

Product Overview



RDM5E series electronic molded case circuit breaker. The circuit breaker is applicable to the distribution network with AC 50Hz, rated insulation voltage of 1000V, rated working voltage of 690V and below, and rated working current of 800A and below. It is used to distribute electric energy and protect the line and power supply equipment from overload, short circuit, undervoltage and other faults.

RDM5E series Circuit breaker with rated current of 630A and below. It can also be used to protect the motor. Under normal conditions, the circuit breaker can be used for infrequent line switching and infrequent motor starting.

RDM5E series circuit breaker has the functions of overload long time delay inverse time limit, short circuit short time delay inverse time limit, short circuit short time delay definite time limit, short circuit instantaneous and undervoltage protection, which can protect the route and power supply equipment from damage.

The circuit breaker has isolation function, and its symbol is 

The product conforms to IEC60497-2/GB/T14048.2 standard.

Selection Guide

RDM5E	125	M	P	4	4	00	2	Z	R
Product code	Frame Size	Breaking capacity	Operation mode	Poles	Release mode	Accessories code	Use code	Product category	Wiring mode
Electronic molded case circuit breaker	125	M: Medium breaking type	No code: handle direct operation Z: Turn handle operation	3: 3 poles 4: 4 poles	Release mode code 4: Electronic release	See Table 1 for accessory code	No code: circuit breaker for distribution 2: Circuit breaker for motor protection	No code: basic type Z: Intelligent communication type 10: Fire protection type	No code: front-plate wiring R: wiring behind the board PF: plug-in front-plate wiring PR: plug-in rear-plate wiring
	250								
	400	H: High breaking type	P: Electric operation						
	800								

Remarks:

- 1) It has overload thermal memory function: overload thermal memory function, short circuit (short time delay) thermal memory function.
- 2) Communication function: standard RS485 interface, Modbus field bus protocol. It is realized through plug-in accessories. See the following table for the configuration of communication accessories:

No	Description	Accessory function
1	Communication shunt alarm accessories	Communication+shunt+overload alarm without tripping+reset button+work indication
2	Status feedback communication attachment	Four remote communication+reset button+work indication
3	Prepayment attachment	Prepayment control+work instructions

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Accessory code list

Code	Accessories name	RDM5E-125			RDM5E-250			RDM5E-400, 800		
		3P, 4P								
00	No internal accessories									
08	Alarm switch									
10	Shunt release									
20	Auxiliary switch (1N01NC)									
	Auxiliary switch (2N02NC)									
02	Auxiliary switch (2N02NC)									
30	Undervoltage release									
40	Shunt release+auxiliary switch (1N01NC)									
	Shunt release+auxiliary switch (2N02NC)									
12	Shunt release+auxiliary switch (2N02NC)									
50	Shunt release+undervoltage release									
60	Two sets of auxiliary switches (2N02NC)									
	Two sets of auxiliary switches (4N04NC)									
22	Two sets of auxiliary switches (3N03NC)									
23	Two sets of auxiliary switches (4N04NC)									
70	Undervoltage release+auxiliary switch (1N01NC)									
	Undervoltage release+auxiliary switch (2N02NC)									
18	Shunt release+alarm switch									
28	Auxiliary switch (1N01NC)+alarm switch									
38	Undervoltage release+alarm switch									
48	Shunt release+auxiliary switch (1N01NC)+alarm switch									
68	Two sets of auxiliary switch (2N02NC) alarm switch									
	Two sets of auxiliary switch (3N03NC) alarm switch									
05	Two sets of auxiliary switch (3N03NC) alarm switch									
78	Undervoltage release auxiliary switch (1N01NC) alarm switch									
	Undervoltage release auxiliary switch (2N02NC) alarm switch									

Remarks: (All internal accessories are terminal outgoing lines except undervoltage release and DC24V shunt release, and other accessories are outgoing lines with a length of 500mm)

1. The first digit 4 of the release mode and internal accessory code indicates the electronic release with three-section protection; The last two digits indicate the internal accessory code, and 00 if there is no accessory;

2. If the installation position and lead direction of accessories code 08, 10 and 20 are changed, please indicate when ordering.

Normal working conditions and installation conditions

- The ambient air temperature shall not exceed +40 , and the average temperature within 24h shall not exceed +35 . The lower limit of ambient air temperature is - 5 .
- The altitude of the installation site shall not exceed 2000m.
- When the maximum temperature is +40 , the relative humidity of the air shall not exceed 50%. Higher relative humidity can be allowed at lower temperatures, such as 90% at 20 . Special measures shall be taken for occasional condensation on products due to temperature changes.
- The pollution level is Level 3.
- The installation category of the main circuit of the circuit breaker is Class III, and the installation category of the auxiliary circuit and control circuit not connected to the main circuit is Class II
- Use category is A or B.
- The inclination of the installation surface of the circuit breaker shall not exceed $\pm 5^\circ$;
- The circuit breaker shall be installed in a place without explosion hazard, conductive dust, corrosion of metal and damage of insulation;
- The product shall be handled with care during transportation, and shall not be inverted to avoid severe collision.

Main technical parameters

Rated current of shell frame grade Inm (A)	125		250		400		800		
Rated current In (A)	32、63、125		250		400		630、800		
Current setting value IR (A)	(12.5~125)+Close		(100~250)+Close		(160~400)+Close		(250~800)+Close		
Breaking capacity level	M	H	M	H	M	H	M	H	
Number of poles	3P、4P								
Rated frequency (Hz)	50								
Rated insulation voltage Ui (V)	AC1000								
Rated impulse withstand voltage Uimp (V)	12000								
Rated working voltage Ue (V)	AC400/AC690								
Arcing distance (mm)	≤50		≤50		≤100		≤100		
Short-circuit breaking capacity level	M	H	M	H	M	H	M	H	
Rated limit short-circuit breaking capacity Icu (kA)	AC400V	50	85	50	85	65	100	75	100
	AC690V	20	20	20	20	20	20	20	20
Rated operating short-circuit breaking capacity Ics (kA)	AC400V	35	50	35	50	42	65	50	65
	AC690V	10	10	10	10	15	15	15	15
Rated short-time withstand current Icw (kA/1s)	1.5		3		5		10		
Use category	A		A		B		B		
Compliance with standards	IEC60497-2/GB/T14048.2								
Applicable working ambient temperature	-35℃~+70℃								
Electrical life (times)	8000		8000		7500		7500		
Mechanical life (times)	20000		20000		10000		10000		
Front panel connection	■		■		■		■		
Back panel connection	■		■		■		■		
Plug-in wiring	■		■		■		■		
Undervoltage release	■		■		■		■		
Shunt release	■		■		■		■		
Auxiliary contact	■		■		■		■		
Alarm contact	■		■		■		■		
Electric operating mechanism	■		■		■		■		
Manual operating mechanism	■		■		■		■		
Intelligent control module	■		■		■		■		
Test power module	■		■		■		■		
Communication function	■		■		■		■		
Time setting	■		■		■		■		

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Main functional features

Intelligent controller is the core component of molded case circuit breaker. It is applied to motor protection or power distribution protection to realize the integration of measurement, protection, control and communication functions, so as to protect the line and power supply equipment from overload, short circuit, grounding and other fault hazards.

MCU microprocessor controller is adopted, with stable and reliable performance: the intelligent controller can provide power supply, as long as one phase is powered on, when the current is not less than 35% of its rated value, it can ensure the normal operation of the protection function;

Selective cooperation with three-section protection: use circuit breaker of category B and other short circuit protection connected in the same circuit.

The device has selective coordination under short circuit conditions; Setting of overload long delay inverse time limit, short circuit delay (inverse time limit, definite time limit), short circuit instantaneous and other protection function parameters;

It has three parameter settings of action current and action time, and can be adjusted in 4-10 gears: users can adjust according to the load current requirements

The controller can be set and adjusted, and the corresponding functions can be selected to be closed according to the user's requirements (customized functions, which need to be ordered by the user When specified);

Large current instantaneous tripping function: when the circuit breaker is closed and running, in case of short circuit large current (20 Inm), the magnetic tripping mechanism of the circuit breaker can directly trip, and the double protection is more reliable and safe;

With tripping test (test) function: input DC 12V voltage to test the action characteristics of circuit breaker;

Fault self-diagnosis function: protect and detect the working state and operation of the intelligent controller itself;

With pre-alarm indication and overload indication: when the load current reaches or exceeds the setting value, the light guide column will lead out the light source;

Dual air gap technology of magnetic flux converter: more reliable and stable operation, no misoperation, reliable tripping and low power;

High protection accuracy: overload protection, short circuit short delay protection action current accuracy $\pm 10\%$; The accuracy of short-circuit instantaneous protection value is $\pm 15\%$ depending on the action current;

Interchangeability of installation: the overall dimensions and installation dimensions are the same as those of RDM1 series plastic case circuit breaker.

