



M11 Series Moulded-case Circuit Breaker

Product overview

M11, M11LY, M11RT, M11E and M11EL series of circuit breakers are new upgraded circuit breakers researched and developed by the company combined with the advantages of similar international products and demand of domestic and international markets.

With insulation voltage up to 1000V, the circuit breaker is applicable for distribution systems of AC50Hz, rated working voltage 690V and rated working current from 10A to 800A, used to distribute electric power energy, protect circuits and power equipment against overload, short circuit, under voltage and so on, also can be used for infrequent startup of motor and protect it from overload, short circuit or under voltage.

It is featured with small size, high breaking, short flashover, etc., is the ideal product for users. It can be vertically installed or horizontally installed.

M11DC series DC moulded-case circuit breaker (hereinafter referred to as circuit breaker) is suitable for DC systems of rated voltage up to and including DC 1000V and rated current 10~800A, used to distribute electric power energy, protect circuits and power equipment against overload, short circuit and so on.

The products can be fed with wires from top and bottom, and it is polarity-free.
It complies with the standards IEC60947-2, GB14048.2, etc.

Product features

Feature 1: current limiting capacity

Current-limiting refers to limit of the increase of short-circuit current in the loop, and in the loop protected by M11, peak value of the short-circuit current and the I2t energy in the circuit will be much smaller than the prospective value.

U-shaped fixed contact

Unique U-shaped fixed contact can achieve pre-breaking technology:

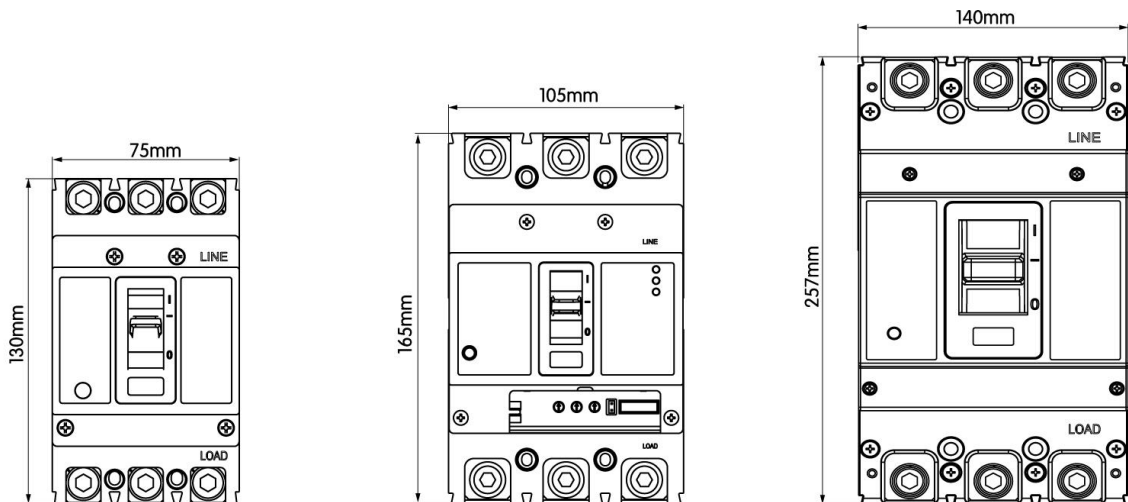
The so-called pre-breaking technology refers to when short-circuit current flows through the contact system, electric power generated by U-shaped fixed contact and moving contact is mutual exclusive. The greater the short-circuit current is, the greater the repulsion of the electromotive force, and it is generated together with the short-circuit current at the same time. Before the trip action occurs, the electrodynamic repulsion force can make the fixed and moving contact separation, by increasing the arc to increase the equivalent resistance between them to achieve the purpose of suppressing increase of short-circuit current.

Feature 2: modular accessories

- ◆ Accessory: For the circuit breakers of the same frame, they has uniform sizes regardless of the breaking capacity and rated current; Accessory: Users can freely
- ◆ choose and expand functions of circuit breakers according to their needs
- ◆ Modular accessories have insulation function, which is easy for hot-line operation and installation.

Feature 3: miniaturized frame

5 frame sizes: 125 type, 160 type, 250 type, 630 type, 800 type
Rated current of M11 series 10A~800A



Feature 4: contact repulsion device (patented technology)

The technical scheme adopted by the invention is:

As shown in Figure 1, the new contact device is mainly consisted of fixed contact, moving contact, shaft 1, shaft 2, shaft 3 and springs;

When the circuit breaker is in the closed state, shaft 2 acts on the right side of the spring angle; When the circuit breaker has a large fault current, the moving contact will be subjected to the electric repulsion generated by the current itself, and rotate with the center of shaft 1, when shaft 2 rotates to the top of the spring angle with the moving contact, it makes moving contact to rapidly rotate upwards and quickly break the circuit upon the reaction of spring, it has enhanced the breaking capacity of the product through optimization of the contact structure.

