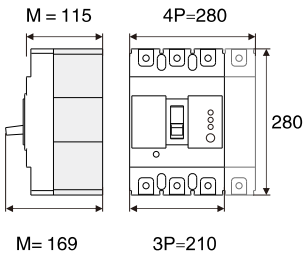
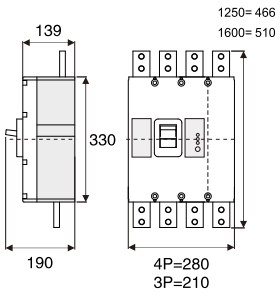
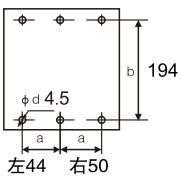
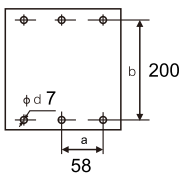
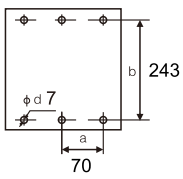
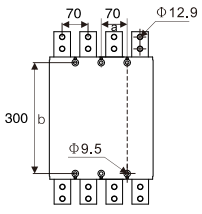
Model	Electric current (A)	Three-pole total power loss (W)		
		Front and rear connection	Plug-in front connection	Plug-in rear connection
LMM1-125(S/M) (Direct heating) (16A~25A)	25	40	42	45
LMM1-125(S/M) (Interheat) (32A~100A)	125	35	37	40
LMM1-125(S/M)	250	62	66	70
LMM1-400	400	115	120	125
LMM1-630	630	187	193	200
LMM1-800	800	262	/	300
LMM1-1600(1250)	1600	386	/	/

LMM1L

Series Moulded Case Earth Leakage Circuit Breaker

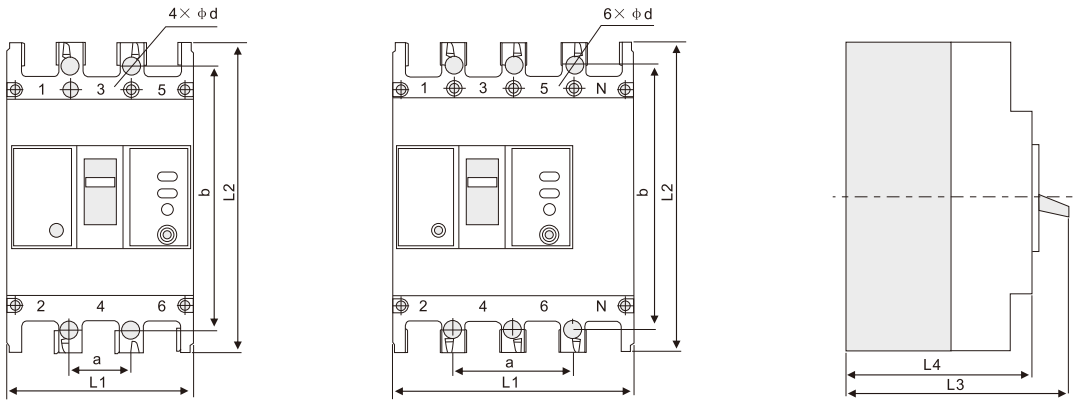
Main technical parameters

									
Model		LMM1L–125(63 Shell Frame)		LMM1L–125			LMM1L–250		
Rated frame current Inm (A)		125		125			250		
Rated current In (A)		16, 20, 25, 32, 40, 50, 63, 80, 100, 125		16, 20, 25, 32, 40, 50, 63, 80, 100, 125			100, 125, 140, 160, 180, 200, 225, 250		
Rated working voltage Ue (V)		AC400		AC400 (2P:230V)			AC400 (2P:230V)		
Rated insulation voltage Ui (V)		AC800V							
No. of poles		3, 4	3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4
Rated limit short-circuit breaking capacity class		S		S		M	S		M
Rated residual operating current I△n	I Type	100、300、500mA		100、300、500mA			100、300、500mA		
	II Type	50、100、300mA		50、100、300mA			50、100、300mA		
Rated residual non-operating current		I△n × 50%							
Rated residual short-circuit making (breaking) capacity I△n (mA)		Icu × 25%							
Rated limit short-circuit breaking capacity Icu (kA)	AC400V	12	35	12	35	50	12	35	50
Rated service short-circuit breaking capacity Ics (kA)	AC400V	6	22	6	22	35	6	22	35
Operation life (cycle)	NO	3000		3000			2500		
	OFF	7000		7000			6500		
Arcing distance (mm)		⩽50		⩽50			⩽50		
Outline dimensions (mm)									
									
Installation dimensions (mm)									
									

						
LMM1L–400		LMM1L–630		LMM1L–800		LMM1L–1600 (1250)
400		630		800		1600
200、225、250、315、350、400		400、500、630		400、500、630、700、800		630、700、800、1000、1250、1600
AC400V						AC400V
AC800V						AC1000V
3,4	3,4	3,4	3,4	3,4	3,4	3,4
	M		M		M	
100、300、500mA		100、300、500mA				300、500、1000、2000mA
300、500、1000mA		300、500、1000mA				
I△n × 50%						
Icu × 25%						
35	65	35	65	35	65	65
22	45	22	50	22	50	50
1500		1500		1500		500
4000		4000		3000		2500
≤100		≤100		≤100		⩽120
						
						

LMM1L Outline and installation dimensions

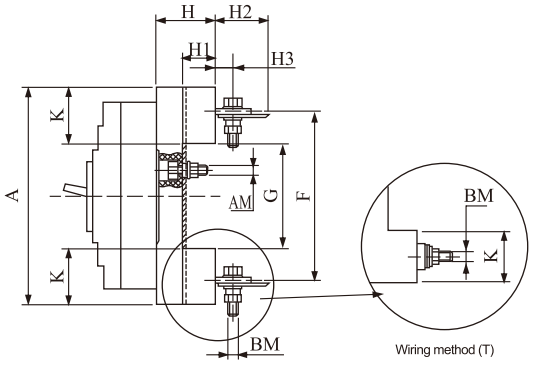
◆ Outline and installation dimensions of front-connected wiring in circuit breaker

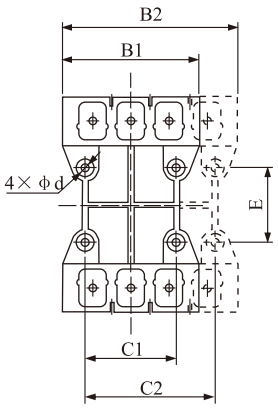


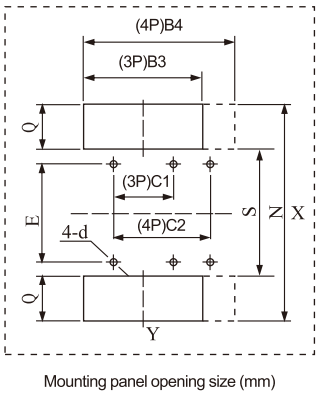
Front-connected wiring in circuit breaker

