Moulded Case Circuit Breaker & Dual Power Automatic Transfer Switch
Miniature Circuit Breaker & Residual Current Circuit Breaker

AM1 Series Moulded Case Circuit Breaker

AM1-63M/3P

AM1-63M/4P

AM1-100M/3P

AM1-250L/3P

TWO OPTIONS:PAPER OR LASER LABEL,DEFAULT IS LABER LABEL

1. Application

AM1 series moulded case circuit breaker is one of products developed and manufactured by adopting international advanced technology. It is supplied with rated insulating voltage 500 and 800V and used for the circuit of AC 50/60Hz, rated operating voltage AC 400V (or below), rated operating current up to 1600A for infrequently changing over and starting of the motors. The products conforms to IEC60947-2 standard.

2. Main Technical Specification

Table 1

Type	Rated current (A)	Pole	Rated insulating voltage (V)	Rated operating voltage (V)	Arcing-over distance (mm)	Ultimate short circuit breaking capacity (kA)	Service short circuit breaking capacity (kA)	Operation performance		Utilization category
								Load	Unload	
AM1-63L	(6),10,16,20,	3, 4	500V	400V	0	25	18	1500	8500	A
AM1-63M	25,32,40,50,63				0	50	35			
AM1-125L	(10),16,20,25,		800V		0(⩽ 50)	35	22			
AM1-125M	32,40,50,63, 80,100,125				0(⩽ 50)	50	35			
AM1-250L	100,125,160,				⩽ 50	35	22	1000	7000	
AM1-250M	180,200,225				⩽ 50	50	35			
AM1-400L	225,250,315,				⩽ 50	50	35	1000	4000	
AM1-400M	350,400				⩽ 100	65	42			
AM1-630L	400				⩽ 100	50	35			
AM1-630M	500 600				⩽ 100	65	42			
AM1-800M	630,700,800				⩽ 100	75	50			
AM1-1250M	1000,1250				⩽ 100	100	65			
AM1-1600M	1600				⩽ 100	150	80			

Note: 6A without thermal protection

The N-pole of four-poles breaker is sited at the right side of the product has four types:

Type A: Without current trip-release on N pole which making all the time, not closing and opening with the other three poles.

Type B: Without current trip-release on N pole which closing and opening with the other poles.

Type C: With current trip-release which closing and opening with the other three poles.

Type D: With current trip-release which making all the time not closing and opening with the other three poles.

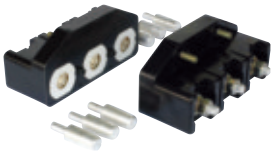
3. Protection Characteristic

The thermodynamic release of a circuit breaker provides the feature of inverse time-delay, while the magnetic release is the instantaneous operation as shown on table 2(distribution circuit breaker) and table 3 (motor protection circuit breaker).

AM1-250L/3P

AM1-400L/3P

Back panel connection



Plug-in connection

Electromagnetic operation device

Motor-driven operation device

Table 2

Rated current of release (A)	Thermodynamic release(ambient temperature land +40°C marine +45°C)		Operating current of magnetic release (A)
	1.05In(cold state) Inoperative time(h)	1.30In(heat state) Operative time(h)	
10 ⩽ In ⩽ 63	⩾ 1	< 1	10In±20%
63 < In ⩽ 100	⩾ 2	< 2	
100 < In ⩽ 800	⩾ 2	< 2	5In±20% 10In±20%

Table 3

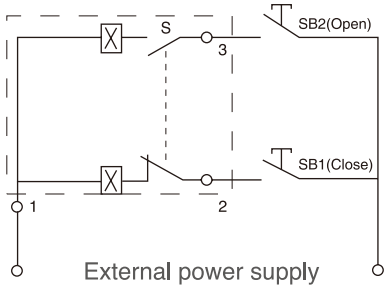
Rated current of release (A)	Thermodynamic release (ambient temperature land +40°C marine +45°C)				Operating current of magnetic release (A)
	1.0In(cold state) non-trip time(h)	1.20In(heat state) trip time (h)	1.50In(heat state) trip time (m)	7.2In(cold state) trip time(s)	
10 ⩽ In ⩽ 250	⩾ 2	< 2	⩽ 4	4 < t ⩽ 10	12In±20%
250 < In ⩽ 630			⩽ 8	6 < t ⩽ 20	

4. Accessories of Circuit Breaker

4.1 The external accessories of the breaker

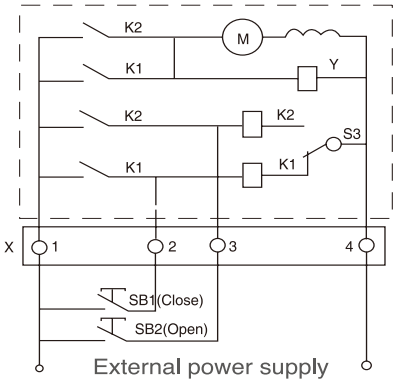
- **Electromagnetic operation device and Motor-driven operation device**

1) Wiring diagram of type CDM electromagnetic operation device(fitting AM1-63,100,250) see the following drawing (wiring diagram of the external accessories of the breaker in the dotted frame)



Code description: SB1, SB2 stand for push button.(provided by users themselves)
Number “1”、“2”、“3” stand for number of wiring terminals.
Voltage rating: AC50/60Hz 230V 400V, DC 220V

2) Wiring diagram of type CD Electromagnetic operation device and motor-driven operation device (fitting AM1-400、630、800) see belows (wiring diagram of the external accessories of the breaker in the dotted frame)

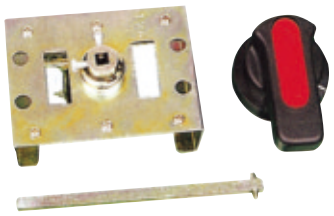


Code description: SB1, SB2 stand for push button. (provided by users themselves)
“X” stands for line connection terminals
Voltage rating: AC50/60Hz 230V 400V, DC220V

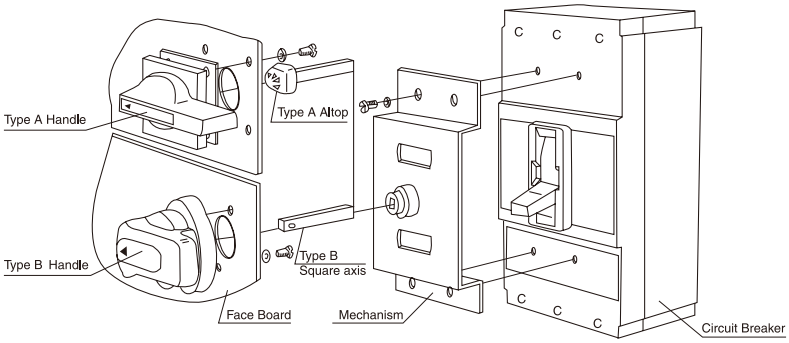
● **Rotary handle operation device**

The mechanism is used with moulded case circuit breaker to operate the draw-out panel. Power distribution panel and supply box outside the panel by turning the handle ,and to ensure the door of panel would not be openned when the breaker being on.

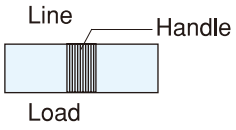
The hand-drive mechanism can be equiped with two types of operation, one is “A” model square handle , the other is “B” model round handle.



Rotary handle operation device



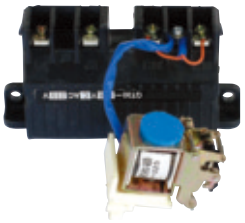
4.2 Release pattern and accessories code



UVR: Under-voltage release; SHT: Shunt release;
AL: Alarm contact AX: Auxiliary contact;

Release pattern and accessories code	Name / Type	AM1-63, 100, 250	AM1-400	AM1-630	AM1-800
200, 300	Without accessories	200: magnetic release (only short circuit protection) 300: thermal magnetic release(both overload and short circuit protection)			
208, 308	Alarm contact	AL	AL	AL	AL
210, 310	Shunt release	SHT	SHT	SHT	SHT
220, 320	Auxiliary contact	AX	AX	AX	AX
230, 330	Under-voltage release	UVR	UVR	UVR	UVR
240, 340	Shunt release Auxiliary contact	SHT AX	SHT AX	SHT AX	AX SHT
250, 350	Shunt release Under-voltage release	SHT UVR	SHT UVR	SHT UVR	UVR SHT
260, 360	Two group of auxiliary contact	AX AX	AX AX	AX AX	AX AX
270,370	Under-voltage release Auxiliary contact	AX UVR	AX UVR	AX UVR	UVR AX
218, 318	Shunt release Alarm contact	AL SHT	SHT AL	AL SHT	AL SHT
228, 328	Alarm contact Auxiliary contact	AL AX	AL AX	AL AX	AL AX
238, 338	Under-voltage release Alarm contact	AL UVR	AL UVR	AL UVR	AL UVR
248, 348	Shunt release, Alarm contact, Auxiliary contact	AL AX SHT	SHT AL AX	AL AX SHT	AL AX SHT
268, 368	Two group of auxiliary contact, Alarm contact	AL AX AX	AL AX AX	AL AX AX	AL AX AX
278, 378	Shunt release, Alarm contact, Under-voltage release	SHT AL UVR	AL UVR SHT	AL UVR SHT	SHT AL UVR

According to user's demands, accessories could lead to direct wire outcoming or line wiring terminals could be added(please mark out in case of placing order).

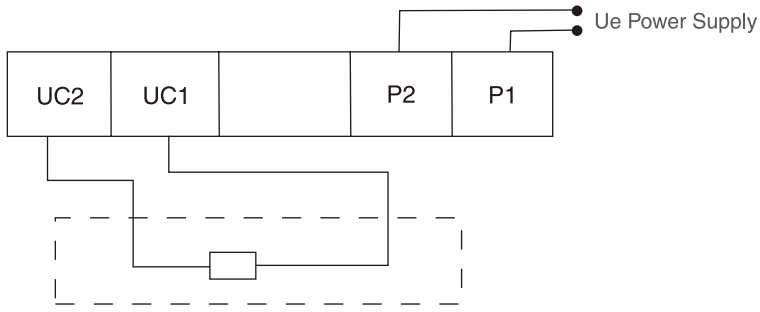


Under-voltage release

● **Under-voltage release**

Wring diagram of the under-voltage release connected externally (the internal accessories in the dotted frame)

Ue: AC230V, 400V

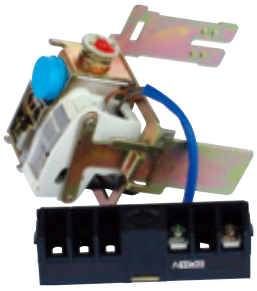


When the operation voltage is 35%~70% of the rated voltage, the under-voltage release should make the breaker trip correctly.

When the operation voltage is 85%~110% of the rated voltage, the under-voltage release should make the breaker close.

In case of the operation voltage less than 35% of the rated voltage, the under-voltage should prevent the breaker from closing.

Note: Only the under-voltage release should be energized in advance, the breaker could be recramped and turned-on, otherwise the breaker will be damaged.

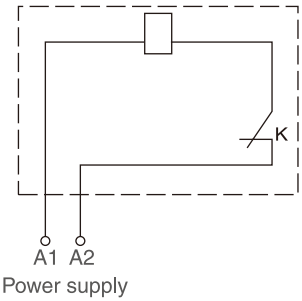


Shunt release

● **Shunt release**

Wring diagram of the shunt release (the internal accessories in the dotted frame)

"K" is the slow motion switch normal-close contact connect the coil in series in the shunt release. It turns-on or turns-off automatically as soon as the breaker on or off.

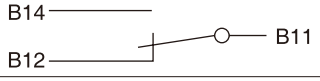


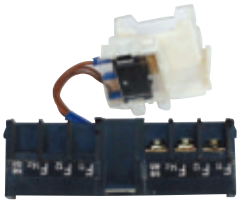
Voltage rating: AC230V 400V, DC 110V 220V

The shunt release should make the breaker trip reliably when the operation voltage is 70%~110% of the rated control voltage.

Alarm contact

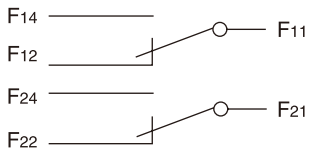
● **Alarm contact**

The position of the breaker in "off" or "on"	
The position of the breaker in "free trip" (alarm)	B11 and B12 switch from "close" to "open", status of B11 and B14 switch from "open" to "close"



Auxiliary Contact

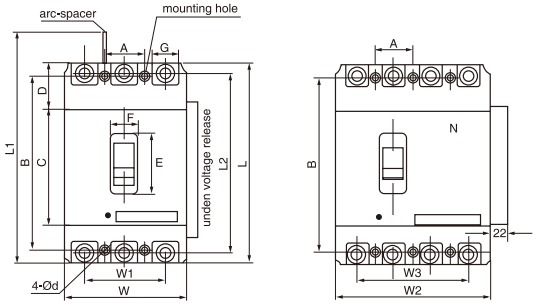
● **Auxiliary Contact**

When the breaker is in "off"		For the breaker with frame current 400A and above
		For the breaker with frame current 250A and below
When the breaker is in "on"	When the breaker is in "off", the contacts switch from "close" to "open". When the breaker is in "off", the contacts switch from "open"to close"	

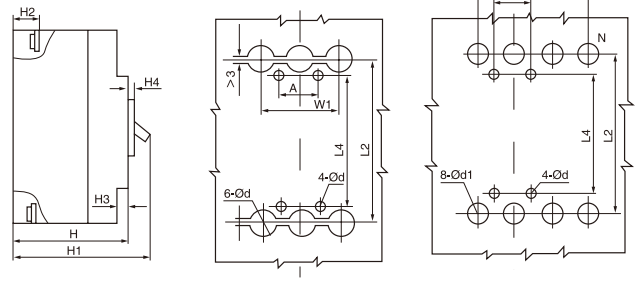
5. Outline and Installation Dimensions (mm)

