GRM3 DC Series

AC/DC High Voltage Molded Case Circuit Breaker



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GRM3 DC Series

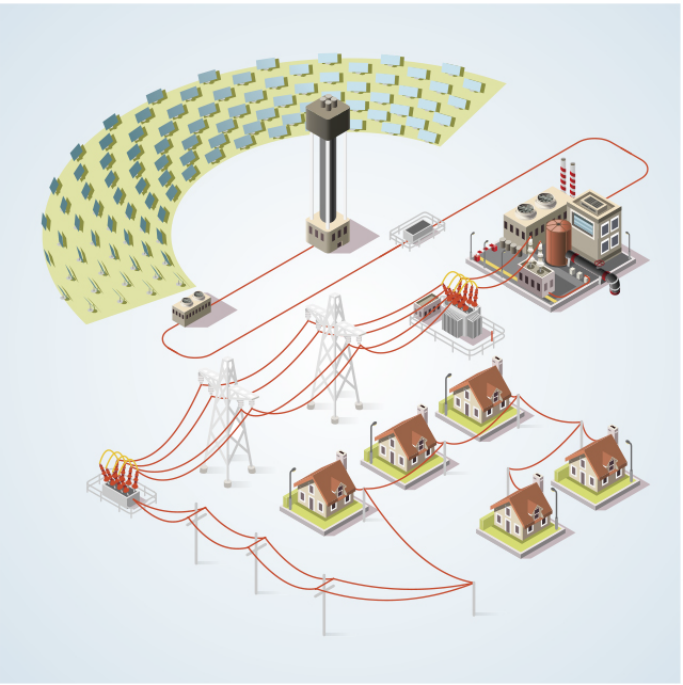
AC/DC High Voltage Molded Case Circuit Breaker





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AC/DC High Voltage Molded Case Circuit Breaker







Function Introduction

Through many years of dedicated research on the actual system operation situation and customer needs of new energy at home and abroad, SHILONG Electric has developed the GRM3HU/DC series of AC and DC Molded Circuit Breaker for New Energy.

Product Characteristic

- GRM3HU series Molded Circuit Breaker, The maximum rated voltage is AC 1140V, and the maximum current is 800A.
- GRM3HU series Molded Circuit Breaker, in the voltage of AC 800V, the maximum breaking capacity is 50kA, which can ensure reliable short-circuit protection of the system.
- GRM3DC series Molded Circuit Breaker, The maximum rated voltage is AC 1500V, and the maximum current is 800A.
- GRM3DC series Molded Circuit Breaker, in the voltage of DC 1500V, the maximum breaking capacity is 20kA, which can ensure reliable short-circuit protection of the system.

Standard

GRM3HU/DC series AC/DC molded case circuit breakers meet the following standards
IEC 60947-1 GB/T14048.1 General Provisions
IEC 60947-2 GB/T14048.2 Circuit Breaker

Use and Maintenance

Various characteristics and accessories of the circuit breaker shall be fixed by the manufacturer and shall not be adjusted in the use. Under the compliance with custody and use conditions, from the date of 24 months from the manufacturer delivery and in the situation of the circuit breaker intact seals, if the product is damaged or not used normally due to manufacturing quality problems, the manufacturer shall be responsible for replacement and repair without charge.

Applied Environment

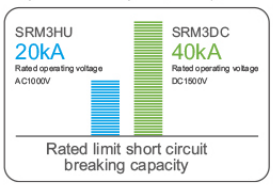
1. The altitude is not higher than 5500 m;
2. It is resistant to damp air (three-proof type)①
3. It is resistant to the influence of salt fog and oil fog (three - proof type);
4. It is resistant to the influence of mold (three - proof type);
5. In a medium without explosion risk, and the medium is not enough to corrode the metal and destroy the insulation of the gas and conductive dust.

Note: The three-prevention products should be specially customized, please indicate TH.

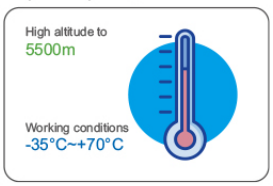
High operating voltage



High breaking capacity



High range applications



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GRM3 Series AC/DC High Voltage Molded Case Circuit Breaker







Model preparation meaning

GR	M	3	DC	-	250	H:R	/	3	300	D	DC1500V	200A
①	②	③	④		⑤	⑥		⑦	⑧	⑨	⑩	⑪

Code name	Meaning
①	
②	Molded Case
③	Design No.
④	HU-AC, DC-DC
⑤	Shell frame gradecurrent 250, 320, 400, 630, 800
⑥	Rated short-circuit breaking capacity rating H: high speed breaker R: current limiting type
⑦	Phase No.
⑧	Stripper mode and attachment code (see Table)
⑨	External accessories D: Auto operation Z: Manual operation
⑩	Rated voltage AC415V, AC550V, AC690V, AC800V, AC1000V, AC1140V DC250V, DC500V, DC750V, DC1000V, DC1250V, DC1500V
⑪	Rated current: 20~800A

Class

According to operation mode:

1. Direct operation
2. Electric operator mechanism operation
3. Rotary handle operation

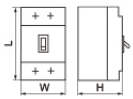
According to the protection form:

1. Line protection
2. Line isolation

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GRM3HU Series AC High Voltage Molded Case Circuit Breaker

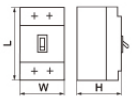
Main technical parameter

Appearance									
Model		GRM3HU-320				GRM3HU-400			
Rated current of shell frame grade Inm(A)		320				400			
Rated current In(A)		20, 32, 63, 80, 100, 125, 140, 160, 180, 200, 225, 250, 280, 315, 320				250, 280, 300, 315, 350, 400			
Pole Number		3				3			
Rated working voltage Ue (V)AC		415	500/690	800	1000/1140	415	500/690	800	1000/1140
Rated insulation voltage Ui (V)		1150				1150			
Rated impulse withstand voltage Uimp (kV)		8				12			
Extreme short-circuit breaking capacity Icu (kA)	H Type	85	50	36.5	15	85	50	36.5	10
	R Type	/	/	/	/	100	60	50	15
Running short-circuit breaking capacity Ics (kA)		Ics=100%Icu							
Mechanical life (Total times)		20000				10000			
Electrical life (Total times)		3000	3000	3000	2000	1000	1000	1000	700
Insolation feature		Yes							
Standard		IEC 60947-2, GB/T 14048.2							
Allowable ambient temperature		-35~+70°C							
Levels of protection		IP20							
Quality certificate		CCC、CE、TÜV certificate							
With accessories		Auxiliary, alarm, off load, Hand operation, Electric operation							
Arcing distance (mm)		≤50 (Zero arc, with arcing cover)							
Transient Action value		10In							
Overall dimensions L×W×H(mm) 	L	180				250			
	W	107				182			
	H	126				165			

Note: 320 shell frame is not divided into H: high breaking, R: current limiting type.

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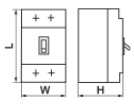
GRM3HU Series AC High Voltage Molded Case Circuit Breaker

Appearance									
Model		GRM3HU-630				GRM3HU-800			
Rated current of shell frame grade Inm(A)		630				800			
Rated current In(A)		500 630				700 800			
Pole Number		3				3			
Rated working voltage Ue (V)AC		415	500/690	800	1000/1140	415	500/690	800	1000/1140
Rated insulation voltage Ui (V)		1150				1150			
Rated impulse withstand voltage Uimp (kV)		12				12			
Extreme short-circuit breaking capacity Icu (kA)	H Type	85	50	36.5	10	85	50	36.5	10
	R Type	100	60	50	15	100	60	50	15
Running short-circuit breaking capacity Ics (kA)		Ics=100%Icu							
Mechanical life (Total times)		5000				5000			
Electrical life (Total times)		1000	1000	1000	700	1000	1000	1000	700
Insolation feature		Yes							
Standard		IEC 60947-2, GB/T 14048.2							
Allowable ambient temperature		-35~+70°C							
Levels of protection		IP20							
Quality certificate		CCC、CE、TÜV certificate							
With accessories		Auxiliary, alarm, off load, Hand operation, Electric operation							
Arcing distance (mm)		≤50 (Zero arc, with arcing cover)							
Transient Action value		10In							
Overall dimensions L×W×H(mm) 	L	250				250			
	W	182				182			
	H	165				165			

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GRM3DC Series DC High Voltage Molded Case Circuit Breaker

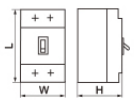
Main technical parameter

Appearance								
Model		GRM3DC-320			GRM3DC-400			
Rated current of shell frame grade Inm(A)		320			400			
Rated current In(A)		20, 32, 63, 80, 100, 125, 140, 160, 180, 200, 225, 250, 280, 315, 320			225, 250, 315, 350, 400			
Pole Number		2		3	2			3
Rated working voltage Ue (V)DC		500	1000	1500	250/500	750/1000	1250/1500	1250/1500
Rated insulation voltage Ui (V)		1250		1500	1500			
Rated impulse withstand voltage Uimp (kV)		8		12	12			
Extreme short-circuit breaking capacity Icu (kA)	H Type	50	20	20	65	35	15	15① 20②
	R Type	/	/	/	70	40	20	20① 25②
Running short-circuit breaking capacity Ics (kA)	H Type	Ics=100%Icu						
	R Type							
Wiring mode		Up incoming and Down outcoming, Down incoming and Up outcoming (2P, 320/3P) Down incoming and Down outcoming, Up incoming and Up outcoming (3P)						
Mechanical life (Total times)		20000			10000			
Electrical life (Total times)		3000	2000	1500	1000	1000	700	500
Insolation feature		Yes						
Standard		IEC 60947-2, GB/T 14048.2						
Allowable ambient temperature		-35~+70°C						
Levels of protection		IP20						
Quality certificate		CCC、CE、TÜV certificate						
With accessories		Auxiliary, alarm, off load, Hand operation, Electric operation						
Arcing distance (mm)		≤50 (Zero arc, with arcing cover)						
Transient Action value		10In						
Overall dimensions L×W×H(mm) 	L	180		180	250			250
	W	76		107	124			182
	H	126		126	165			165

Note: 320 shell frame is not divided into H: high breaking, R: current limiting type.