Model	Pole	Outline dimensions (mm)				Installation dimensions (mm)		
		L1	L2	L3	L4	a	b	ϕ d
LMM1L–125S (63shell frame)	3	76max	135max	89.3max	75.5max	25	117	4 × ϕ4.5
	4	100max				50		6 × ϕ4.5
LMM1L–125S	2	62max	150max	94max	75max	–	129	2 × ϕ4.5
	3	92max				30		4 × ϕ4.5
	4	122max				60		6 × ϕ4.5
LMM1L–125M	2	62max	150max	110max	92max	–	129	2 × ϕ4.5
	3	92max				30		4 × ϕ4.5
	4	122max				60		6 × ϕ4.5
LMM1L–250S	2	78max	165max	94max	72max	–	125	2 × ϕ4.5
	3	107max				35		4 × ϕ4.5
	4	142max				70		6 × ϕ4.5
LMM1L–250M	2	78max	165max	110max	90max	–	125	2 × ϕ4.5
	3	107max				35		4 × ϕ4.5
	4	142max				70		6 × ϕ4.5
LMM1L–400M	3	150max	257max	152max	108max	44	194	4 × ϕ4.5
	4	198max				94		6 × ϕ4.5
LMM1L–630M	3	182max	270max	157max	111max	58	200	4 × ϕ7
	4	240max						6 × ϕ7
LMM1L–800M	3	210max	280max	169max	115max	70	243	4 × ϕ7
	4	280max						6 × ϕ7

◆ Outline and installation dimensions of plug-in rear connection





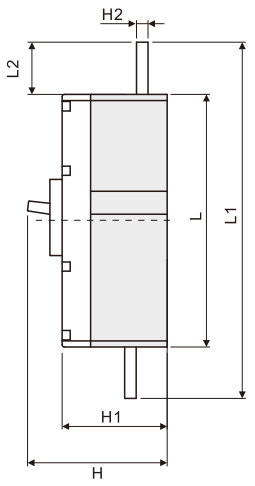


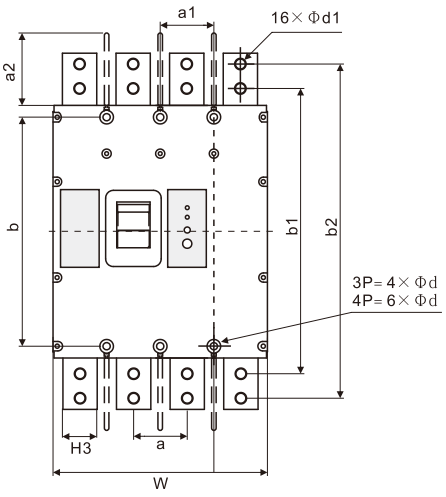
Mounting panel opening size (mm)

Model	Installation dimensions (mm)																			
	A	B1	B2	C1	C2	E	F	G	K	H	H1	H2	H3	N	S	Q	B3	B4	AM	BM	4–d
LMM1L–125(63shell frame)	135	75	100	50	75	60	117	100	18	28	18	16	10	145	90	28	85	110	M5	M5	ϕ5.5
LMM1L–125	168	91	125	60	90	56	132	92	38	50	33	28	19	178	82	48	101	135	M6	M8	ϕ6.5
LMM1L–250	186	107	145	70	105	54	145	94	46	50	33	37	20	196	84	56	117	155	M6	M8	ϕ6.5
LMM1L–400	280	149	200	60	108	129	224	170	55	60	38	46	24	290	160	65	159	210	M8	M12	ϕ8.5
LMM1L–630	300	182	242	100	158	123	234	170	65	60	39	50	32	310	160	75	192	252	M8	M12	ϕ8.5
LMM1L–800	305	210	280	90	162	146	242	181	62	87	60	22	/	315	171	72	220	290	M10	M14(T)	ϕ11

LMM1L-1600(1250) Outline and installation dimensions

◆ Outline and installation dimensions of front-connected wiring in circuit breaker

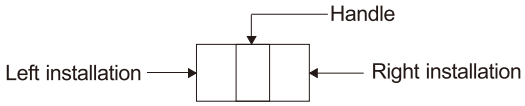




Model	Pole	Outline dimensions (mm)								Installation dimensions (mm)							
		L	L1	L2	W	H	H1	H2	H3	a	a1	a2	b	b1	b2	Φd	Φd1
LMM1L–1250	3	330	466	68	210	190	139	14	45	70	70	107	300	370	436	9.5	12.9
	4	330	466	68	280	190	139	14	45	70	70	107	300	370	436	9.5	12.9
LMM1L–1600	3	330	510	90	210	190	139	16	45	70	70	107	300	390	470	9.5	12.9
	4	330	510	90	280	190	139	16	45	70	70	107	300	390	470	9.5	12.9

Release mode and accessory code

◆ Release mode and internal accessory



☐ Alarm contact
■ Aux contact
● Shunt release
○ Undervoltage release (UVT)
→ Lead wire direction

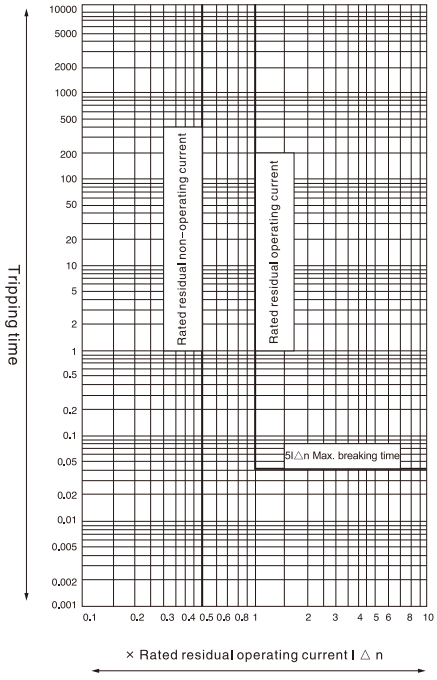
Code	Accessory name	LMM1L–125		LMM1L–250		LMM1L–400		LMM1L–630		LMM1L–800		LMM1L–1600(1250)	
	Model / No. of poles	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P
208、308	Alarm contact												
210、310	Shunt release												
220、320	Auxiliary contact												
230、330	Under-voltage release												
240、340	Shunt auxiliary contact			—		—		—		—		—	—
250、350	Shunt release UVT	—		—		—		—		—		—	—
260、360	Two groups auxiliary contacts											—	—
270、370	Auxiliary contact UVT	—		—		—		—		—		—	—
218、318	Shunt alarm contact	—		—		—		—		—		—	—
228、328	Auxiliary alarm contact											—	—
238、338	UVT alarm contact	—		—		—		—		—		—	—
248、348	Shunt auxiliary alarm contact	—		—		—		—		—		—	—
268、368	Two groups aux alarm contact	—		—		—		—		—		—	—
278、378	Aux contact UVT alarm contact	—		—		—		—		—		—	—

Notes:
☐ Release modes and internal accessory codes: The first digit 2 indicates an electromagnetic (instantaneous) trip unit; while 3 indicates a thermal-magnetic (compound) trip unit. The last two digits represent the internal accessory code, with "00" indicating no accessories.
☐ For MM1L-400 and MM1L-630, the auxiliary contacts for the 228/328/248/348 specifications consist of one set contact (1NO+1NC). For the 268/368 specifications, the auxiliary contacts consist of three sets (3NO+3NC).
☐ For MM1L-100 and MM1L-225, the auxiliary contacts for the 220/320/240/340 specifications consist of two sets (2NO+2NC), which must be specified when placing the order.
☐ If MM1L series includes a residual current alarm module, only ▲-specification accessories are available. The leakage alarm module offers two ways that must be specified when ordering:
Mode 1: When leakage occurs, the leakage alarm module sends a signal, and the circuit breaker trips;
Mode 2: When leakage occurs, the leakage alarm module sends a signal, but the circuit breaker does not trip. Users should carefully evaluate Mode 2 for specific protection requirements.
☐ Wiring diagram for the leakage alarm module refer to the product label or user manual. P1-P2 and P3-P4 are NO and NC contacts, rated for AC 230V, 5A. The input power supply of P5-P6 is AC50Hz, 230 or 400V (based on user selection).