Type	Outline Dimensions(mm)																															Installation Dimensions		
	Front panel connection																Back panel connection					Plug-in connection													
	W	W1	L	L1	L2	H	H1	H2	H3	H4	C	D	E	F	G	W2	W3	L4	H5	H6	ØD	ØD1	L5	L6	H7	H8	H9	H10	J	K	Ød1	M	A	B	Ød
AM1-63L	76	50	135	170	117	74	92	20	7	4	85	28.5	48	22	14	100	75	117	44	66	8	8							60.7				25	117	3.5
AM1-63M	76	50	135	170	117	82	98.5	28	7	4	85	28.5	48	22	14	100	75	117	44	66	8	8							62				25	117	3.5
AM1-100L	92	60	150	185	132	68	86	24	7	4	88	35.5	50	22	17.5	122	90	129	68	108	26	16	92	168	50	62	74	17.5	56	60	6.5	M8	30	129	4.5
AM1-100M	92	60	150	185	132	86	104	24	7	4	88	35.5	50	22	17.5	122	90	129	68	108	26	16	92	168	50	62	74	17.5	56	60	6.5	M8	30	129	4.5
AM1-250L	107	70	165	215	144	86	110	24	5	4	102	31.5	50	22	17	142	105	126	66	110	20	20	94	183	50	69.5	84.5	17.5	54	70	6.5	M8	35	126	5
AM1-250M	107	70	165	215	144	103	127	24	5	4	102	31.5	50	22	17	142	105	126	66	110	20	20	94	183	50	69.5	84.5	17.5	54	70	6.5	M8	35	126	5
AM1-400L	182	116	270	370	234	110	160	43	8	6	134	70	89	65	ø29	198	144	200	65	125	36	36	169	299	60	92	110	21	123	100	8.5	M12	58	200	7
AM1-400M	182	116	270	370	234	110	160	43	8	6	134	70	89	65	ø29	198	144	200	65	125	36	36	169	299	60	92	110	21	123	100	8.5	M12	58	200	7
AM1-630L	182	116	270	370	234	110	160	43	8	6	134	70	89	65	ø29	240	174	200	65	125	36	36	169	299	60	92	110	21	123	100	8.5	M12	58	200	7
AM1-630M	182	116	270	370	234	110	160	43	8	6	134	70	89	65	ø29	240	174	200	65	125	36	36	169	299	60	92	110	21	123	100	8.5	M12	58	200	7
AM1-800M	210	140	280	380	243	106	145	33	30	128									128														70	243	7.2
AM1-1250M	210	140	393			200																													
AM1-1600M	210	140	393			200																													

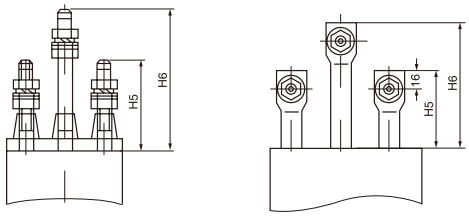
Front panel connection



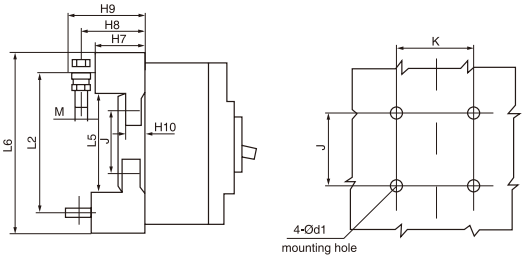
Back panel connection



Back panel connection



Plug-in connection



AM1E Series Moulded Case Circuit Breaker

AM1E-250/3300

AM1E-250/4300

AM1E-800/3300

AM1E-800/4300

1. Application

AM1E series intelligent moulded case circuit breaker is developed and manufactured by adopting international advanced technology. It is supplied with rated insulating voltage 800V and used for circuit of AC 50/60Hz, rated operating voltage 400V, rated operating current up to 800A of the circuit breaker infrequent changing over and starting of the motors. The circuit beaker has protection function of overload long delay inverse time, short circuit short delay time limit, short circuit instantaneous and under voltage, which can protect the line and power supply equipment from damage.

The circuit breaker can be mounted vertically(i.e. vertical) or horizontally. The Circuit breaker can not be poured into the line, that is, only 1,3,5 connect power cord;2,4,6 connect load line.

The circuit breaker conforms to following standards:

IEC60947-1 GBIT14018.1 low-voltage switchgear and control equipment Part I: General

IEC60947-2 GB14048.2 low-voltage switchgear and control equipment, the second part of circuit breaker and annex with electronic over-current protection circuit breaker additional requirement;

IEC60947-4 GB14048.4 low-voltage switchgear and control equipment contactors and motor starts;

IEC60947-5.1 GB14048.5 low-voltage switchgear and control equipment electromechanical control circuit electrical appliances.

GB22710 electronic controller for low voltage circuit breaker.

2. Main Performance Characteristics

AM1E intelligent moulded case circuit breaker is belongs to B category with three grades protection. In the short-circuit conditions, AM1E has a fully selective cooperation with some other short-circuit protection devices in the same circuit.

With five tripping feature options. The users can adjust & set the tripping current according to the load current requirements

The energy of electronic release is provided by the circuit breaker itself. The current signal and the control source are from the toroidal current transformer which is installed in the circuit breaker.

With warning indication: When the load current exceeds the preset current, the LED on the circuit breaker cover indicates yellow;

With overload indication: When the load current exceeds the set current, the LED on the circuit breaker cover indicates red;

With a dedicated fire overload no-trip only alarm function. When the load current overload operation, the circuit breaker does not trip, outputs a passive contact, drive the corresponding alarm device;

Compliance with IEC60947 Appendix F of the electromagnetic compatibility requirements;

Dimensions are same to the same frame AM1 molded case circuit breaker, installation is interchangeable.

3. Type and Meaning

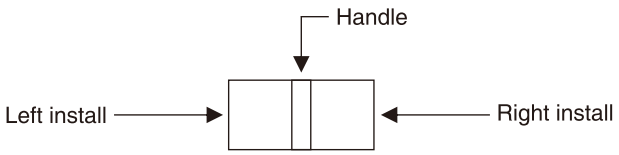
A M 1 E-□ □ □/3 □ □ □

- Type designation
- Electric relay code
- Trip type and accessory code(see table)
- Number pole: 3P-3poles 4P-4poles
- Operating mechanism
- Breaking capacity code: Middle type: M
  Relatively high type: H
- Frame size rated current
- Intelligent type
- Design sequence
- MCCB
- Company code

Note:

1.Distribution without code, protection motor code: 2;
2.Electronic accessories are: 1 communication module, 11 communication with shunt. 111 communication with passive auxiliary contacts, IV overload alarm does not trip module, no electronic components code;
3.According to the number of poles of the product is divided into three poles and four poles, 4 poles N type: N pole over load current protection, time parameter 100% automatic tracking phase line setting value, and N pole and other three poles ON-OFF Together(N pole turn off after close);
4.Directly operation without code, motor operation: P indicate, turn handle: Z indicate.

4. Main Technical Performance of Circuit Breaker



▲ Under-voltage release
■ Shunt realese
● Alarm contact
○ Two group of auxiliary contact
→ Leading wire

Table 1

Type		AM1E-125		AM1E-250		AM1E-400		AM1E-800	
Accessories code	Name \ Pole	3	4	3	4	3	4	3	4
308	Alarm contact								
310	Shunt realese								
320	Auxiliary contact								
330	Under-voltage release								
340	Shunt realese Auxiliary contact								
350	Shunt realese Under-voltage release	—		—		—			
360	Two group of auxiliary contact								
370	Auxiliary contact Under-voltage release								
318	Shunt realese Alarm contact	—		—		—			
328	Auxiliary contact Alarm contact								
338	Under-voltage release Alarm contact	—		—		—			
348	Shunt realese Auxiliary contact Alarm contact	—		—		—			
368	Two group of auxiliary contact Alarm contact								
378	Auxiliary contact Under-voltage release Alarm contact	—		—		—			

Note:
a. Release and internal accessories code first number 3 with three section protection electronic release. After the two digit indicate the internal attachment code. No internal accessory attachments with 00.
b. 348 specifications of AM1E-800 auxiliary contact for a pair of contacts (i.e., 1 NO and 1 NC). 368 specifications auxiliary contact three pairs of contacts(3 NO and 3 NC).
c. 4P product with N form is only separable type.

5. Capacity Loss and Coefficient Ratio

Capacity loss

Table 3

Type	Charging current	Total power loss for three phases	
		Front-panel board or back panel board connection	plug-in connection
AM1E-125	125	35	
AM1E-250	250	62	40
AM1E-400	400	115	70
AM1E-800	800	262	210

Coefficient ratio due to environment temperature factor

Table 4

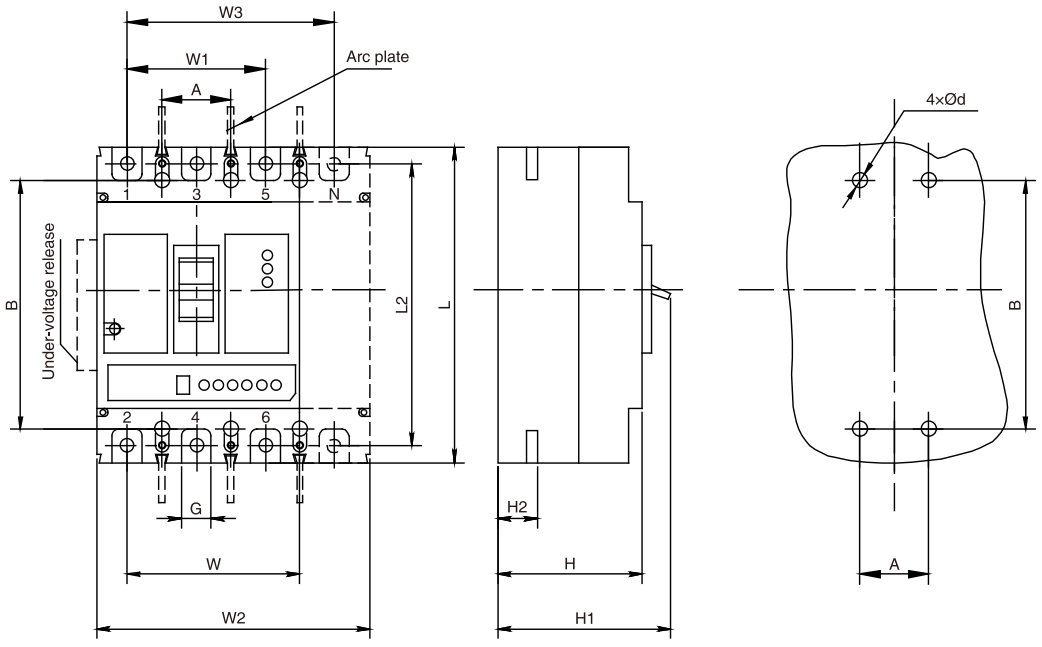
Type \ Environment temperature factor	+40°C	+45°C	+50°C	+55°C	+60°C
	Coefficient ratio	Coefficient ratio	Coefficient ratio	Coefficient ratio	Coefficient ratio
AM1E-125	1In	0.95In	0.89In	0.84In	0.76In
AM1E-250	1In	0.96In	0.91In	0.87In	0.82In
AM1E-400	1In	0.94In	0.87In	0.81In	0.73In
AM1E-800	1In	0.88In	0.83In	0.79In	0.76In

6. Main Technical Specifications

Table 2

Type		AM1E-125		AM1E-250		AM1E-400		AM1E-800	
Frame current(InmA)		125		250		400		800	
Breaking capacity		M	H	M	H	M	H	M	H
Rated current		32A(16,20,25,32)		100,125,140,160 180,200,225,250		200,225,250,280 315,350,400		630,640,660,680 700,720,740,760 780,800	
		125A(40,50,60,70, 80,90,100,125)							
Pole		3, 4		3, 4		3, 4		3, 4	
Rated insulating voltage		AC690V							
Rated operating voltage		AC400V							
Rated impulse withstanding voltage		6000V		8000V		8000V		8000V	
Rated frequency		50Hz							
Flashover distance	Top-down	≤50		≤50		≤80		≤80	
	Left-right	0		0		0		0	
	Front-back	0		0		0		0	
Using category		A		B		B		B	
Rated limiting short-circuit breaking capacity		50	65	50	70	65	85	65	85
Rated service short-circuit breaking capacity		35	50	35	50	42	65	42	65
Rated withstand short-circuit current		1.5	1.5	5	5	8	8	10	10
Operating lift(time)	Elctrical	1500		1000		1000		500	
	Mechanical	8500		7000		4000		3000	

7. Outline and Installation Dimension



AM1DC Series Moulded Case Circuit Breaker

AM1DC-250/4300

1. Application

AM1 DC series DC moulded case circuit breaker is developed by advanced design and manufacturing technology, suitable for a the circuit of AC50/60Hz, rated voltage is DC250V, DC500V, DC750V and DC 1000V, rated current up to 400A, the circuit breaker have function of short circuit, overload and under-voltage protection to protect circuit and power equipment against damage. The breaker are comply with the IEC60947-1 and IEC60947-2.

2. Main Technical Specifications

Type		AM1DC-100			AM1DC-250			AM1DC-400	
Frame current Inm(A)		100			250			400	
Rated current In (A)		10,16,20, 25, 32,40, 50,63, 80, 100			16, 20,25,32,40, 50, 63, 80,100, 125, 140,160,180, 200, 225,250			250,315 350,400	
Pole number		2	3	4	2	3	4	3	4
Rated insulation voltage Ui (V)		1000							
Rated impulse withstanding voltage Uimp(V)		8000							
Rated working voltage Ue(V)		DC250 DC500	DC500 DC750	DC750 DC1000	DC250 DC500	DC500 DC750	DC750 DC1000	DC500 DC750	DC750 DC1000
Using category		A							
Isolation		○							
Arcing distance (mm)		⩽50						⩽100	
Rated short time making capacity Icm (kA)		100% Icu							
Rated limiting short- circuit breaking capacity Icu (kA)	DC250V	35			35				
	DC500V	20	35		20	35		50	
	DC750V		20	35		20	35	35	50
	DC1000V			20			20		35
Rated service short-circuit breaking capacity Ics (kA)		75% Icu							
Electrical life (times)		5000			5000			1000	
Mechanical life (times)	Without maintenance	10000			10000			5000	
	With maintenance	20000			20000			10000	

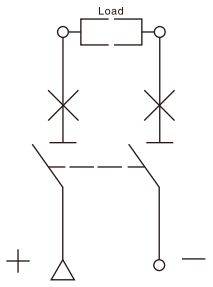
2. Main Technical Specifications

Shunt release	AC230V 400V DC24V~30V DC220V~250V
Under-voltage release	DC220~250V
Auxiliary contact	AC-15:AC400/0.3A DC-13:DC250V/0.15A
Alarm contact	AC-15:AC400/0.3A DC-13:DC250V/0.15A
Motor-driven operation device	AC110V 230V 400V DC24V~30V, DC110V~125V, DC220V~250V

