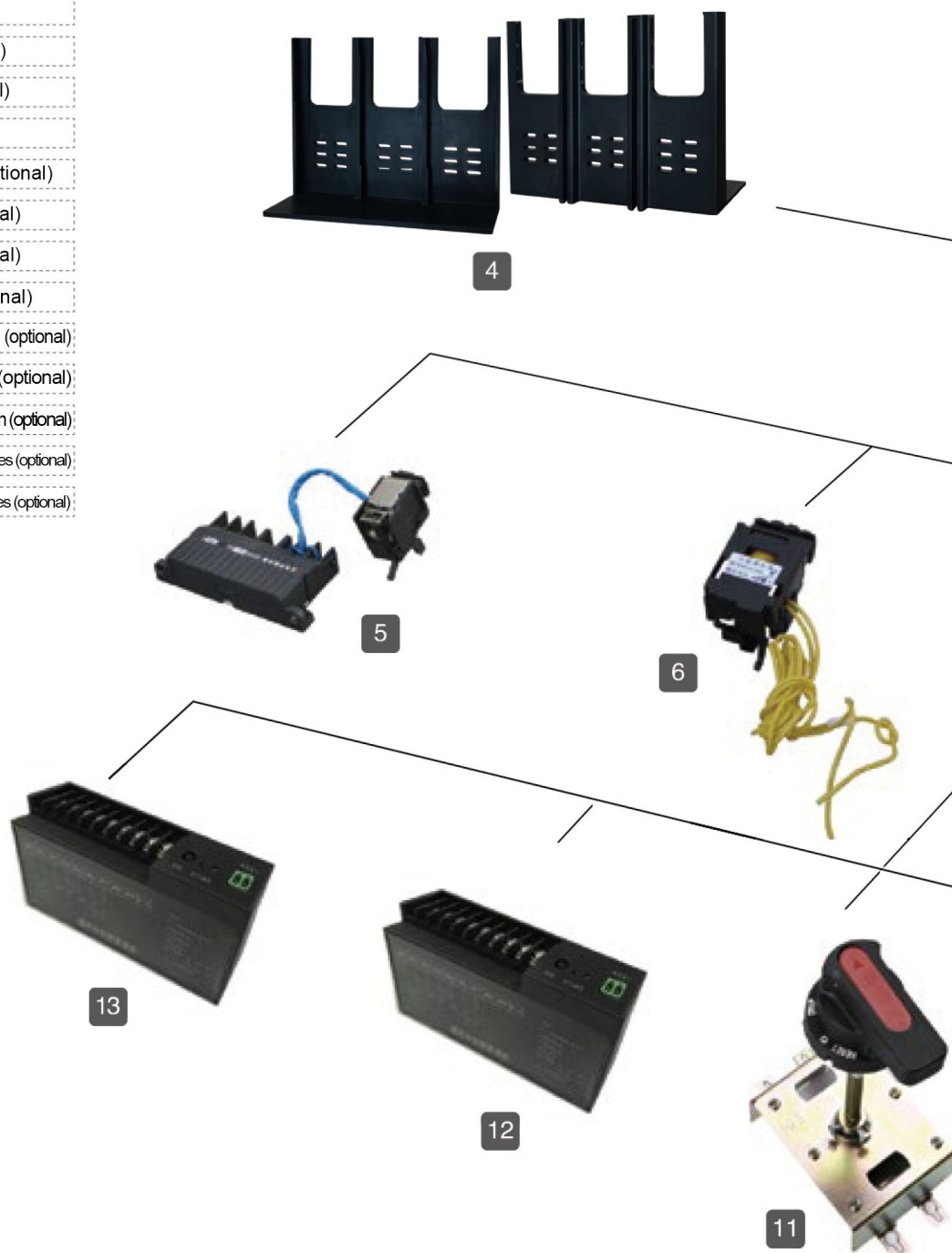
