



- ◆ ZAM3 Series Moulded Case Circuit Breaker
- ◆ ZAM3L Series Residual Current Circuit Breaker
- ◆ ZAM3E Series Electronic Circuit Breaker



CATALOGUE

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The general of ZAM3E series electronic circuit breaker

- ◆ ZAM3E series electronic circuit breakers(hereafter simply referred to as circuit breakers) are one of the new type breakers which have been developed using international advanced design and manufacturing technology. The rated insulation voltage of the breakers is 800V. In the circuit of AC50Hz, the rated working voltage 690V or bellow and the rated working current up to 800A, the breakers are suitable for infrequent turn-on or turn-off and infrequent motor starting-up. The breakers have overload long-time-delay inverse, short-circuit short-time delay, short-circuit instantaneous and under-voltage protection performances, so as to protect the circuit and the power equipment from damage. Circuit breaker protection features complete and accurate, can improve the reliability of power supply and avoid unnecessary power failures.
- ◆ According to the rated ultimate short-circuit breaking ability(Icu), the breakers are classified into two kinds of types L(standard type),M(second high type).Those breakers have the advantages such as small size, high breaking ability, short arc, anti vibration.
- ◆ The breakers could be installed vertically (upright) or horizontally (transverse).
- ◆ The breakers has disconnecting function, its corresponding symbol is shown as “  ”.
- ◆ The breakers can not be fed inversely, only allowing 1,3,5 connect with power supply wires, 2,4,6 connect with load wires.
- ◆ The breakers comply with the demands of the following standards: GB/T14048.2, IEC60947-2.



Application conditions for operation and installation

- ◆ Ambient temperature : -5°C~+40°C.
- ◆ Elevation of installation site: ≤2000m.
- ◆ Relative humidity: not exceeding 50% at the maximum ambient temperature of +40°C. With the lower temperature, higher humidity would be permitted. E.g. when the relative humidity is 90% at the ambient temperature of 20°C , special measures should be taken to solve the dew on the surface, which would appear due to the temperature change.
- ◆ Pollution protection: 3 grade.
- ◆ Breakers pass the GB/T2423.10 which can tolerate the mechanical vibration(frequency:2Hz~13.2Hz,displacement:±1 and frequency:13.2Hz~125Hz,acceleration : ±0.7g).
- ◆ Installing categories: III for the main circuits; II for auxiliary circuit and control circuit without connecting with the main circuit.
- ◆ Breakers can be used in electromagnetic environment A.
- ◆ Humid and tropical type (TH)breakers pass the GB/T2423.4, which can tolerate the Influence of damp air、 salt mist、 oil mist and mould.
- ◆ Breakers should be installed in the place without any explosive medium,conductive dust and can not corrode metal and destroy the insulation.
- ◆ The place would not be invade by rain and snow.
- ◆ Storage condition: Ambient temperature is -40°C~+70°C.

Main technical-performance index

ZAM3E series electronic circuit breaker main technical-performance index

Frame current $I_{nm}(A)$	125		250		400		800		
Type	ZAM3E-125		ZAM3E-250		ZAM3E-400		ZAM3E-800		
Pole number	3	4	3	4	3	4	3	4	
Rated current $I_n(A)$	32(12.5 ~ 32) 63(25 ~ 63) 125(40 ~ 125)		250(125 ~ 250)		400(160 ~ 400)		630(250 ~ 630) 800(315 ~ 800)		
Rated insulation voltage $U_i(V)$	AC800		AC800		AC800		AC800		
Rated impulse voltage $U_{imp}(V)$	8000		8000		8000		8000		
Rated working voltage $U_e(V)$ 50Hz/60Hz	AC400		AC400		AC400		AC400		
Arc-over distance(mm)	$\geq 50(0)^{2)}$		$\geq 50(0)^{2)}$		$\geq 125(0)^{2)}$		$\geq 125(0)^{2)}$		
Limiting short-circuit breaking ability $I_{cu}(kA)$	50		50		65		75		
Operating short-circuit breaking ability $I_{cs}(kA)$	35		35		50		50		
Rated short-time withstand current $I_{sw}(kA)/1s$	-		-		5		10		
Utilization category	A		A		B		B		
Electrical durability (times) ¹⁾	2000		2000		1000		1000		
Mechanical durability (times) ¹⁾	Without maintenance		15000		8000		5000		
	Maintenance		30000		15000		10000		
Outline dimensions (mm)	Width	92	122	107	142	150	198	210	
	Length	150		165		257		280	
	Height	92		90		106.5		115.5	
<p>Note:</p> <p>1)For GB14048.1, the term "durability" expresses the expectancy of the number of operating cycles which can be performed by the equipment before repair or replacement of parts.</p> <p>2)Can be zero arcing by installing arc cover of 6.2mm(ZAM3E-125), 7.5mm(ZAM3E-250), 9.3mm(ZAM3E-400), 9.5mm(ZAM3E-630/800).</p>									

Protection feature

(一)Application: power distribution

Power distribution ZAM3E Release pattern code is 3, it has overload long-time-delay, short-circuit short-time delay, short-circuit instantaneous protection function.