Residual current protection characteristic curve

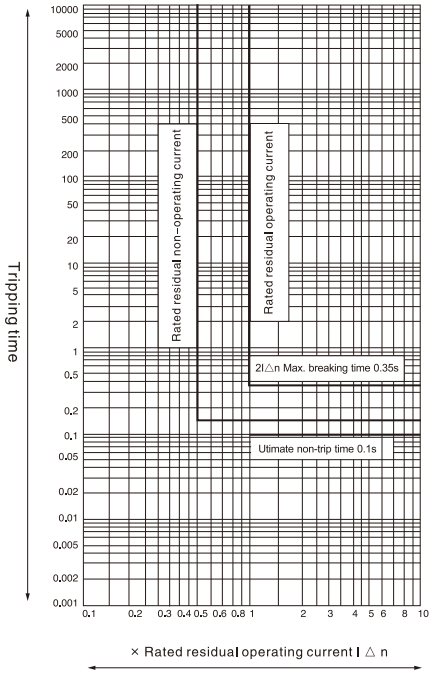
IΔn= 0.03/0.1/0.3/0.5/1(A)

Non-delay type residual current protection time/current characteristic curve



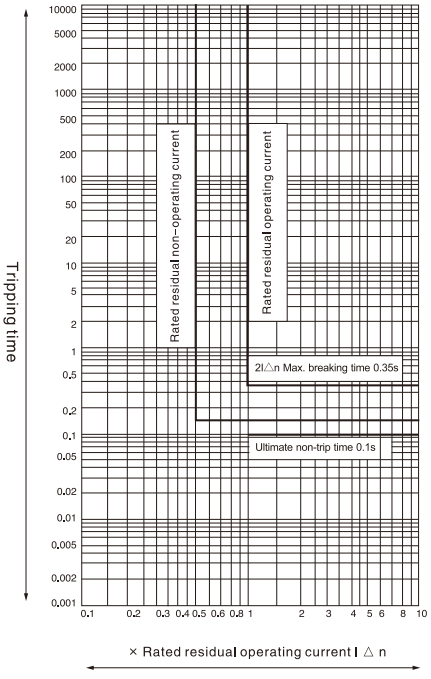
IΔn= 0.1/0.3/0.5/1(A)

Delay type residual current protection time/current characteristic curve



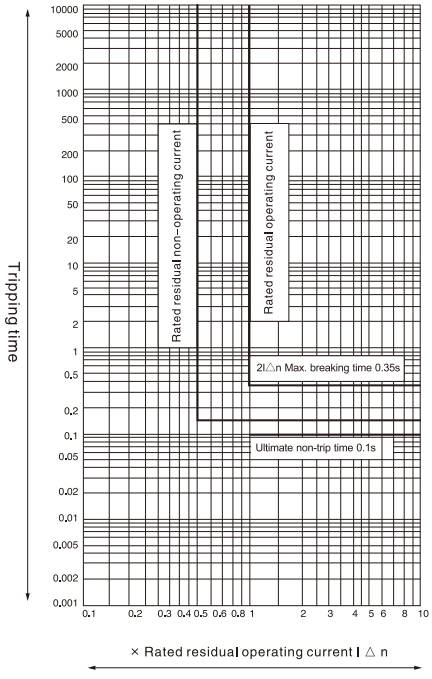
IΔn= 0.1/0.3/0.5/1(A)

Delay type residual current protection time/current characteristic curve



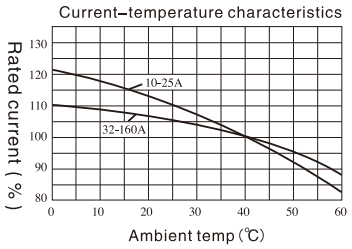
IΔn= 0.1/0.3/0.5/1(A)

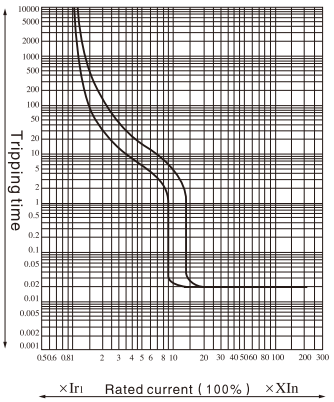
Delay type residual current protection time/current characteristic curve



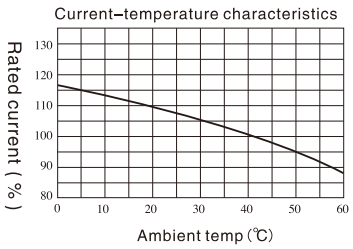
Tripping characteristic curve

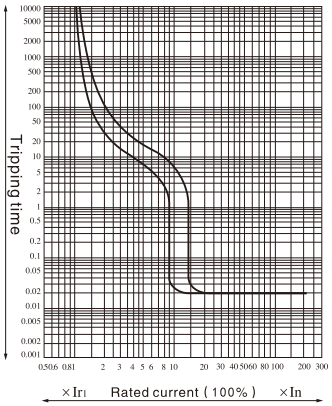
◆ Note: The characteristic curve is measured under the cold state and three-phase load.



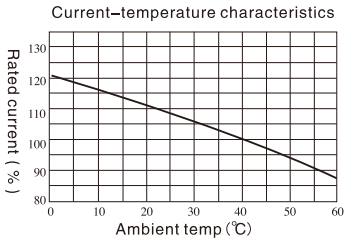


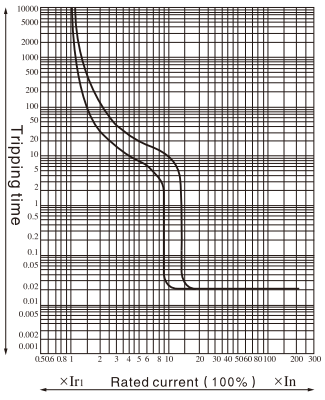
LMM1L-125S/M Time/current characteristic curve



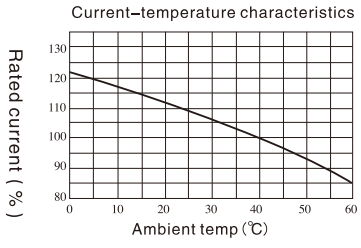


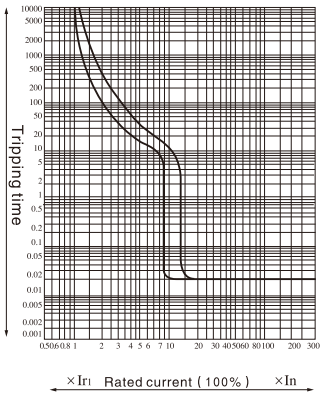
LMM1L-250S/M Time/current characteristic curve





LMM1L-400M Time/current characteristic curve

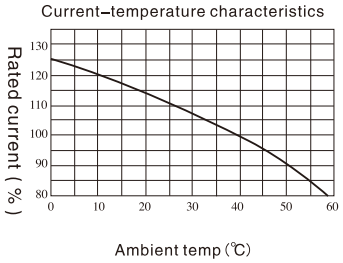


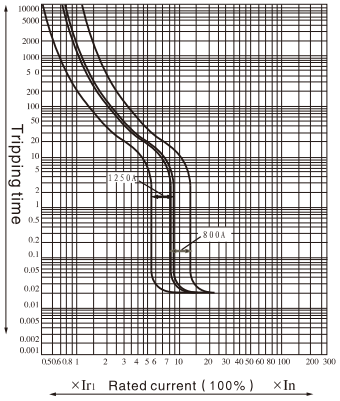


LMM1L-630M Time/current characteristic curve

Tripping characteristic curve

◆ Note: The characteristic curve is measured under the cold state and three-phase load.