Dual passive signal output function: for signal (or alarm), with capacity of AC230V3A;

With fire shunt function: overload alarm does not trip (a pair of passive contacts are provided) and shunt trip function is provided ;

Communication function: standard RS485, Modbus field bus protocol;

Classification and structure of circuit breaker

Classification

Divided by product poles

According to the number of poles, it is only divided into three and four levels.

According to rated current: RDM5E-125 is 32 (12.5~32), 63 (25~63), 125 (50~125)
RDM5E-250 is 250(100~250);
RDM5E-400 is 400(160~400);
RDM5E-800 is 630(250~630)、800(315~800)

According to the wiring mode, it is divided into four types: front-plate wiring, back-plate wiring, plug-in front-plate wiring and plug-in back-plate wiring;

The circuit breaker can be divided into two types:

With accessories and without accessories:

Accessories are divided into internal accessories and external accessories:

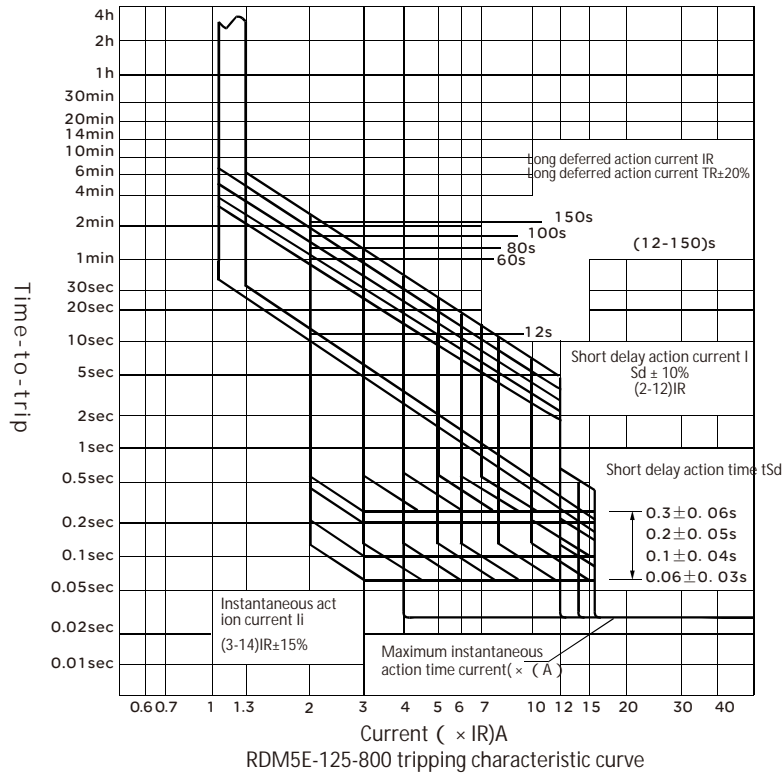
Internal accessories include shunt release, undervoltage release, auxiliary contact and alarm contact;

External accessories include rotary handle operating mechanism and electric operating mechanism.

Characteristics of release

The circuit breaker is equipped with a current sensor sampled according to the effective value. The circuit breaker has protection functions such as overload long delay inverse time limit, short circuit short delay inverse time limit, short circuit short delay definite time limit, short circuit instantaneous action, etc., which can be set by the user to form the required protection characteristics; The neutral overcurrent protection current and time parameters automatically track the setting value of phase line at 100%.

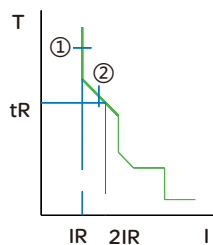
The characteristics of the release are shown in the figure below.



Main function configuration of power distribution system

Overload long time delay protection

Overload long time delay protection is used to prevent lines and equipment from overheating in case of overload.



Order number	Parameters	Explanation
①	I_R	Overload long delay tripping setting current
②	t_R	Overload long delay setting time

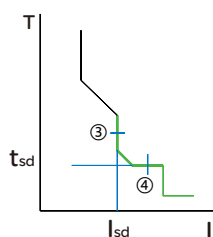
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□ Action characteristics of overload long delay inverse time protection

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Current setting value (IR) [Encoder 1]	125	32	IR=12.5-14-16-18-20-22-25-28-30-32
		63	IR=25-32-36-40-45-50-56-63
		125	IR=50-56-63-70-75-80-90-100-112-125
	250	250	IR=100-112-125-140-150-160-180-200-225-250
	400	400	IR=160-180-200-225-250-280-315-350-375-400
	800	630	IR=250-280-315-350-375-400-450-500-560-630
800		IR=315-350-400-450-500-560-630-700-760-800	
Operating characteristic			I > 1.3IR, action within 1h, I 1.05IR > 2h non-action current allowable error: ± 10%
Characteristic curve	Time setting value (s) [Encoder 2]		tR=12-60-80-100-OFF @2IR (Inm=125、250) ; When tR=OFF, turn off the overload long delay protection function
	Time-to-trip		Action time is consistent $T=(\frac{2IR}{I})^2 tR$; Time tolerance: ± 20%
Remarks:			
1. Overload long delay protection has thermal memory function. The cooling time is 30 minutes by default, and the controller will automatically clear the thermal memory value after power failure.			
2. When the overload alarm non-tripping accessory is connected, the overload alarm non-tripping function will be automatically turned on, and the action characteristic curve is the same as the overload long delay protection function. When tR=OFF, turn off the overload long delay protection function and the alarm non-trip function.			

Short circuit short time delay protection

Short circuit short time delay protection aims at medium-strength short circuit fault and provides selective protection for distribution system.



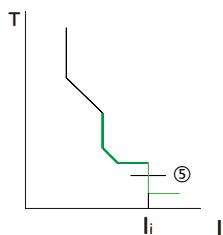
Order number	Parameters	Explanation
③	I _{sd}	Overload long delay tripping setting current
④	t _{sd}	Overload long delay setting time

□ Short circuit short time delay protection action characteristics

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Current setting value (IR) [Encoder3]	125-400	32-400	Isd= (2-2.5-3-4-5-6-7-8-10-12) × IR
	800	630-800	Isd= (2-2.5-3-3.5-4-5-6-7-8-10) × IR
Operating characteristic			I > 1.1Isd action, I 0.9Isd non-action current allowable error: ± 10%
Characteristic curve	Current setting value (S) [Encoder4]		Tsd=0.06-0.1-0.2-0.3-OFF (when tR=OFF, the short circuit short delay protection function is turned off);
	Time-to-trip		When Isd I < 1.5Isd, inverse time action, The characteristic curve is: $T = \left(\frac{1.5Isd}{I} \right)^2 \cdot tsd$ Allowable time error: inherent error ± 20ms, ± 20%; When 1.5Isd I < Ii, time-limit action: tsd=0.06s, ± 0.03s tsd=0.1s , ±0.04s tsd=0.2s , ±0.05s tsd=0.3s , ±0.06s

Short circuit instantaneous protection

The short circuit instantaneous protection aims at serious short circuit fault and provides fast cut-off protection for the distribution system.