For example ZAM3E-125/3300.

Protection	Frame grade	Rated current In(A)	Current setting(A)	Operating feature/time
Overload long-time -delay	125	32	Ir1=12.5-14-16-18-20-22-25-28-30-32	I ^t operating 1.05Ir1, non-operating within two hours 1.3Ir1, ≤ 1h operating 2Ir1, t1=(12-60-80-125)s (ZAM3E-125/250) t1=(12-60-125-150)s (ZAM3E-400/800)
		63	Ir1=25-28-32-36-40-45-50-56-60-63	
		125	Ir1=40-50-63-70-75-80-90-100-112-125	
	250	250	Ir1=100-112-125-140-150-160-180-200-225-250	
	400	400	Ir1=160-180-200-225-250-280-315-350-375-400	
	800	630	Ir1=250-280-315-350-375-400-450-500-560-630	
	800	800	Ir1=315-350-400-450-500-560-630-700-760-800	
Allowable error				± 20%

Protection	Frame grade	Rated current In(A)	Current setting(A)	Operating feature/time
Short-circuit short-time -delay	125 ~ 800	32 ~ 630	Ir2=(2-2.5-3-4-5-6-7-8-10-12) × Ir1	When Ir2 ≤ I < 1.5Ir2, inverse operating; 1.5Ir2, t2=(0.06-0.1-0.2-0.3)s inverse: ± 20%
	800	800	Ir2=(2-2.5-3-3.5-4-5-6-7-8-10) × Ir1	
Allowable error			± 10%	When 1.5Ir2 ≤ I < Ir3, definite operating; t2=0.06s, ± 0.02s t2=0.1s, ± 0.03s t2=0.2s, ± 0.04s t2=0.3s, ± 0.06s

Protection	Frame grade	Rated current In(A)	Current setting(A)	Operating feature/time
short-circuit instantaneous	125	32 ~ 125	Ir3=(4-6-7-8-10-11-12-13-14-16) × Ir1	Instantaneous operating
	250/400/800	250 ~ 630	Ir3=(4-6-7-8-9-10-11-12-13-14) × Ir1	
	800	800	Ir3=(4-5-6-7-8-9-10-11-12) × Ir1	
Allowable error			± 15%	
Neutral pole protection (four poles C type)	Whole series	32 ~ 800	Ir1N=Ir1, Ir2N=Ir2, Ir3N=Ir3	
Overload pre-alarm	Whole series	32 ~ 800	Ir0=(0.7-0.75-0.8-0.85-0.9-0.95-1.0) × Ir1	

Protection feature

(二)Application: motor protection

Motor protection ZAM3E Release pattern code is 3, Usage code is 2, it has overload long-time-delay , short-circuit short-time delay , short-circuit instantaneous protection function.

For example ZAM3E-125/33002.

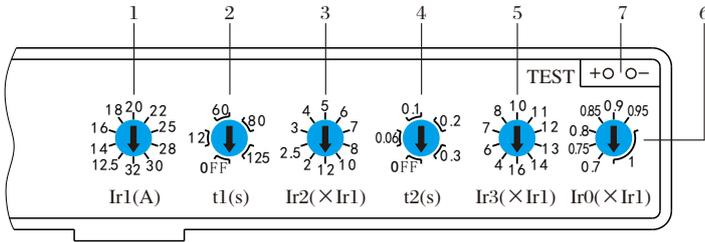
Protection	Frame grade	Rated current I _n (A)	Current setting(A)	Operating feature/time					
Overload long-time-delay	125	32	I _{r1} =12.5-14-16-18-20-22-25-28-30-32	I^2t operating 1.05I _{r1} Non-operating within 2 hours 1.2I _{r1} Operating within 1 hour					
		63	I _{r1} =25-28-32-36-40-45-50-56-60-63						
		125	I _{r1} =40-50-63-70-75-80-90-100-112-125						
	250	250	I _{r1} =125-112-125-140-150-160-180-200-225-250	1.5I _{r1}	21.3s	107s	142s	178s	
				2I _{r1} , t ₁	12s	60s	80s	125s	
				7.2I _{r1}	0.93s	4.63s	6.17s	7.72s	
				Tripping level	-	10A	10	20	
	400	400	I _{r1} =160-180-200-225-250-280-315-350-375-400	I^2t operating					
				1.05I _{r1}	Non-operating within 2 hours				
				1.2I _{r1}	Operating within 1 hour				
800	630	I _{r1} =250-280-315-350-375-400-450-500-560-630	1.5I _{r1}	21.3s	107s	178s	267s		
			2I _{r1} , t ₁	12s	60s	125s	150s		
			7.2I _{r1}	0.93s	4.63s	7.72s	11.6s		
			Tripping level	-	10	20	30		
Allowable error				± 20%					