LMM1L-800/1250 Time/current characteristic curve

Derating factor

◆ Derating factor of circuit breaker ambient temperature change

Model	Derating factor (In)				
	+40℃	+45℃	+50℃	+55℃	+60℃
LMM1L–125(shell frame)	1	0.94	0.88	0.81	0.74
LMM1L–125	1	0.96	0.91	0.85	0.78
LMM1L–250	1	0.97	0.94	0.90	0.86
LMM1L–400	1	0.95	0.89	0.82	0.75
LMM1L–630	1	0.94	0.88	0.82	0.76
LMM1L–800	1	0.94	0.87	0.80	0.72
LMM1L–1600(1250)	1	0.92	0.85	0.79	0.70

Note: The above derating factors are measured under the rated frame current.

Use and maintenance

◆Various characteristics and accessories of the circuit breaker shall be set by the manufacturer and shall not be adjusted arbitrarily during use. The user must understand the technical data of the product in detail before adjusting the relevant parameters of the circuit breaker.
◆The handle of the circuit breaker can be in three positions, which respectively represent the three states of closing, opening and free tripping. When the handle is in the free tripping position, pull the handle to the opening direction. At this time, the circuit breaker can be reset and then closed.
◆The user shall adhere to the storage and use conditions. Within 12 months from the date of delivery by the manufacturer, if the product is damaged or cannot be used normally due to manufacturing quality problems, the manufacturer is responsible for repair or replacement.

LMM1E SERIES

Moulded Case Electron Circuit Breaker

Outline

LMM1E series electronic moulded case circuit breaker (hereinafter referred to as circuit breaker), suitable for circuits of AC 50Hz (or 60Hz), rated insulation voltage 1000V, rated working voltage 400V and below and rated working current 1250A, for the use of infrequent conversion and infrequent starting of motor. The breaker features overload long delay inverse time limit, short-circuit short delay inverse time limit, short-circuit short delay fixed time limit, short-circuit instantaneous, and undervoltage protection functions, as well as residual current protection (optional) and phase loss protection functions (optional). It can protect circuits and power equipment from damage. The breaker has complete and precise protection characteristics, which can enhance the reliability of power supply and avoid unnecessary power outages. The "Z" and "B" type controls are equipped with communication interfaces, enabling "four remote" capabilities to meet the requirements of control centers and automation systems.

Circuit breakers are divided into M type (relatively high breaking capacity type) and H type (high breaking capacity type) according to their rated limit short-circuit breaking capacity. The circuit breaker has the characteristics of small size, high breaking capacity, short flying-arc and anti-vibration, etc.

The circuit breaker can be installed vertically (upright) or horizontally (flat).

The circuit breaker has isolation function, and its corresponding symbol is:" —⟋⊢✕— "

The circuit breaker cannot be wired in reverse; specifically, 1, 3, 5 are only allowed to connect the power line while 2, 4, 6 should be connected to the load line.

Outline

- Altitude: less than 2000m
- Ambient medium temperature: -5°C ~ + 40 °C (+ 45 °C for shipping products)
- Can withstand moist air
- Can withstand mold
- Can withstand nuclear radiation
- Max. Inclination: 22.5°
- Can still work reliably if the product subjects to the normal vibration from ships
- Can still work reliably if the product subjects to the earthquake (4g)
- Put in the place without explosion danger and conductive dust, and free from gases or conductive dust that could corrode metal or damage insulation.
- Put in the place without sleet

Circuit Breakers codes and Implications

LM M 1 E - □ □ □ / □ □ □

- Product type
- Release mode and accessory code
- No. of poles
- Operation mode
- Rated short-circuit withstand strength level
- Rated frame current
- Electronic release
- Design code
- Moulded case circuit breaker
- Enterprise code

Note:

1. According to the rated limit short circuit breaking capacity, it can be divided into M type (relatively high breaking capacity type), H type (high breaking capacity type).
2. None=Handle direct operation, P=Electric operation, Z=Rotating handle operation
3. None=Basic type, Z=Intelligent communication type, B=Programming communication, X=Fire protection type, L=LCD type.

Main functions and features

◆ Intelligent controller is the core component of the moulded case circuit breaker. It is used in motor protection or power distribution protection to realize measurement, protection, control and communication functions., protecting the circuits and power equipment from damage of overload, short-circuit and grounding fault, etc.;
◆ Use MCU microprocessor control, ensuring stable and reliable performance: The intelligent controller can self-power, as long as one phase is powered, the protection function can be guaranteed to work normally when the current is not less than 20% of its rated value;
◆ Selective coordination has three stages of protection: Circuit breakers of Type B used in conjunction with other short-circuit protective devices connected in the same circuit exhibit selective coordination under short-circuit conditions. The settings for overload long delay inverse time limit, short-circuit delay (inverse/fixed time limit), and short-circuit instantaneous protection parameters can be adjusted accordingly;
◆ The breaker offers three-stage protection parameter settings for operating current and operating time, with 4 to 10 adjustment levels: Users can configure the controller based on load current requirements and select to turn off specific functions according to their needs (customized functions must be specified when placing an order);
◆ High-current instantaneous trip function: When the circuit breaker is closed or during operation, if a short-circuit with high current (≥20Inm) occurs, the magnetic tripping mechanism of the circuit breaker can be directly tripped, ensuring double protection for enhanced safety and reliability;
◆ Tripping test (experiment) function: input DC 12V voltage to test circuit breaker operating characteristics;
◆ Fault self-diagnosis function: protect and monitor the working state and operation of the intelligent controller itself;
◆ Pre-alarm indication and overload indication: When the load current reaches or exceeds the over-set value, the corresponding light guide column leads the light source;
◆ Double air-gap technology of magnetic flux converter: more reliable and stable operation, avoiding malfunction and reliable tripping and small power consumption;
◆ High protection accuracy: Overload and short-circuit time-delay protection accuracy is ±10%; short-circuit instantaneous tripping accuracy is 15%, based on operating current.
◆ The installation is interchangeable: the outline dimensions and installation dimensions are the same as those of the MM1 series molded case circuit breakers (Note: MM1E-630 is the same as MM1-800).

Optional function (based on MM1E intelligent communication type or programming communication type)

◆ Temperature monitoring and protection function: When the ambient temperature exceeds the set value (the default setting is 85 ℃), the controller will output an alarm photoelectric signal or open the circuit breaker;
◆ Two-way passive signal output function: for signal (or alarm), capacity AC230V 5A;
◆ Overload thermal memory function: overload thermal memory function, short circuit (short delay) thermal memory function;
◆ Fire shunt function: overload alarm does not trip (provide a pair of passive contacts) and provides shunt trip function;
◆ Communication function: standard RS232, RS485, Modbus fieldbus protocols;
◆ Can be connected to a handheld programmer: set various protection parameters of the circuit breaker and perform nearly 10 fault inquiries and various status displays;
◆ Can be connected to intelligent control module: convert optically isolated contact signal output, including programmable D0 output function;
◆ High-end type with LCD display module.

Detailed function

◆ Communication function
Through the communication protocol converter card, the breaker can seamlessly connect to PROFIBUS-DP, DEVICE-NET, or other power distribution automation networks. It supports remote control, remote adjustment, remote communication, and remote monitoring functions, enabling efficient operation and dispatch from a distance.
Remote monitoring: working parameters, load current, fault parameters, etc. of the power grid;
Remote communication: various parameters, tripping characteristics, rated current, etc. of circuit breakers;
Remote adjustment: The computer remotely adjusts various protection parameters, tripping characteristics, and rated current of the circuit breaker;
Remote control: remote opening or closing of the breaker via computer control.