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GRM3DC Series DC High Voltage Molded Case Circuit Breaker

Appearance									
Model		GRM3DC-630				GRM3DC-800			
Rated current of shell frame grade Inm(A)		630				800			
Rated current In(A)		500 630				700 800			
Pole Number		2			3	2			3
Rated working voltage Ue (V)DC		250/500	750/1000	1250/1500	1250/1500	250/500	750/1000	1250/1500	1250/1500
Rated insulation voltage Ui (V)		1500				1500			
Rated impulse withstand voltage Uimp (kV)		12				12			
Extreme short-circuit breaking capacity Icu (kA)	H Type	65	35	15	15① 20②	65	35	15	15① 20②
	R Type	70	40	20	20① 25②	70	40	20	20① 25②
Running short-circuit breaking capacity Ics (kA)	H Type	Ics=100%Icu							
	R Type								
Wiring mode		Up incoming and Down outcoming, Down incoming and Up outcoming (2P, 320/3P) Down incoming and Down outcoming, Up incoming and Up outcoming (3P)							
Mechanical life (Total times)		5000							
Electrical life (Total times)		1000	1000	700	500	1000	1000	700	500
Insolation feature		Yes							
Standard		IEC 60947-2, GB/T 14048.2							
Allowable ambient temperature		-35~+70°C							
Levels of protection		IP20							
Quality certificate		CCC、CE、TÜV certificate							
With accessories		Auxiliary, alarm, off load, Hand operation, Electric operation							
Arcing distance (mm)		≤50 (Zero arc, with arcing cover)							
Transient Action value		10In							
Overall dimensions L×W×H(mm) 	L	250			250	250			250
	W	124			182	124			182
	H	165			165	165			165

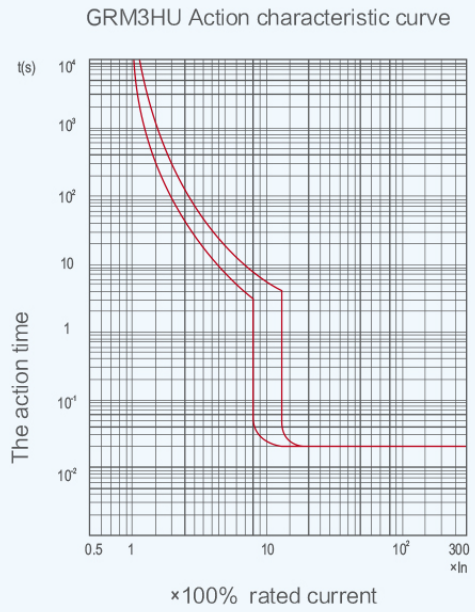
Note: ① 2P connection in series, ② 3P connection in series

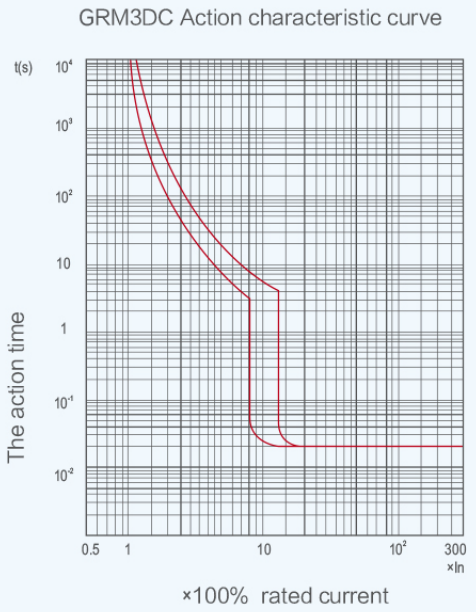
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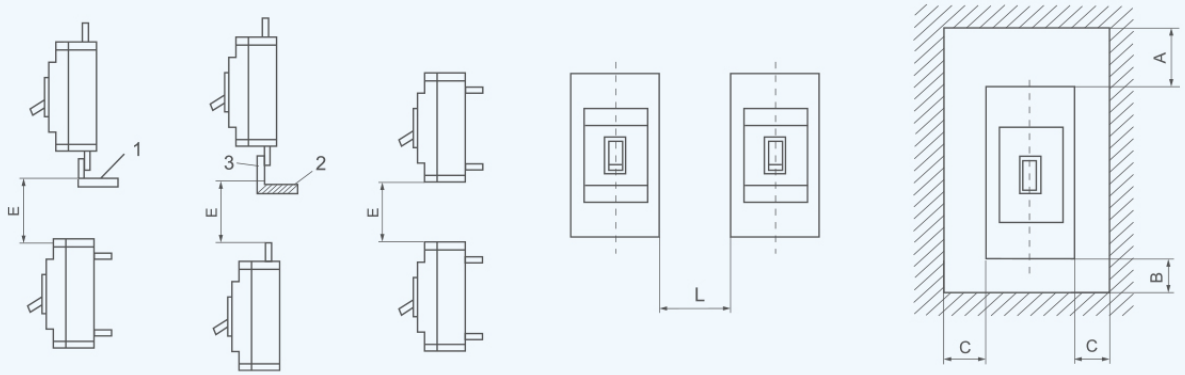
Action characteristic curve of the circuit breaker