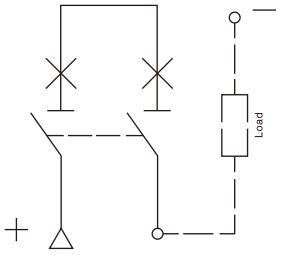
3. Wiring diagram

Two pole circuit breaker

C type connection

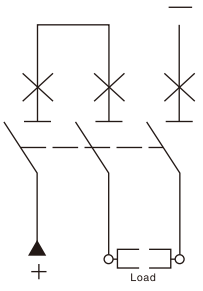


D type connection

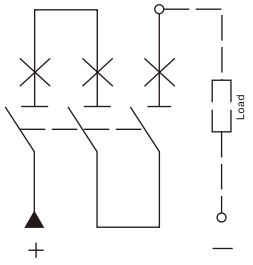


Three pole circuit breaker

E type connection

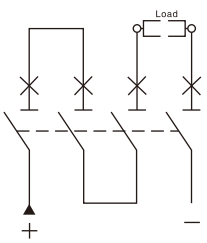


F type connection

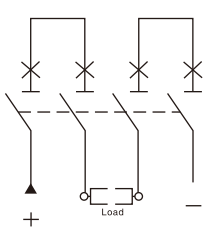


Four pole circuit breaker

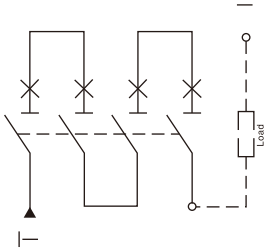
G type connection



H type connection



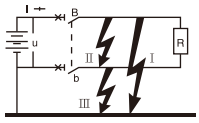
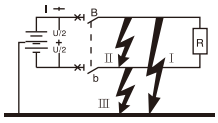
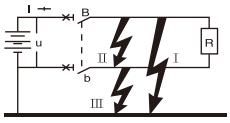
I type connection



Power system suitable for above wiring diagram

Rated working voltage	Power/Load wiring type						
	Ungrounding system		Negative pole grounding system				Core point grounding system
DC250V	C		-	D			C
DC500V	E	-	D	E	-	-	C
DC750V	E	H	E	F	G	I	H
DC1000V	-	H	-	-	G	I	H

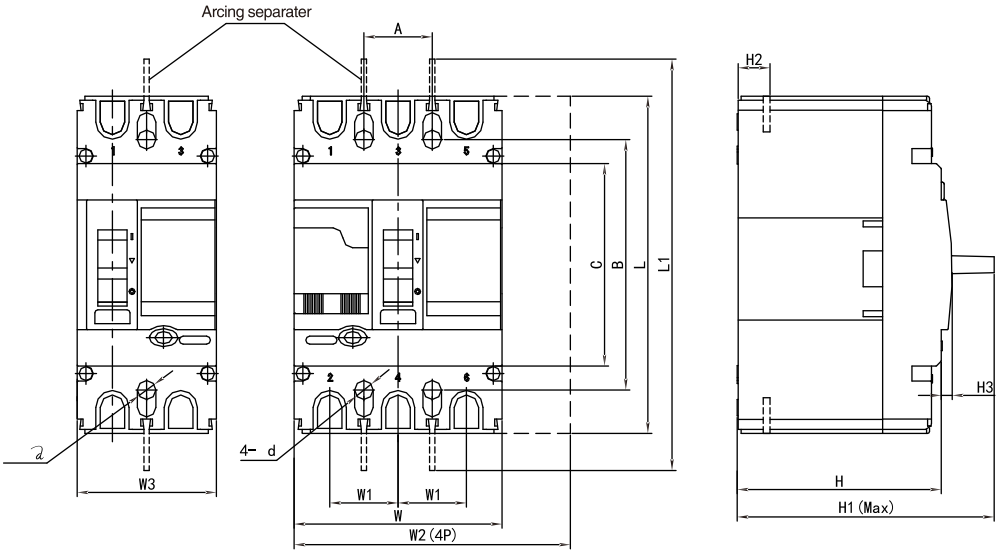
4. Application in DC Grounding system

System catelogy		Grounding system		No grounding system
		Negative pole grounding	Core point grounding	
All of fault category				
Fault effect	Fault I	Producing the highest short–circuil current Breaking the positive pole contact connected to power	U/2voltage,producing the highest short–circuil current effect Breaking the positive pole contact connected to power	No effect
	Fault II	Producing the highest short–circuil current But the contaets in series are all breaking	Producing the highest short–circuil current But the contaets in series are all breaking	Producing the highest short–circuil current But the contaets in series are all breaking
	Fault III	No effect	the same as fault I, but breaking the negative pole contact connected to power	No effect
The most serious condition		Fault I	Fault I and fault III	Fault II
Breaking pole condition		Can be in series on the positive pole, breaking both poles	With U/2, use breaking highest short–circuit current to each pole	Breaking both poles

Wiring conduct selection

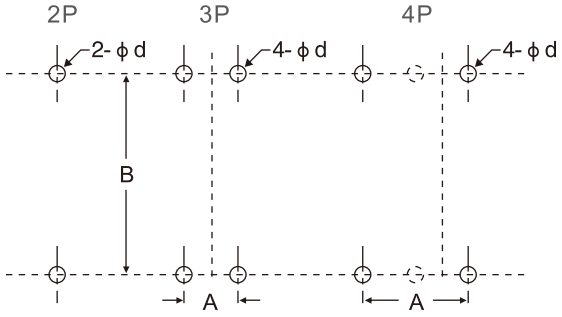
Rated current (A)	Section area (mm^2)	Rated current (A)	Section area (mm^2)
16, 20	2.5	125, 140	50
25	4	160	70
32	6	180, 200, 225	95
40, 50	10	250	120
63	16	315, 350	185
80	25	400	240
100	35		

5. Outline and Installation Dimension (mm)



Two pole　　Three pole/four pole

Remarks:The arcing separaters are only installed between the phase lines



Type		AM1DC–100			AM1DC–250			AM1DC–400	
		2P	3P	4P	2P	3P	4P	3P	4P
Outline dimensions	C	87.5			102			129	
	H	87			103			105	
	H1	105			127			155	
	H2	24			24			38	
	H3	4			5.5			6.5	
	L	150			165			257	
	L1	250			360			457	
	W	75			107			150	
	W1	30			35			48	
	W2	100			142			198	
	W3	50			75			/	
Installation dimensions	A	/	30	60	/	35	70	44	88
	B	129			126			194	
	Φd	4.5			4.5			7	

AM1L Series Earth Leakage Circuit Breaker

AM1L-125L/4300A

AM1L-250L/4300A

AM1L-400L/4300A

AM1L-630L/4300A

1. Application

AM1L series earth leakage circuit breaker is one of the new type earth leakage breakers which has been developed by the company using international advanced design and manufacturing technology. Suitable for a line of AC50/60Hz, rated voltage up to 400V, rated current 16A to 630A. and is acted as infrequently changeover of circuit or infrequent starting of motor.The breaker has overload, short-circuit and under-voltage protective function, which can protect the circuit and the power equipment against damage, meanwhile, it can provide protection to these fire risk that caused by these long-time existed grounding fault that can not be detected by the over-current protection.

This breaker can be installed vertically(upright) or horizontally(transverse).

The wiring of the breaker can not be in adverse direction, that means power supply line must be connected to terminal 1,3 and 5,and the load line connected to terminal 2,4 and 6.

The rated residual operating current I △ n and the maximum breaking time can be adjusted on site according to practical condition.

The leakage protection module still can work normally when the phase voltage reduced to 50V. It has the same overall size with the AM1 series breakers, which make the installation more exchangeable.

The breakers are suitable for isolation, its symbol are: —/|×—

The breakers comply with the demands of the following standards:

IEC60947-1 and GB/T 14048.1 General

IEC60947-2 and GB 14048.2 Low voltage breakers

IEC60947-4 and GB 14048.4 Contactors and motor starters

IEC60947-5.1 and GB 14048.5 Electrical equipments of electromechanical control circuit

2. Main Technical Specifications

Table 1

Type		AM1L-100			AM1L-225			AM1L-400		AM1L-630	
Frame current Inm(A)		100			225			400		630	
Rated current In(A)		(10)16,20,25,32, 40,50,63,80,100			100, 125, 160, 180, 200, 225			225, 250, 315, 350,400		400, 500, 630	
Pole number		3		4	3		4	3	4	3	4
Rated insulation voltage Ui(V)		AC800									
Rated working voltage Ue(V)		AC400									
Rated impulse with-stand voltage Uimp(V)		8000									
Arc-over distance(mm)		≥50									
Breaking capacity grade		M	H		M	H		M		M	
Limiting short-circuit breaking capacity Icu (kA)	AC400V	50	85	50	50	85	50	65		65	
Service short-circuit breaking capacity Ics(kA)	AC400V	35	50	35	35	50	35	42		42	
Rated residual operating current I △ n(mA)	Non-delay type	100/300/500									
	Delay type	100/300/500								300/500/1000	
Rated residual non-operating current I △ no(mA)		1/2 I △ n									
Operation performance (time)	Electrified	1500			1000			1000		1000	
	Unelectrified	8500			7000			4000		4000	

Note: According to the pole number of product, it classifies three and four poles. The neutral pole (N-Pole) of the four-poles products has four types:

Type A: N-pole without over-current release unit, it has been connected all the time, not closing and opening with the other three poles.

Type B: N-pole without over-current release unit, which closing and opening with the other three poles.

Type C: N-pole fixed with over-current release unit, which closing and opening with the other three poles.

Type D: N-pole fixed with over-current release unit, it has been connected all the time, not closing and opening with the other three poles.

1. The limiting breaking and arc-over distance includes horizontal and vertical installation.

2. If the three-pole breaker of this series is connected with three phase load, the load can not have neutral line, otherwise the breaker will have fault action.

3. If the three-pole breaker of this series is connected with single phase load, the phase line will be connected to the left pole, and the neutral line is connected to the right pole, the middle pole is blanket

3. Protection Characteristic

The thermal release of the breaker has again-time-limit property; the electromagnetic release is inst. Operation, its property see table 2(for distribution),table 3 (motor protection).

Table 2

Rated current of release(A)	Thermal release (ambient temperature +40°C)		Electromagnetic release tripping current(A)
	1.05In(cold state) non-trip time (h)	1.03In(hot state) trip time (h)	
10 ⩽ In ⩽ 63	1	1	10In ± 20%
63 ⩽ In ⩽ 125	2	2	
125 ⩽ In ⩽ 630	2	2	5In ± 20% 10In ± 20%

Table 3

Rated current of release	Thermal release (ambient temperature +40°C)				Electromagnetic release tripping current(A)
	1.0In (cold state) non-trip time (h)	1.20In(hot state) trip time(h)	1.50In(thermal state) trip time	7.2In(cold state) trip time	
10 ⩽ In ⩽ 400	2	2	8min	6s<Tp ⩽ 20s	12In±20%

4. Residual Current Operating Time of Earth Leakage Circuit Breaker

4.1 Non-delay type operation characteristics see table 4(I △n ⩽ 30mA should be Non-delay type)

Table 4

Rated current		I △n	2I △n	5I △n	10I △n
Non-delay type	Max.breaking time(s)	0.3	0.15	0.04	0.04

Note: [a]to I △n ⩽ 30mA earth leakage circuit breaker, 0.25A can instead of 5I △n
According to[a], adopt 0.25A, then 10 I △n is 0.5A.

4.2 Delay type operation characteristics see table 5

Limiting non-driven time of delay type earth leakage circuit breaker according to 2I △n, operation characteristics see table 5

Back panel connection

Table 5

Delay time (s)	Max. breaking time(s) at I △ n	Limiting non-driven time (s) at 2I △ n	Max. breaking time(s)	Max. breaking time(s) at 5I △ n	Max. breaking time(s) at 10I △ n
0.1	0.4	0.06	0.2	0.15	0.15
0.2	0.5	0.06	0.2	0.15	0.15
0.3	0.6	0.1	0.4	0.3	-
0.4	0.7	0.2	0.5	0.4	-
0.5	0.8	0.3	0.6	0.5	-
0.6	0.9	0.4	0.7	0.6	-
0.7	1.0	0.5	0.8	0.7	-

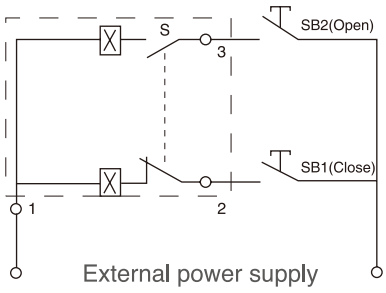
5 .Accessories of Circuit Breaker

5.1 The external accessories of the breaker

- **Electromagnetic operation device and Motor-driven operation device**

1) Wiring diagram of type CDM electromagnetic operation device(fitting AM1L-100,225) see the following drawing (wiring diagram of the external accessories of the breaker in the dotted frame)

Electromagnetic operation device

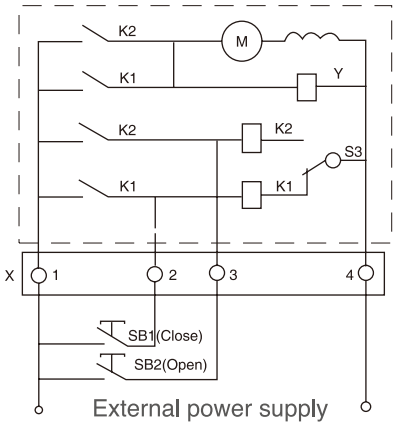


2) Wiring diagram of type CD motor-driven operation device (fitting AM1L-400,630) see belows (wiring diagram of the external accessories of the breaker in the dotted frame)

Code description: SB1, SB2 stand for push button.(provided by users themselves)
Number “1”、“2”、“3” stand for number of wiring terminals.

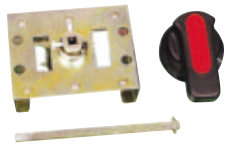
Voltage rating: AC230V、400V, DC 220V

Motor-driven operation device



Code description: SB1, SB2 stand for push button. (provided by users)
“X” stands for line connection terminals

Voltage rating: AC50Hz 230V、400V; DC220V



Rotary handle operation device

● **Rotary handle operation device**

The mechanism is used with moulded case circuit breaker to operate the draw-out panel. Power distribution panel and supply box outside the panel by turning the handle ,and to ensure the door of panel would not be openned when the breaker being on.

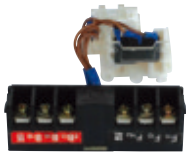
The hand-drive mechanism can be equipped with two types of operation one is “A” model square handle , the another is “B” model round handle.