Order number	Parameters	Explanation
⑤	Ii	Instantaneous tripping setting current

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Current setting value (IR) [Encoder5]	125-800	32-800	Ii= (3-4-5-6-7-8-10-12-14-OFF) × IR
Operating characteristic			I > 1.15Ii instantaneous protection acts, I 0.85Ii instantaneous protection does not act; Allowable error of current: ± 15%

Overload pre-alarm [encoder 6]

Encoder 6 can be used as a parameter setting device for overload pre-alarm function

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Pre-alarm current (Ip)	125-800	32-800	Ip= (0.7-0.75-0.8-0.85-0.9-0.95-1-OFF) × IR
Operating characteristic			I > 1.0Ip pre-alarm indicator light is on, I 0.9Ip pre-alarm indicator light is not on

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Overload indication

The panel overload indicator is used to monitor the load current status

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Overload Indicator	125-800	32-800	1.05IR
Operating characteristic			I > 1.05IR overload indicator light is on, I 1.0IR overload indicator light is not on

Operation indication

The panel operation indicator is used to monitor the controller operation status

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Operation indication	125-800	32-800	0.4In
Operating characteristic			I > 0.4In operation indicator flashes (cycle 1 s, duty ratio 50%), I 0.35In operation indicator does not light

Prepaid function

After connecting the prepaid accessories, the product receives the AC220V control signal output by the electricity meter. See the following table for action characteristics:

Meter signal	Circuit breaker action characteristics
0VAC	Opening and closing operation allowed
220VAC	Automatic opening with a delay of 3 seconds, and reclosing is prohibited.

Communication function

The controller has the communication function, which needs to be realized with corresponding accessories.

Communication characteristic parameters

Interface: the controller is externally connected with communication accessories, and the accessories are externally connected with standard RS485 interface.

Baud rate (bps): 38400 by default, and the remote control can be set in the range of 2400, 4800, 9600, 19200, and 38400.

Communication format:

Data bit: 8;

Check bit: even;

Stop bit: 1;

Communication protocol: ModBusRTU, slave mode;

Equipment address: 10 (default), remote adjustment can be set in the range of 1 to 255.

Main function configuration of motor protection

Overload long time delay protection

The overload long time delay protection of the motor shall be implemented according to the characteristic requirements of 8.2.1.5.1 in GB/T 14048.4.

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)						
Current setting value (IR) [encoder 1]	125	32	IR=12.5-14-16-18-20-22-25-28-30-32						
		63	IR=25-32-36-40-45-50-56-63						
		125	IR=50-56-63-70-75-80-90-100-112-125						
	250	250	IR=100-112-125-140-150-160-180-200-225-250						
	400	400	IR=160-180-200-225-250-280-315-350-375-400						
	800	630	IR=250-280-315-350-375-400-450-500-560-630						
800		IR=315-350-400-450-500-560-630-700-760-800							
Operating characteristic			$I > 1.2I_R$, 1h内动作, $I \leq 1.05I_R$, >2h不动作 电流允许误差: $\pm 10\%$						
Tripping category [Encoder 2]			tR=12-60-80-100-OFF @2IR (Inm=125、250) ; tR=12-60-100-150-OFF @2IR (Inm=400-800) ;						
Characteristic curve	Category	125 250 shell frame action characteristics/time				400 800 shell frame action characteristics/time			
		Press $I^2 t$ to act				Press $I^2 t$ to act			
	1.05IR (Cold state)	No action within 2h				No action within 2h			
	1.2IR (Cold state)	No action within 1h				No action within 1h			
	1.5IR (Cold state)	21.3s	107s	142s	178s	21.3s	107s	178s	267s
	2IR , tR (Cold state)	12s	60s	80s	100s	12s	60s	100s	150s
	7.7IR (Cold state)	0.93s	4.63s	6.17s	7.72s	0.93s	4.63s	7.72s	11.6s
	Trip class	—	10A	10	20	—	10	20	30
	Allowable error of time-to-trip: $\pm 20\%$								
Remarks:									
1. Overload long delay protection has thermal memory function. The cooling time is 30 minutes by default, and the controller will automatically clear the thermal memory value after power failure.									
2. When the overload alarm non-tripping accessory is connected, the overload alarm non-tripping function will be automatically turned on, and the action characteristic curve is the same as the overload long delay protection function. When tR=OFF, turn off the overload long delay protection function and the alarm non-trip function.									

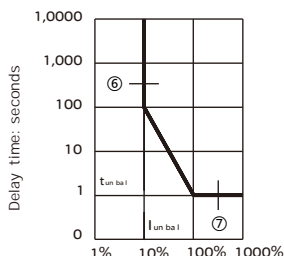
Overload pre-alarm

Projects	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Pre-alarm current (Ip)	125-800	32-800	$I_p=1.0 \times I_R$ (fixed)
Operating characteristic			$I > 1.0I_p$ pre-alarm indicator light is on, $I < 0.9I_p$ pre-alarm indicator light is not on

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Current unbalance protection [encoder 6]

Encoder 6 can be used as a parameter setting device for current unbalance protection. Current unbalance protection is one of the basic functions of motor protection, which can eliminate the motor jitter and burning fault caused by current unbalance and phase loss.



Serial number	Parameters	Explanation
⑥	I_{unbal}	Current unbalance rate setting value
⑦	t_{unbal}	Current unbalance rate protection setting time

Project	Shell frame grade Inm(A)	Class rating In(A)	Range (A)
Current unbalance rate (%)	125-800	32-800	$I_{unbal} = (10-20-30-40-50-60-70-80-90-OFF) \%$
Operation characteristics	$I > 1.1I_{unbal}$ action, $I < 0.9I_{sd}$ no action		
Characteristic curve	$T = \max \{ (\frac{1}{I_{unbal}})^2 \times t_{unbal}, t_{unbal} \}$, $t_{unbal} = 1s$ Time tolerance: $\pm 10\%$;		
Calculation method of current unbalance rate	$I_{avg} = \frac{I_1^2 + I_2^2 + I_3^2}{3}, I_{avg} \epsilon_i = \frac{I_i - I_{avg}}{I_{avg}} \times 100\%$ Is the average value of three-phase current, I_j is the effective value of the j th phase current. Note: The current in the above formula refers to the effective value		

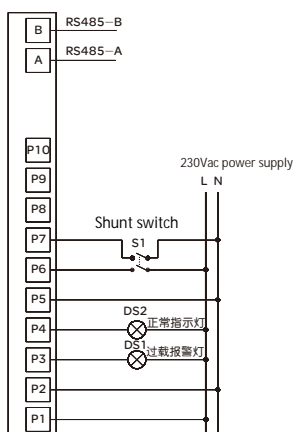
Accessory function configuration

Specification configuration

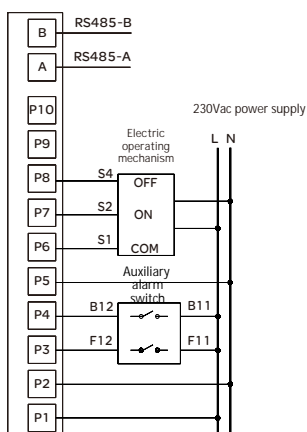
Serial number	Description	10p accessory function	Rated power supply voltage (range)	Rated control signal voltage (range)
1	Communication shunt alarm accessories	Communication+shunt+overload alarm without tripping+reset button+work indication	AC230V/AC400V (85%-110%)	Shunt signal DC24V (85% - 110%) Alarm passive contact capacity AC230V3A, DC30V3A
			DC24V (85%-110%)	Shunt signal AC230V/AC400V (85% - 110%) Alarm passive contact capacity AC230V3A, DC30V3A
2	Four type of remote communication accessories	Four type of remote communication+reply Key+work indication	DC24V (85%-110%)	Status signal DC24V (85% - 110%) Electric operation signal DC24V
			AC400V (85%-110%)	Status signal AC230V/AC400V (85% - 110%) Electric operation signal DC24V
3	Prepayment attachment	Prepayment control+work instructions	AC400V (85%-110%)	Prepaid signal AC230V (85% - 110%)

Note: Reset button function: press and hold for 5s; The communication baud rate, communication address and other parameters are restored to the factory value;