GRM3 Action characteristic curve





Safe distance during circuit breaker installation



Type	L	A		B	C	E	
		Without zero arcing cover	With zero arcing cover			Without zero arcing cover	With zero arcing cover
GRM3-320	40	50	65	25	25	50	130
GRM3-400	70	100	65	25	25	100	130
GRM3-630		100	65	25	25	100	130
GRM3-800		100	65	25	25	100	130

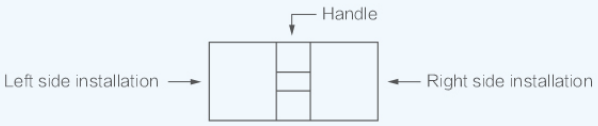
In above picture, there is 1. No insulated links 2. Insulated wires 3. Cable terminals

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GRM3 Series AC/DC High Voltage Molded Case Circuit Breaker

Release way and accessory code

300: delay protection + instantaneous protection



□ Alarm contact
■ Auxiliary contacts
● Shunt release
○ under voltage release
→ Lead line direction

Accessory code	Accessory name	GRM3HU-250/320	GRM3HU-400/630/800	GRM3DC-250/320	GRM3DC-400/630/800
300	Without inner accessory	——	——	——	——
308	Alarm Contact				
310	Shunt release				
320	Auxiliary contact (1NO1NC)				
302	Auxiliary contact (2NO2NC)	——		——	
330	Under voltage releas	——	——	——	——
340	Shunt release + Auxiliary contact (1NO1NC)				
312	Shunt release + Auxiliary contact (2NO2NC)	——	——	——	——
350	Shunt Release + Under voltage contact	——	——	——	——
360	Group 2 auxiliary contact (2NO2NC)		——		——
322	Group 2 auxiliary contact (3NO3NC)	——	——	——	——
323	Group 2 auxiliary contact (4NO4NC)	——	——	——	——
370	Under Voltage Release + Auxiliary contact (1NO1NC)	——	——	——	——
332	Under Voltage Release + Auxiliary contact (2NO2NC)	——	——	——	——
318	Shunt release + Alarm Contact	——		——	
328	Auxiliary contact (1NO1NC) + Alarm Contact				
338	Under voltage releas + Alarm Contact	——	——	——	——
348	Shunt release Auxiliary contact (1NO1NC) + Alarm Contact	——		——	
	Shunt release Auxiliary contact (2NO2NC) + Alarm Contact	——	——	——	——
368	Group 2 auxiliary contact (2NO2NC) + Alarm Contact				
	Group 2 auxiliary contact (4NO4NC) + Alarm Contact	——	——	——	——
305	Group 2 auxiliary contact (3NO3NC) + Alarm Contact	——	——	——	——
378	Group 2 auxiliary contact (1NO1NC) + Under voltage releas + Alarm Contact	——	——	——	——
	Group 2 auxiliary contact (2NO2NC) + Under voltage releas + Alarm Contact	——	——	——	——

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Product accessories

1. Ontology
2. Undervoltage release (customer purchase)
3. Shunt release (customer purchase)
4. Alarm contact (customer purchase)
5. Auxiliary contact (customer purchase)
6. Electric operating mechanism (customer purchase)
7. Hand-operated mechanism (customer purchase)
8. Terminal guard (customer purchase)
9. Front wiring board (customer option)
10. Arc partition (standard with the main body)