5.2 The Internal Accessories of the Breaker

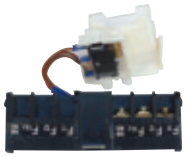
5.2.1 Release pattern and accessories code see following table

Under-voltage release

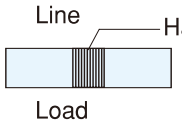
Shunt release



Alarm contact



Auxiliary contact



SHT: Shunt release; UVR: Under-voltage release;
AX: Auxiliary contact; AL: Alarm contact

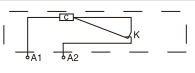
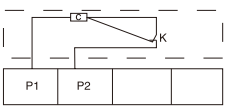
Release pattern and accessories code	Name \ Type	AM1L- 100, 225	AM1L-400	AM1L-630
200, 300	Without accessories	200: Magnetic release (only short circuit protection) 300: Thermal magnetic release(both overload and short circuit protection)		
208, 308	Alarm contact	AL	AL	AL
210, 310	Shunt release	SHT	SHT	SHT
220, 320	Auxiliary contact	AX	AX	AX
230, 330	Under-voltage release	UVR	UVR	UVR
228, 328	Auxiliary contact, Alarm contact	AL AX	AL AX	AL AX

5.2.2 The technical parameter and functions of the accessories

Accessory	Rated operating voltage (V)			
	AC50/60Hz		DC	
Shunt release Us	220(230)	380(400)	110	220
Under-voltage release Us	220(230)	380(400)		

Auxiliary contact and Alarm contact: Auxiliary contact is as same as Alarm contact , the technical parameter see following table

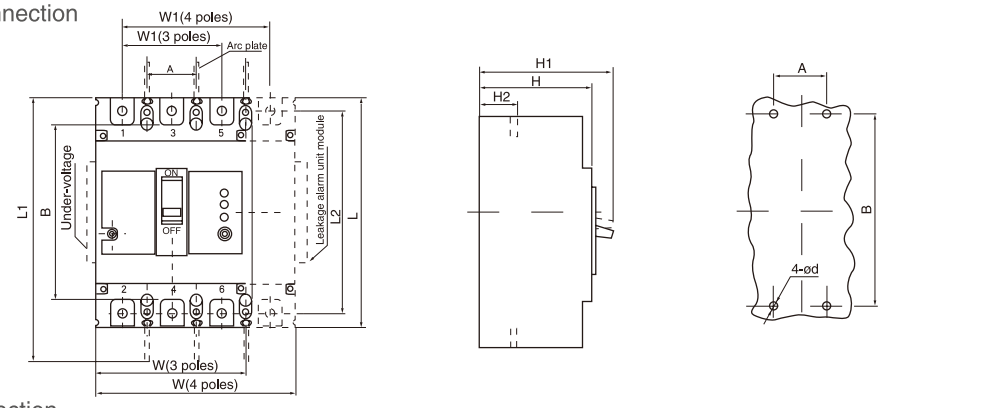
Rated thermal current Ith (A)	Rated operating current Ie(A)		Suited Frame Inm(A)
	AC380V	DC220V	
3	0.3	0.15	100, 225
3	0.4	0.15	400, 630

Accessory	Function	Wiring connection diagram
Alarm contact	Indicate circuit breaker at tripping	B14 B12 B11 The position of breaker at opening and closing
Auxiliary contact	Indicate circuit breaker at opening or closing	B14 B12 F11 The position of breaker at opening
Shunt release	The shunt release should make the breaker trip reliably when the operatiopn voltage is 70%-110% of rated control voltage	The micro switch will cut by itself when breaker open 
Under-voltage release	When Ue is 35%-70% of the rated control voltage, the under voltage release should make the breaker trip correctly When Ue is 85%-110% of the rated control voltage, the under voltage release should make the breaker close In case of Ue less than 35%of the rated control voltage should prevent the breaker from closing	

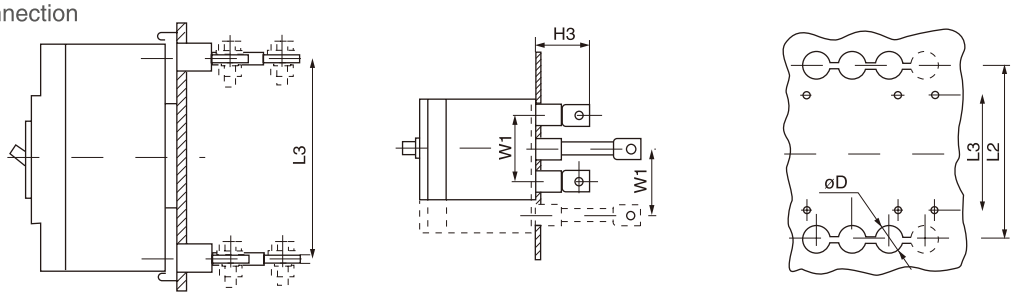
6. Outline and Installation Dimension(mm)

Type	Outline dimensions																			Installation dimensions		
	Front panel connection								Back panel connection			Plug-in connection										
	W	L	H	W1	L1	L2	H1	H2	L3	H3	D	L4	L5	H4	H5	H6	C	D	D1	A	B	d
AM1L-100M,H/3P	92	150	92	60	200	132	110	28.5	90	93	22	168	92	50	64	76	56	60	6.5	30	129	4.5
AM1L-100M,H/4P	122	150	92	90	200	132	110	28.5	90	93	22	168	92	50	64	76	56	90	6.5	30	129	4.5
AM1L-225M,H/3P	107	165	90	70	265	144	110	24	93	100	24	183	94	50	71.5	86.5	54	70	6.5	35	126	5.5
AM1L-225M,H/4P	142	165	103	105	265	144	110	24	93	100	24	183	94	50	71.5	86.5	54	105	6.5	35	126	5.5
AM1L-400M,H/3P	150	257	106.5	96	441	224	146.5	38	164	108.5	32	279	-	60	83.5	106.5	70	105	8.5	44	194	7
AM1L-400M,H/4P	198	257	106.5	144	441	224	146.5	38	164	108.5	32	279	-	60	83.5	106.5	70	129	8.5	44	194	7
AM1L-630M,H/3P	210	280	115.5	145	480	243	155	45.3	158	84	48	296	-	61	97	148	140	143	10	70	243	7
AM1L-630M,H/4P	280	280	115.5	210	480	243	155	45.5	158	84	48	296	-	61	97	148	140	210	10	70	243	7

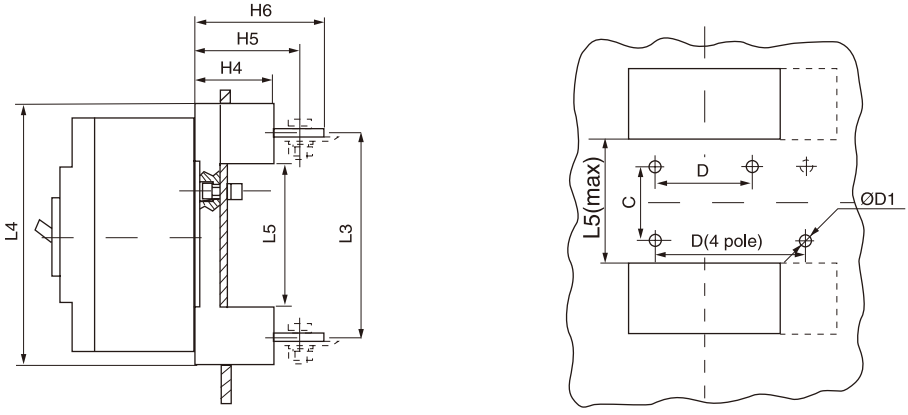
Front panel connection



Back panel connection



Plug-in connection



AM1/MS1-40L Series Moulded Case Circuit Breaker

AM1/MS1-40L

1. Application

AM1/MS1 series molded case circuit breaker is Economic type of AM1 Type. It is suitable to the circuit of AC 50Hz, rated voltage up to 380V, rated current up to 63A, used as the protection of over load, short circuit and the non frequent start of motor. Complies with GB140048.2, GB14048.4, IEC60947-2 and IEC60947-4 standards.

AM1/MS1 MCCB operation mechanism has obviously close and break swiftly. The contact is AgZno, the contact resistance is small, abrasion resistant, anti fusion welding, the long time delay release adopt oil damping hydraulic type release, ideal time-inverse protection feature can be supplied.

2. Main Technical Specification

Type		AM1/MS1-40	AM1/MS1-63
Un(V)		AC 380/220	
Inm(A)		40	63
Pole		3	
In(A)		6,10,16,20,25,32,40	50,63
Electrical life(times)	With load	1500	
	No load	8500	
	Total	10000	
Operation Time/Hour		120	
Over current tripping feature	1.05IH	Not trip within 1 hour	Cool status
	1.3In	Trip within 1 hour	Thermal status
	3.0In	Return time ≥2s	Cool status
	10IN	≤2s trip	Cool status

Remark: Frame current>63A,default tripping time or not tripping time is 2 hour.

3. Normal Working Conditions and Installation Condition

1.Maximum ambient air temperature does not exceed 40°C, and the minimum is not less than -5°C. The average temperature does not exceed 35°C within 24h;

Note 1: When the lower limit is -10°C or -25°C, users should state to manufacturer when ordering.

Note 2: When the upper limit is more than +55°C or the lower limit is less than -25°C, users shouldnegotiate with the manufacturer.

2.The altitude of installation site does not exceed 2000m;

3.Relative humidity of the surrounding air temperature is less than 50% at 40°C. At a lower temperature, it can be a higher relative humidity. For example at 20°C, it is up to 90%. When it occurs the occasional condensation due to temperature changes, appropriate measures should be taken.

4.Pollution degree: Class 3;

5.Installation category: Main circuit of circuit breaker is ClassIII. Control and auxiliary circuits are ClassII.

AM2 Series Moulded Case Circuit Breaker

AM2-100N/3P

AM2-250N/3P

AM2-400N/3P

AM2-630N/3P

1. Application

AM2 series moulded case circuit breaker is one of the breakers which adopts international advanced design, manufacture technology to develop. The rated insulating voltage is 750V, suitable for the circuit of AC 50/60Hz,rated working voltage 690V or below,rated working current is 12.5A to1600A and used in distributing electric energy,and infrequently breaking in the normal conditions , protecting the circuit & equipment from overload & under voltage, circuit breaker with rated frame current 400A or below,can be used in mousecage motor's infrequent start, breaking during working, protecting motor from overload, short circuit & undervoltage,the product conforms to IEC60947-2 standard.

2. Main Technical Specifications

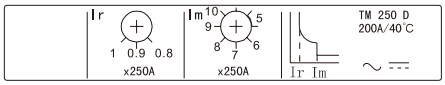
Table 1

Type	Pole	Rated insulating voltage (V)	Rated operating voltage (V)	Rated ultimate short circuit breaking capacity Icu (kA) at 380/415V	Rated service short circuit breaking capacity Ics at 380/415V(kA)	Operation performance		Utilization category
						ON	OFF	
AM2-100N	3, 4 pole	750	690 or below	25	25	1500	8500	A
AM2-100H				70	70			
AM2-100L				150	150			
AM2-160N				36	36	1000	7000	
AM2-160H				70	70			
AM2-160L				150	150			
AM2-250N				36	36	1000	7000	
AM2-250H				70	70			
AM2-250L				150	150			
AM2-400N				45	45	1000	4000	
AM2-400H				70	70			
AM2-400L				150	150			
AM2-630N				45	45	1000	4000	
AM2-630H				70	70			
AM2-630L				150	150			
AM2-1250N	3 pole			50	37.5	1000	4000	
AM2-1600N				50	37.5			

Note:1. The N-pole breaker which closing and opening with the other three poles no protection.

3 Main Technical Parameter of Trip Units

Thermal magnetic release

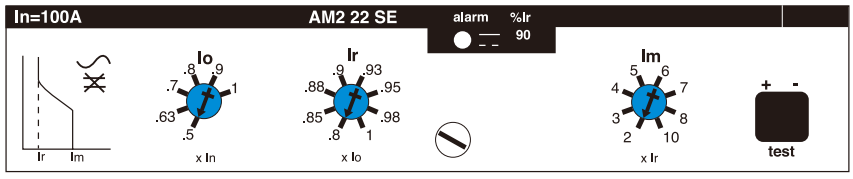


Type	Rated current In(A)	Note
AM2-100	12.5,16,20,25,32,40,50,63,80,100	T adjustable (0.8~1In) M adjustable (5~10In)
AM2-160	16,20,25,32,40,50,63,80,100,125,160	
AM2-250	160、180、200、225、250	
AM2-400	315、350、400	
AM2-630	400、500、630	
AM2-1250	800、1000、1250	T adjustable (0.8~1In) M fixed
AM2-1600	1000、1250、1600	

● **Electronic release**

AM2 22SE: protection of low-voltage distribution networks for AM2-100\160\250

AM2-250N/4P

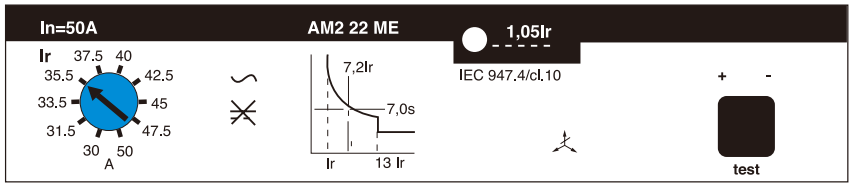


1. Overload protection with adjustable threshold
2. Short-circuit protection with adjustable threshold
3. Load indication : light at 90% of Ir setting threshold;
   Flashing at 105% or more of Ir setting threshold

Type	Rated current In(A)	Note
AM2-100	40、100	Ir=0.4…1 × In(adjustable 48 setting) Tripping between 1.05…1.3 × Ir (IEC60947-2) (**Long-time overload protection**) Im=2-3-4-5-6-7-8-10 × Ir (**Short-circuit protection**)
AM2-160	40、100、160	
AM2-250	40、100、160、250	

AM2 22ME: protection of motor for AM2-100\160\250

AM2-630N/4P

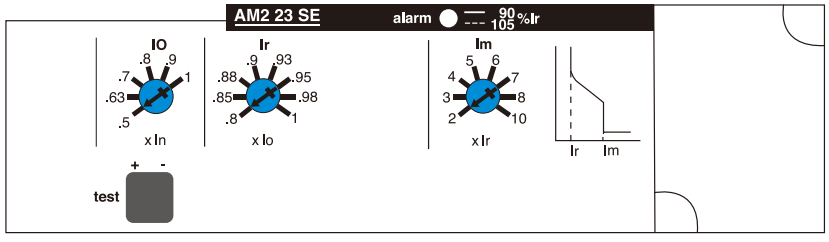


1. Overload protection with adjustable threshold, as defined by IEC60947-4 (2) tripping class 10
2. Short-circuit protection with fixed threshold (13xIr)
3. phase failure protection (tripping time delay between 3.5s-6s)
4. Load indication : dark less than 105% of Ir setting threshold;
   Flashing at 105% or more of Ir setting threshold

Type	Rated current In(A)	Note
AM2-100	40、50、80、100	Ir=0.6-0.63-0.67-0.71-0.75-0.80-0.85-0.90-0.95-1 × In
AM2-160	40、50、80、100、150	
AM2-250	40、50、80、100、150、220	