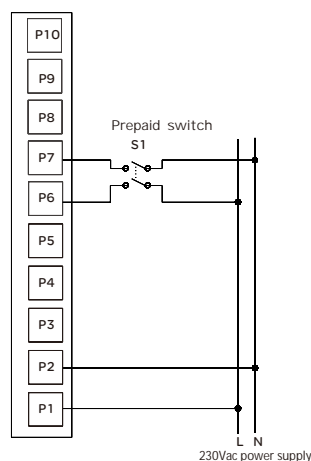
Accessory wiring diagram



Communication shunt alarm accessories



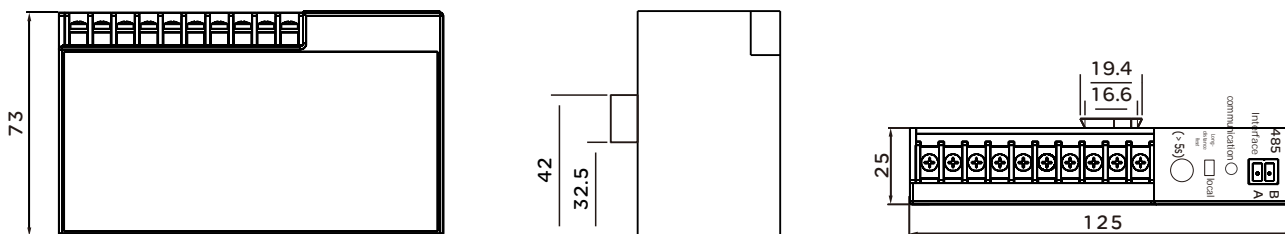
Four remote accessories



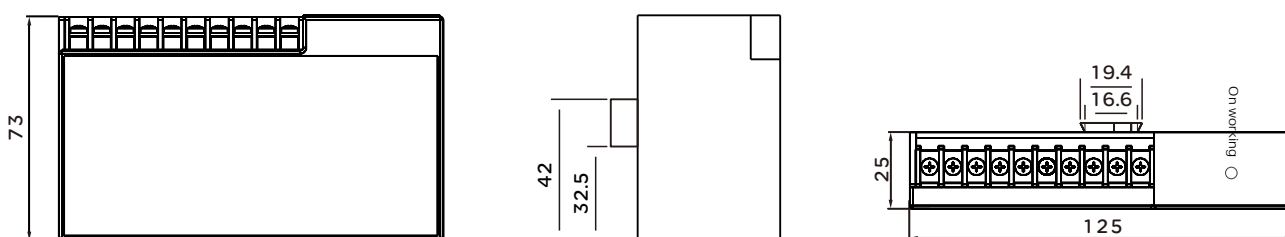
Prepayment accessories

Structure size

The enclosure dimensions for communication shunt alarm accessories and status feedback communication accessories are as follows



The shell dimensions for the prepaid accessories are as follows



Technical data of accessory devices

Rated value of auxiliary contact and alarm contact

Type	Shell frame rating Current I_{nm} (A)	Agreed heating current I_{th} (A)	Rated working current I_e (A)	
			AC400V	DC220V
Auxiliary contact	$I_{nm} \leq 400$	3	0.3	0.15
	$I_{nm} \geq 400$	3	0.4	0.15
Alarm contact	$100 \leq I_{nm} \leq 800$	3	0.3	0.15

Rated control power voltage (U_s) and rated working voltage (U_e) of control circuit release and electric mechanism

Type		Rated voltage (V)		
			AC50Hz	DC
Release	Shunt release	U_s	230、400	110、220
	Undervoltage release	U_e	230、400	—
Electric mechanism		U_s	230、400	110、220

- When the applied voltage of the shunt release is between 70% and 100% of the rated control power voltage, the circuit breaker shall be reliably disconnected.
- When the power supply voltage drops to 70%-35% of the rated working voltage of the undervoltage release, the undervoltage release can reliably break the circuit breaker; When the power supply voltage is lower than 35% of the rated working voltage of the undervoltage release, the undervoltage release can prevent the circuit breaker from closing; When the power supply voltage is higher than 85% of the rated working voltage of the undervoltage release, the undervoltage release can ensure the reliable closing of the circuit breaker.
- The electric operating mechanism can reliably close the circuit breaker when the power supply voltage is between 85% and 110% at the rated frequency.
- Power loss

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Model	Power-on current (A)	Total three-phase power loss (VA)	
		Front/back panel connection	Plug-in wiring
RDM5E-125	125	35	40
RDM5E-250	250	62	70
RDM5E-400	400	115	125
RDM5E-800	800	262	294

Derating coefficient of ambient temperature change (measured at rated current of the same frame)

Derating factor	Ambient temperature	Derating coefficient						
		+40°C	+45°C	+50°C	+55°C	+60°C	+65°C	+70°C
Model								
RDM5E-125		1In	1In	1In	.97In0.	.95In0.	.92In0.	0.9In
RDM5E-250		1In	1In	1In	.96In0.	.93In0.	.89In0.	0.86In
RDM5E-400		1In	1In	1In	.97In0.	.95In0.	.92In0.	0.9In
RDM5E-800		1In	1In	1In	.96In	.93In	.89In	0.86In

Communication function of circuit breaker

The RDM5E electronic circuit breaker with electric operating mechanism is connected with the upper computer (such as computer), and the remote "four remote" function can be realized through the communication interface. RS485 interface, Modbus-RTU protocol, communication baud rate 9600K, in addition, the addition of RDM5E electronic circuit breaker controller (optional accessories) can also directly read and modify the parameters of the circuit breaker on site.

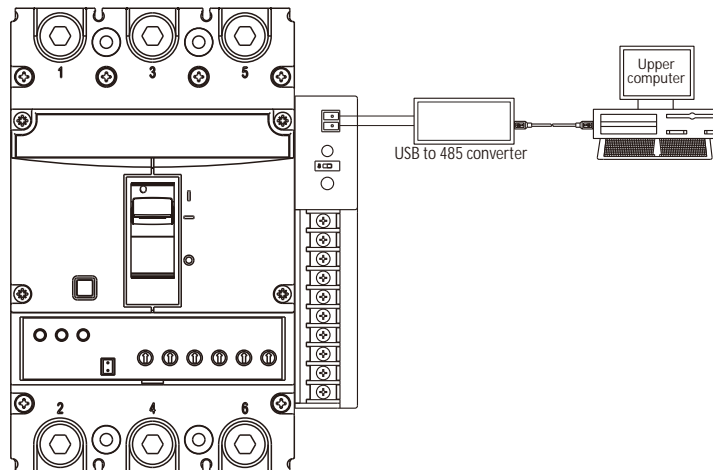
Communication interface and external module of electronic circuit breaker

RDM5E series communicatable electronic molded case circuit breaker is equipped with communication interface and MODBUS communication protocol.

The RDM5E series communicatable electronic molded case circuit breaker is not used for networking communication, but when it is used alone, the hand-held programmer can conduct the protection characteristic setting and other operations on the circuit breaker through the communication interface: it can also connect the RD-CD LCD display module on the communication interface to monitor the operating current and fault information of the circuit breaker.

When the RDM5E series communicatable electronic molded case circuit breaker is used for networking communication, it can be directly connected to the corresponding field bus: For the field bus with different protocols, the RD-DP protocol conversion module can be selected to convert the MODBUS protocol and then connect it to the corresponding field bus.

The communication network of RDM5E series communicatable electronic molded case circuit breaker can be connected by referring to the scheme below.



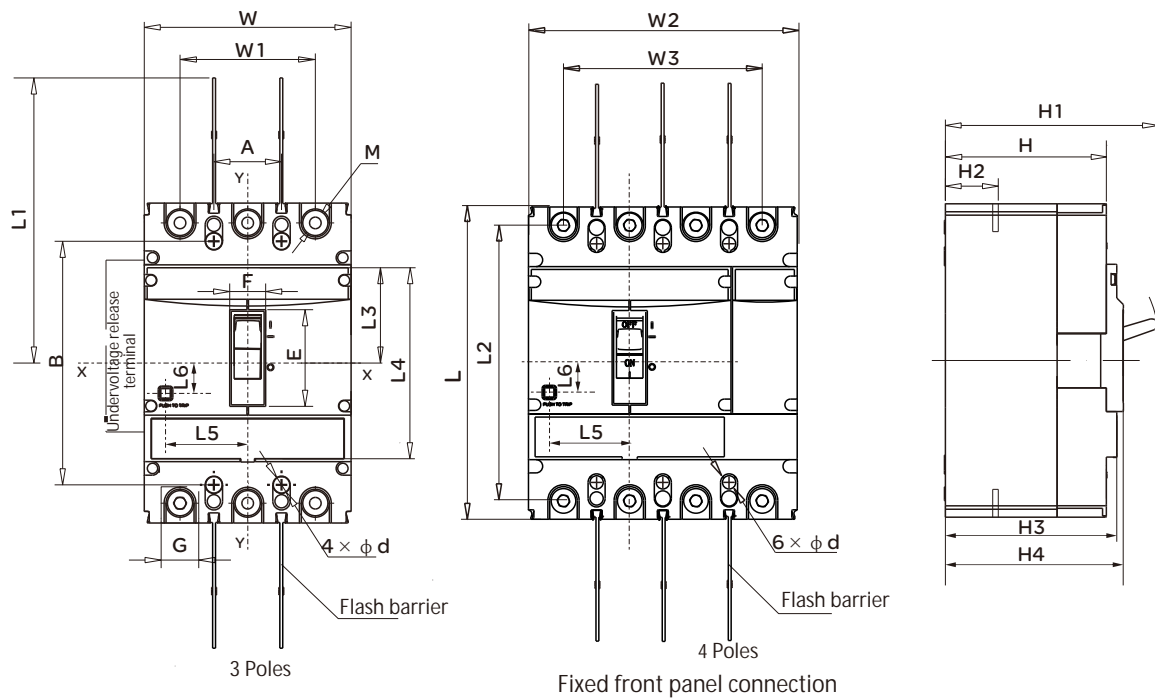
RDM5E Series Communicable Electronic Molded Case Circuit Breaker Function Configuration