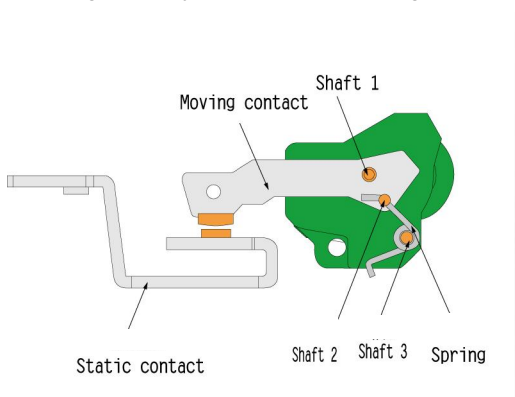


Figure 1

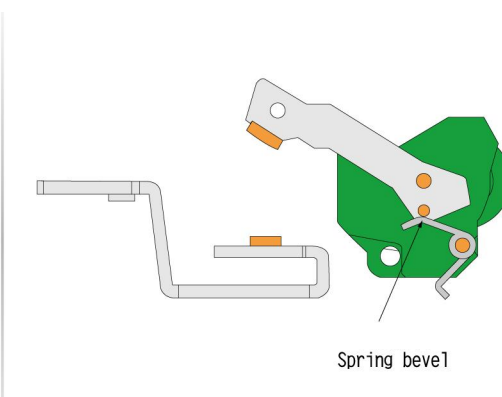
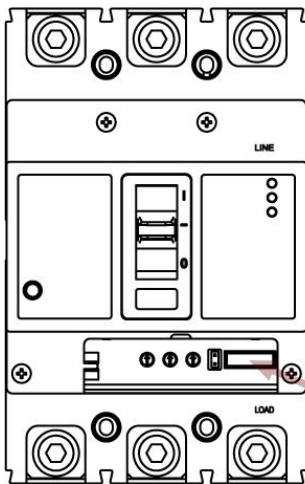


Figure 2(opening state)

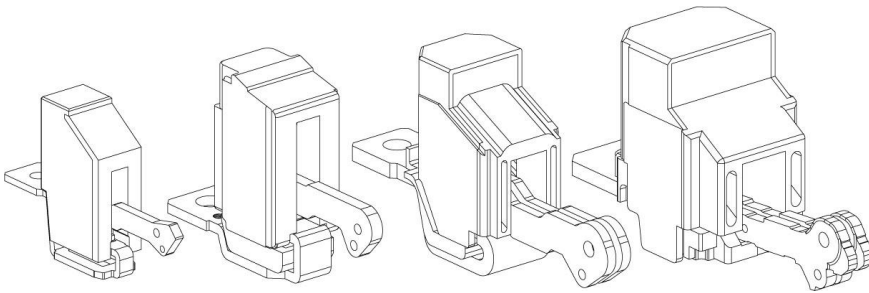
Feature 5: intelligence

Network communication is more convenient. It accesses to Modbus communication system through dedicated connection. M11E / M11EL with communication function can select monitoring accessories to realize door display, read, set and control.



Communication is built in the body, without external modules

Feature 6: modularized arc extinguishing system



Feature 7: unification

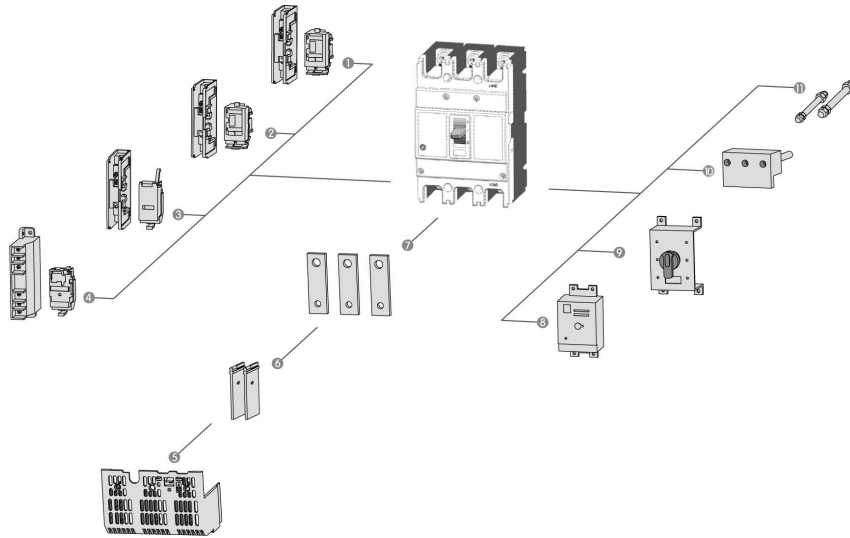
The six series of M11, M11LY, M11DC, M11RT, M11E, and M11EL under the same frame size have the same dimensions, installation dimensions and appearance style, which is completely unified design.