AM2 23SE: protection of low-voltage distribution networks for AM2-400\630

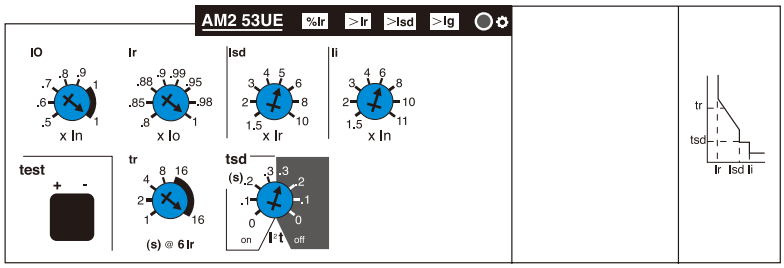
AM2-1600N



1. Overload protection with adjustable threshold
2. Short-circuit protection with adjustable threshold
3. Load indication : light at 90% of Ir setting threshold;
   Flashing at 105% or more of Ir setting threshold

Type	Rated current In(A)	Note
AM2-400	400	Ir=0.4…1 × In(adjustable 48 setting) Tripping between 1.05…1.3 × Ir (IEC60947-2) (**Long-time overload protection**) Im=2-3-4-5-6-7-8-10 × Ir (**Short-circuit protection**)
AM2-630	630	

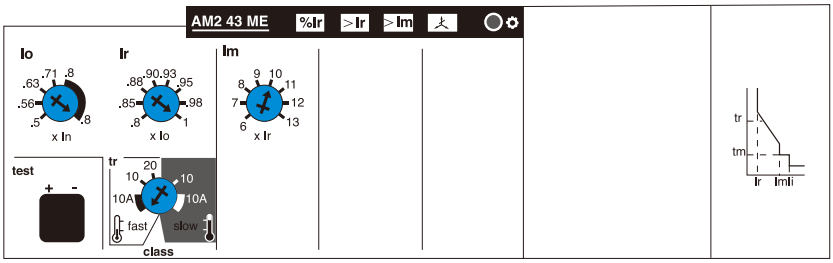
AM2 53UE: protection of low-voltage distribution networks for AM2-400\630



1. Overload protection with adjustable threshold, as defined by IEC60947-2
2. Short-circuit protection with adjustable threshold
3. Instantaneous short-circuit protection
4. Earth fault protection with adjustable threshold
5. Load indication : light at 90% of Ir setting threshold;
   Flashing more than Ir setting threshold
6. Fault indication
   LEDs indicates the type of fault that caused tripping
   Overload (**LT** protection) or abnormal component temperature **(>Ir)**;
   Short-circuit (**ST** or instantaneous protection)**(>Im)**;
   Earth fault (if earth fault protection option is present)**(Ig)**;
   Microprocessor malfunction (both **(>Ir)** and **(>Im)** LEDs go on ,plus the **(Ig)** LEDs if earth fault protection option is present)
   Battery powered. Spare battery are supplied in an adapter box. When a fault occurs , the LED indicating the type of fault ,lights for about 10 minutes . The information is however stored in memory . The LED can be illuminated by pressing the test pushbutton. The LED automatically goes off and the memory is cleared when the circuit breaker is reset .

Type	Rated current In(A)	Note
AM2-400	400	Ir=0.4…1 × In(adjustable 48 setting) Tripping between 1.05…1.3 × Ir (IEC60947-2) at 6 × Ir Trip time: 1s, 2s, 4s, 8s, 16s(adjustable) (**Long-time overload protection**) Isd=1.5-2-3-4-5-6-7-8-10 × Ir Trip time: 0s, 0.1s, 0.2s, 0.3s adjustable+I^2t (**Short-circuit short time delay protection**) Ii=1.5-2-3-4-6-7-8-10-11 × Ir (**Instantaneous short-circuit protection**) Ig=0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1 × Ir Trip time: 0.1s, 0.2s, 0.3s, 0.4s adjustable+I^2t (**Earth fault protection**) (**If option is present**)
AM2-630	630	

AM2 43ME: protection of motor for AM2-400\630



1. Overload protection with adjustable threshold, as defined by IEC60947-4 (2) tripping class 10A,10 and 20
2. Short-circuit protection with adjustable threshold (6...13xIr)
3. Phase failure protection (built-in electronic release: operates unbalanced single-phase current at 40% and more than)(tripping time delay 4s±10%),as defined by IEC60947-4.1
4. Load indication : Flashing more than Ir setting threshold
5. Fault indication

LEDs indicates the type of fault that caused tripping

Overload (**LT** protection) or abnormal component temperature **(>Ir)**;

Short-circuit (**ST** or instantaneous protection)**(>Im)**;

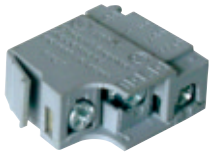
Phase failure **(right LED)**;

Microprocessor malfunction (**(>Ir) (>Im)** and phase failure LEDs all go on)

Battery powered. Spare battery are supplied in an adapter box. When a fault occurs ,the LED indicating the type of fault ,lights for about 10 minutes . The information is however stored in memory . The LED can be illuminated by pressing the test pushbutton. The LED automatically goes off and the memory is cleared when the circuit breaker is reset .

Type	Rated current In(A)	Note
AM2-400	400	Ir=0.4…1 × In(adjustable 48 setting) Trip degree: class 10A, 10,20(IEC60947-4) (**Long-time overload protection**) Im=6-7-8-9-10-11-12-13 × Ir (**Short-circuit protection**)
AM2-630	630	

Under-voltage release
Shunt release

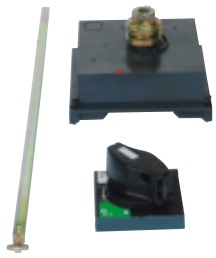


Auxiliary contact
Alarm contact

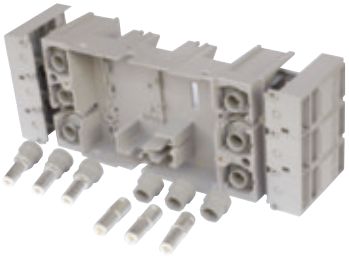
4. Accessories

Accessories	Rated operating voltage	Consumption		For type
		Pick-up	Seal-in	
Shunt release (MX)	24V 100V 220/230V 380/400V	<10VA	<5VA	AM2-100~630
Under-voltage release(UN)	220/230V 380/400V	<10VA	<5VA	

Accessories	Rated operating voltage	Rated operating current		For type
		AC12	AC15	
Auxiliary contact (OF)	380/400V	6	3	AM2-100~630
Alarm contact(AL)	380/400V	6	3	



Rotary handle



Plug-in base

Rotary handle

● **Direct rotary handle**

Degree of protection:IP40

Function: 1) suitability for isolation

2) indication of three positions 0(off) I(on) and tripped

3) press “push to trip” button, can trip-free

4) visibility of and access to trip unit settings

5) the circuit breaker can be locked in the off position by one to three padlocks , diameter 5 to 8mm(not supplied)

● **Extended rotary handle**

Degree of protection:IP55

Function: 1) Suitability for isolation

2) Indication of three positions 0(off) I(on) and tripped

3) Visibility of and access to trip unit settings when the door is open

4) Door opening prevented when circuit breaker is on

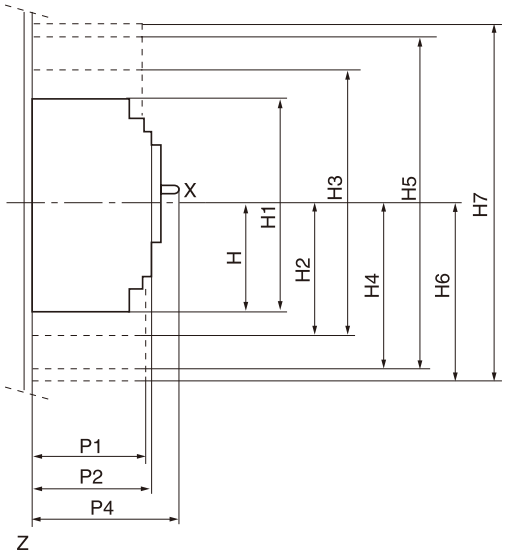
5) The circuit breaker can be locked in the off position by one to three padlocks , diameter 5 to 8mm(not supplied).Locking prevents opening of the switchboard door

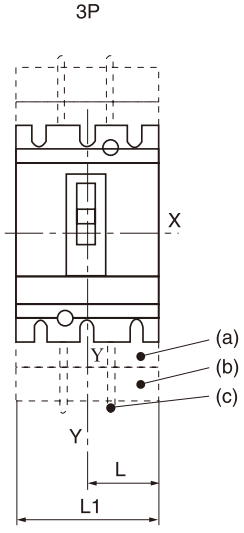
5. Installation: Circuit breaker may be mounted vertically, horizontally or flat on their back without any derating of characteristics.

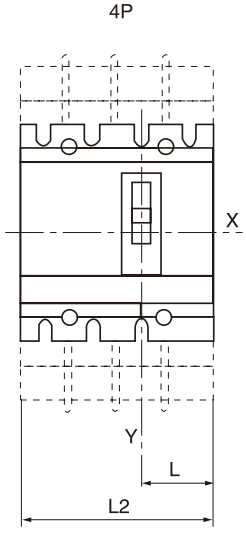
6. Fix: Mounting on backplate , mounting on rails

7. Connection: Front panel connection , back panel connection , plug-in connection

8. Outline and Installation Dimension

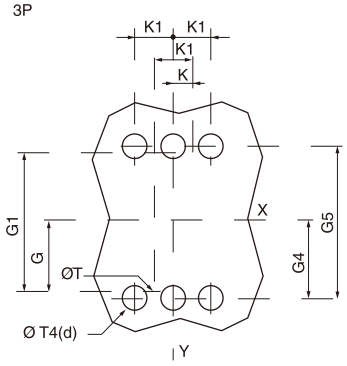




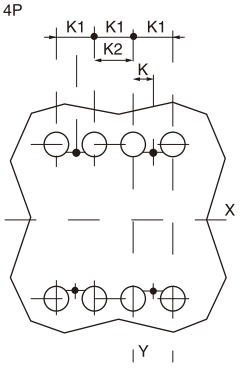


Mounting on backplate

3P

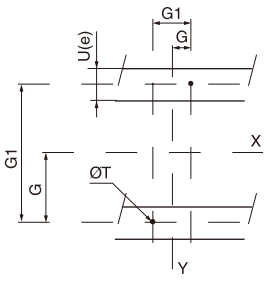


4P

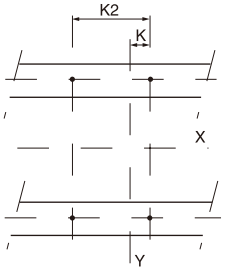


Mounting on rails

3P

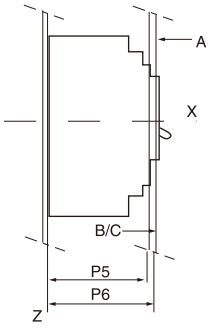


4P

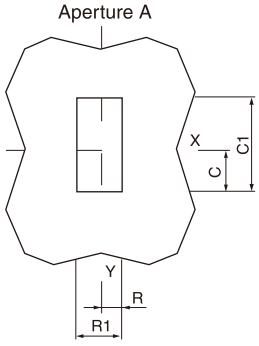


Aperture on a front panel

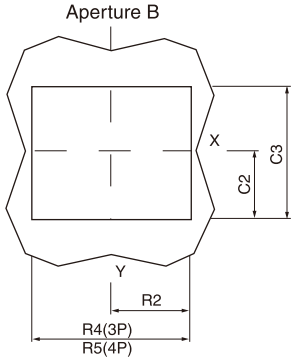
Fitting to fixed and plug-in circuit breaker



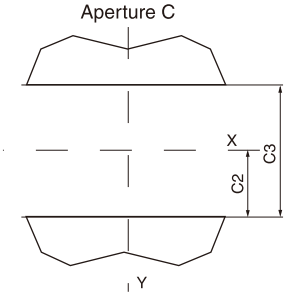
Aperture A



Aperture B



Aperture C



AM2-100~630

Unit: mm

Type	C	C1	C2	C3	G	G1	G4	G5	H	H1	H2
AM2 100/160/250N/H/L	29	76	54	108	62.5	125	70	140	80.5	161	94
AM2 400/630N/H/L	41.5	116	92.5	184	100	200	113.5	227	127.5	255	142.5
AM2 1250/1600N									100	255	

Type	H3	H4	H5	H6	H7	K	K1	K2	L	L1	L2	P1	P2	P4	P5
AM2 100/160/250N/H/L	188	160.5	321	178.5	357	17.5	35	70	52.5	105	140	81	86	111*	83
AM2 400/630N/H/L	285	240	480	237	474	22.5	45	90	70	140	185	95.5	110	168	107
AM2 1250/1600N						99.5	199	209	99.5	199	269	107.5		205	

Type	P6	R	R1	R2	R4	R5	ØT	ØT4	(Ue)
AM2 100/160/250N/H/L	88	14.5	29	54	108	143	6	22	⩽ 32
AM2 400/630N/H/L	112	31.5	63	71.5	143	188	6	32	⩽ 32
AM2 1250/1600N							6.5		

* P4=126 is suitable for AM2 250N/H/L

AM3 Series Moulded Case Circuit Breaker

AM3-125L/3P

AM3-250L/3P

AM3-400L/3P

AM3-630L/3P

1. Application

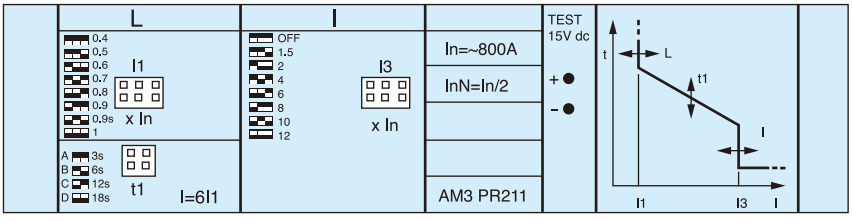
AM3 series moulded case circuit breaker,is applicable for the circuit of AC 50/60Hz,rated insulation voltage 690V(AM3-125 500V),rated operating voltage AC 690V or below ,rated operating current 12.5-1600A, for distribute energy of electric and infrequently making and breaking circuit in normal conditions.The circuit-breakers are provided with the function of the protection against overload,short circuit and under-voltage.The circuit breakers comply with standard of IEC60947-2.The circuit-breakers are double insulating (Inm=250A or above), the control circuit of the accessories is set apart with the main circuit , and doesn't need to open the cover of the circuit breaker when install the accessories.