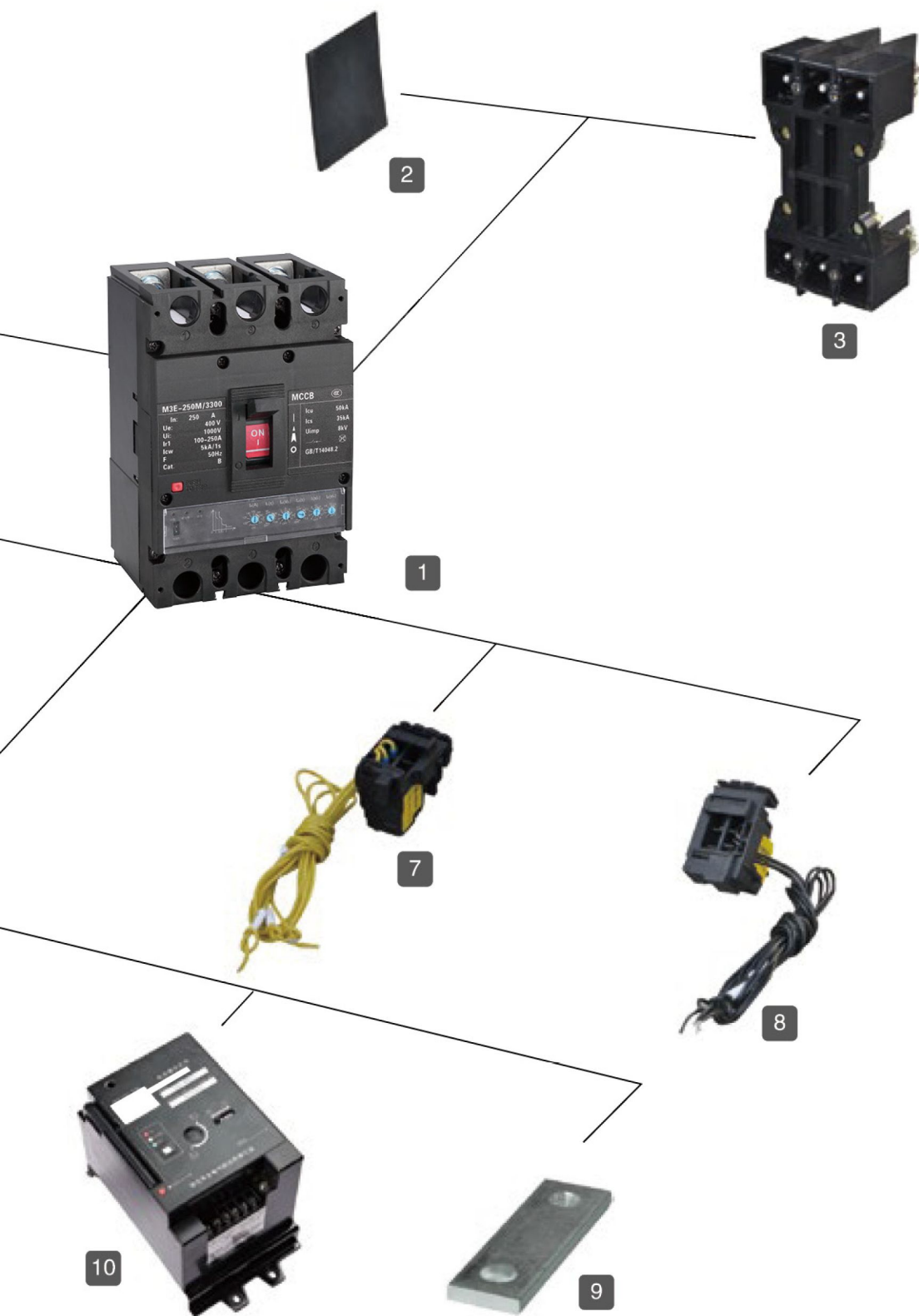