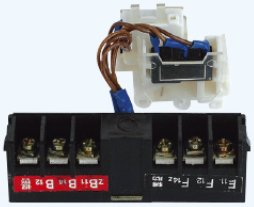


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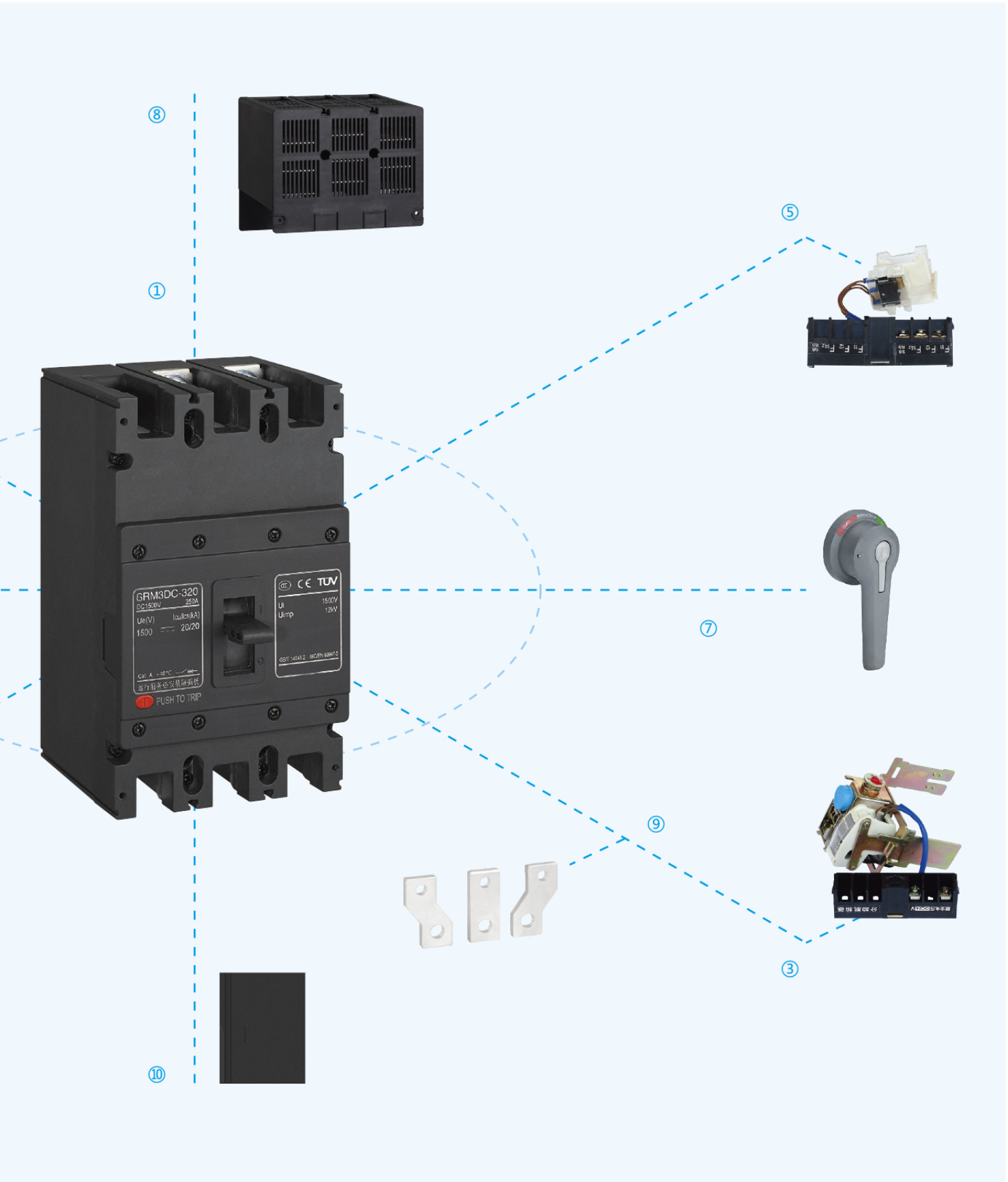


⑥

④



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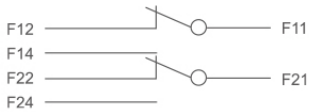
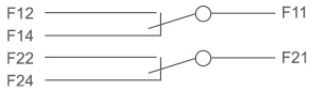
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Auxiliary contact

Auxiliary contact current parameters

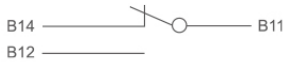
Rated current of shell frame class	Agreed heating current	Rated operating current at AC 400V
Inm<250	3A	0.30A
Inm>400	6A	0.40A

Auxiliary contact and its combination

When the circuit breaker is in the "off" positio	
	
When the circuit breaker is in the “on” position	
	

Alarm contact

Alarm contact and its combination

Alarm Contact Ue= 220V,Ith=3A	
When the circuit breaker is the “off” and “ on” positions	
When the circuit breaker is in the "free trip" position	

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GRM3 Series AC/DC High Voltage Molded Case Circuit Breaker

Shunt Release

Generally installed in the circuit breaker A phase, and between 70% -110% of the rated control power supply voltage, the distributor shall reliably buckle the circuit breaker under all operating conditions.

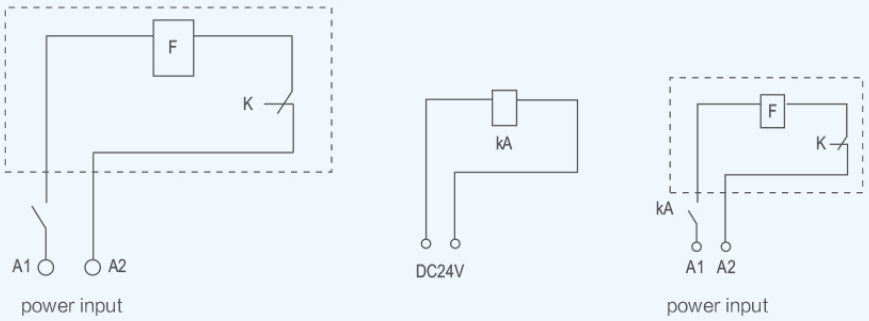
Control voltage: General: AC50Hz, 110V, 230V, 400V, DC 24V, 100V, 220V

Note: when the control circuit power supply is DC24V, it is recommended to use the following figure for the excitation control circuit design.

KA: is a DC24V intermediate relay with a contact current capacity of 1A.

The micro switch in series between the K: tap and the coil is normally closed contact. When the circuit breaker is disconnected, the contact is disconnected by itself and closed when closed.

