

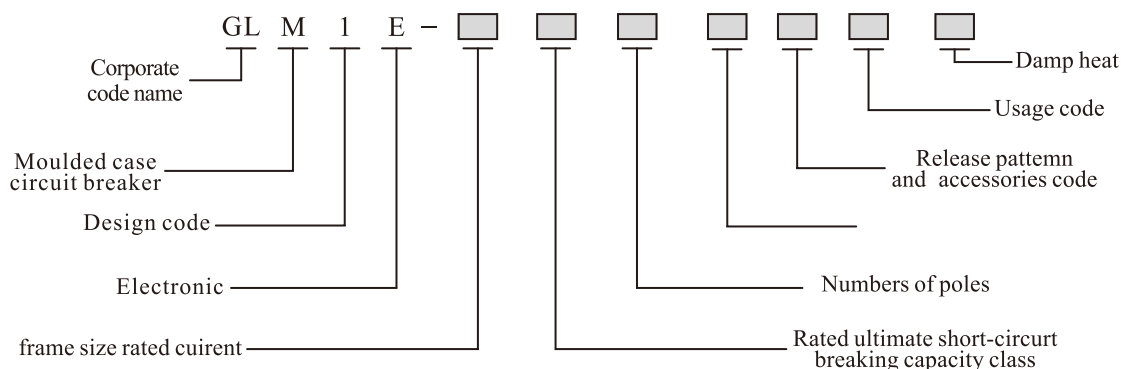
## GENERAL

GLMIE series electronic MCCB (hereafter referred to as simply breakers) are one of the new type breakers which have been developed by the company using CAD/CAM/CAE international advanced design and manufacturing technology. The rated insulation voltage of the breakers is 800-1000V. In the circuit of AC 50Hz/60Hz, rated operational voltage 690V and rated current up to 1250A, the breakers take the role of infrequent change-over switching and infrequent motor start-up. The breakers have overload long-time-delay inverse, short-circuit short-time-delay inverse, short-circuit short-time-delay definite, short-circuit instantaneous and under-voltage protection functions so as to prevent the circuit and supply devices from damage. The breaker can be provided for temperature down to -40°C.

The breakers, according to the rated ultimate short-circuit breaking capacity (cu), are classified into two kinds of types M (second high breaking type) and H (high breaking type). The breakers are of the following characteristics: compact size, high breaking capacity, short arc-over distance and shakeproof, etc.

- The breakers could be installed vertically (upright) or horizontally (transverse).
- The breakers could not be wired adversely. 1, 3 and 5 can only be connected with supply line, 2, 4 and 6 can only be connected with load line.
- The breakers have disconnecting function, its corresponding symbol is shown as “ ”
- The breakers comply with the demands of the following standards:
  - IEC 600947-1 and GB14048.1-2006 Low-voltage switchgear and controlgear General rules
  - IEC 600947-2 and GB14048.2-2008 Low-voltage switchgear and controlgear Circuit-breakers and appendix F additional tests for circuit-breakers with electronic over-current protection.
  - IEC 60947-4-1 and GB14048.4 Low-voltage switchgear and controlgear Electromechanical contactors and motor starters
- The breakers have obtained the “CCC” mark of CQC.

## TYPE AND ITS MEANING



Note: 1) usage code for distribution MCCB is without code, usage code for motor protection is 2.

2) No code for operation directly; P for motor operator; Z, for rotary handle operator.

## TYPE AND ITS MEANING / NORMAL SERVICE AND MOUNTING CONDITIONS

- The pattern of neutral (N) for four poles breaker: protective current and time of over-current in N pole, are 100% automatic tracking phase line, and N pole combines with other three poles (closing first and opening last)

- Classification according to rated current: GLM1E-100 has 32, 63, 100A, GLM1E-225 has 225A, GLM1E-250 has 250A, GLM1E-400 has 400A, GLM1E-630 has 630A, GLM1E-800 has 800A, GLM1E-1250 has 800, 1000, 1250A;

- The connected mode has five: front connected, rear connected, plug in front connected, plug-in rear connected and draw-out connected.

- In accordance with breaker whether with accessories: with accessories and without accessories. Accessories: internal/external, internal accessories: shunt release, under-voltage release, auxiliary contact and alarm contact; external accessories: rotary handle operator, motor operator and BLE test temperature alarm module.