Protection	Frame grade	Rated current I _n (A)	Current setting(A)	Operating feature/time
Short-circuit short-time-delay	125 ~ 800	32 ~ 630	I _{r2} =(2-2.5-3-4-5-6-7-8-10-12) × I _{r1}	When I _{r2} ≤ I < 1.5I _{r2} , inverse operating ; 1.5I _{r2} , t ₂ =(0.06-0.1-0.2-0.3)s inverse: ± 20%
Allowable error			± 10%	When 1.5I _{r2} ≤ I < I _{r3} , definite operating ; t ₂ =0.06s, ± 0.02s t ₂ =0.1s, ± 0.03s t ₂ =0.2s, ± 0.04s t ₂ =0.3s, ± 0.06s

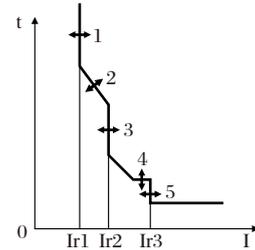
Protection	Frame grade	Rated current I _n (A)	Current setting(A)	Operating feature/time
short-circuit instantaneous	125	32 ~ 125	I _{r3} =(4-6-7-8-10-11-12-13-14-16) × I _{r1}	Instantaneous operating
	250/400/800	250 ~ 630	I _{r3} =(4-6-7-8-9-10-11-12-13-14) × I _{r1}	
Allowable error			± 15%	
Neutral pole protection (four poles C type)	Whole series	32 ~ 630	I _{r1N} =I _{r1} , I _{r2N} =I _{r2} , I _{r3N} =I _{r3}	
Overload pre-alarm	Whole series	32 ~ 630	I _{r0} =(0.7-0.75-0.8-0.85-0.9-0.95-1.0) × I _{r1}	

Electronic overcurrent release setting value

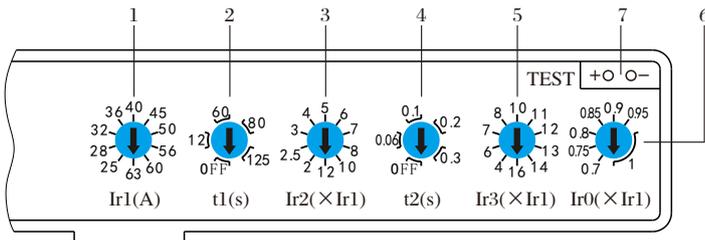
ZAM3E-125, In=32A Electronic overcurrent release



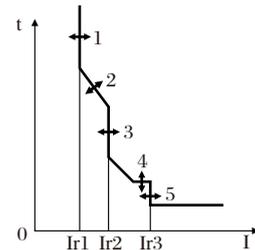
Protective characteristic curve of electronic over current release



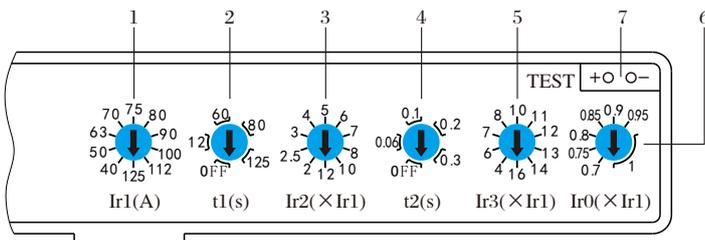
ZAM3E-125, In=63A Electronic overcurrent release



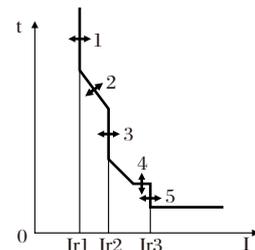
Protective characteristic curve of electronic over current release