## iALM3E Electronic Moulded Case Circuit Breaker

1	Switch body
2	Arc chute (standard)
3	plug-in type (optional)
4	Zero arcing hood
5	Undervoltage release (optional)
6	Shunt release (optional)
7	Alarm contact (optional)
8	Auxiliary contact (optional)
9	Front-panel wiring transition board (optional)
10	Electric operating mechanism (optional)
11	Rotary handle operating mechanism (optional)
12	Communication, shunt, alarm accessories (optional)
13	Four-remote communication accessories (optional)







## iALM3E Electronic Moulded Case Circuit Breaker

### Product overview

iALM3E series electronic moulded case circuit breaker (hereinafter referred to as circuit breaker) is one of the new circuit breakers developed by our company with international advanced technology. It has the characteristics of four segment selective protection, high breaking, small and compact structure, etc.

The circuit breaker is classified into M type (higher breaking type) and H type (high breaking type) according to rated limit short-circuit breaking capacity (Icu). It is an ideal product for power distribution and motor protection. Its rated insulation voltage is 1000V, which is applicable to the AC 50/60Hz circuit with rated working voltage of 690V and below, and setting current from 12.5A to 800A for infrequent line conversion and infrequent motor startup.

A module with communication function can be added to the circuit breaker, so that the original circuit breaker can be easily upgraded to a communication type circuit breaker.

The circuit breaker has the functions of overload long time delay, short circuit short time delay, short circuit instantaneous and grounding protection. The product can be equipped with undervoltage, shunt, auxiliary, alarm, communication and other accessories.

This series of circuit breakers can be installed vertically (i.e. upright) or horizontally (i.e. transversely).

With isolation function, the corresponding symbol is:

It has a unique "overload alarm without tripping" function to ensure the continuity of power supply.

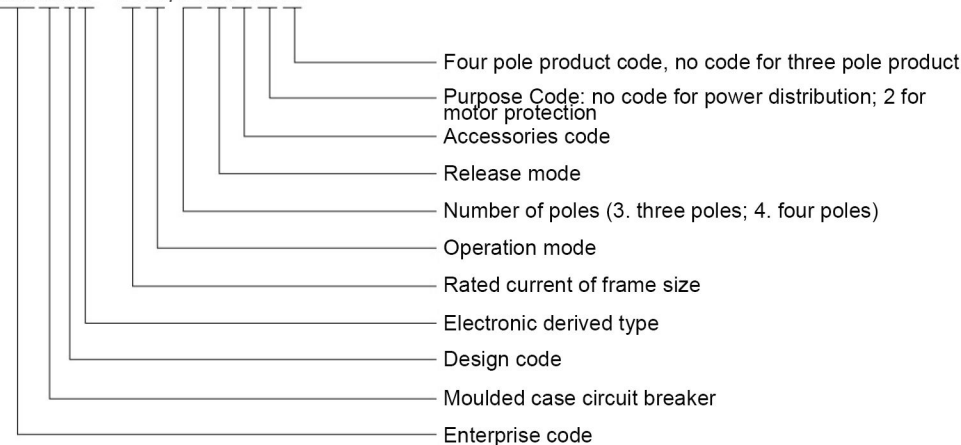
The circuit breaker complies with series standards:

IEC/EN 60947-1 and GB/T 14048.1 Low-voltage switchgear and controlgear-Part 1: General rules.

IEC/EN 60947-2 and GB/T 14048.2 Low voltage switchgear and controlgear Part 2: Circuit breakers.

### Product naming rules

iALM3E — □□/□□□□□



Note: \* there is no code for distribution protection, and the motor protection code is represented by 2.

\*\*There is no code for manual direct operation, electric operation is represented by P, and rotary handle operation is represented by Z.

## iALM3E Electronic Moulded Case Circuit Breaker

Table 1

Code	Instruction	Example
A	The N-pole is not equipped with overcurrent tripping element, and the N-pole is always connected and is not closed or open together with other three poles	3N300A
B	The N-pole is not equipped with overcurrent tripping element, and N pole is closed and open together with other three poles (N-pole is closed first and then open)	4300B
C	The N-pole is equipped with an overcurrent tripping element, and the N-pole is closed and open together with the other three poles (the N-pole is closed first and then open)	4300C
D	The N-pole is equipped with an overcurrent tripping element, and the N-pole is always connected and is not closed or open together with other three poles	3N300D

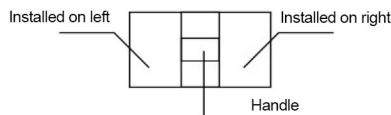
## Normal working conditions and installation conditions

- ◆ Ambient air temperature is -5℃ to +40℃;
- ◆ The relative humidity of the air at the installation site shall not exceed 50% when the maximum temperature is +40℃ at lower temperatures, there can be higher relative humidity, such as 90% at 20℃. Special measures shall be taken for occasional condensation due to temperature change;
- ◆ The pollution level is level 3;
- ◆ The circuit breaker should pass GB/T2423.10, the test requires that it can withstand mechanical vibration with frequency of 2Hz~13.2Hz, displacement of ± 1mm, frequency of 13.2Hz ~100Hz and acceleration of ±0.7g;
- ◆ The installation category of the main circuit of the circuit breaker is II, and the installation category of other auxiliary circuits and control circuits is II;
- ◆ The circuit breaker is suitable for electromagnetic environment B;
- ◆ The circuit breaker shall be installed in a place without explosion hazard, conductive dust, sufficient corrosion to metal and damage to insulation;
- ◆ The circuit breaker shall be installed in a place free from rain and snow;
- ◆ Operating conditions:
  - ◇ The circuit breaker should pass the test requirements of GB/T 2423.1 and GB/ T2423.2, and the ambient air temperature can be as low as -30℃ and as high as +70℃ (capacity reduction is adopted beyond +40℃, see the technical data in this sample for details);
  - ◇ The characteristics are not affected when the altitude is up to 2000m (the capacity is reduced when it is more than 2000m, see the technical data in this sample for details);
  - ◇ Storage conditions: ambient air temperature is -40℃~ +75℃.
- ◆ The protection level of the product body is IP20
- ◆ Cabinet door installation
  - Equipped with toggle handle: the protection level is IP40
  - Equipped with rotary handle: the protection level is IP50
  - Equipped with electrical operating mechanism: the protection level is IP40