● Basic function △ Optional function

function	Product type	RDM5E basic model	RDM5E (Z) intelligent	RDM5E (X) fire protection type	RDM5E (F) prepaid type
Overload long delay setting		●	●	●	●
Short circuit short time delay setting		●	●	●	●
Short circuit instantaneous setting		●	●	●	●
Overload and pre-alarm indication		●	●	●	●
Tripping test function		●	●	●	●
Fault self-diagnosis function		●	●	●	●
Dual passive signal output		—	●	△	—
Communication function module		—	●	△	—
Shunt function		—	△	△	—
Intelligent control module		—	△	△	—
Fire protection function		—	—	●	—
Prepaid function		—	—	—	●

Outline and installation dimensions

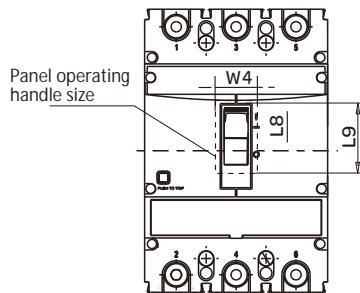
See Figure 1 for the overall dimensions of the front-plate wiring (X-X and Y-Y are the center of the circuit breaker)



Model	Front panel connection																Button location		
	W	W1	W2	W3	L	L1	L2	L3	L4	H	H1	H2	H3	H4	E	F	G	L5	L6
RDM5E-125	92	60	122	90	150	125	132	43	92	82	112	29	93	96	43	19	18	22	16
RDM5E-250	107	70	142	105	165	136	144	52	104	85	115	23	90.5	94	50	19	23	42.5	15.5
RDM5E-400	150	96	198	144	257	256	224	69	159	99	152	38	104	115	80	42	31	57.5	30
RDM5E-800	210	140	280	210	280	240	243	80	178	102	158	41	112	122	82	42	44	53	24.5

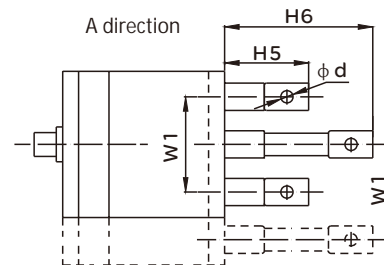
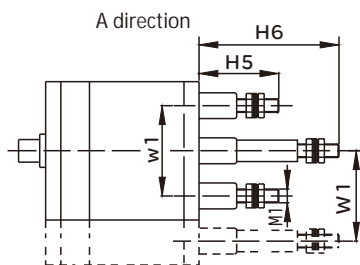
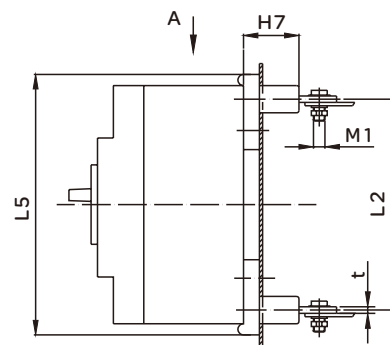
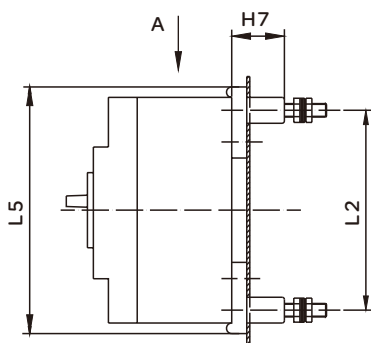
RDM5E series Electronic molded case circuit breaker

Panel operating handle size



Product model	Size Code		
	W4	L8	L9
RDM5E-125	23	24	40
RDM5E-250	23	30	44
RDM5E-400	47	39	66
RDM5E-800	47	42	66

Fixed Back panel connection

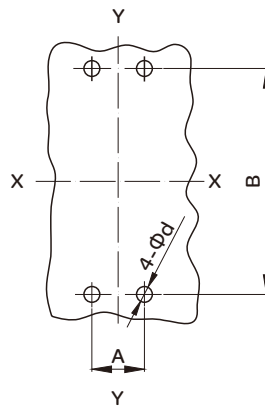


RDM5E-125, 250 fixed Back panel connection

RDM5E-400, 800 fixed Back panel connection

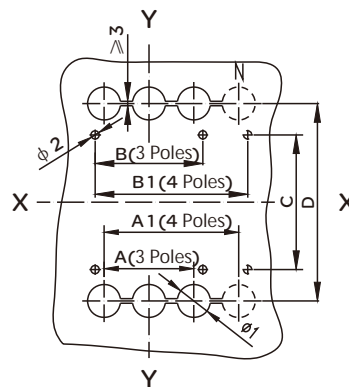
Product model	Back panel connection						
	L7	H5	H6	H7	M1	d	t
RDM5E-125	164	53	93	35	M8	-	-
RDM5E-250	173	55	100	35	M8	8.5	-
RDM5E-400	267	68	128	37	M10	10.5	8.5
RDM5E-800	295	84	-	37	M12	13	16

Hole size of front panel connection (X-X and Y-Y are the center of circuit breaker)



Model	RDM5E-125		RDM5E-250		RDM5E-400		RDM5E-800		
Number of poles	3	4	3	4	3	4	3	4	
Hole size of mounting plate (mm)	A	30	60	35	70	44	94	70	140
	B	129		126		194		243	
	d	4.5		4.5		7		7	

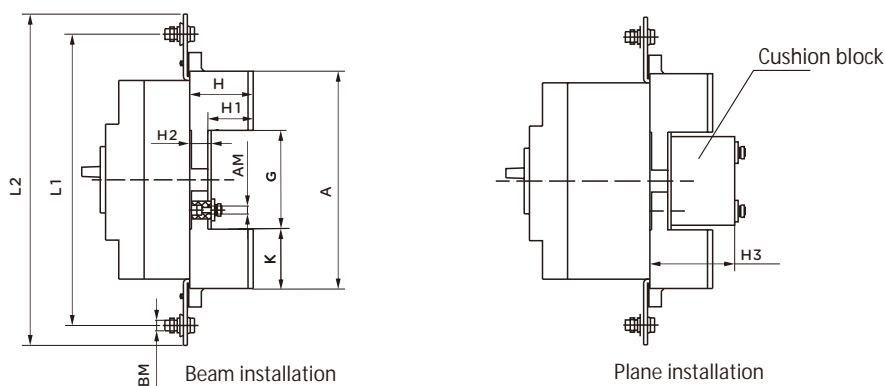
Hole size of back panel connection (X-X and Y-Y are the center of circuit breaker)



Model	RDM5E-125		RDM5E-250		RDM5E-400		RDM5E-800		
Number of poles	3	4	3	4	3	4	3	4	
Hole size of mounting plate (mm)	A	60	-	70	-	96	-	140	-
	A1	-	90	-	105	-	144	-	210
	B	30	-	35	-	44	-	70	-
	B1	-	60	-	70	-	94	-	70
	C	108		122		194		243	
	D	132		145		224		243	
	φ1	22		24		32		48	
	φ2	5.5		5.5		6.5		7	