2. Specification

Table 1

Type	Pole number	Rated insulating voltage (V)	Rated operating voltage (V)	Ultimate short circuit breaking capacity Icu(kA)		Rated short-circuit service breaking capacity Ics(%Icu)	Utilization category
				AC380V (400)	AC660V (690)		
AM3-125L	1,2, 3,4	500	500	25	-	50%	A
AM3-160L	3, 4	690	690 and below	35	8	75%	
AM3-160M				50	10	75%	
AM3-250L		800		35	14	100%	
AM3-250M				65	18	75%	
AM3-400L				35	18	100%	
AM3-400M				65	22	100%	
AM3-630L				35	20	100%	
AM3-630M				50	22	100%	
AM3-800L				35	20	100%	
AM3-800M				50	22	100%	
AM3-1250L	3			50	20	100%	
AM3-1600L							

3. Main Technical Parameter of Trip Units (See Table 2)



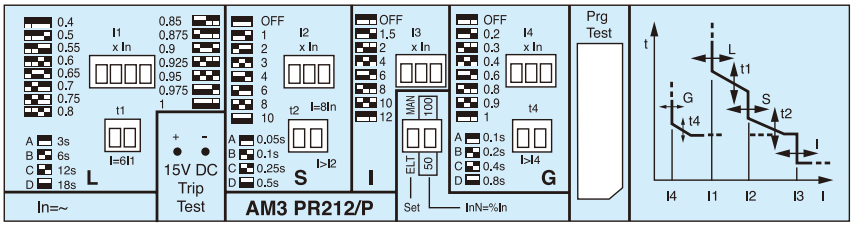


Table 2

Type	Thermal magnetic release		Electronic release	
	Rated current In(A)	Note	Rated current In(A)	Note
AM3-125	12.5,16,20,25,32,40, 50,63,80,100,125	T fixed M fixed	-	
AM3-160	16,20,25,32,40,50, 63,80,100,125,160	T adjustable (0.7~1In) M fixed	-	
AM3-250	100,125,160,180, 225,250	T adjustable (0.7~1In) M fixed	-	
AM3-400	225,250,315, 350,400	T fixed or adjustable (0.7~1In) M fixed	320,400	I1=0.4…1 × In AM3 PR211(L-LI) I1=0.4…1 × In AM3 PR212(LSI-LSIG) Tripping between 1.05…1.3 × I1 (IEC60947-2) I^2t=constant (**Long-time overload protection**) I2=1-2-3-4-6-8-10 × In t2=0.05s, 0.1s, 0.25s, 0.5s adjustable (**Short-circuit short time delay protection**) I3=1.5-2-4-6-8-10-12 × In (**Instantaneous short-circuit protection**) I4=0.2-0.3-0.4-0.6-0.8-0.9-1 × In t4= 0.1s, 0.2s, 0.4s, 0.8s adjustable (**Earth fault protection**)
AM3-630	400,500,630	T fixed M fixed	630	
AM3-800	630,700,800	T fixed M fixed	800	
AM3-1250	-	-	800,1000, 1250	
AM3-1600	-	-	1000,1250, 1600	

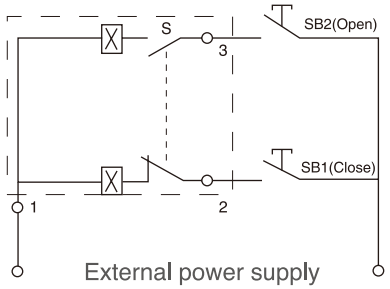
Note: T-thermal M-magnetic L-long time S-short time relay I-instantaneous G-earth fault
AM3-125/160 In=12.5,16,20,32,40 magnetic protection that is fixed at 500A.

4. Accessories

4.1 The external accessories of the breaker

- **Electromagnetic operation device and Motor-driven operation device**

1) Wiring diagram of type CDM electromagnetic operation device(fitting AM3-125,160,250) see the following drawing (wiring diagram of the external accessories of the breaker in the dotted frame)

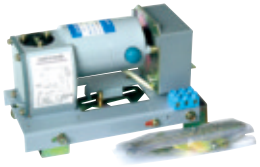


Code description: SB1, SB2 stand for push button.(provided by users themselves)
Number “1”、“2”、“3” stand for number of wiring terminals.
Voltage rating: AC50Hz 230V、400V, DC 220V

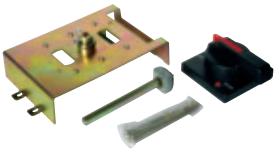
2) Wiring diagram of type CD motor-driven operation device (fitting AM3-400、630、800) see belows (wiring diagram of the external accessories of the breaker in the dotted frame)

Plug-in base

Electromagnetic operation device

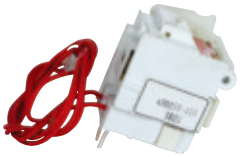


Motor-driven operation device

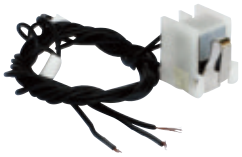


Rotary handle

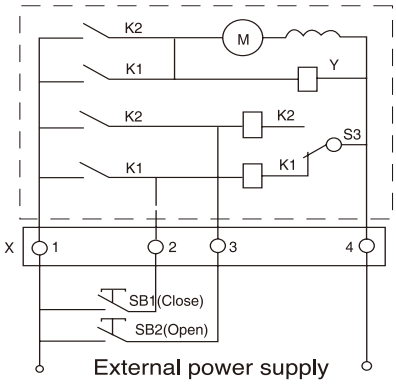
Shunt release



Under-voltage release



Alarm contact



Code description: SB1, SB2 stand for push button. (provided by users)
"X" stands for line connection terminals
Voltage rating: AC 230V、400V; DC220V

● **Rotary handle**

Economic extended rotary handle
Degree of protection:IP30
Function: 1) With indication of isolation
2) Indication of three positions 0(off) I(on) and tripped
3) Door opening prevented when circuit breaker is on

4.2 The internal accessories of the breaker

● **Under-voltage release**

Us: AC 400V, 230V
When the operation voltage is 35%~70% of the rated voltage, the under-voltage release should make the breaker trip correctly.
When the operation voltage is 85%~110% of the rated voltage, the under-voltage release should make the breaker close.
In case of the operation voltage less than 35% of the rated voltage, the under-voltage should prevent the breaker from closing.
Note: Only the under-voltage release should be energized in advanced, the breaker could be recramped and turned-on, otherwise the breaker will be damaged.

● **Shunt release**

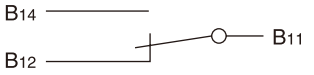
Us: AC230V 400V; DC110V 220V
The shunt release should make the breaker trip reliably when the operation voltage is 70%~110% of the rated control voltage

● **Auxiliary Contact**

When the breaker is in "off"	F14 F12 F11 F24 F22 F21 F14 F12 F11	Size 2N/O+2N/C 1N/O+1N/C
When the breaker is in "on"	When the breaker is in "off", the contacts switch from "close" to "open". When the breaker is in "off", the contacts switch from "open"to close"	

Auxiliary Contact

● **Alarm contact**

The position of the breaker in “off” or “on”	
The position of the breaker in “free release” (alarm)	B_{11} and B_{12} switch from “close” to “open”, status of B_{11} and B_{14} switch from “open” to “close”

Auxiliary contact and Alarm contact: Auxiliary contact is as same as Alarm contact , the technical parameter(see table 3)

Table 3

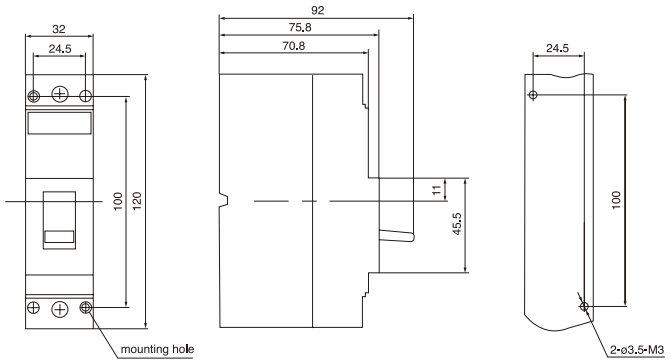
Rated heating current Ith (A)	Rated operating current Ie(A)		Suited Frame Inm(A)
	AC 380V	DC 220V	
3	0.3	0.15	125, 160
3	0.4	0.15	250, 400
3	0.4	0.15	630, 800,1250, 1600

5. Installation: Circuit breaker may be mounted vertically, horizontally or flat on their back without any derating of characteristics.

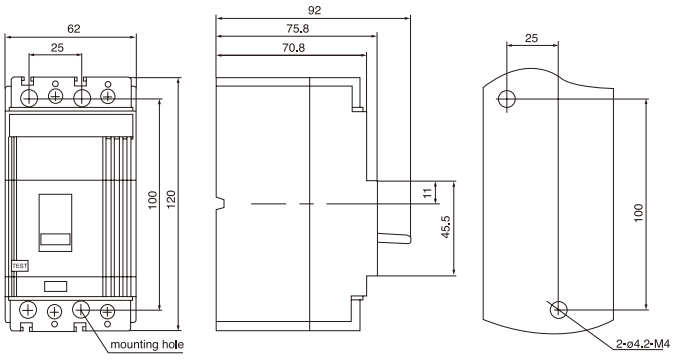
6. Fix: Mounting on backplate.

7. Connection: Front panel connection , black panel connection , plug-in connection

8. Outline and Installation Dimension

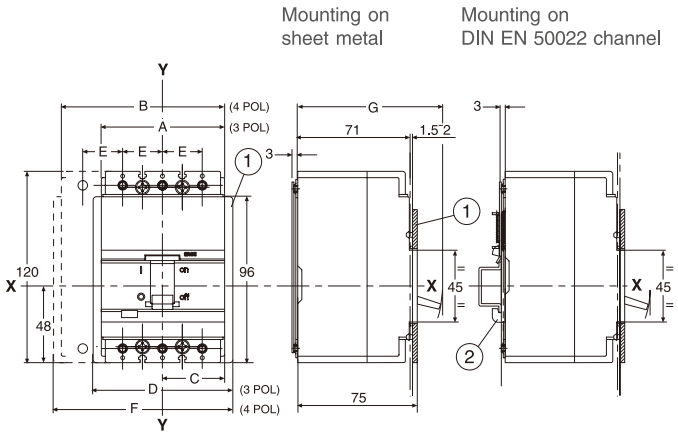


AM3-125 1P

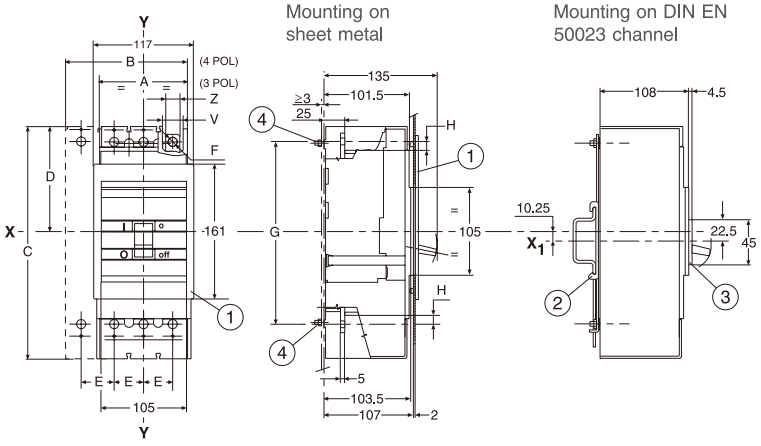


AM3-125 2P

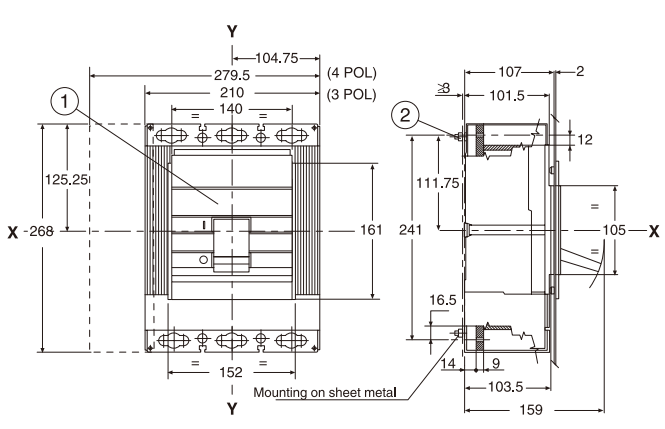
8. Outline and Installation Dimension (mm)



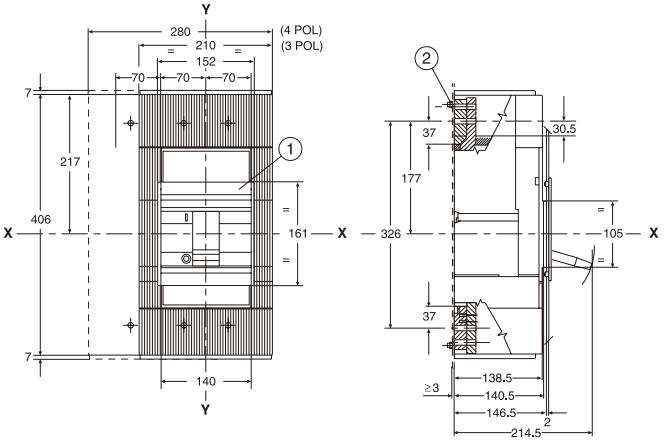
	A	B	C	D	E	F	G
AM3-125	78	103	39	91	25	116	91
AM3-160	90	120	45	103	30	133	93



	A	B	C	D	E	F	G	H
AM3-250	105	140	170	87.25	35	ø8	143	10
AM3-400	140	183.75	254	125.25	143.75	ø10	218	12



AM3-630/AM3-800



AM3-1250/AM3-1600

AM9 Series Moulded Case Circuit Breaker

AM9-63S

1. Application

AM9 series MCCB is suitable for industrial or commercial power and lighting with AC50/60Hz, rated working voltage up to AC600V/DC250V, rated current up to 630A. It's a kind of economical breaker with the characters of stable and reliable function, beautiful appearance, small size and long life. It can be used for conversion of line and infrequently starting motor. It can also be attached to install the accessories which have protection function for avoiding lossvoltage, undervoltage. The product can connect line with front board and back board, it also can be equipped with hand-operating apparatus or motor-operating apparatus to control in a remote distance.

AM9-103S

2. Specification

The rated insulation voltage for this series of circuit breaker is 690V, the rated operating voltage is 600V, the rated frequency is 50/60Hz, the other rated values for the main circuit.