◆ Handheld programmer: LCD display, simple operation and simple interface. It can set various protection parameters of the circuit breaker, query last fault, edit functions, and program D0 outputs, etc. Users can customize function settings or upgrade of future features based on self-defined scheme.
◆ Overload thermal memory function: The overload thermal memory function of the controller can be selected by the user, with the factory default being off. When enabled, the thermal memory energy is completely released within 15 minutes.
◆ Short circuit thermal memory function: The short circuit thermal memory function of the controller (short delay) can be selected by the user, with the factory default being off. When enabled, the thermal memory energy is completely released within 15 minutes.
◆ Fault recording function: The controller can record the fault type, fault tripping time, fault phase and maximum fault current of the last 10 times, and these records remain stored even during a power outage.
◆ Fire shunt function: used by the fire protection system. When the tripping conditions are met under the set parameters, the circuit breaker will not trip and output normally open (NO) and normally closed (NC) contacts, and provide shunt function. The user can choose whether to disconnect the circuit breaker.
◆ Programmable D0 output function: controller has four photoelectric signal outputs. D01 and D02 photoelectric signals can be programmed as the following function outputs, D03 is the opening signal and D04 is the closing signal.

Long delay fault	Short delay fault	Ground Fault
Leakage fault	Instantaneous fault	Overvoltage fault
Over temperature fault	Fault trip	Undervoltage fault
Long delay fault alarm	Short delay fault alarm	Ground fault alarm
Leakage fault alarm	Instantaneous fault alarm	Overvoltage fault alarm
Over temperature fault alarm	Fault trip alarm	Undervoltage fault alarm

◆ Circuit breaker opening and closing state detection function (optional function)
The controller can detect the current opening and closing state of the circuit breaker and upload it to the upper computer to the computer network in real time.

Product function configuration

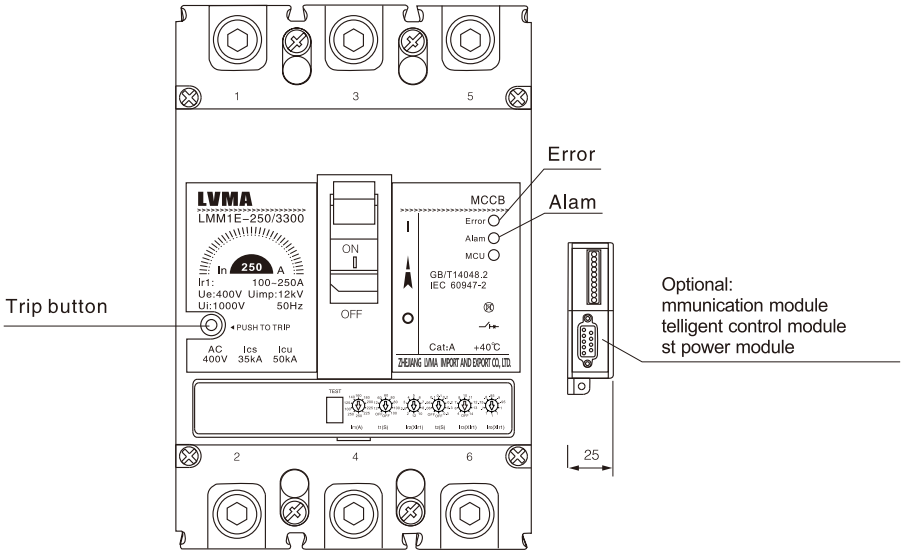
Table 1 Product function configuration table

Functions / Product type	LMM1E Basic type	LMM1E(Z) Intelligent type	LMM1E(B) Programmable type	LMM1E(X) Fire protection type	LMM1E(L) LCD type
Overload long delay setting	●	●	●	●	●
Short-circuit short delay setting	●	●	●	●	●
Short-circuit instantaneous setting	●	●	●	●	●
Overload, pre-alarm indication	●	●	●	●	●
Trip test function	●	●	●	●	○
Fault self-diagnosis function	●	●	●	●	●
Coded switch setting	●	●	———	●	———
Two-way passive signal output	———	●	●	○	○
Communication module	———	●	●	○	○
Handheld programmer	———	○	●	○	○
Coding tuning	———	○	●	○	○
Shunt function	———	○	○	○	○
Temperature monitoring protection	———	○	○	○	○
Memory function	———	○	○	○	○
Intelligent control module	———	○	○	○	○
Fire protection function	———	———	———	○	———
LCD display	———	———	———	———	●

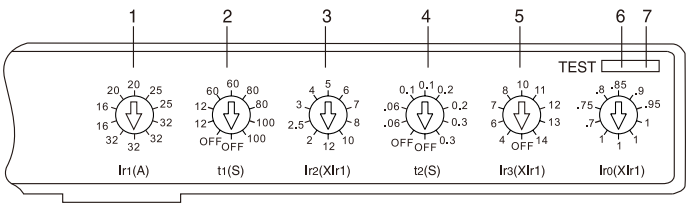
● Basic skills ○ Optional features

Structure and logo introduction

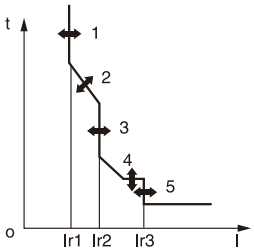
◆ Circuit breaker front indication



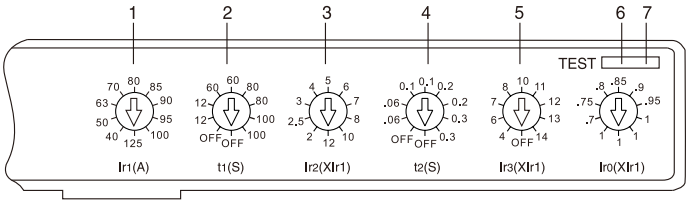
◆ LMM1E-125,In=32A Electronic release



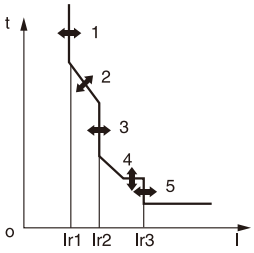
Electronic trip unit protection characteristic curve



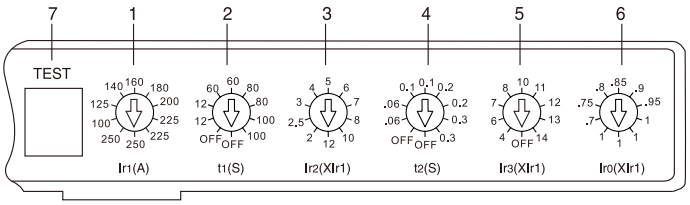
◆ LMM1E-125,In=125A Electronic release



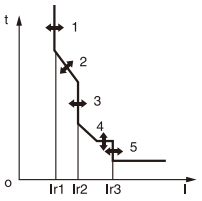
Electronic trip unit protection characteristic curve



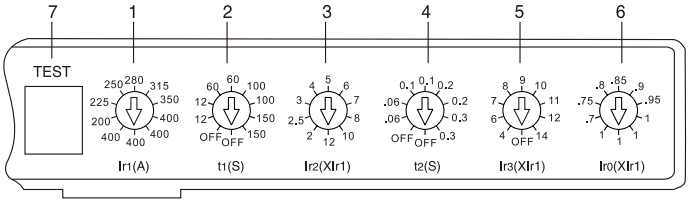
◆ LMM1E-250,In=250A Electronic release



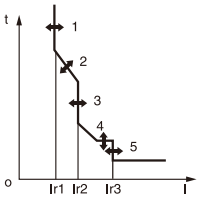
Electronic trip unit protection characteristic curve