Ambient and installation conditions

- ◆ Altitude up to 2000m;
- ◆ Ambient medium temperature should be within -5°C to +40°C (+45°C for marine products);
- ◆ It can withstand the effect of damp air;
- ◆ It can withstand the effect of moulds;
- ◆ It can withstand the effect of nuclear radiation;
- ◆ The max inclination is 22.5°.
- ◆ It still can work reliably when the ship subjects to normal vibration;
- ◆ It can still work reliably if the product subjects to the earthquake (4g).
- ◆ Places where the surrounding medium is free from explosion danger, and far away from gas or conductive dust that would erode the metal or destroy the insulation;
- ◆ Keep away from rain or snow.

Components of circuit breaker

1 Auxiliary switch	5 Terminal cap	9 Manual operation
2 Alarm switch	6 Phase partition	10 Plug-in type back-board wiring
3 Shunt release	7 Front-board wiring	11 Back-board wiring
4 Undervoltage release	8 Electric operation	



Model selection guide








M11	125	C				P	4
↓	↓	↓				↓	↓
Product code	Frame size	Current class				Code of control circuit source voltage	Pole number
Moulded-case circuit breaker	125 160 250 400 630 800	S	M	H	P: electric operation Z rotary handle W: direct operation	3: 3-pole 4: 4-pole	
	Note:	125	25/15				
	125 is upgraded type of 63 frame	160	35/25	50/35	70/50		
	160 is upgraded type of 100 frame	250	35/25	50/35	70/50		
	250 is upgraded type of 225 frame	400	50/35	65/42	85/50		
	630 is upgraded type of 400 frame	630	50/35	65/42	85/50		
		800	50/35	65/42	85/50		

300	125A		2	A
↓	↓		↓	↓
Release type and internal accessory	Rated current (A)		Application	Code of four-pole product
The first digit represents release type	125	10, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125	1: power distribution	A: N-pole without protection cannot close or open
2: Has instantaneous release only	160	63, 80, 100, 125, 140, 160	2: motor protection	B: N-pole without protection can close and open
3: Complex release Note:	250	100, 125, 140, 160, 180, 200, 225, 250		C: N-pole with protection can close and open
Later two digits are the code of accessories (see accessory table)	400	250, 300, 315, 350, 400		D: N-pole with protection cannot close or open
	630	400, 500, 630		
	800	500, 630, 700, 800		








Q1			D1		Q	2
↓			↓		↓	↓
Accessory voltage			Electric operation voltage		Installation methods	Install wiring board or not
Undervoltage release	Shunt release	Auxiliary alarm	DC1 Electric Operation	DC3 Electric Operation	Q: Front-board	1: No
Q1: AC220V	F1: AC220V	J1: AC125V	D1: AC220V	D5: AC230V	H: Back-board	2: Yes
Q2: AC240V	F2: AC380V	J2: AC250V	D2: AC230V	D6: AC110V	C: Plug-in type	
Q3: AC380V	F3: DC110V	J3: DC125V	D3: AC380V	D7: DC220		
Q4: AC415V	F4: DC24V	J4: DC24V	D4: AC400V	D8: DC110		
				D9: AC110-240V		
				D10: DC100-220V		
			Note:			
			Adaptable voltages for two electric operations. Please refer to the introduction of external accessory.			

- Circuit breaker can be equipped with undervoltage release, shunt release, auxiliary contacts, alarm contacts, electric operating mechanism, rotary operating handle and other accessories.
- Circuit breaker has protection functions of overload long delay, short-circuit short delay and short-circuit instantaneous voltage protection, the user can set the required protection characteristics (user only needs to operate the DIP switch for settings of protection function parameters).
- Circuit breaker has ground fault and thermal analog protection functions, pre-alarm indication over-current indication, load current indication, digital current analysis technology, and it can achieve a higher level of protection.