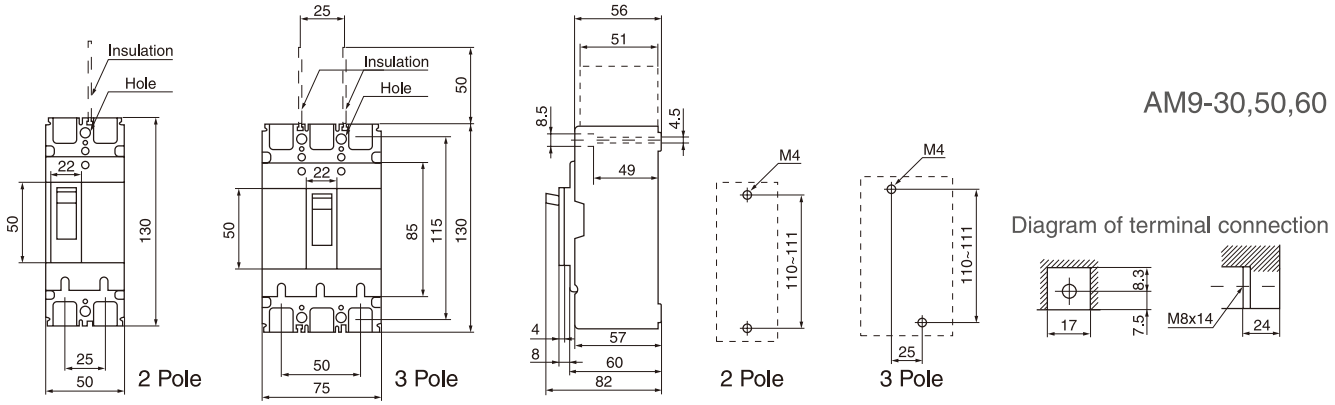
AM9-203S

Type	2pole	AM9-32E	AM9-52E	AM9-52S	AM9-62E	AM9-62S
	3pole	AM9-33S	AM9-53E	AM9-53S	AM9-63E	AM9-63S
Frame size(AF)		30	50		60	
Rated current(A)		5,10,15,20,30	5,10,15,20,30,40,50		60	
Rated operational voltage(V)Ue (50/60Hz)		600	600	600	600	600
Rated insulation voltage(V)Ui(50/60Hz)		690	690	690	690	690
Rated impulse withstand voltage(kV)Uimp		6	6	6	6	6
Ultimate breaking capacity (kA,Icu AC 50/60Hz)	220V/240V	10	10	25	10	25
	380V	7.5/5	7.5/5	14/10	7.5/5	14/10
	415V	7.5/5	7.5/5	14/10	7.5/5	14/10
	440/460V	5	5	10	5	10
	480/500V	2.5	2.5	7.5	2.5	7.5
	600V	2.5	2.5	5	2.5	5
Utilisation category		A	A	A	A	A
Endurance	Mechanical	8500	8500	8500	8500	8500
	Electrical	1500	1500	1500	1500	1500

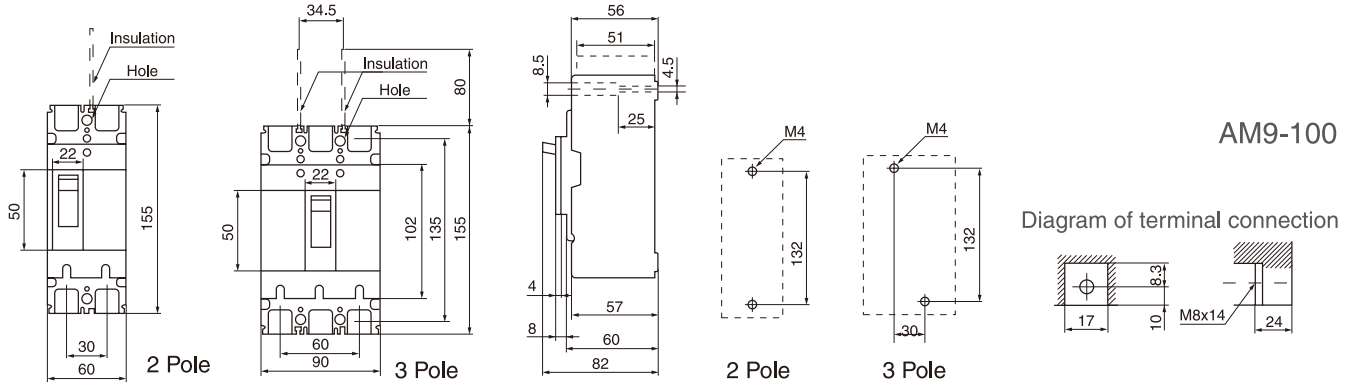
AM9-403S

Type	2pole	AM9-102E	AM9-102S				
	3pole	AM9-103E	AM9-103S	AM9-203E	AM9-203S	AM9-403E	AM9-403S
Frame size(AF)		100		225		400	
Rated current(A)		5,10,15,20, 30,40,50, 60,75,100	15,20,30, 40,50,60, 75,100	100,125,150,175, 200,225		250,300,350,400	
Rated operational voltage(V)Ue (50/60Hz)		600	600	600	600	600	600
Rated insulation voltage(V)Ui(50/60Hz)		690	690	690	690	690	690
Rated impulse withstand voltage(kV)Uimp		6	6	6	6	6	6
Ultimate breaking capacity (kA,Icu AC 50/60Hz)	220V/240V	10	50	35	50	35	50
	380V	7.5/5	25	18	25	30	42
	415V	7.5/5	25	18	25	25	35
	440/460V	5	25	18	25	25	35
	480/500V	2.5	25	10	14	18	25
	600V	2.5	14	7.5	10	18	22
Utilisation category		A	A	A	A	A	A
Endurance	Mechanical	8500	8500	7000	7000	4000	400
	Electrical	1500	1500	1000	1000	1000	1000

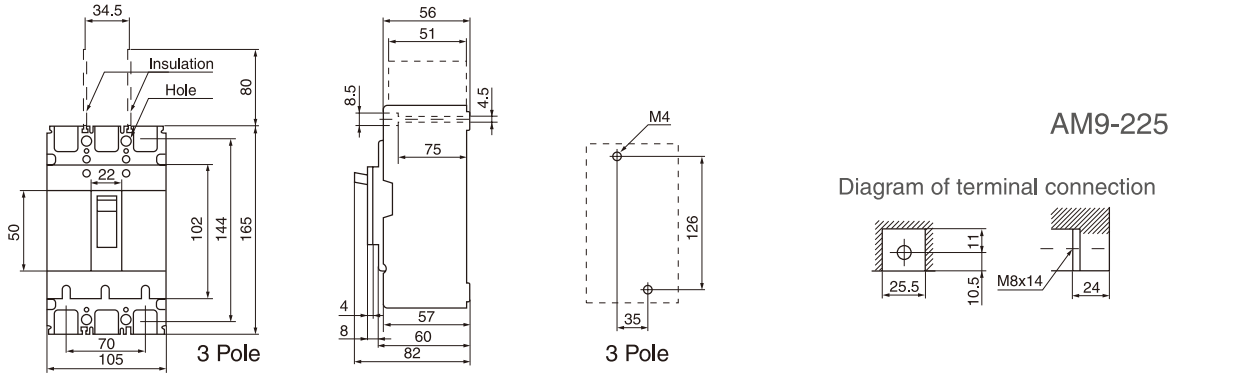
3. Outline and Installation Dimensions (mm)



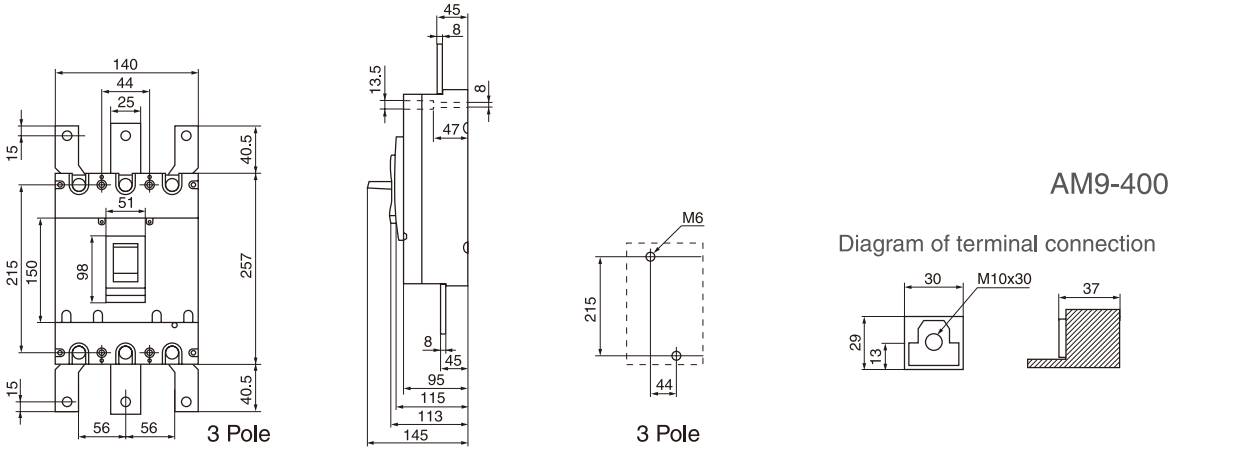
AM9-30,50,60



AM9-100



AM9-225



AM9-400

AW45 Air Circuit Breaker

1. Application

AW45-2000

AW45 series air circuit breaker (hereinafter referred to as breaker) is suitable for the circuit of AC 50/60Hz with rated voltage 400V, 690V and rated current up to 6300A .It is mainly used to distribute electric energy and protect circuit and power supply equipment from overload, under-voltage short-circuit ,and single-phase earthing .With intelligent and selective protection functions, the breaker can improve the reliability of power supply, and avoid unnecessary power failure . The breaker is applicable for power stations, factories , mines(for 690V) and modern high-building, especially for the distribution system of intelligent building.

The breaker conforms to IEC60947-2. The whole series have past CCC certification and CE certification.

2. Working Condition

AW45-3200

Temperature condition: -5°C~+40°C; the average value within 24h not exceed +35°C.

Elevation: altitude of installation place shall not exceed 2000m.

Atmosphere condition: relative humidity at +40°C shall not exceed 50%. Higher humidity is permissible at lower temperature condition. When the higher monthly average relative humidity is 90% in the humiddest month , the lowest monthly average temperature of this month is +25°C. And consider the influence of dew on product surface due to temperature changes.

Pollution grade: grade III.

The breaker should be installed according to the requirement on the instruction manual: the vertical inclination degree shall not exceed 5°.

3. Specification

AW45-6300

Type		AW45-2000	AW45-3200	AW45-4000	AW45-6300
Frame rated current Inm (A)		2000	3200	4000	6300
Number of poles		3,4	3,4	3,4	3,4
Rated current In (A)		630,800,1000, 1250,1600,2000	2000,2500, 3200	2000,2500, 3200,4000	4000,5000, 6300
Icu (kA)	400V	80	100	100	120
	690V	50	65	65	80
Ics = Icw (kA)	400V	50	80	80	100
	690V	40	50	50	65
Rated current at N-pole In (A)		50%In, 100%In			
Inherent making & breaking time		23-32ms			
Operational performance (operations)	Electric life	500			
	Mechanical life	Maintenance-free 2500 Maintenance 10000			
Mounting mode		Fixed / Withdrawable			
Arcing distance(mm)		0			
Intelligent controller		Standard type(M) telecommunication type (H)			

4. Intelligent Controller

Intelligent controller is one of the core components of the circuit breaker

4.1 properties of the intelligent controller

a. Protective function of over-load long time-delay and inverse time limit, short time-delay and inverse time limit, short time-delay definite time limit instantaneous operation protection;

b. Single-phase earthing failure protection;

c. Display of setting current Ir and operational current;

d. Ampere meter;

e. Over-load alarm;

f. Short-circuit alarm

g. Testing of operational properties

Note: The breakers with telecommunication port are available to realize remote control to breaker through master computer.

4.2 Protection performances of over-current release

a. Ir and its inaccuracy of the controller

Inm(A)	Long time-delay		Short time-delay		Instantaneous		Earthing failure	
	Ir1	Error	Ir2	Error	Ir3	Error	Ir4	Error
⩾ 2000	(0.4~1)In	±10%	(0.4~15)In	±10%	1.0In~15kA	±15%	Inm ⩽ 4000A(0.2-0.8) In (Max.1200A.Min.200A) Inm ⩽ 6300A(0.2-1.0) In	±10%

Note: 1.When the breaker could realize over-load with long time delay .short-circuit with short time-delay and short-circuit instantaneous protections, the setting ratings can not be over-lapped ,and Ir1< Ir2< Ir3

2. When the frame is 3200A and above ,the setting ratings range from 1.01In to 75kA.

b. Characteristics of long time-delay protection

1.05 Ir1	1.3 Ir1	1.5 Ir	2.0 Ir1
>2h non-tripping	<1h tripping	15s,30s,60s,120s,240s,480s	8.4s,16.9s,33.7s,67.5s,135s,270s

c. Characteristics of short time-delay protection.

For low over-current ,inverse time-limit protection could be realized; when the over-current is >8 Ir1, it will automatically change to be definite time-limit protection properties.

Refer to table below for time-limit properties.

Setting delay time (s)	Returnable time (s)
0.1, 0.2, 0.3, 0.4	0.06, 0.14, 0.23, 0.35

5. Standard Composition

To facilitate your ordering and utilization, the AW45 intelligent with basic electric accessories as follows.

Standard composition of the breaker	Fixed type	Withdrawable type
Body	■	■
Drawer base	■	■
Intelligent controller	■	■
Electric motor	■	■
Closing electro-magnet	■	■
Shunt release	■	■
Under-voltage	■	■
Auxiliary contact	■	■
Door frame	■	■

6. Accessories

6.1 Shunt release

a. Shunt release is for remote breaking of circuit breaker so as to enhance security of the operator;

b. Ratings of shunt release

Rated operational voltage (V)	AC220V	AC380V	DC110V	DC220V
Operational voltage range	(70%~110%) Ue			
Power consumption	24VA	24VA		40W

6.2 Under-voltage release

a. It is an optional accessory;

b. Mainly used to protect apparatus from damage due to lowering of the operational voltage to a certain value;

c. Two types of release are available: instantaneous release and time-delay release;

d. For breakers appended with the release, it should be electrified continuously;

e. Ratings of under-voltage release.

f. Operation properties of under-voltage release

Rated operational voltage (V)	AC220V	AC380V	DC110V	DC220V
Operational voltage range	(35%~110%) Us			
Power consumption	24VA	24VA		40W

Category		Under-voltage time-delay release	Under-voltage instantaneous release
Operation time of the release		Time-delay: 1s,3s,5s	Instantaneous
Operational voltage of the release	35% Us ~70% Us	Break the breaker	Break the breaker
	⩽ 35% Us	Can not make the breaker	Can not make the breaker
	⩾ 85% Us~110% Us	Reliably make the breaker	Reliably make the breaker
Within 1/2 delay time, voltage of power supply recovers to 85% Us		Can not trip the breaker	

Note: Error the time of time-delay is ±10%

6.3 Closing electro-magnet

a. The magent is for remote making of circuit breaker so as to enhance security of the operator.

b. The mangent could not be electrified for a long time.

c. Ratings of the magnet.