RDM5E series Electronic molded case circuit breaker

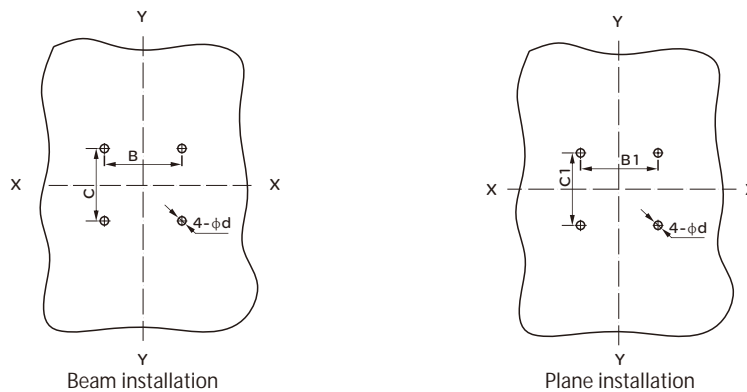
Overall dimensions of RDM5E series plug-in front panel



RDM5E-125 ~ 800 plug-in front panel connection circuit breaker overall dimensions

Model	Size code										
	A	G	K	H	H ₁	H ₂	H ₃	L1	L2	AM	BM
RDM5E-125	172	95	38.5	50.5	35	16.5	61	185	217	M6	M8
RDM5E-250	183	95	44	52	35	18	65	230	259	M6	M10
RDM5E-400	276	170	53	79.5	67	18	-	322	352	M6	M10
RDM5E-800	303	179	62	87.5	60.5	28	118	375	405	M10	M12

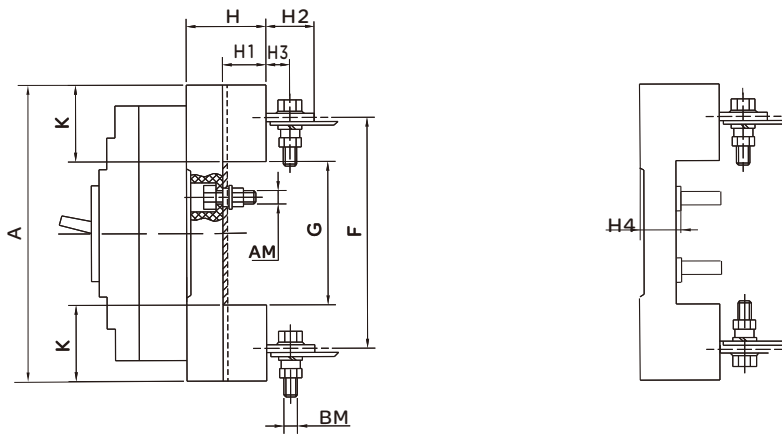
Hole size of plug-in front panel connection (X-X and Y-Y are the center of circuit breaker).



RDM5E-125 ~ 800 Plug-in front panel connection hole size

Model		RDM5E-125	RDM5E-250	RDM5E-400	RDM5E-800
Number of poles		3	3	3	3
Hole size of mounting plate (mm)	B	66	70	115	90.5
	B1	50	60	—	65
	C	60	64	135	144.5
	C1	35	35	—	80
	d	6.5	6.5	6.5	11

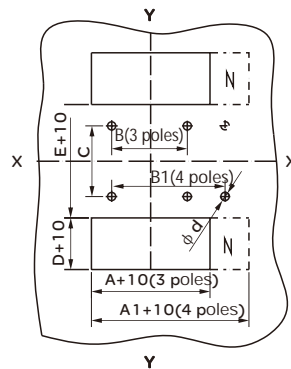
RDM5E Series Plug-in Rear Boundary Dimensions and Mounting Plate Hole Dimensions



RDM5E-125 ~ 800 plug-in back panel connection circuit breaker overall dimensions

Model	Size code										
	A	F	G	K	H	H1	H2	H3	H4	AM	BM
RDM5E-125	168	133	92	38	48	32.5	32.5	18	17	M6	M8
RDM5E-250	186	144	95	45.5	49.5	33.5	34	15	17	M6	M8
RDM5E-400	280	224	171	54.5	59.5	40	44	23.5	20	M8	M12
RDM5E-800	305	243	181	62	87	60	—	—	28	M10	M14

Hole size of plug-in back panel connection (X-X and Y-Y are the center of circuit breaker)



RDM5E-125 ~ 800 Plug-in back panel connection hole size

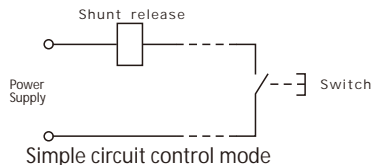
Model	RDM5E-125		RDM5E-250		RDM5E-400		RDM5E-800		
	3	4	3	4	3	4	3	4	
Hole size of mounting plate (mm)	A	91	—	107	—	149	—	210	—
	A1	—	129	—	145	—	200	—	290
	B	60	—	70	—	60	—	90	—
	B1	—	90	—	105	—	108	—	162
	C	56		54		129		146	
	D	38		45.5		54.5		62	
	E	92		95		171		181	
	d	6.5		6.5		8.5		11	

RDM5E series Electronic molded case circuit breaker

Shunt release



The shunt release is an accessory for remote control of product opening. When the power supply voltage is equal to any voltage between 85% and 110% of the rated control power supply voltage, the shunt release can act reliably.



Electrical characteristics

Product model	Power consumption of shunt coil (W)		
	AC400V	AC230V	DC24V
RDM5E-125	96.8	73	91.2
RDM5E-250	112	68.6	85.3
RDM5E-400、800	68	58.2	100

Operating characteristic

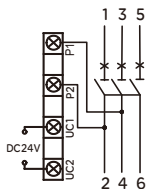
Reliable operating voltage	70% - 110% × Us	
Power-on time (pulse type)	Minimum value	10ms
	Maximum value	1s
Response time	30ms	
Number of operations	1000	

Wiring diagram

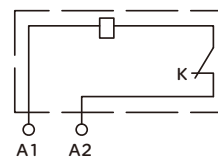
K: The microswitch in series with the coil inside the shunt release is a normally closed contact. After the circuit breaker is opened, the contact will automatically open and close when it is closed.

When the rated control power supply voltage is DC24V shunt release, the maximum length of copper conductor (each length of two conductors) must meet the requirements of the following table:

Voltage DC24V	Cross-sectional area of conductor	
	1.5mm ²	2.5mm ²
100% Ue	150m	250m
80% Ue	100m	1600m



DC24V wiring diagram



Power input

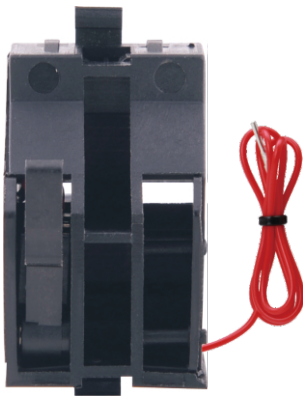
K: The microswitch in series with the coil inside the shunt release is a normally closed contact. When the circuit breaker is opened, the contact will automatically open and close when it is closed.

Auxiliary contact

Function

When the circuit breaker is in the opening or free tripping state, F12 and F11 are connected, and F14 and F11 are disconnected;
 When the circuit breaker is in the closed state, F12 and F11 are disconnected, and F14 and F11 are connected.

The auxiliary contacts of the circuit breaker are divided into two groups, and each group of auxiliary contacts is not separated electrically. See the following table for auxiliary contact parameters.



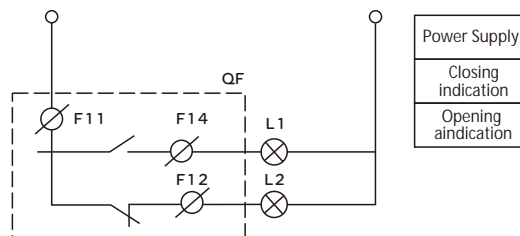
The position of the circuit breaker when it is in the "open" position		Circuit breaker with frame current of 400A and above
The position of the circuit breaker when it is in the "closed" position		Circuit breaker with frame current of 250A and below

Electrical characteristics

Working voltage (V)		AC				DC		
		24	48	110	240/415	24	48	110/220
Working current (A)	AC-15	6	6	5	2	-	-	-
	DC-13	-	-	-	-	2	1.2	0.25

Wiring diagram

The auxiliary contact can form a control circuit with the indicator light, through which the operator can know the opening and closing positions of the circuit breaker without opening the distribution cabinet.



RDM5E series Electronic molded case circuit breaker

Alarm contact



The alarm contact is mainly used to provide signals in case of overload, short circuit, undervoltage and other faults or free tripping of the load of the circuit breaker. The alarm contact does not act during normal closing and opening of the circuit breaker, and only after free tripping or fault tripping can the contact change its original position.