- Ambient air temperature: -5°C ~ +55°C;
- The altitude of the site of installation does not exceed 2000m;
- The relative humidity of the air does not exceed 50% at a maximum temperature of +40°C. Higher relative humidities may be permitted at lower temperature, e.g. 90% at +20°C. Special measures may be necessary in cases of occasional condensation due to variations in temperature,
  - Pollution degree 3;
  - Installing category: II for main circuit, II for other auxiliary and control circuits;
    - Be suitable in electromagnetic environment A; Damp heat breaker can be able to bear the influence of damp air or salt mist and oil mist or mould;
    - There must be not any explosive dangerous and non-conducting dust, there must be not any gas which would corrode metal and destroy insulation;
    - The place would not be invaded by rain and snow.

# STRUCTURE INTRO DUCTION

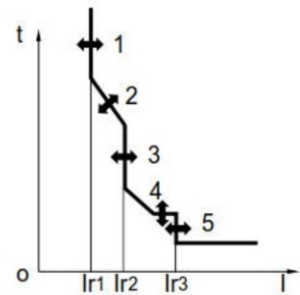
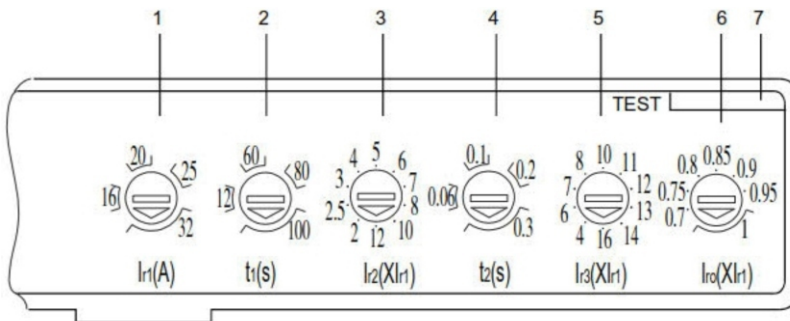
•Breaker front direction



GLM1E-100, In=32A

GLM1E-100, In=32A electronic release

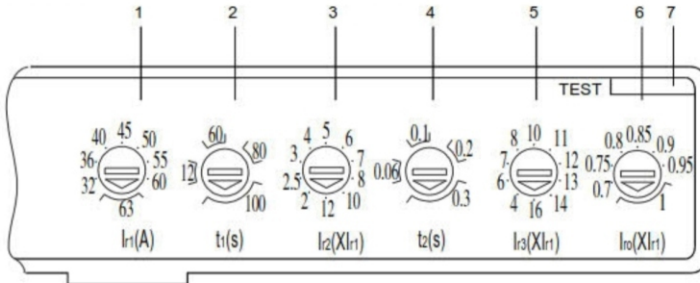
Protective characteristic curve of electronic release