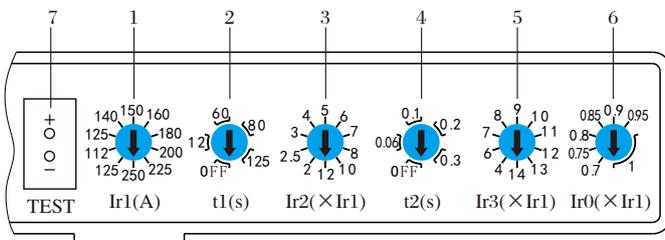
ZAM3E-125, In=125A Electronic overcurrent release



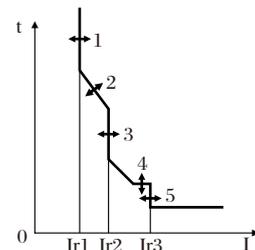
Protective characteristic curve of electronic over current release



ZAM3E-250, In=250A Electronic overcurrent release

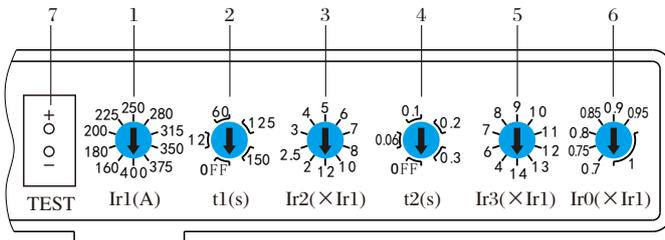


Protective characteristic curve of electronic over current release

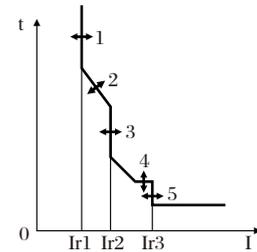


Electronic overcurrent release setting value

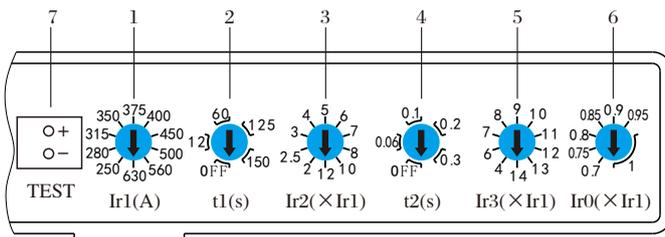
ZAM3E-400, In=400A Electronic overcurrent release



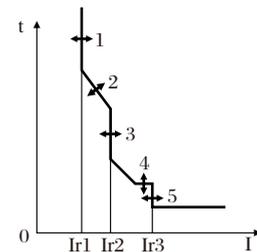
Protective characteristic curve of electronic over current release



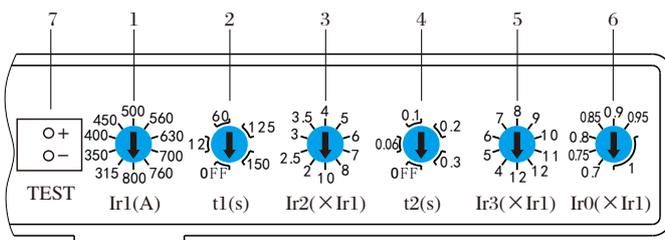
ZAM3E-800, In=630A Electronic overcurrent release



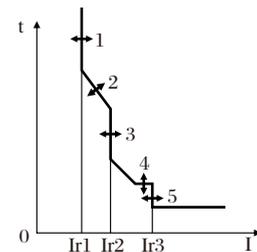
Protective characteristic curve of electronic over current release



ZAM3E-800, In=800A Electronic overcurrent release



Protective characteristic curve of electronic over current release



- 1-For the adjustment of overload long-time delay operating current I_{r1} , according to different rated current this knob can be adjusted from 4 steps to 10 steps;
- 2-For the adjustment of long-time operating time $t1$, this knob can be adjusted 4 steps;
- 3-For the adjustment of short-circuit short-time delay operating current I_{r2} , this knob can be adjusted 10 steps;
- 4-For the adjustment of short-time operating time $t2$, this knob can be adjusted 4 steps;

- 5-For the adjustment of short-circuit instantaneous operating current I_{r3} , this knob can be adjusted 9 steps or 10 steps;
- 6-For the adjustment of pre-alarm operating current I_{r0} , this knob can be adjusted 7 steps;
- 7-Test interface, used to connect DC12V test power, check controller tripping function.