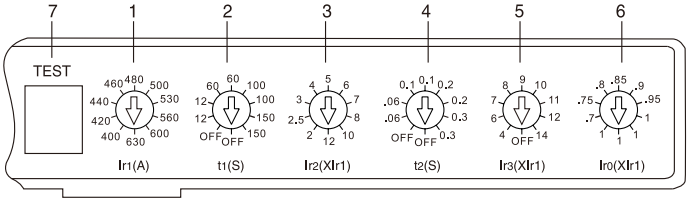
◆ LMM1E-400,In=400A Electronic release



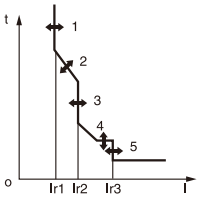
Electronic trip unit protection characteristic curve



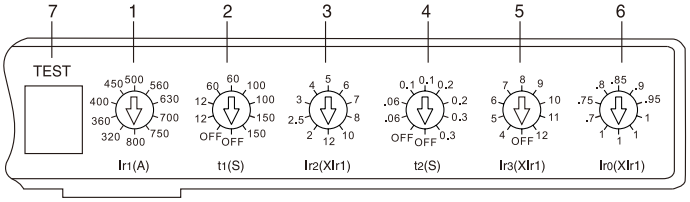
◆ LMM1E-630,In=630A Electronic release



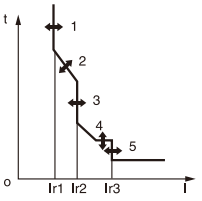
Electronic trip unit protection characteristic curve



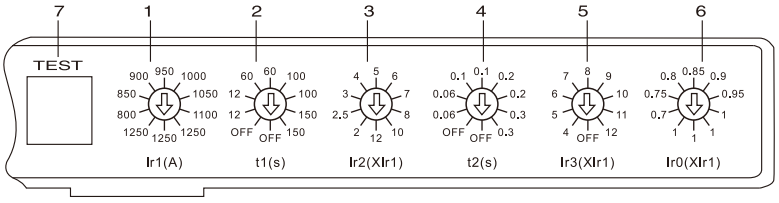
◆ LMM1E-800,In=800A Electronic release



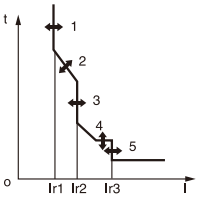
Electronic trip unit protection characteristic curve



◆ LMM1E-1250,In=1250A Electronic release



Electronic trip unit protection characteristic curve



Note:

◆ Overload long-delay trip current Ir1 adjustment: Depending on the rated current of the circuit breaker, it can be adjusted in 4th to 10th gears.

◆ Long-delay trip time t1 adjustment: adjustable in 4 gears.

◆ Short-circuit short-delay trip current Ir2 adjustment: adjustable in 10 gears.

◆ Short-delay trip time t2 adjustment: adjustable in 4 steps.

◆ Short-circuit instantaneous trip current Ir3 adjustment: adjustable in 8, 9, or 10 gears.

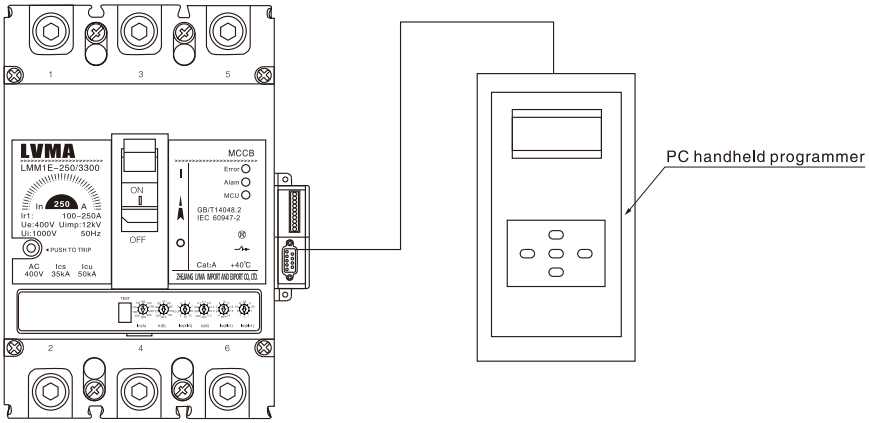
◆ Pre-alarm trip current Ir0 adjustment: adjustable in 7 gears.

◆ Test terminal: used for trip testing (trial).

Communication interface, external module application and networking of intelligent circuit breaker

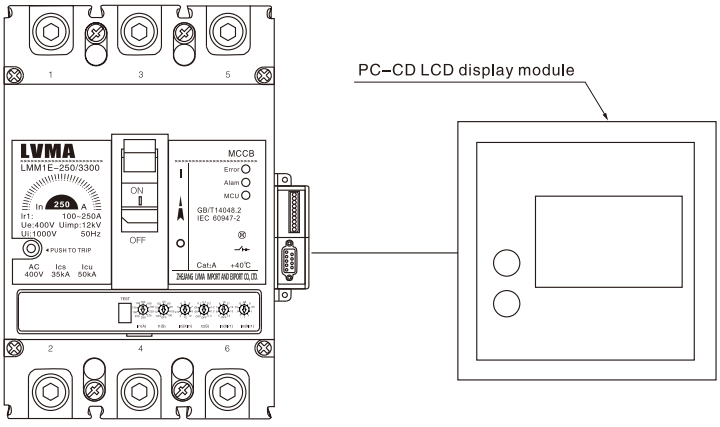
◆LMM1E series communicable intelligent moulded case circuit breaker is equipped with communication interface, according to MODBUS communication interface protocol. When the MM1E series communicable intelligent moulded case circuit breaker is not used for network communication, but is used alone, the handheld programmer can set the protection characteristics of the circuit breaker through the communication interface; it can also connect the PC-CD LCD display module through the communication interface, used to monitor the operating current and fault information of the circuit breaker. When the MM1E series communicable intelligent moulded case circuit breaker is used in network communication, it can be directly connected to the corresponding fieldbus. For fieldbuses of different protocols, the PC-DP protocol conversion module can be selected, and the MODBUS protocol is converted and then connected to the corresponding fieldbus.

◆When MM1E series communicable intelligent moulded case circuit breaker is used alone to set the protection parameters of the circuit breaker, professional personnel are required to use PC handheld programmer to connect it in the way shown in the following figure, and operate it according to the operation instructions of the handheld programmer.



◆LMM1E series communicable intelligent molded case circuit breaker and PC-CD LCD display module are used together.

During normal operation, the display module can monitor the operating current and fault information of the circuit breaker. When setting the protection parameters of the circuit breaker, professional personnel are required to use PC handheld programmer to connect it, and operate it according to the operation instructions of the handheld programmer.



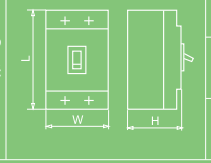
◆Communication network of MM1E series communicable intelligent moulded case circuit breaker

Communication network can be connected by referring to the scheme below. Choose different protocol modules for different protocols, converting MODBUS to PROFIBUS-DP and other protocols.