Rated operational voltage (V)	AC220V	AC380V	DC110V	DC220V
Operational voltage range	(85%~110%) Us			
Power consumption	40VA	40VA		40W

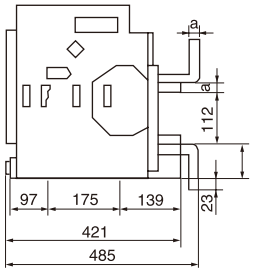
6.4 Auxiliary contact

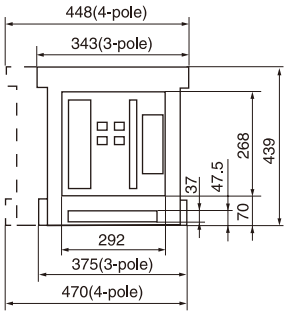
a. Conventional heating current of auxiliary contact: 6A

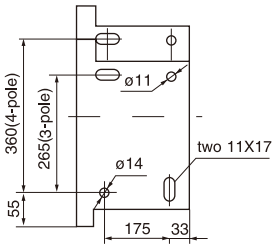
b. Auxiliary contacts: 4NO+4NC, 3NO+NC, 5NO+5NC(customization)

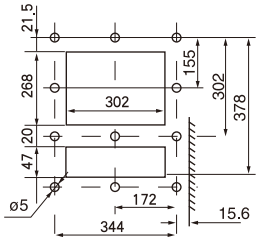
7. Outline and Installation Dimensions (mm)

AW45-2000 Drawer-type

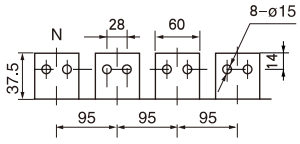






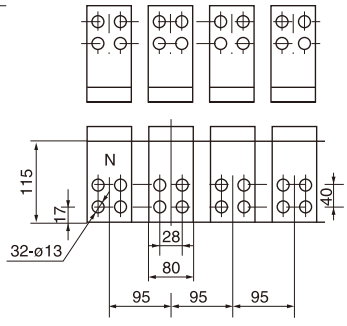


Opening hole on panel



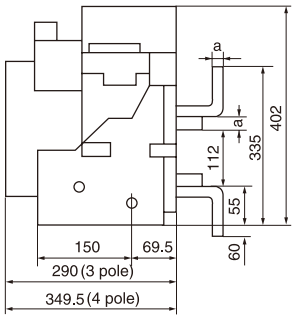
Horizontal Wire-connection

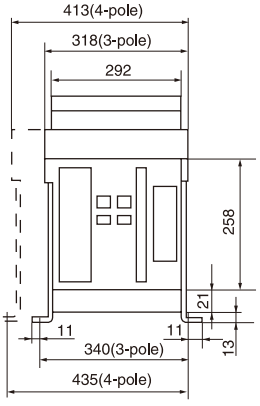
In(A)	a(mm)
630	10
800~1600	15
2000	20



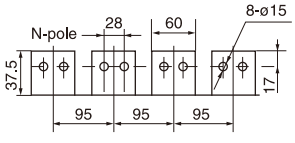
Vertical wire-connection

AW45-2000 Fixed type

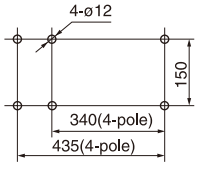




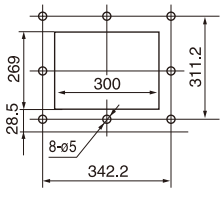
In(A)	a(mm)
630	10
800~1600	15
2000	20



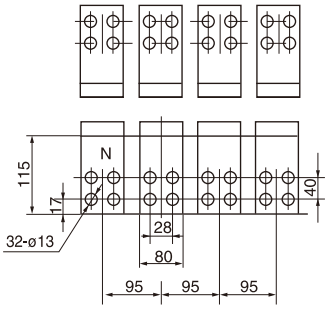
Horizontal Wire-connection



Installation hole on flight & outer side

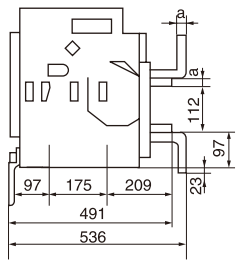


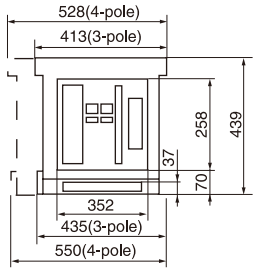
Opening hole on panel



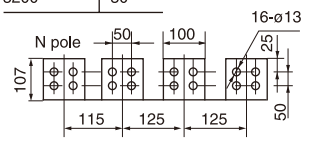
Vertical wire-connection

AW45-3200 Drawer type

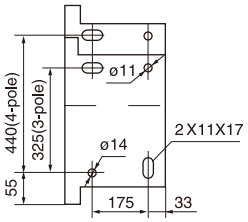


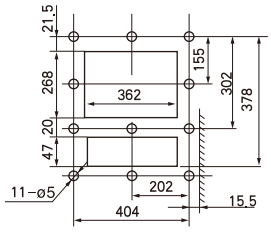


In(A)	a(mm)
2000-2500	20
3200	30

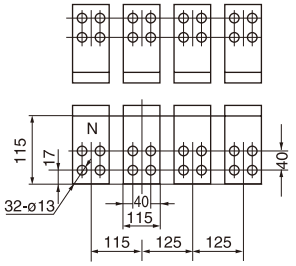


Horizontal Wire-connection



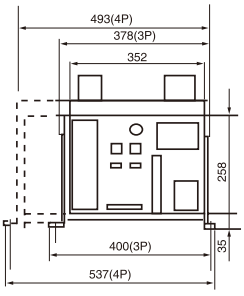


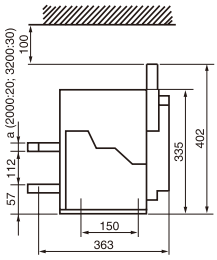
Opening hole on panel

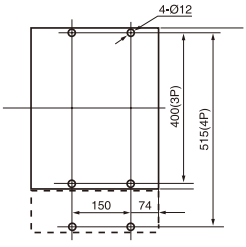


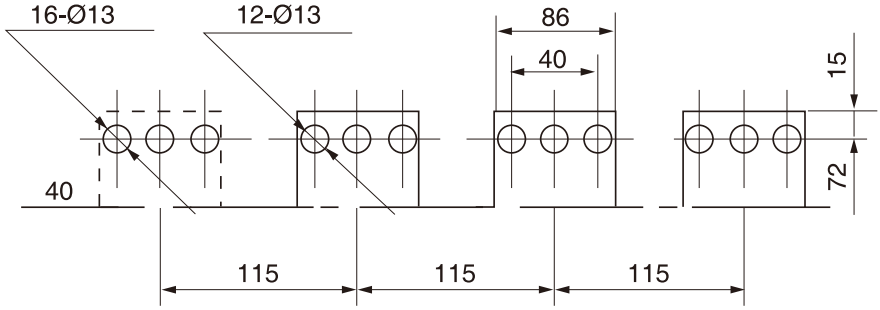
Vertical wire-connection

AW45-3200 Fixed type

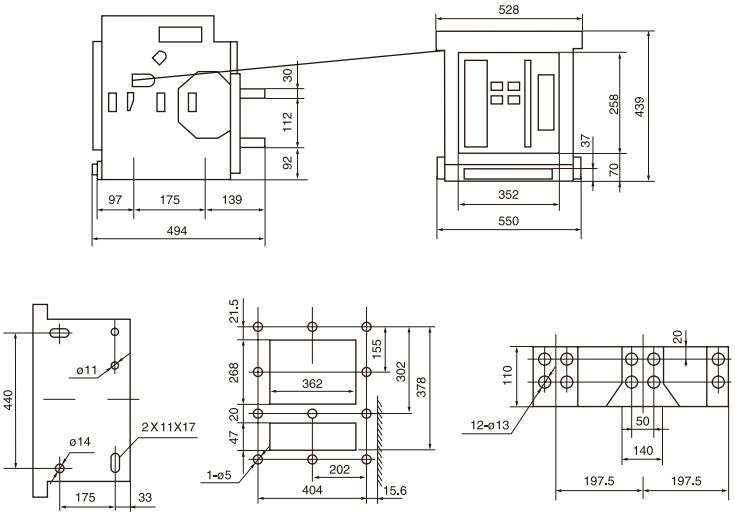




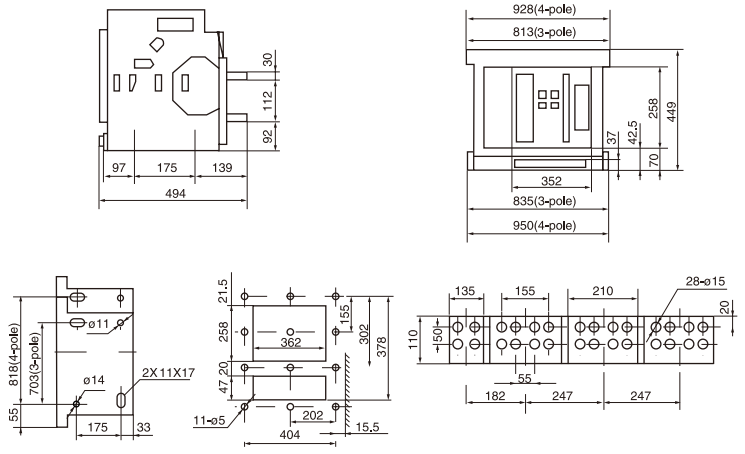




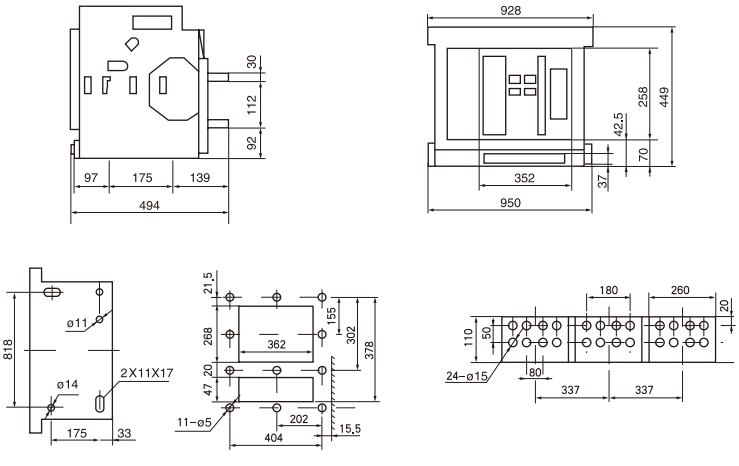
AW45-4000 Drawer type (3-pole)



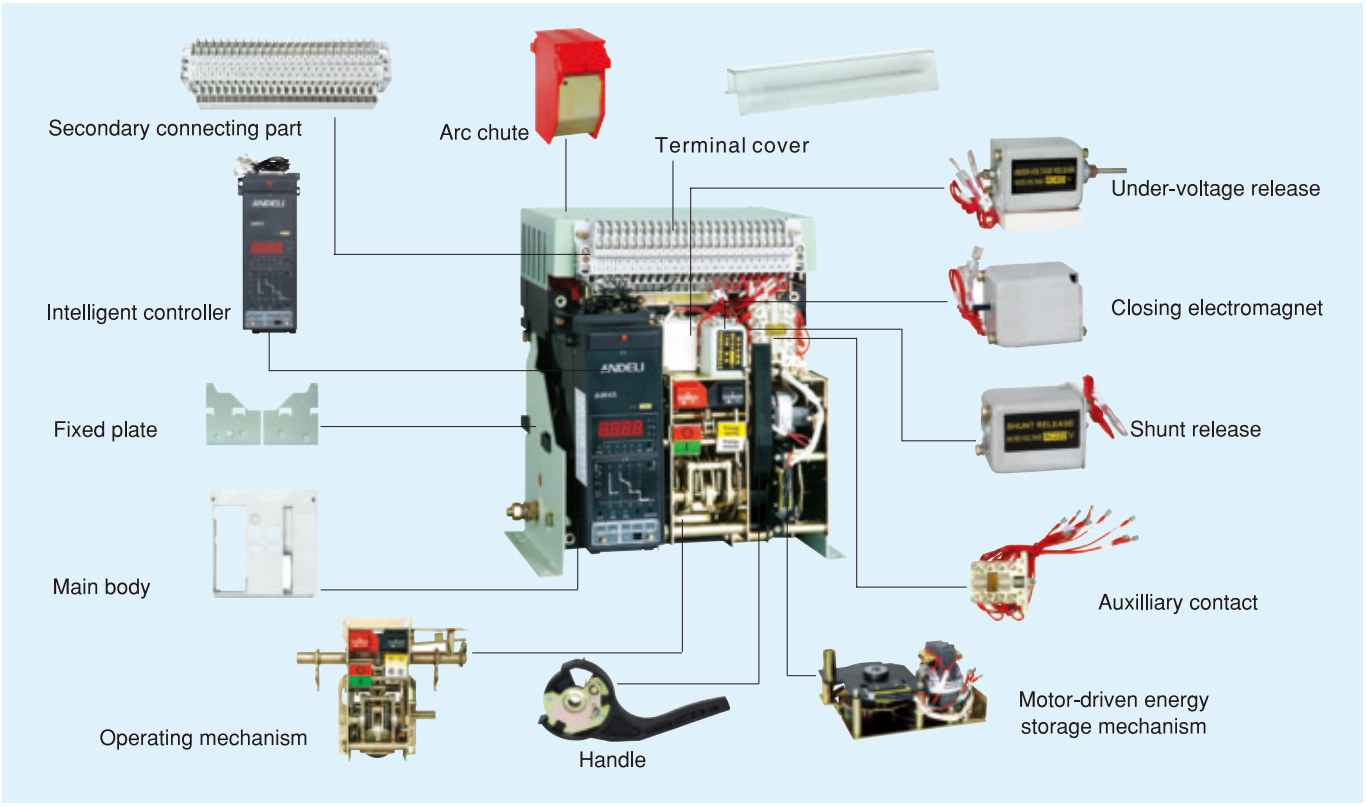
AW45-4000,5000 Drawer-type



AW45-6300 Drawer type (3-pole)



Fixed Type Structure Explosion



Drawer Type Structure Explosion