## iALM3E Electronic Moulded Case Circuit Breaker

### Release type and accessory code

Release type and accessory code Release type and accessory code



Alarm contact ●

Auxiliary contact ○

Shunt release ■

Undervoltage release ▲

Table 2

	Accessory code	Accessory installation and lead mode					
Accessory name	Electronic release	iALM3E-125/160		iALM3E-250/320		iALM3E-400 iALM3E-630 iALM3E-630Big volume iALM3E-800 iALM3E-1250	
No accessories	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 contacts	368						
Undervoltage release, auxiliary contact, alarm contact	378						

Note: the 800 moulded case product has no right alarm accessories

A group of auxiliary contacts below 400 type includes one normally open and one normally closed contact, and a group of auxiliary contacts above 400 type includes two normally open and two normally closed.



## iALM3E Electronic Moulded Case Circuit Breaker

## Product parameters

◇ See Table 3 and table 4 for product parameters

Table 3

Basic information					
Rated current of frame size		125		250	
Number of poles		3P、3P+N、4P		3P、3P+N、4P	
Frequency (Hz)		50/60		50/60	
Rated working voltage Ue (V)		380/400 /415/660/690		380/400 /415/660/690	
Rated insulation voltage Ui (V)		1000		1000	
Rated impulse withstand voltage Uimp (kV)		8		8	
Rated working current In (A)		32AF:12.5-32 63AF:25-63 125AF:50-125		250AF:100-250	
Breaking capacity level		M	H	M	H
Rated limit short circuit breaking capacity Icu (KA)	AC400V	50	65	50	65
	AC690V	10	20	10	20
Rated service short-circuit breaking capacity Ics (KA)	AC400V	35	55	35	55
	AC690V	10	10	10	10
Rated short-time withstand current Icw (KA/1s)	AC400V			5	5
Isolation capability		Provided (3P, 4P)		Provided (3P, 4P)	
Usage category		Type A		Type A	
Arc distance (mm)		≤ 50		≤ 50	
Mechanical life (times)	Maintenance free	20000		20000	
	With maintenance	40000		40000	
Electrical life (times)		10000		10000	

Table 4

Basic information							
Rated current of frame size		400		630		800	
Number of poles		3P、3P+N、4P		3P、3P+N、4P		3P、3P+N、4P	
Frequency (Hz)		50/60		50/60		50/60	
Rated working voltage Ue (V)		380/400/415 660/690		380/400/415 660/690		380/400/415 660/690	
Rated insulation voltage Ui (V)		1000		1000		1000	
Rated impulse withstand voltage Uimp (kV)		8		8		8	
Rated working current In (A)		400AF:160-400		630AF:250-630		630AF:250-630 800AF:315-800	
Breaking capacity level		M	H	M	H	M	H
Rated limit short circuit breaking capacity Icu (KA)	AC415V	85	100	85	100	85	100
	AC690V	20	30	20	30	20	30
Rated service short-circuit breaking capacity Ics (KA)	AC415V	65	70	65	70	65	70
	AC690V	20	20	20	20	20	20
Rated short-time withstand current Icw (KA/1s)	AC415V	8	6	10	10	10	10
Isolation capability		Provided(3P、4P)		Provided(3P、4P)		Provided(3P、4P)	
Usage category		Type B		Type B		Type B	
Arc distance (mm)		≤ 100		≤ 100		≤ 100	
Mechanical life (times)	Maintenance free	10000		10000		8000	
	With maintenance	20000		20000		10000	
Electrical life (times)		8000		8000		7500	