LMM1E

Series Moulded Case Electron Circuit Breaker

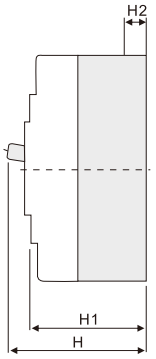
Main technical parameters

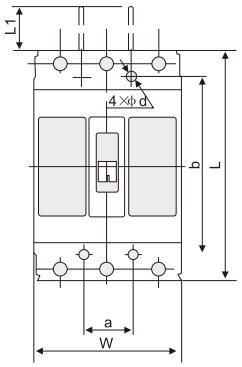
				
Model		LMM1E-125	LMM1E-250	LMM1E-400
Rated frame current Inm (A)		125	250	400
Rated current (adjustable) In (A)		16、20、25、32、40、 50、63、70、80、85、90、95、 100、125	100、125、140、160、 180、200、225、250	200、225、250、280、315、 350、400
Rated working voltage Ue (V)		AC400V		
Rated insulation voltage Ui (V)		AC 1000V		
Rated impulse withstand voltage Uimp		AC 12kV		
No. of poles		3,4	3,4	3,4
Rated limit short-circuit breaking capacity class				
Rated limit short-circuit breaking capacity Icu (kA)		50	50	65
Rated service short-circuit breaking capacity Ics (kA)		35	35	50
Rated short-time withstand current Icw (kA)/1s				5kA/1s
Using catagory		A	A	B
Operation life (cycle)	NO	3000	3000	2000
	OFF	7000	7000	4000
Outline dimensions (mm) 	L	150	165	257
	W	3P= 92 4P= 122	3P= 107 4P= 142	3P= 150 4P= 198
	H	92	90	106.5
Arcing distance (mm)		⩽50	⩽50	⩽100

		
LMM1E-630	LMM1E-800	LMM1E-1250
630	800	1250
400、420、440、460、480、 500、530、560、600、630	630、640、660、680、700、 720、740、760、780、800	630、700、800、1000、 1250、1600
AC400V		
AC1000V		
AC 12kV		
3,4	3,4	3,4
65	65	65
50	50	50
10kA/0.5s	10kA/0.5s	
B	B	B
1500	1500	500
3000	3000	2500
270	280	466
3P= 182 4P= 240	3P= 210 4P= 280	4P=280 3P=210
111	115.5	139
⩽ 100	⩽ 100	⩽ 120

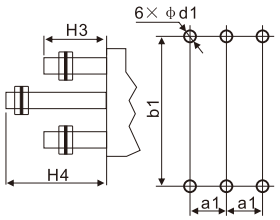
LMM1E Outline and installation dimensions

◆ Outline and installation dimensions of fixed front-connected and rear-connected wiring





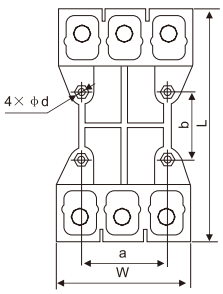
3-pole

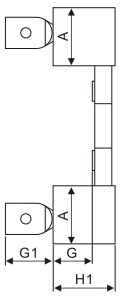


3-pole rear-connected wiring size

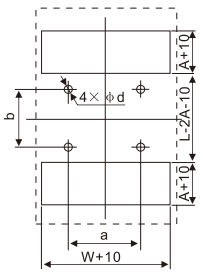
Model	Pole	Outline dimensions (mm)						Installation dimensions (mm)			Rear-connected wiring size (mm)				
		L	L1	W	H	H1	H2	a	b	ϕd	a1	b1	d1	H3	H4
LMM1E-125	3	150	51	92	110	92	28.5	30	129	4.5	30	132	22	53	93
LMM1E-250	3	165	64	107	110	90	25	35	126	5.5	35	144	24	55	100
LMM1E-400	3	257	105	150	146.5	106	38	44	194	7	48	224	32	48.5	108.5
LMM1E-630	3	280	100	210	155	115.5	41	70	243	7	70	243	48	62	84
LMM1E-800	3	280	100	210	155	115.5	41	70	243	10	70	243	48	62	84
LMM1E-125	4	150	51	122	110	92	28.5	30	129	4.5	30	132	22	53	93
LMM1E-250	4	165	64	142	110	90	25	35	126	5.5	35	144	24	55	100
LMM1E-400	4	257	105	197	146.5	106	38	94	194	7	48	224	32	48.5	108.5
LMM1E-630	4	280	100	240	155	115.5	41	70	243	7	70	243	48	62	84
LMM1E-800	4	280	100	280	155	115.5	41	70	243	10	70	243	48	62	84

◆ Outline and installation dimensions of plug-in rear connection





3-pole



Mounting hole opening size

unit(mm)

Model	W	L	A	H1	G	G1	a	b	d
LMM1E-125	94	168	41	50	32.5	26	60	56	6.5
LMM1E-250	110	183	51	50	32.5	36.5	70	54	6.5
LMM1E-400	152	279	58	60	39	46.5	60	129	8.5
LMM1E-630	213	296	58	61	45	87	140	143	10
LMM1E-800	213	296	58	61	45	87	140	143	10

Selection of cross-section area for connecting busbars and cables

◆ Selection of busbar

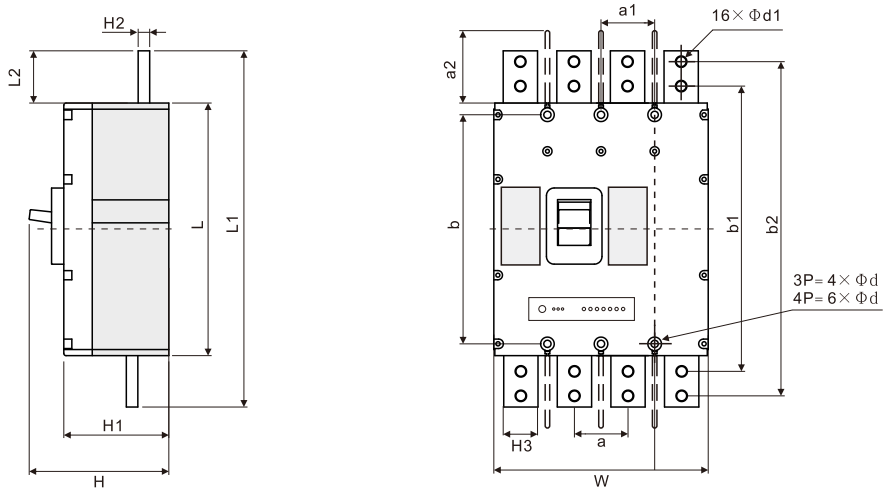
Rated current A	10 16 20	25 32	40 50	63	80	100	125	140 160	180 200 225	250	315 350	400
Conductor cross-section area mm²	2.5	6	10	16	25	35	50	70	95	120	185	240

◆ Selection of cable

Rated current A	Cable cross-section		Copper busbar size	
	Quantity	Conductor cross-section area mm²	Quantity	size(mm)
500	2	150	2	30 × 5
630	2	185	2	40 × 5
700、800	2	240	2	50 × 5

LMM1E-1250 Outline and installation dimensions

◆ Outline and installation dimensions of front-connected wiring of circuit breaker



Model	Pole	Outline dimensions (mm)								Installation size (mm)							
		L	L1	L2	W	H	H1	H2	H3	a	a1	a2	b	b1	b2	Φd	Φd1
LMM1E-1250	3	330	466	68	210	190	139	15	45	70	70	107	300	370	436	9.5	12.9
	4	330	466	68	280	190	139	15	45	70	70	107	300	370	436	9.5	12.9

Power loss

Model	Electric current (A)	Three-pole total power loss (W)		
		Front-connected wiring	Rear-connected wiring	Plug-in wiring
LMM1E-100	100	35	35	40
LMM1E-225	225	62	62	70
LMM1E-400	400	115	115	125
LMM1E-630	630	190	190	210
LMM1E-800	800	262	262	294
LMM1E-1250	1250	386	/	/

Derating at high altitude

◆ Derating factor at high altitude

If the sea wave exceeds 2000m, which is suitable for the working environment, the electrical performance of the circuit breaker can be corrected according to the following table.