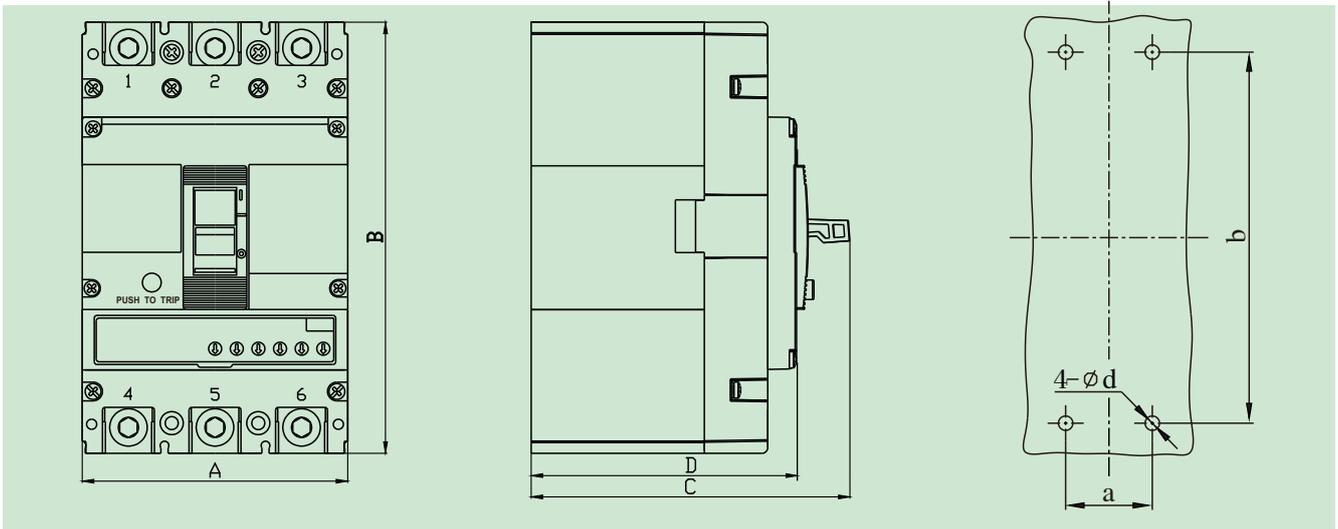
The inner accessories code

Alarm contact
 Auxiliary contact
 ● Shunt release
 ○ Under-voltage release
 → Lead direction
 Handle 

Left mounting  Right mounting 

Code	Accessories name	ZAM3E-125/250		ZAM3E-400		ZAM3E-800
		3poles	4poles	3poles	4poles	3poles/4poles
00	No accessory					
08	Alarm contact					
10	Shunt release					
20	Auxiliary contact(1N01NC)					
	Auxiliary contact(2N02NC)					
02	Auxiliary contact(2N02NC)					
30	Undervoltage release					
40	Shunt release, auxiliary contact (1N01NC)					
	Shunt release, auxiliary contact (2N02NC)					
12	Shunt release, auxiliary contact (2N02NC)					
50	Shunt release, undervoltage release					
60	Two group of auxiliary contact (2N02NC)					
	Two group of auxiliary contact (4N04NC)					
22	Two group of auxiliary contact (3N03NC)					
23	Two group of auxiliary contact (4N04NC)					
70	Undervoltage release, alarm contact (1N01NC)					
	Undervoltage release, alarm contact (2N02NC)					
32	Undervoltage release, alarm contact (2N02NC)					
18	Shunt release, alarm contact					
28	Auxiliary contact (1N01NC) alarm contact					
	Auxiliary contact (2N02NC) alarm contact					
38	Undervoltage release, alarm contact					
48	Shunt release, auxiliary contact (1N01NC) alarm contact					
	Shunt release, auxiliary contact (2N02NC) alarm contact					
68	Two group of auxiliary contact (2N02NC) alarm contact					
	Two group of auxiliary contact (4N04NC) alarm contact					
05	Two group of auxiliary contact (3N03NC) alarm contact					
78	Undervoltage release, auxiliary contact (1N01NC) alarm contact					
	Undervoltage release, auxiliary contact (2N02NC) alarm contact					