## iALM3E Electronic Moulded Case Circuit Breaker

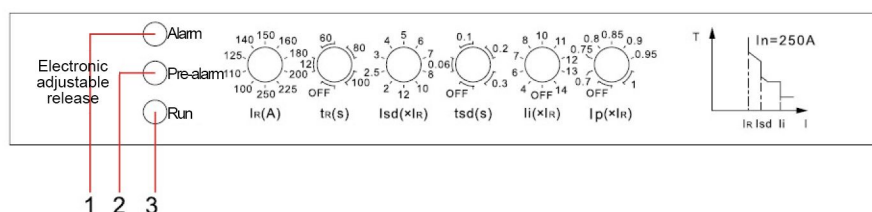
### ◇ Overload pre-alarm

Table 5

Electronic release	Rated current of frame size $I_n$ (A)	Rated current $I_n$ (A)	Current setting value of adjustable overload pre-alarm protection release $I_p$ (A)	Tripping characteristics/-time
Overload pre-alarm	Full series	32-800	$I_p = (0.7-0.75-0.8-0.85-0.9-0.95-1) \times I_n + \text{OFF}$	/

## Electronic release

### ◇ Indicator status instruction



### ◇ Three-knob intelligent controller (E1 type)

Table 6

	Indicator instruction	Indicator running state instruction
1	Alarm LED indicator (red)	If $I > 1.05I_R$ , the overload alarm indicator is on, if $I \leq 1.0I_R$ , the overload indicator is off
2	Pre-alarm LED indicator (yellow)	If $I > 1.1I_P$ , the pre-alarm indicator is on, if $I \leq 0.9I_P$ , the pre-alarm indicator is off
3	Running LED indicator (green)	If $I > 0.4I_n$ , the running indicator flickers (once per second)

### ◇ Three-knob intelligent controller (E1 type)

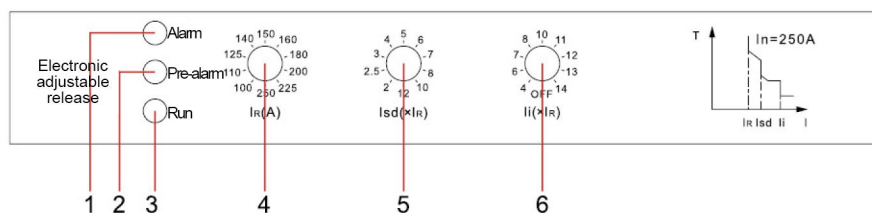


Table 7

Three-knob intelligent controller data		
1	Alarm LED indicator	Default parameter 1. overload long-delay time default setting value $t_R = 60s$ 2. Short-circuit short-delay time default setting value $t_{sd} = 0.3s$ 3. Overload pre-alarm current default setting value $I_P = 0.9 \times I_R$
2	Pre-alarm LED indicator	
3	Running LED indicator	
4	Overload long-delay current setting value $I_R$ (A)	
5	Short-circuit short-delay current setting value $I_{sd}$ (A)	
6	Short-circuit short-delay current setting value $I_i$ (A)	

## iALM3E Electronic Moulded Case Circuit Breaker

### ◇ Pre-alarm type intelligent controller (general)

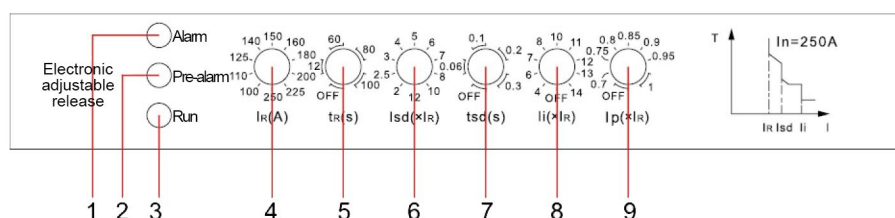


Table 8

Six-knob intelligent controller data		
1	Alarm LED indicator	Default parameter See table 17
2	Pre-alarm LED indicator	
3	Running LED indicator	
4	Overload long-delay current setting value $I_R$ (A)	
5	Overload long-delay time setting value $t_R$ (s)	
6	Short-circuit short-delay current setting value $I_{sd}$ (A)	
7	Short-circuit short-delay time setting value $t_{sd}$ (s)	
8	Short-circuit short-delay current setting value $I_l$ (A)	
9	Overload pre-alarm current setting value $I_P$ (A)	