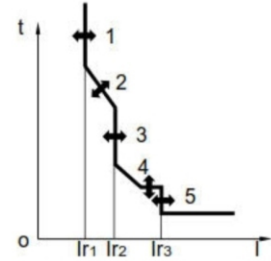
# STRUCTURE INTRO DUCTION

GLM1e-100, In=63A

GLM1e-100, In=63A electronic release

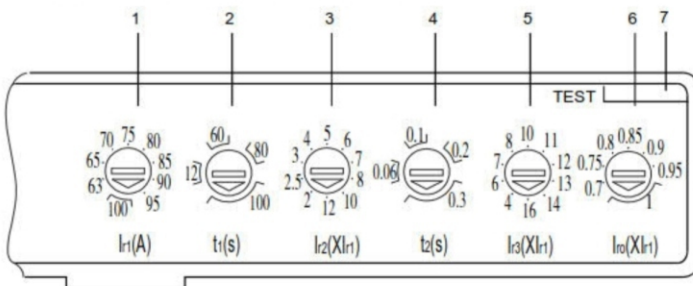


Protective characteristic curve of electronic release

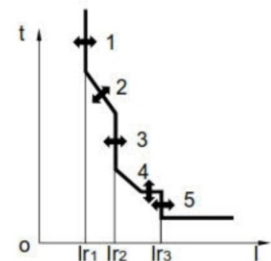


GLM1e-100, In=100A

GLM1e-100, In=100A electronic release

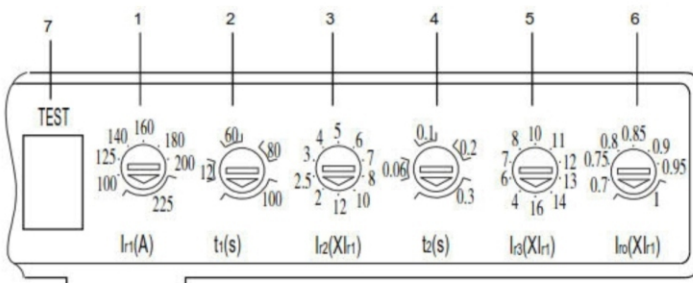


Protective characteristic curve of electronic release

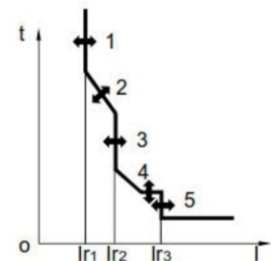


GLM1e-225, In=225A

GLM1e-225, In=225A electronic release

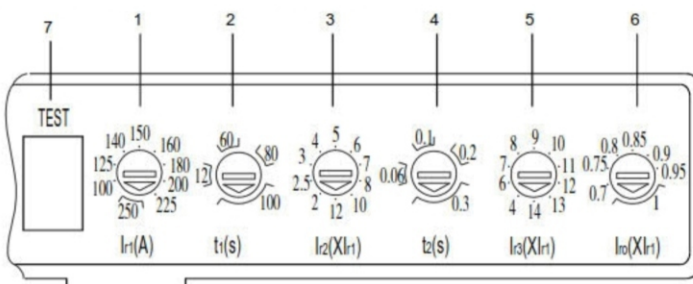


Protective characteristic curve of electronic release

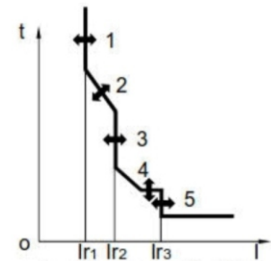


GLM1e-250, In=250A

GLM1e-250, In=250A electronic release

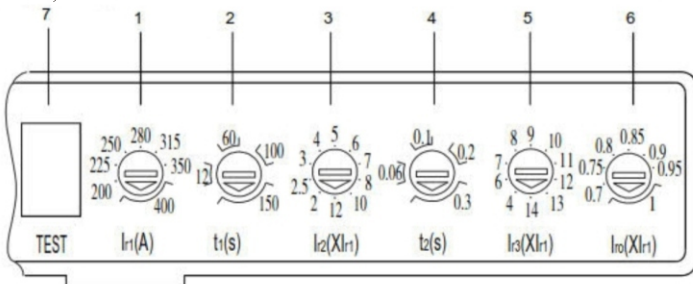


Protective characteristic curve of electronic release

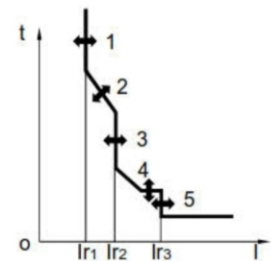


GLM1e-400, In=40A

GLM1e-400, In=400A electronic release



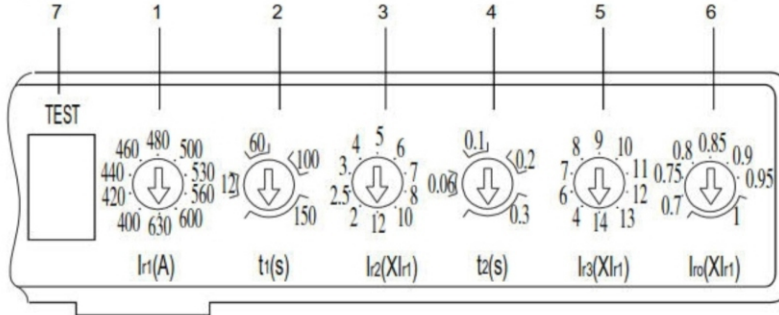
Protective characteristic curve of electronic release