Function

- Overload or short circuit fault
- Manual test button tripping
- Shunt release action
- Line fault, undervoltage release action indicates the opening and closing status of the circuit breaker:

The position of the circuit breaker when it is "on" and "off"	
---	--

Electrical characteristics

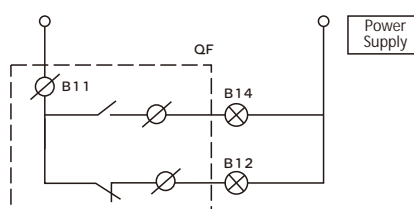
K: The microswitch in series with the coil inside the shunt release is a normally closed contact. After the circuit breaker is opened, the contact will automatically open and close when it is closed.

When the rated control power supply voltage is DC24V shunt release, the maximum length of copper conductor (each length of two conductors) must meet the requirements of the following table:

Working voltage (V)		AC				DC		
		24	48	110	240/415	24	48	110/220
Working current (A)	AC15	6	6	5	2	-	-	-
	DC13	-	-	-	-	2	1.2	0.25

Wiring diagram

The alarm contact can be connected with the indicator light, buzzer, etc. When the circuit breaker is tripped, the operator can be informed in time.



Undervoltage release



Realize the undervoltage protection function of the circuit breaker, disconnect the circuit breaker when the power supply voltage is too low, and protect the electrical equipment. When its power supply voltage drops to a specified range, it is a release that can make the circuit breaker open without delay.

When the voltage drops to 70% - 35% of the rated control power voltage, the undervoltage release shall act; The undervoltage release shall be able to prevent the circuit breaker from closing when it is lower than 35% of the rated voltage of the release; The undervoltage release shall be able to ensure the reliable closing of the circuit breaker within 85%-110% of the rated control power supply voltage.

The rated value of undervoltage release is AC50Hz, 230V and 400V.

Noted: For circuit breakers equipped with undervoltage release, only when the release is connected with rated voltage can the circuit breaker be re-trapped and closed.

Applicable voltage and power consumption

Rated control power supply voltage (Us)	AC 220-240V
	AC 380-415V
Power consumption (hold)	5W

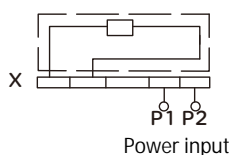
Electrical characteristics

Model	Undervoltage coil power consumption (W)	
	AC400V	AC230V
RDM5E-125	4	3.1
RDM5E-250	4.3	3.3
RDM5E-400	3.6	2.5
RDM5E-800	2	1.6

Operating characteristic

Operating conditions	Reliable disconnection	35%~70%
	Prevent closing	≤ 35%
	Reliable closing	≥ 85%
Response time	1s	
Number of operations	1000	

Wiring diagram



Warning: The undervoltage release must be powered on before the circuit breaker can be tripped and closed again, otherwise the circuit breaker will be damaged!

Wiring diagram of external undervoltage module (internal wiring diagram of circuit breaker is shown in the dashed box)

RDM5E series Electronic molded case circuit breaker

Electric operating mechanism (MOD)



Protection grade: IP40

Function

- Button control circuit breaker opening and closing;
- Motor closing and opening or manual closing and opening can be freely selected;
- With opening and closing indication and free tripping indication;

Operation

Select the operation type through the manual/automatic rotary switch:

- Automatic operation

Turn the "manual/automatic switch" to the "automatic" position and give the "closing or opening" signal remotely to realize the connection and disconnection of the circuit breaker.

- Manual operation

Turn the "manual/automatic switch" to the "manual" position, and turn the operating handle to realize the connection and disconnection of the circuit breaker.

Application

- Local electric operation, centralized operation and automatic control;
- Common/standby power supply conversion, or switching to standby power supply to optimize energy cost, etc;
- Suitable for remote electric closing, breaking and re-tripping of circuit breaker and automatic control occasions;
- Rated working voltage of electric operating mechanism: AC 400V, AC 230V, DC220V;
- Working voltage range of electric operating mechanism: 85%~110% Ue.

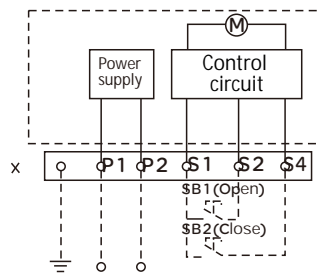
Type of electric operating mechanism:

- CD2 AC and DC electric operating mechanism

Allowable voltage range of CD2 electric operating mechanism:

- CD2: 125A-250A operation frequency is no more than 180 times per hour, and operation time is 0.7S;
- CD2: 400A-800A operation frequency is no more than 60 times per hour, and operation time is 1s;
- When the rated control power supply voltage is 230VAC/220VDC, the allowable range of voltage is: 184~253VAC/187~242VDC ;
- Rated control power supply voltage: when 400VAC, the allowable range of voltage is 320~440VAC;
- According to the different operating force of the circuit breaker, the electric operating mechanism of the switch with relatively small force can operate normally.

The wiring diagram of the electric operating mechanism is shown in the figure below (the internal wiring diagram of the electric operating mechanism is shown in the dashed box)



Voltage specification: AC50HZ 100~240V
DC100~220V power input

Explanation: SB1 and SB2 operation buttons
(Prepared by the user)

X terminal block

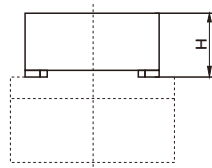
P1 and P2 are external power input

Noted: After the circuit breaker trips, the electric operating mechanism must make the circuit breaker trip again before closing.

The operating current, power and service life of the electric operating mechanism are shown in the following table.

Supporting circuit breaker	Operation current (A)	Motor power (W)	Life (times)
RDM5E-125	≤0.5	14	10000
RDM5E-250	≤0.5	14	8000
RDM5E-400	≤2	35	5000
RDM5E-800	≤2	35	5000

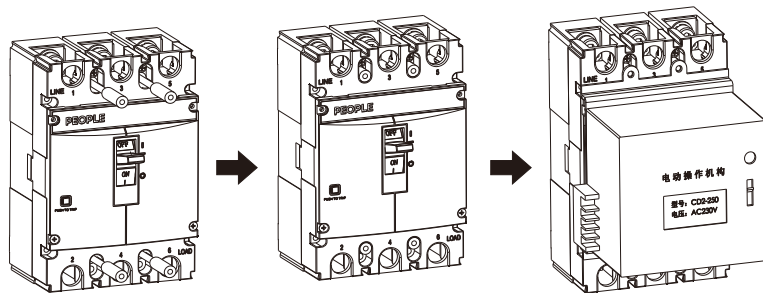
See the table below for the height of electric operating mechanism.



Height of electric operating mechanism

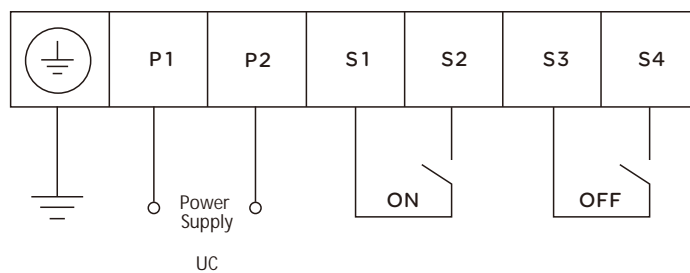
Supporting circuit breaker	H(mm)
RDM5E-125	94
RDM5E-250	90
RDM5E-400	143
RDM5E-800	147

Installation and operation diagram of CD2 motor:



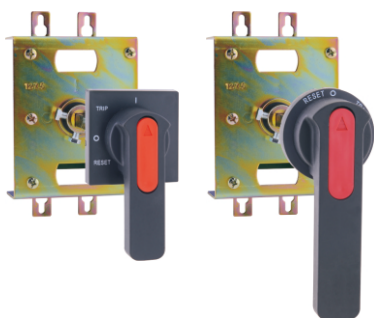
⚠ After the circuit breaker of the electric operating mechanism trips, the electric operating mechanism must be opened before closing

Wiring diagram



RDM5E series Electronic molded case circuit breaker

Rotary handle operating mechanism



According to the human body mechanics, the rotating handle adopts a unique design and transmission structure to realize the closing of the molded case circuit breaker through the rotating handle. Opening and re-tripping. Flexible and stable operation, small operating force and convenient installation. The position of the rotary handle accurately represents the position of the circuit breaker contact: open, closed or free tripping.