### ◇ Grounding type intelligent controller (E3 type)

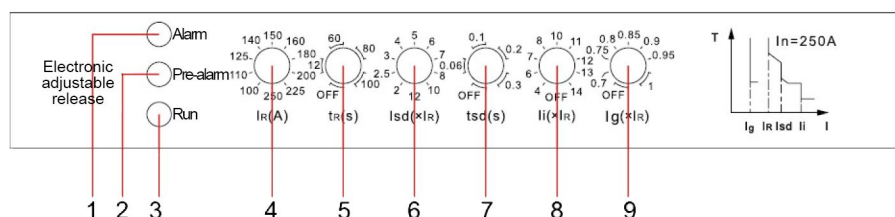


Table 9

Six-knob intelligent controller data		
1	Alarm LED indicator	Default parameter 1. Grounding protection time setting value $t_g=0.4s$ 2. Overload pre-alarm current default setting value $I_P=0.9 \times I_R$
2	Pre-alarm LED indicator	
3	Running LED indicator	
4	Overload long-delay current setting value $I_R$ (A)	
5	Overload long-delay time setting value $t_R$ (s)	
6	Short-circuit short-delay current setting value $I_{sd}$ (A)	
7	Short-circuit short-delay time setting value $t_{sd}$ (s)	
8	Short-circuit short-delay current setting value $I_l$ (A)	
9	Overload pre-alarm current setting value $I_P$ (A)	



## iALM3E Electronic Moulded Case Circuit Breaker

### ◇ Pre-alarm type intelligent controller (general)

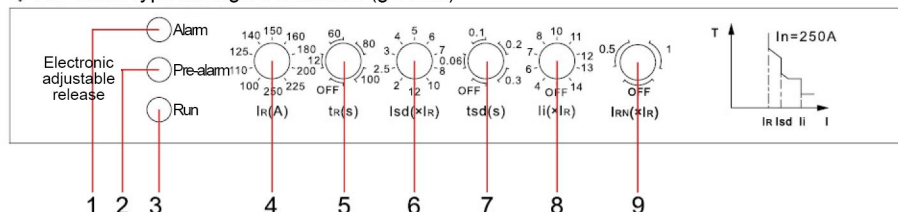


Table 10

Six-knob intelligent controller data		
1	Alarm LED indicator	Default parameter 1. Overload pre-alarm current default setting value $I_P = 0.9 \times I_R$
2	Pre-alarm LED indicator	
3	Running LED indicator	
4	Overload long-delay current setting value $I_R$ (A)	
5	Overload long-delay time setting value $t_R$ (s)	
6	Short-circuit short-delay current setting value $I_{sd}$ (A)	
7	Short-circuit short-delay time setting value $t_{sd}$ (s)	
8	Short-circuit short-delay current setting value $I_l$ (A)	
9	Neutral protection current setting value $I_{RN}$ (A)	

## Technical data

### ◇ Reference cross-sectional area of connecting wires with different rated currents

Table 11

Rated current $I_n$ (A)	32	63	125	160	250	320	400
Conductor cross-sectional area (mm <sup>2</sup> )	6	16	50	70	120	185	240

Table 12

Rated current $I_n$ (A)	Cable		Copper bar	
	Sectional area (mm <sup>2</sup> )	Qty.	Size (mm * mm)	Qty.
630	185	2	40 × 5	2
800	240	2	50 × 5	2

### ◇ Power loss

Table 13

Product model	Power-on current (A)	Total power loss of three pole/four pole (W)		
		Front-panel/ back-panel	Plug in front-panel wiring	Plug in type back-panel
iALM3E-125	125	12	12	12.2
iALM3E-250	250	50	75	86
iALM3E-400	400	58	87	90
iALM3E-630	630	110	120	130
iALM3E-800	800	115.2	125	140

## iALM3E Electronic Moulded Case Circuit Breaker

◇ Derating coefficient at different temperatures

Table 14

Product model	Power-on current (A)	Ambient temperature						
		-35°C	-30°C	-25°C	-20°C	-15°C	-10°C	-5°C
iALM3E-125	125	1.45In	1.4In	1.35In	1.3In	1.2In	1.18In	1.15In
iALM3E-250	250	1.45In	1.4In	1.35In	1.3In	1.25In	1.2In	1.18In
iALM3E-400	400	1.65In	1.6In	1.55In	1.44In	1.42In	1.4In	1.35In
iALM3E-630	630	1.4In	1.35In	1.31In	1.3In	1.25In	1.2In	1.18In
iALM3E-800	800	1.35In	1.34In	1.32In	1.31In	1.3In	1.25In	1.23In