Wiring diagram of excitation tripping

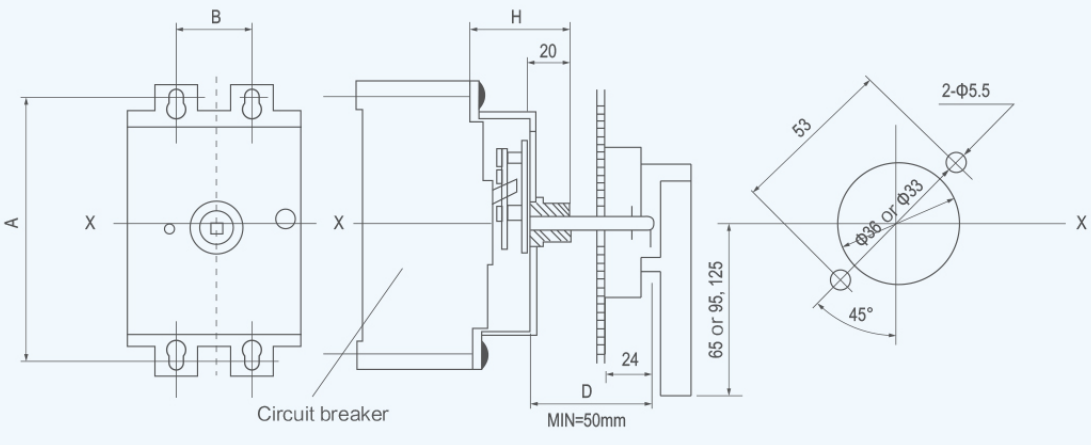


Installation method and overall dimension of external accessories

Turning the operating handle mechanism type and specification

Model	installation dimension (mm)				Operator handle relative to circuit breaker center value (mm)
	A	B	H	D	
CZ2-320/SRM3	157	35	55	50-150	0
CZ2-400/SRM3	224	48	78	50-150	±5

Schematic of CS1-A handle



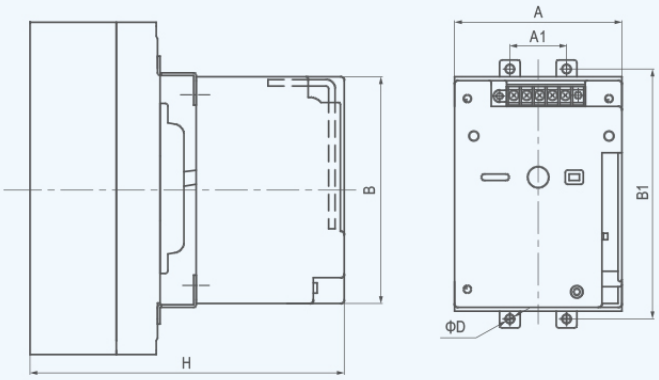
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GRM3 Series AC/DC High Voltage Molded Case Circuit Breaker

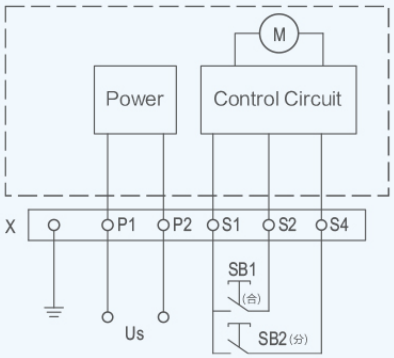
Model and specification of electric operating mechanism

Model	H	B	B1	A	A1	D
GRM3-320	188.5	116	126	90	35	4.2
GRM3-400	244	176	194	130	48	6.5

CD2 Outline and installation dimensions schematic diagram



Electric power operator mechanism wiring diagram



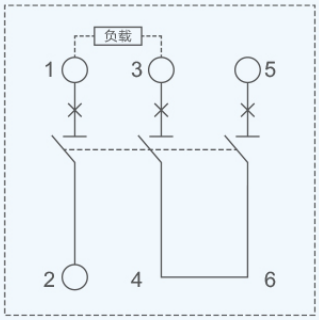
Symbol Description:

SB1,SB2 operation button (user-owned)

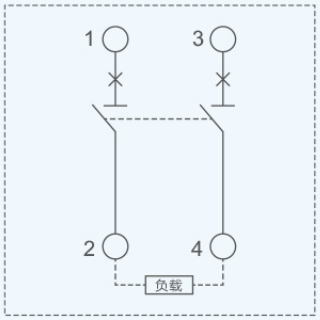
X terminal row

P1, P2 Power Supply for External Supply

Connection mode of DC circuit breaker



3P shape (3-pole string)