Classification of rotating handle

- Direct rotation handle (RHD)
- Extended rotary handle (ERH)

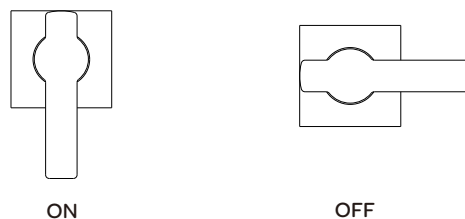
Features of rotary handle

- When the circuit breaker is in the closing state, the cabinet door cannot be opened under the action of the rotating handle;
- If the cabinet door needs to be opened in an emergency, the cabinet door can be opened through the emergency unlocking device on the operating handle;
- For circuit breakers of different specifications, the corresponding extended handle shall have the same opening size of the door panel;
- Low operating force and high reliability.

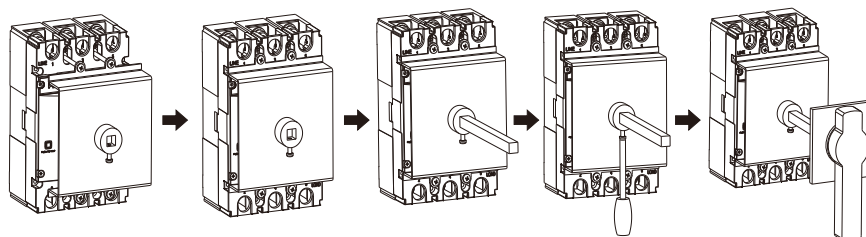
Extended rotary handle (ERH)

Operating instructions

ON/OFF operation



Installation diagram



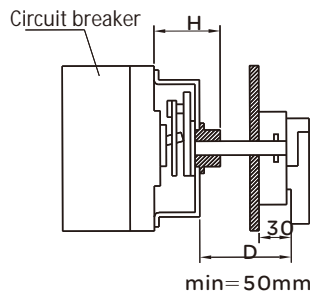
1. Align the installation direction of manual operation
2. Tighten the installation screw
3. Install the extension screw
4. Fix the screw
5. Install the extension handle

Noted: The screw length is 150 mm by default. If you need other special customization, please contact the manufacturer (increase or decrease by 50 mm).

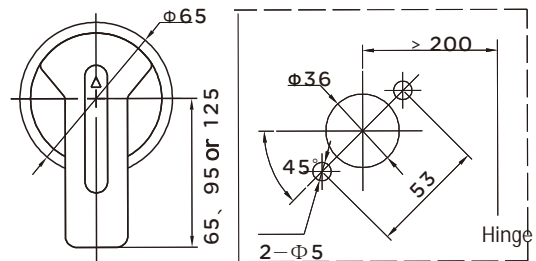
Rotating manual operating mechanism

When installing the manual operating mechanism, the hole shall be opened according to the size shown in the figure, and the handle shall be fixed when the "OFF" indication of the rotating handle is in the horizontal position on the switch cabinet door plate.

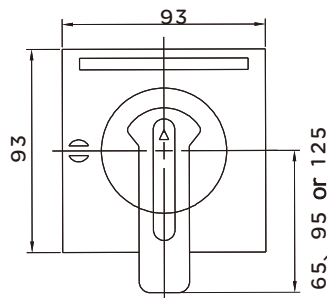
Then try to operate the handle. The rotation should be flexible, and the circuit breaker should be opened when the handle is in the horizontal position, and the circuit breaker should be closed when the handle is in the vertical position.



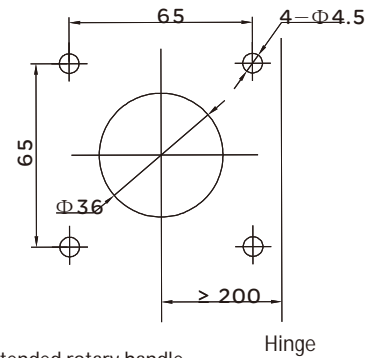
Dimension drawing of manual operating mechanism



Hole size drawing of circular extended rotary handle



Hole size drawing of square extended rotary handle

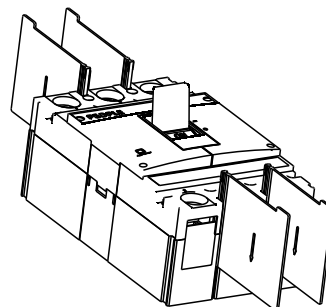


Hinge

Model	RDM5E-125	RDM5E-250	RDM5E-400	RDM5E-800
Installation dimension H	61	57	88	87
Y value of operating handle relative to circuit breaker center	0	0	0	0

Interphase partition

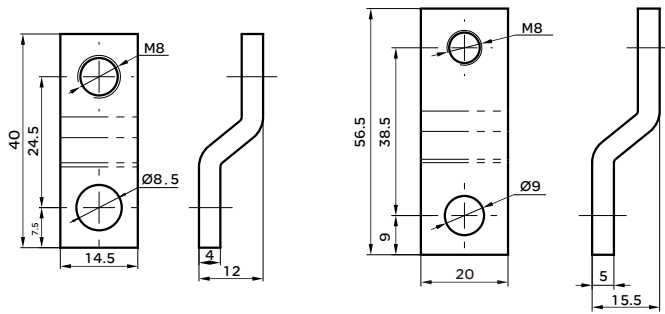
The interphase partition can enhance the insulation performance of interphase conductors. Even after the switch is installed, it can be installed from the front slot. The interphase partition is factory standard, and one circuit breaker has 4 pieces (3P).



RDM5E series Electronic molded case circuit breaker

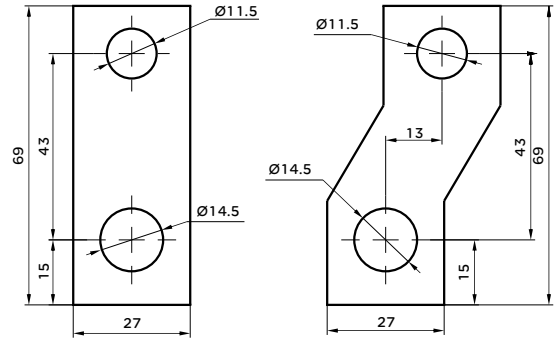
Extension terminal

The expansion terminal is connected to the standard terminal of the circuit breaker, thus providing a variety of wiring schemes in a small space:

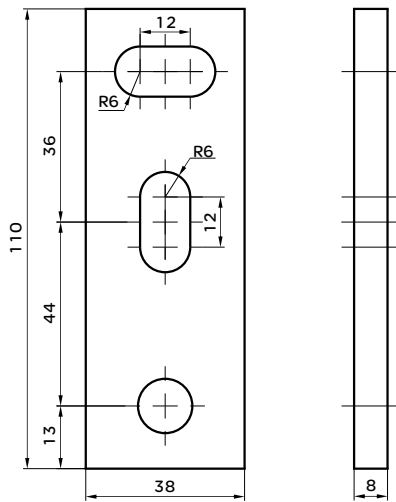


RDM5E-125 shell frame accessory row

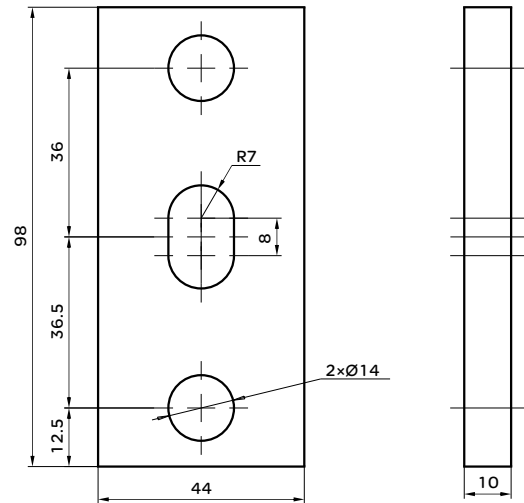
RDM5E-250 shell frame accessory row



RDM5E-400 shell frame accessory row (thickness 8mm)



RDM5E-630 shell frame accessory row



RDM5E-800 shell frame accessory row