Table 15

Product model	Power-on current (A)	Ambient temperature						
		0°C	45°C	50°C	55°C	60°C	65°C	70°C
iALM3E-125	125	1.15In	0.95In	0.94In	0.93In	0.92In	0.91In	0.89In
iALM3E-250	250	1.15In	0.95In	0.94In	0.89In	0.85In	0.81In	0.78In
iALM3E-400	400	1.3In	0.95In	0.94In	0.89In	0.85In	0.81In	0.78In
iALM3E-630	630	1.13In	0.95In	0.94In	0.92In	0.9In	0.87In	0.86In
iALM3E-800	800	1.18In	0.95In	0.94In	0.85In	0.82In	0.8In	0.78In

(1) Derating factor 1In of all moulded case circuit breakers at 40°C;

(2) For iALM3E circuit breaker, the derating factor is measured under the maximum rated current of each moulded case.

## iALM3E Electronic Moulded Case Circuit Breaker

### Outline and installation dimensions

◇ See table 16 and figure 1 for overall and installation dimension of the product

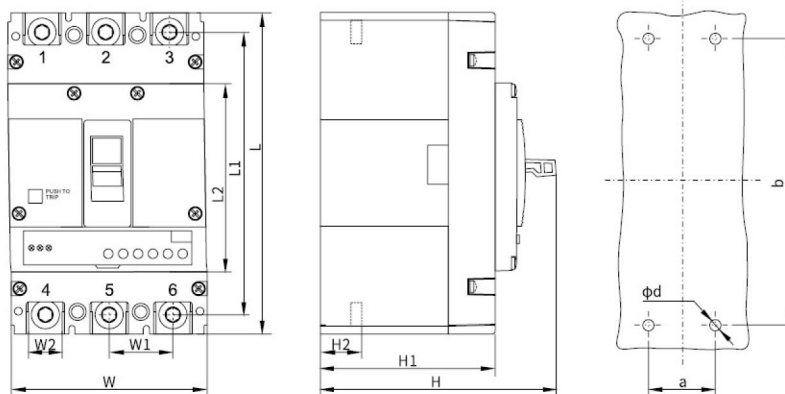


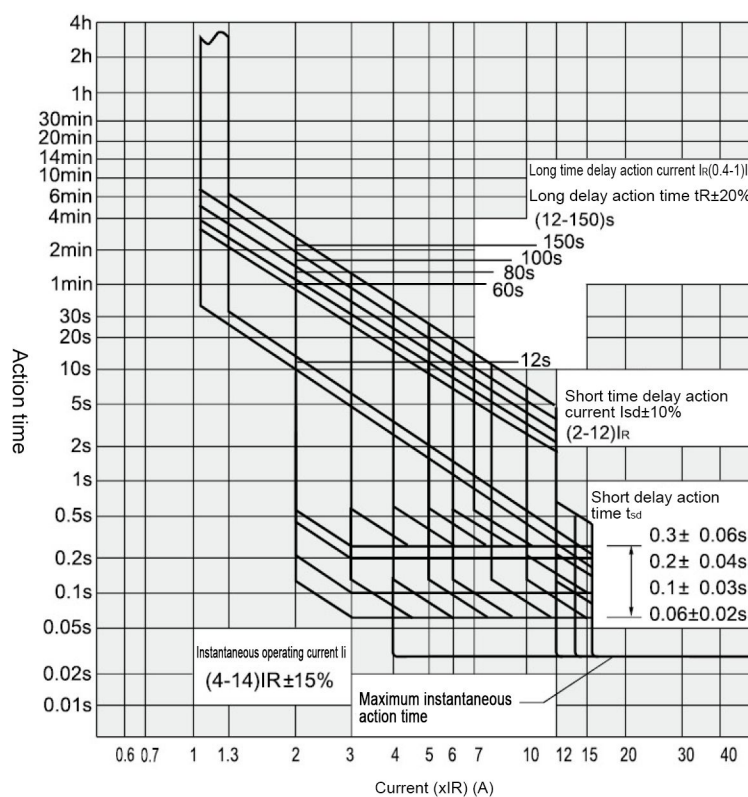
Figure 1 iALM3E overall and installation dimension

Table 16

Product model	Number of poles	Overall dimension									Mounting dimensions		
		L	L1	L2	W	W1	W2	H	H1	H2	a	b	Φd
iALM3E-125	3	150	132	88.5	92	30	18	110	81	28	30	129	4.5
iALM3E-250	3	165	143	102	107.5	35	23	110	83	23	35	126	4.5
iALM3E-400	3	257	225	168	150	48	33	150	97	38	44	194	7
iALM3E-630 (Increased)	3	257	225	168	150	48	33	150	97	40	44	194	7
iALM3E-800	3	280	242	188	210	70	45	153	104	45	70	243	7