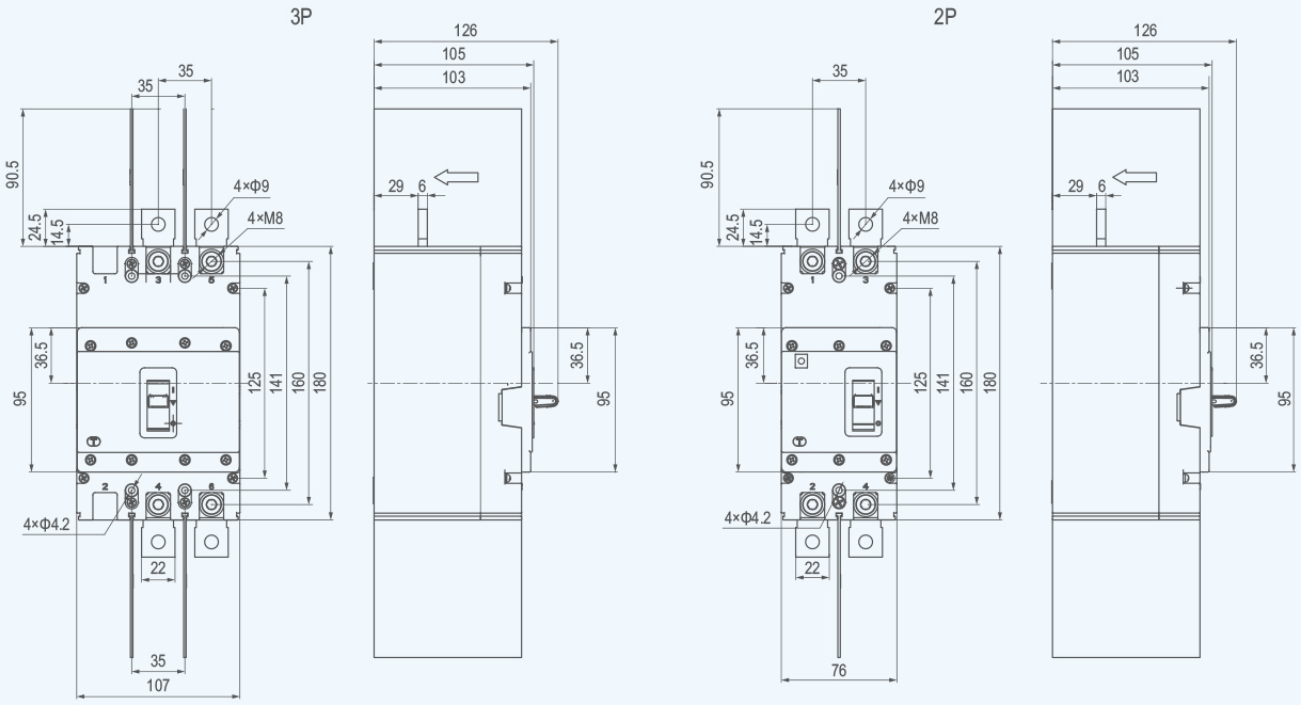
2P shape (2-pole string), 3P shape (2-pole string)

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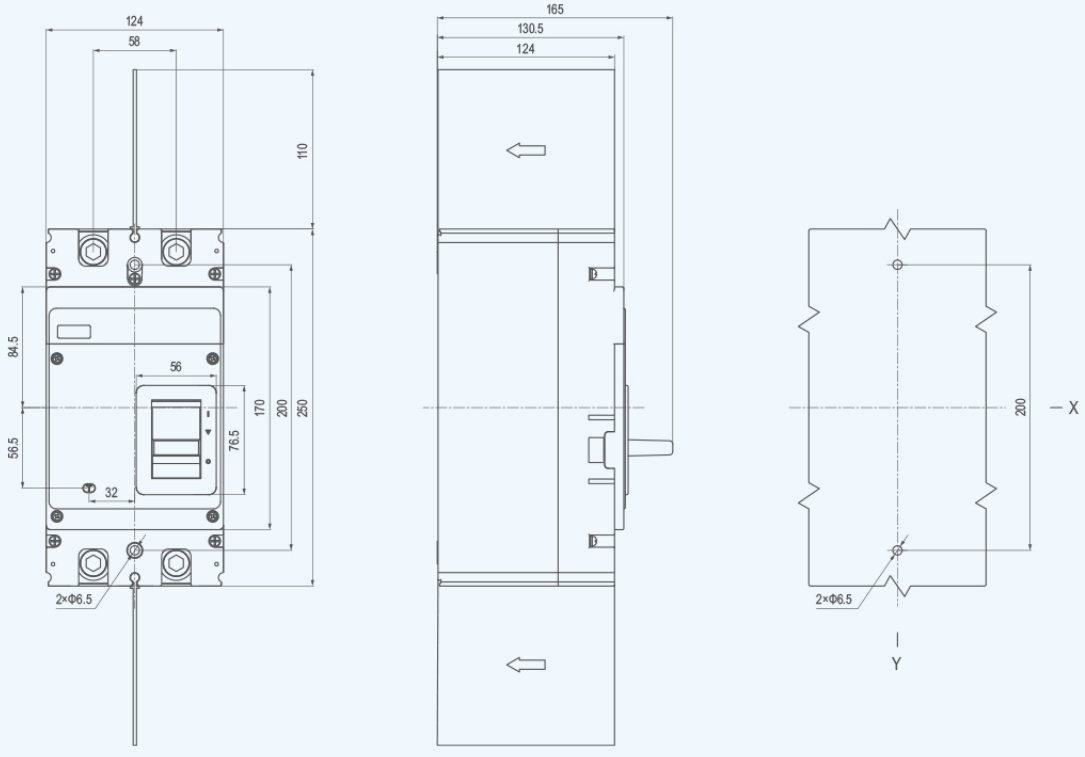
GRM3 Series AC/DC High Voltage Molded Case Circuit Breaker