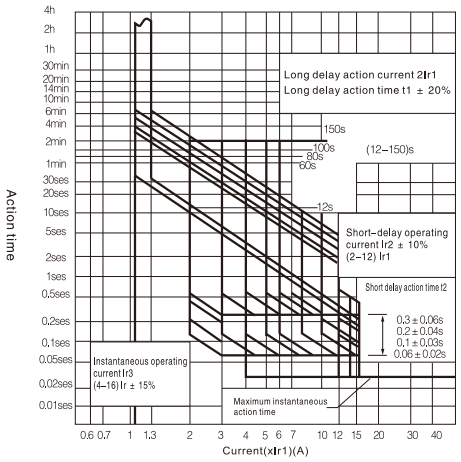
Altitude (m)	2000	3000	4000	5000
Power frequency voltage (V)	3000	2500	2000	1800
Working current correction factor	1	0.94	0.88	0.83
Short-circuit breaking capacity correction factor	1	0.83	0.71	0.63

Characteristics of electronic release

◆ Characteristics of release

It provides protection functions such as overload long delay inverse time limit, short-circuit short delay inverse time limit, short-circuit short delay fixed time limit, and short-circuit instantaneous action, which users can configure to create the self-desired protection characteristics. The overcurrent protection current and time parameters for the neutral line are automatically tracked at 100% of the phase line settings.

The characteristics of release are shown in the figure to the right.



◆ Action characteristics of long delay overcurrent protection inverse time limit

Controller type	Basic type		Intelligent communication type, programming communication type LCD type
Electric current	Action time		
1. 05Ir1	> 2h inaction		
13Ir1	≤1h action		
2Ir1	Inm=100A, 225A Setting time t1 (s)	t1=(12/60/80/100)s	12s-100s (Maximum step 1s)
2Ir1	Inm=400A, 630A, 800A Setting time t1 (s)	t1=(12/60/100/150)s	12s-100s (Maximum step 1s)
Thermal momery	30min, can be cleared after outage (This function is optional for intelligent communication type and programming communication type)		
	1.The action time matches $I^2T=(2Ir1)^2t1$ (1.2Ir1≤1＜Ir2) 2.The allowable tolerance of action time is ± 20% 3. Returnable time is not less than 70% of action time		

◆ Protection characteristics of short delay overcurrent

Electric current	Action time					
Ir2≤I＜1.5Ir2	Inverse time limit		$I^2T_1=(1.5Ir2)^2t2$			
		Setting time t2 (s)	0.06	0.01	0.2	0.3
1.5Ir2≤I＜Ir3	Time limit	Tolerance (s)	±0.02	±0.03	±0.04	±0.06
		Returnable time (s)			0.14	0.21

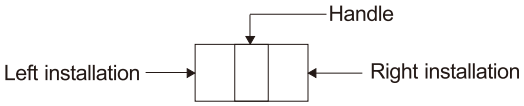
Note: Tolerance of inverse time action time ± 20%

◆ Action characteristics of short-circuit instantaneous protection

Rated current	100/225	400/630	800	1250
Setting current	Ir3=(4/6/7/8/10/11/12/ 13/14/16)×Ir1	Ir3=(4/6/7/8/9/10/11/ 12/13/14)×Ir1	Ir3=(4/6/7/8/9/ 10/11/12)×Ir1	Ir3=(4/5/6/7/8/ 9/10/11/12)×Ir1
Action characteristics		I≤0.85Ir3 No action I≥1.15Ir3 action		

Release mode and accessory code

☐ Release mode and internal accessory



☐ Alarm contact
■ Aux contact
● Shunt release
○ Undervoltage release (UVT)
→ Lead wire direction

Code	Accessory name	Model / No. of poles	LMM1E-100/ LMM1E-225	LMM1E-400		LMM1E-630/ LMM1E-800	LMM1E-1250
			3P、4P	3P	4P	3P、4P	3P、4P
308	Alarm contact		□	□	□	□	□
310	Shunt release		●	●	●	●	●
320	Auxiliary contact		■	■	■	■	■
330	Under-voltage release		○	○	○	○	○
340	Shunt auxiliary contact		—	—	■ ●	■ ●	■ ●
350	Shunt release UVT		—	—	—	○ ●	—
360	Two sets of auxiliary contacts		—	—	■ ■	■ ■	—
370	Auxiliary contact UVT		—	—	○ ■	○ ■	—
318	Shunt alarm contact		—	—	—	□ ●	□ ●
328	Auxiliary alarm contact		■ □	■ □	■ □	□ ■	—
338	UVT alarm contact		—	—	—	□ ○	—
348	Shunt auxiliary alarm contact		—	—	—	■ □ ●	—
368	Two sets of aux contacts + alarm contact		—	—	■ □ ■	■ □ ■	—
378	Aux contact UVT alarm contact		—	—	—	□ ○ ■	—

Note:
◆ Release mode and internal accessory code: the first digit 3 indicates an electronic release with three-stage protection. The last two digits represent the internal accessory code, with '00' used if no accessory is included.
◆ For LMM1E-400 with 328-specification, MM1E-630/800 with 348-specification, and LMM1E-400/630/800 with 360-specification, the auxiliary contacts consist of three sets (3NO+3NC). For all other specifications, The number of auxiliary contacts is two sets for MM1E-400 and above, and one set for specifications below LMM1E-250.
◆ For the auxiliary contacts of LMM1E-100 and LMM1E-225 models with 320-specification, two pairs of contacts (2NO+2NC) are available, but they must be specified when ordering.
◆ When internal accessories cannot meet customer requirements, additional auxiliary functions can be provided through an intelligent controller. Such as: auxiliary signals for opening and closing, shunt trip functions, and fault signals for various protection functions.

Release mode and accessory code

◆Various characteristics and accessories of the circuit breaker shall be set by the manufacturer and shall not be adjusted arbitrarily during use. For leakage circuit breakers and electronic circuit breakers, the user must understand the technical data of the product in detail before adjusting the relevant parameters of the circuit breaker.
◆The handle of the circuit breaker can be in three positions, which respectively represent the three states of closing, opening and free tripping. When the handle is in the free tripping position, pull the handle to the opening direction. At this time, the circuit breaker can be reset and then closed.
◆The handle of the circuit breaker can be in three positions, which respectively represent the three states of closing, opening and free tripping. When the handle is in the free tripping position, pull the handle to the opening direction. At this time, the circuit breaker can be reset and then closed.

Ordering instructions

◆Please indicate the model, specification and order quantity of the circuit breaker. When using undervoltage release, shunt release or electric operating mechanism, please indicate the voltage value of working voltage or control power supply voltage.
For example: 10 sets of MM1-100L /3300 rear-connected wiring (front-connected wiring can be unmarked) with rated working current of 80A.
20 sets of MM1L-225/4300 time-delay type with rated working current of 180A and leakage current of 100mA, 300mA, 500mA.
10 sets of MM1E-400H/3300Z, 400A intelligent communication type with CD2 electric operating mechanism.
◆Please declare if the ambient temperature is under the following conditions: the upper limit exceeds + 40℃ or the lower limit falls below -5℃.

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