Outline dimensions and mounting dimensions

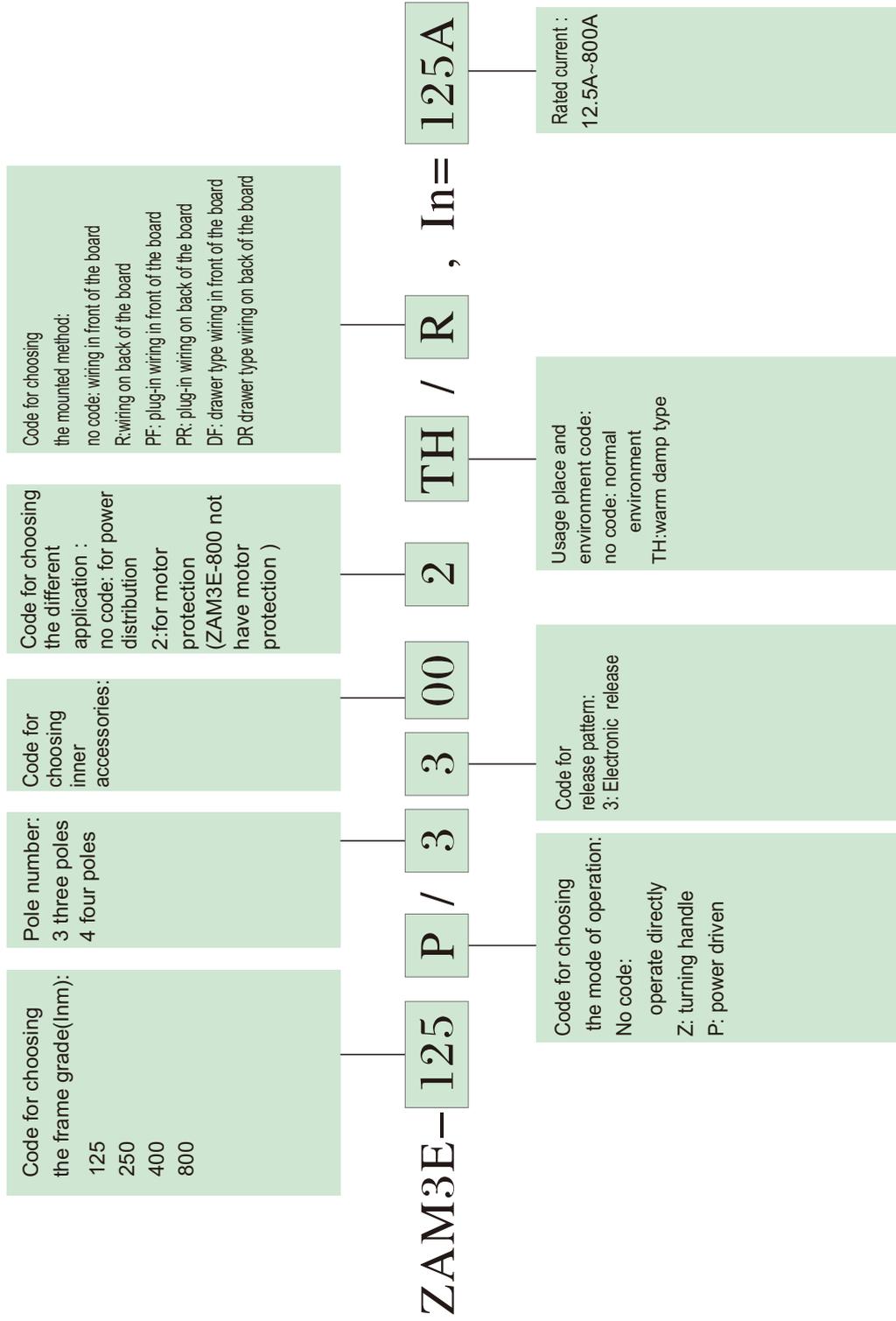


◆ Outline dimensions and mounting dimensions (mm)

Type	Pole number	outline dimensions				mounting dimensions		
		A	B	C	D	a	b	ϕd
ZAM3E-125	3	92	150	110	92	30	129	4.5
	4	122				60		
ZAM3E-250	3	107	165	110	90	35	126	4.5
	4	142				70		
ZAM3E-400	3	150	257	146.5	106.5	44	194	7
	4	198				94		
ZAM3E-800	3	210	280	155	115.5	70	243	7
	4	280				140		

Quick selection table for ZAM3E series electronic circuit breaker

Quick selection table for ZAM3E series electronic circuit breaker



For example: If place an order for ZAM3E-125, standard type, three poles, rated current 50A with shunt release, wiring in front of the board, 2 breakers, it would be written-in "To order ZAM3E-125/3310, In=80A, two breakers."