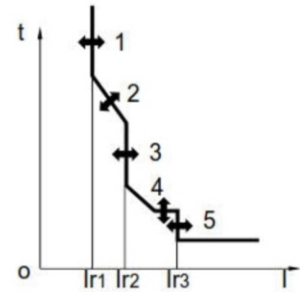
# STRUCTURE INTRO DUCTION

GLM1e-630 In=630A

GLM1e-100, In=630A electronic release

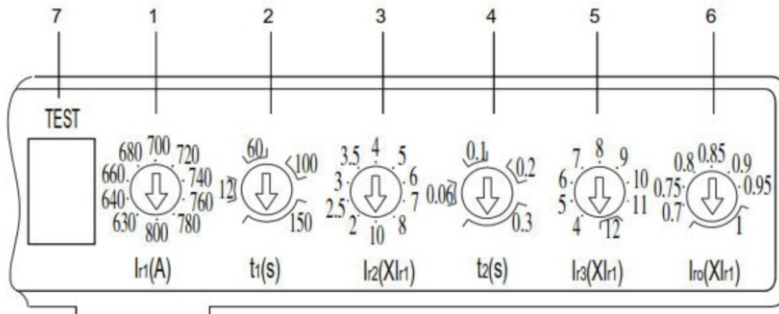


Protective characteristic curve of electronic release

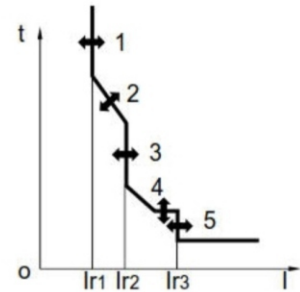


GLM1e-800, In=800A

GLM1e-800, In=800A electronic release

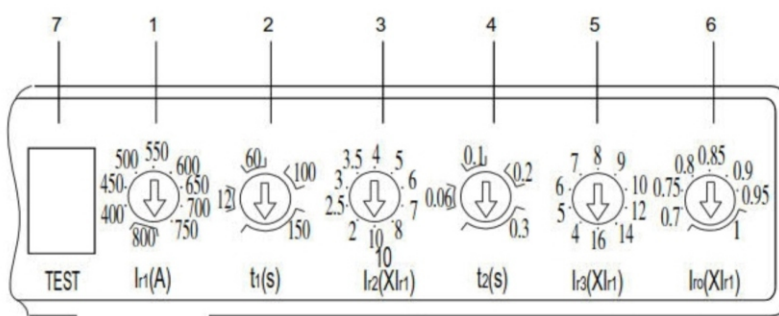


Protective characteristic curve of electronic release

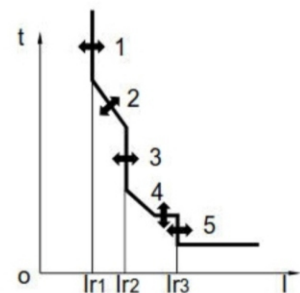


GLM1e-1250, In=800A

GLM1e-1250, In=800A electronic release

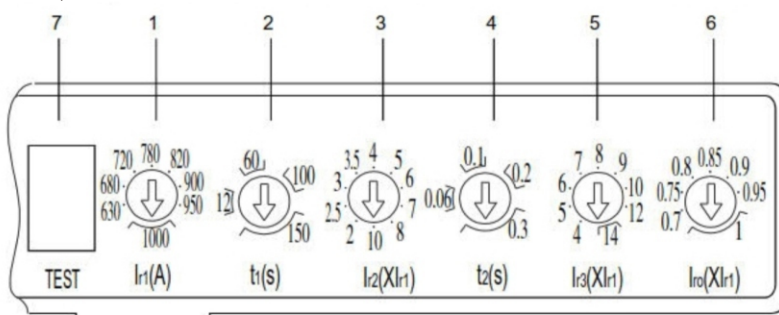


Protective characteristic curve of electronic release

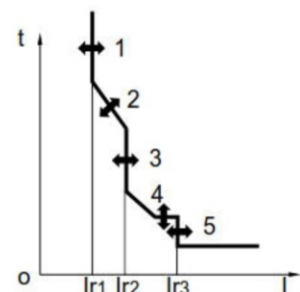


GLM1e-1250, In=1000A

GLM1e-1250, In=1000A electronic release



Protective characteristic curve of electronic release

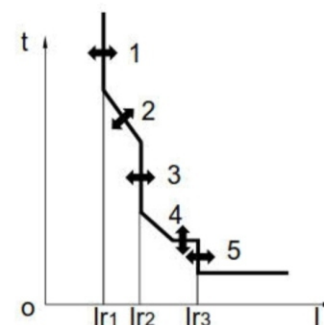
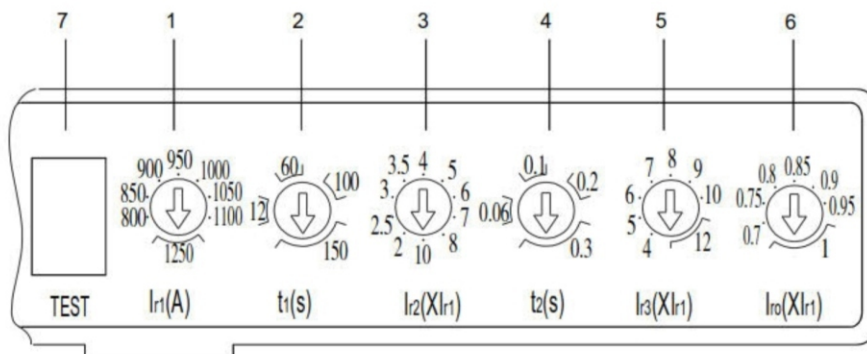


## STRUCTURE INTRO DUCTION

GLM1e-630 In=630A

GLM1e-100, In=630A electronic release

Protective characteristic curve of electronic release



### Protection

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  $t_1$ , 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  $t_2$ , this knob can be adjusted 4 steps ;

5-For the adjustment of short-circuit instantaneous operating current  $I_{r3}$ , this knob can be adjusted 8 steps, 9 steps or 10 steps ;

6-For the adjustment of pre-alarm operating current  $I_{r0}$ , this knob can be adjusted 7 steps

### Other functions

7-Test terminal for the testing of present setting values electronic release ;

8-Pre-alarm indication;

9-Over-load indication;

10-Tripping button;

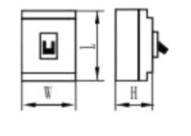
11-Normal



## MAIN TECHNICAL PERFORMANCE INDEX

- The technical performance index see following table 1 please