## iALM3E Electronic Moulded Case Circuit Breaker

### Protection characteristic curve of circuit breaker



### Factory parameter setting of intelligent controller for circuit breaker

Factory parameter setting value

Table 17

	Protection type	Distribution protection	Motor protection
4	Overload	Setting current $I_R(A)$	$I_n$
5	long delay	Delayed $t_R(s)$	60
6	Short circuit short delay	Setting current $I_{sd}(A)$	100
7		Delayed $t_{sd}(s)$	6 ( $XI_R$ )
8	Short circuit transient		10 ( $XI_R$ )
9 (pre-alarm standard provision, others optional)	Pre-alarm	Setting current $I_p(A)$	14 ( $XI_R$ )
	Grounding protection	Setting current $I_g(A)$	0.3 ( $XI_R$ )
	Neutral protection	Setting current $I_{RN}(A)$	Close

## iALM3E Electronic Moulded Case Circuit Breaker

### Ordering instructions

---

The user must specify the following items when ordering:

- a) Model, name and number of poles of circuit breaker.
- b) Rated current of circuit breaker.
- c) Name, specification and combination code of accessories of circuit breaker (working voltage value shall be indicated for shunt release and undervoltage release)
- d) Purpose: for power distribution (delivery as power distribution use if not indicated), for motor protection (represented by 2).
- e) Quantity.

For example: iALM3E-250, 3P, 50kA breaking capacity, rated current 250A, with shunt release, its voltage is AC400V, totally 20 sets. It shall be written as: iALM3E-250M/3310, 250A AC400V, 20 sets.

Special requirements for circuit breaker can be determined through consultation with the manufacturer.

### Quick selection example

---

- a) iALM3E-125M/3300 125A:

That is to order a three pole, electronic distribution protection circuit breaker of iALM1E series 125A frame size, 50kA (high breaking type), rated current 125A.

- b) iALM3E-125M/33002 125A:

That is to order a three pole electronic motor protection circuit breaker of iALM3E series 125A frame size, 50kA (high breaking type) and rated current 125A.

- c) iALM3E-125H/3300E1 125A:

That is to order a set of iALM3E series electronic circuit breaker of 125A frame size, 85kA (high breaking type), three pole, three knob controller with rated current of 125A, for distribution protection.

Note: if you need special customized products, please consult our company first.



## iALM3E Electronic Moulded Case Circuit Breaker

Description of selection table of iALM3E series molded case circuit breaker

iALM3E	125	M	Z	/	4	3	00	2	A	II	E1	125	AC230V
Model	Frame size current	Breaking capacity	Operation mode	Number of poles	Tripping mode	Internal accessories	Purpose	N-pole code	Alarm module	Controller code	Rated current	Accessory voltage	
iALM3E electronic moulded case circuit breaker	125: 125A	M: Higher breaking	Default: direct operation	3 : 3P	3 : Electronic type	00: no accessories 10: shunt release 20: auxiliary contact 30: undervoltage release 40: shunt + auxiliary	Default: distribution protection	A :The three protective poles and the zero line are not disconnected with other poles	Default: overload alarm trip	Default: pre-alarm controller	125: 32A 63A 125A	AC380/400V AC220/230V DC220V DC110V DC24V	
	250: 250A												
	400: 400A	H: High breaking	Z: Rotary handle operation	4 : 4P		50: shunt + undervoltage 60: two sets of auxiliary contacts 70: undervoltage + auxiliary 08: alarm contact	2: Motor protection	B: The three protective poles and zero line are disconnected with other poles	III: Overload alarm without trip	E1: three-knob controller	160: 63A 125A 160A	In case of kinds of accessory voltages, they shall be described separately (e.g. shunt AC230V, undervoltage AC400V)	
	630: 630A												
800: 800A	P: Motor operation				18: shunt + alarm 28: auxiliary + alarm 38: undervoltage + alarm 48: shunt + alarm+ auxiliary		C: The four protective poles and zero line are disconnected with other poles		E3: grounded controller	250: 250A 320: 320A			
						68: two groups of auxiliary + alarm 78: undervoltage + auxiliary + alarm		D: The four protective poles and the zero line are not disconnected with other poles		E4: neutral protection controller	400: 400A 630: 630A		

Note: accessories of undervoltage release are not provided temporarily. Please contact local sales personnel when purchasing