● **Thermal overload fixed type technical data sheet**

 M11 thermal overload technical data sheet							
Frame current (A)		125	160	250	400	630	800
Model		M11-125S M11-125H	M11-160S M11-160M M11-160H	M11-250S M11-250M M11-250H	M11-400S M11-400M M11-400H	M11-630S M11-630M M11-630H	M11-800S M11-800M M11-800H
Pole number		1, 2, 3, 4	2, 3, 4	3, 4	3, 4	3, 4	3, 4
Rated current (A)		10, 16, 20, 32, 25, 40, 50, 63, 80, 100, 125	10, 16, 20, 32, 25, 40, 50, 63, 80, 100, 125, 140, 160	100, 125, 140, 160, 180, 200, 225, 250	250, 315, 350, 400	250, 315, 350, 400, 500, 630	500, 630, 700, 800, 1000, 1250
Rated voltage (V)		AC400V	AC400V	AC400V	AC400V	AC400V	AC400V
Rated insulation voltage (V)		AC1000V	AC1000V	AC1000V	AC1000V	AC1000V	AC1000V
Short-circuit breaking capacity (KA) @cu/lcs	AC400V	25/15 35/25	35/25 50/35 70/50	35/25 65/42 85/50	50/35 65/42 85/50	50/35 65/42 85/50	50/35 65/42 85/50
Operating cycle number	Electrical life	6000	3000	3000	2000	2000	1500
	Mechanical life	9000	7000	7000	4000	4000	4000
Outline dim (mm)	1P	25-130-68-90	- - -				
a-b-c-ca	2P	50-130-68-90	60-155-68-90	60-155-88-115			
	3P	75-130-68-90	90-155-68-90	90-155-88-115	105-165-68-92	105-165-88-115	140-257-103-155
	4P	100-130-68-90	120-155-68-90	120-155-88-115	140-165-68-92	140-165-88-115	184-257-103-155
Weight (kg)	1P	0.32	-	-			
	2P	0.5 0.55	1	1.1	1.5	1.7	5.5
	3P	0.55 0.65	1.1	1.2	1.9	2.1	7
	4P	0.65 0.8	1.4	1.5			
Electric operating device (MD)		•			•		•
External driving operating handle		•			•		•
Automatic release		Thermal electromagnetic type		Thermal electromagnetic type		Thermal electromagnetic type	

● **Thermal adjustable and magnetic adjustable type technical data sheet**

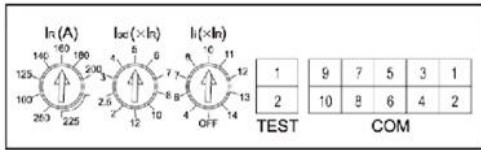
M11RT thermal adjustable and magnetic adjustable (TAMA) technical data sheet																
Frame current (A)	160		250		400		630		800		1250					
Model	M11RT-160S	M11RT-160M	M11RT-160H	M11RT-250S	M11RT-250M	M11RT-250H	M11RT-400S	M11RT-400H	M11RT-630S	M11RT-630H	M11RT-800S	M11RT-800H	M11RT-1250S	M11RT-1250H		
Pole number	3, 4			3, 4			3, 4		3, 4		3, 4		3, 4			
Rated current (A)	20-25, 25-32, 32-40, 40-50, 50-63, 63-80, 80-100, 100-125A, 125-160A			100-125, 125-160, 160-200, 200-250A			200-250, 250-320, 320-400		400-500, 500-630		400-500, 500-630, 630-800		630-800, 800-1250			
	AC400V			AC400V			AC1000V		AC400V		AC400V		AC400V			
Rated voltage (V)	AC1000V			AC1000V			AC1000V		AC1000V		AC1000V		AC1000V			
Rated insulation voltage (V)	AC1000V			AC1000V			50/35	70/50	50/35	70/50	50/35	85/50	50/35	85/50		
Short-circuit breaking capacity(KA)icu/lcs	AC400V		35/25	50/35	70/50	35/25	50/35	85/50	2000	2000	1500	1500	1500	1500		
	Electrical life		3000			3000			4000		4000		4000		4000	
Operating cycle number	Mechanical life		7000			7000			1000		1000		1000		1000	
	Outline dim(mm) a-b-c-ca															
	3P		90-155-68-90	90-155-88-115	105-165-68-92	105-165-88-115	140-257-103-155	140-257-103-155	210-275-103-155	210-275-103-155	210-275-103-155	210-275-103-155	210-275-103-155	210-275-103-155		
	4P		120-155-68-90	120-155-88-115	140-165-68-92	140-165-88-115	185-257-103-155	185-257-103-155	280-275-103-155	280-275-103-155	280-275-103-155	280-275-103-155	280-275-103-155	280-275-103-155	280-275-103-155	
Weight (kg)	3P		1	1.1	1.1	1.5	1.7	5.5	5.7	9.5	9.5	9.5	9.5	9.5		
	4P		1.1	1.4	1.7	1.9	2.1	7	7.5	12.5	12.5	12.5	12.5	12.5		
Electric operating device (MD)	•															
External driving operating handle	•															
Automatic release	Thermal electromagnetic type						Thermal electromagnetic type									