Table 1

Type		GLM1E-100			GLM1E-225			GLM1E-250			GLM1E-400		
Inm(A) Frame size rated current		100			225			250			400		
In(A) Rated current		32	63	100	225			250			400		
Iri (A) Overload long-time-delay setting current		16,20,25, 32	32,36,40, 45,50,55, 60,63	63,65,70, 75,80,85, 90,95,100	100,125,140, 160,180,200,225			100,125,140,150, 160,180,200,225,250			200,225,250, 280,315,350,400		
Uc (V) Rated operational voltage		400 690	400		400 690	400		400 690	400		400 690	400	
Uj (V) Rated insulation voltage		800-1000											
Uimp(V) Rated impulse withstand voltage		12000											
Numbers of poles		3		4	3		4	3		4	3		4
Breaking capacity class		M	H		M	H		M	H		M	H	
Icu(kA) Rated ultimate short-circuit breaking capacity		50	85	50	50	85	50	50	85	50	65	100	65
		20			20			20			20		
Ics(kA) rated service short-circuit breaking capacity		35	50	35	35	50	35	35	50	35	42	65	42
		10			10			10			15		
Rated short-time withstand current		5											
Utilization category		B			B			B			B		
Arc-over distance		≥ 50(0)**											
Electrical durability		8000			8000			8000			7500		
Mechanical durability	Without maintenance	20000			20000			20000			10000		
	Maintenance	40000			40000			40000			20000		
Outline dimension 		92		122	107		142	107		142	150		198
		150			165			165			257		
		92			90			90			106.5		
Front connected		○			○			○			○		
Rear connected		○			○			○			○		
Plug-in connected		○			○			○			○		
Draw-out connected		○			○			○			○		
Under-voltage release		○			○			○			○		
Shunt release		○			○			○			○		
Auxiliary contact		○			○			○			○		
Alarm contact		○			○			○			○		
Motor operator		○			○			○			○		
Rotary handle operator		○			○			○			○		
GLM1E tester		○			○			○			○		

\* Note: for GB14048.1-2006, 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