Outline and installation dimension method and its overall dimension

GRM3DC-250/320、GRM3HU-320 Outline and installation of hole opening dimensions



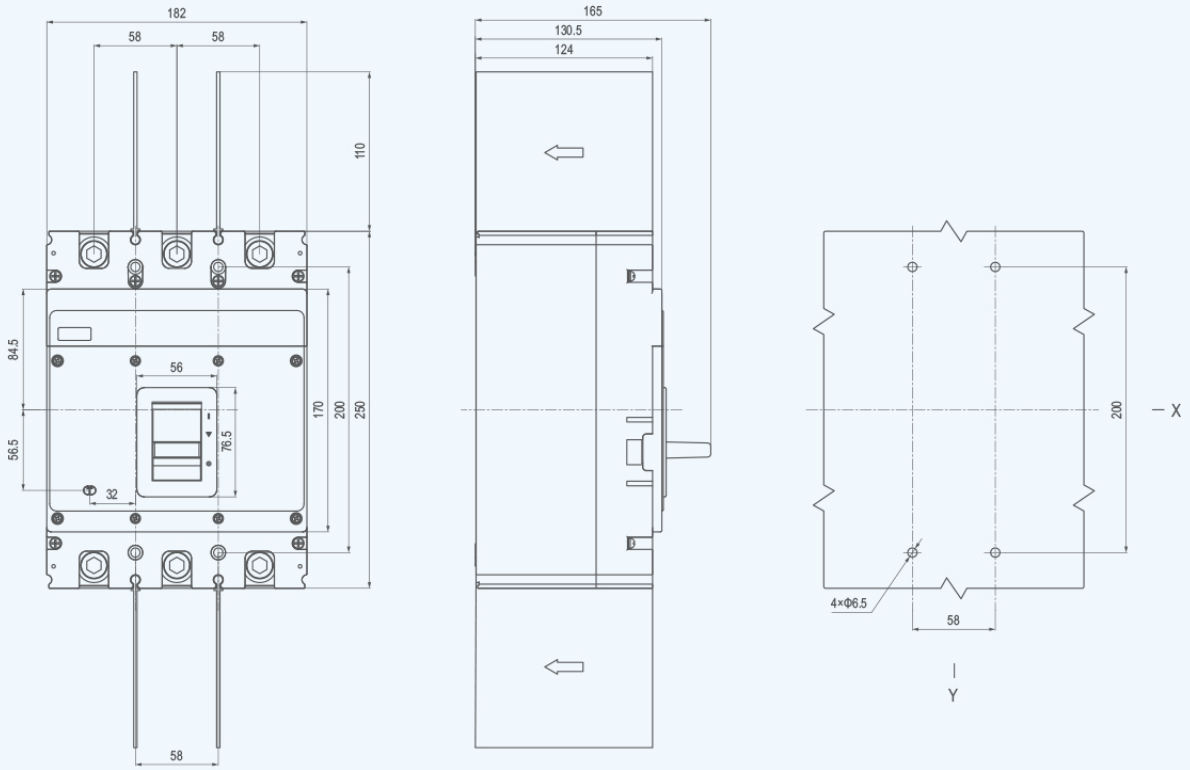
GRM3DC-400/630/800 Outline and installation of hole opening dimensions (2P)



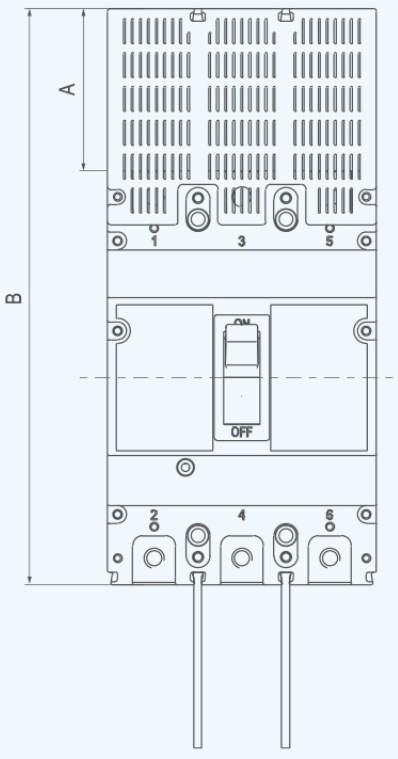
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GRM3 Series AC/DC High Voltage Molded Case Circuit Breaker

GRM3DC-400/630/800, GRM3HU-400/630/800 Outline and installation of hole opening dimensions (3P)



RM3 with arc cover installation drawing



Circuit breaker	Arcing cover length: A	Total length : B
GRM3-320	64	245
GRM3-400/630/800	64	314

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