● **Electronic type technical data sheet**

M11E Electronic type MCCB technical data sheet													
Frame current (A)	160		250		400		630		800		1250		
Model	M11E-160H		M11E-250H		M11E-400H		M11E-630H		M11E-800H		M11E-1250H		
Pole number	3, 4		3, 4		3, 4		3, 4		3, 4		3, 4		
Rated current (A)	16-32, 40-125, 80-160		100-250		200-400		200-400, 300-630		300-630, 400-800		400-800, 800-1250		
Rated voltage (V)	AC400V												
Rated insulation voltage (V)	AC1000V												
Short-circuit breaking capacity(KA)icu/lcs	AC400V		70/50	85/50	85/50	85/50	85/50	85/50	85/50	85/50	85/50	85/50	85/50
	Electrical life		1500	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Operating cycle number	Mechanical life		7000	7000	4000	4000	4000	4000	4000	4000	4000	4000	4000
	Outline dim(mm) a-b-c-ca												
	3P		90-155-88-115	105-165-88-115	140-257-103-155	140-257-103-155	210-257-103-155	210-257-103-155	210-257-103-155	210-257-103-155	210-257-103-155	210-257-103-155	210-257-103-155
	4P		90-155-88-115	140-165-88-115	185-257-103-155	185-257-103-155	280-257-103-155	280-257-103-155	280-257-103-155	280-257-103-155	280-257-103-155	280-257-103-155	280-257-103-155
Weight (kg)	3P		1.8	2.1	5.5	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	4P		2.3	2.6	7	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Electric operating device (MD)	•												
External driving operating handle	•												
Automatic release	Electronic type												

Panel and function description

Intelligent release panel



Tripping test port (TEST):

- 1 Tripping test input DC12V(+)
- 2 Tripping test input DC12V(-)

Panel adjustment knob as follows in turn:

- I_r (A) $I_{sd}(\times I_r)$ $l_i(\times I_r)$
- I_r : Overload long delay tripping setting current; I_{sd} : Short-circuit short delay tripping setting current;
- l_i : Short-circuit instantaneous tripping setting current;

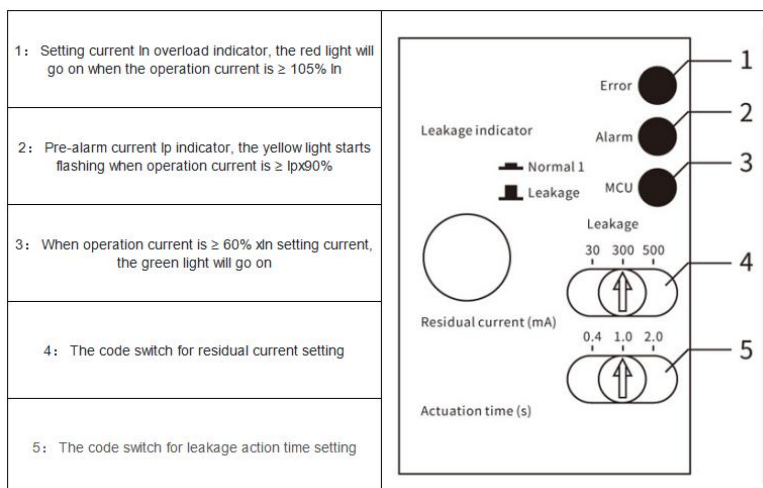
The rest parameters are set by factory default, or set by remote communication, as follows:

- t_r : Overload long delay setting time, factory default: 60s;
- t_{sd} : Short-circuit short delay setting time, factory default: 0.1s;
- I_p : Overload pre-alarm setting current, factory default: $0.85 \times I_r$;

Intelligent communication port (COM):

1: Power supply input DC24V(+)	6: 485B-
2: Power supply input DC24V(-)	7: Closing and opening common terminal of electric operating mechanism
3: 485A+	8: Closing and opening common terminal of electric operating mechanism
4: 485A+	9: Opening of electric operating mechanism
5: 485B-	10: Closing of electric operating mechanism

Panel With Residual Current Protection





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