\*\* note: can be zero arcing by installing arc cover of 6mm

## MAIN TECHNICAL PERFORMANCE INDEX

- Release pattern and internal accessories code see following Table 2 please

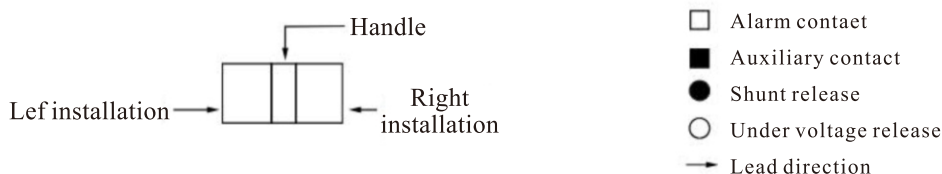


Table 2

Release pattern and accessories code	Accessories name	Type				
		Three poles four poles	Three poles	Four poles	Three poles Four poles	Three poles
308	Alarm contact					
310	Shunt release					
320	Auxiliary contact					
330	Undervoltage release					
340	Shunt release auxiliary contact	---	---			
350	Shunt release undervoltage release	---	---	---		
360	Two auxiliary contact	---	---			
370	Auxiliary contact undervoltage release	---	---			
318	Shunt release alarm contact	---	---	---		
328	Auxiliary contact alarm contact					
338	Undervoltage release alarm contact	---	---	---		
348	Shunt release auxiliary contact, alarm contact	---	---	---		
368	Two auxiliary contact alarm contact	---	---			
378	Auxiliary contact undervoltage release, alarm contact	---	---	---		

- Note: 1. Release pattern and accessories code's first number 3 is provided with three class protective electron]TUTTDrowideo with temaaccessories code. without accessories is provided 00.
2. ForGLM'E-400 codes 328,GLM1-630, 800, 1250 codes 348.GLMfr-1250 codes 378 have one pair ofauxiiary contact (a noray open and a normallycloseforGLMt.400, 630,800, 1250eodes 368 have three pair of auxiliary contacts( three normally open and three normally close). The amount of auxiliary contaetsin terms specifications is disposed according to the diagram on page 27.
3. For GLMiE-100, 225, 250, two pair of auxiliary contacts(two normally open and two normally close) are provided, note when making order.

## POWERLOSS

- Power loss see following table 3

Table 2

Type	With current	The total power loss of three/four poles			
		front connected	Rear connected	Rear connected	Rear connected
GLM1E-100	100	12	12	12.2	-
GLM1E-225	225	41	41	41.2	-
GLM1E-250	250	50.6	50.6	50.8	-
GLM1E-400	400	52.8	52.8	53.1	72.9
GLM1E-630	630	71.4	71.4	71.7	91.5
GLM1E-800	800	115.2	115.2	115.5	135.5
GLM1E-1250	1250	140.6			138.9 ( $I_{r1}=1100A$ )

## ALTITUDE RATING

- Operational current correction coefficient, electrical performance of breaker can be corrected by reference to following table:

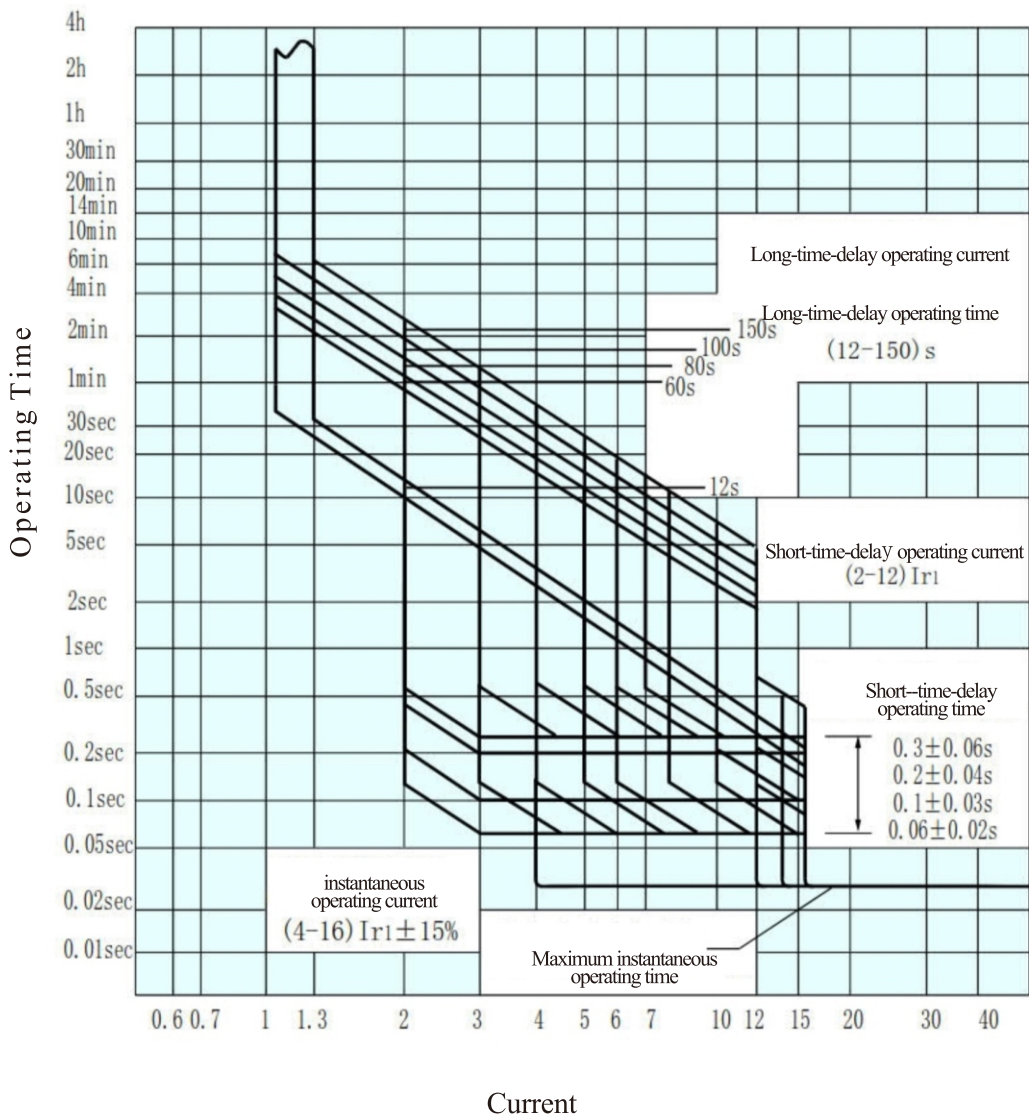
Altitude	2000	3000	4000	5000
Power-frequency withstand voltage	3000	2500	2000	1800
Operational current correction coefficient	1	0.94	0.88	0.83



# ELECTRONIC RELEASE CHARACTERISTIC

The breaker for which the current sensing means are stated to be r.m.s. responsive. it has overload long-time-delay inverse, short-circuit short-time-delay inverse, short-circuit short-time-delay definite, short-circuit instantaneous protection functions, can be set up protection characteristic by the users;

neutral over current protective current and time parameter are 100% automatic tracking phase setting value release characteristic see the following diagram.



## ELECTRONIC RELEASE CHARACTERISTIC

- Long-time-delay over current inverse protective operating characteristic see table 4

Table 4

Current		Operating time								
Distribution		Non-operating with two hours								
	1.3I <sub>r1</sub>	Operating								
	2I <sub>r1</sub>	Setting time	I <sub>nm</sub> =100、225、250A				I <sub>nm</sub> =400、630、800、1250A			
12			60	80	100	12	60	100	150	
Motor protection	1.05I <sub>r1</sub>	Non-operating with two hours								
	1.2I <sub>r1</sub>	Operating								
	1.5I <sub>r1</sub>	Operating time	I <sub>nm</sub> =100、225、250A				I <sub>nm</sub> =400、630A			
			21.3	107	142	178	21.3	107	178	267
	2I <sub>r1</sub>	Setting time	12	60	80	100	12	60	100	150
	7.2I <sub>r1</sub>	Operating time	0.93	4.63	6.17	7.72	0.93	4.63	7.72	11.6
	Trip class		—	10A	10	20	—	10	20	30
Note : 1.operating time in line with $I^2 T_1=(2I_r1)^2 t_1$ ( $1.2I_{tr1} \leq i < I_r2$ ); 2.operating time tolerance: $\pm 20\%$ ; 3.Returnable time not less than 70% operating time.										

- Short-time delay over-current protection characteristic see table 5

Table 5

Current		Operating time					
$I_r2 \leq I < 1.5I_r2$		Inverse		$I^2 T_2=(1.5I_r2)^2 t_2$			
$1.5I_r2 \leq I < I_r3$	Definite	Setting time		0.06	0.1	0.2	0.3
		Tolerance		$\pm 0.02$	$\pm 0.03$	$\pm 0.04$	$\pm 0.06$
		Returnable time				0.14	0.21
Note: Inverse operating time tolerance $\pm 20\%$ .							