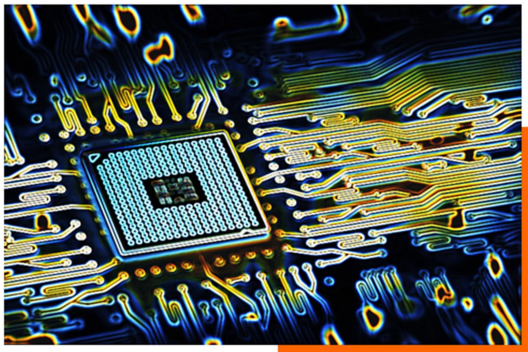

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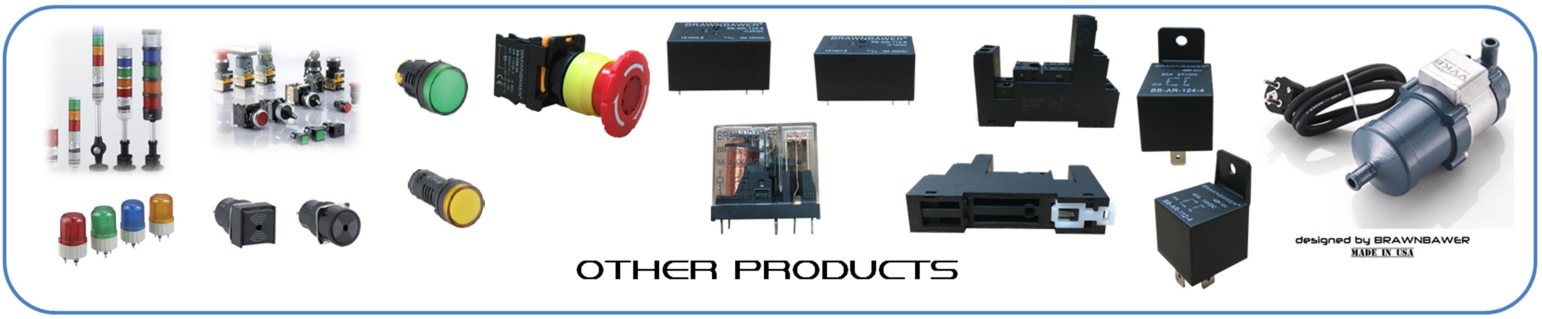


Company Profile

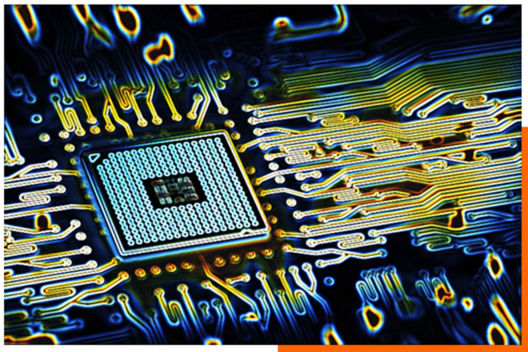
BRAWNBAWER, is a company focused on industrial control electric and mechanic field.

Company employees about 400 people, technical staff accounted for 10%; The company has sales network and offices all over the country provinces and cities, products cover, Germany, Britain, USA, Spain, Italy, Canada, Turkey, India, South / North Africa and more than 10 countries and regions.

BRAWNBAWER, provide service for electricity, communications, chemical industry, mechanical engineering, rail transportation, industrial lighting and automation industries such as customers, product by European Union CE certification, ROHS, CB, IEC, CQC, UL, CCC, , etc.

BRAWNBAWER, self-developed **ATS** (Automatic Transfer Switching Equipment), **MCCB** (Moulded Case Circuit Breakers) , **ACB** (Air Circuit Breakers) , **MCB** (Miniature Circuit Breakers), Miniature Relays, PCB Relays, Automotive Relays, Solid Voltage Regulators, Micro Switchs, push button switchs, energy saving indicator lamp, warning lights, LED light-emitting devices, Buzzer, Emergency Push Buttons, Warning Light, Indicator Bulb, engine pre heaters, such as important areas are widely used and recognized.

BRAWNBAWER, always adhere to the "people- oriented, scientific and technological innovation" the management policy, with "integrity, pragmatic, efficient, innovation" service purposes,to provide intelligent industrial control of electric / mechanic field and reliable solutions.



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ACB

BBAC Series Intelligent Air Circuit Breaker

I. Scope of Application

BBAC series intelligent air circuit breaker (hereinafter referred to as breaker), it is suitable for distribution network which is AC 50Hz, rated voltage up to 660V (690V) and below, 630A~6300A rated current. It is used in distribution of power and protecting circuit from overload, short circuit, undervoltage, single-phase grounding fault hazard. Circuit breaker with intelligent protection function and precise selective protection can improve the reliability of power supply, avoid unnecessary power outages. And it has an open communication interface, can carry out the "four remote", in order to meet requirements of the control center and the automation system. The circuit breaker pulse pressure is 8000V at an altitude of 2000 meters (different altitude correction according to the standard, the maximum is not more than 12000V). This circuit breaker has no intelligent controller or sensor, can used for identification of the isolator. Identification:

The circuit breaker complies with GB14048.2 “low voltage switchgear and control equipment, low voltage circuit

II. Type Definition and Classification

Types and Classification

Classification

Classified by Installation:

a.Fixed

b.Open frame

Divided by poles: 3p、4p

According to the Operation Mode:

a.Electric operation

b.Manual operation (maintenance)

Release Type

Intelligent controller, under voltage instantaneous (or delayed) release, shunt release.

The Performance of Intelligent Controller

a. Intelligent controller is divided into: H (Communication), M (general intelligent), L (economical)

b. With overload long delay inverse time delay, short time limit, inverse time, instantaneous function.

Users can set their own protection characteristics which is needed;

c. Single-phase grounding protective function

d. Display function: setting current, operating current, each phase voltage value is displayed (voltage display should be presented when ordering).

e. Alarm function: overload alarm.

f. Self check function: overheating self-test, microcomputer self diagnosis.

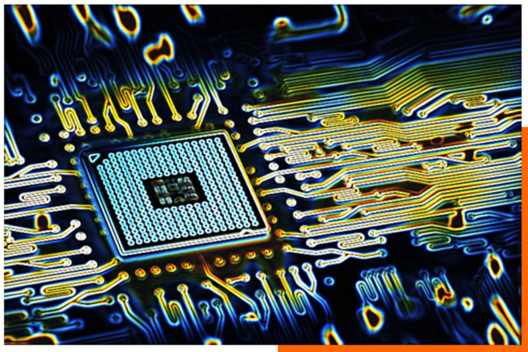
III. Main Technical Parameters

1. The basic parameters of the circuit breaker is shown in Table 1

Table 1

Frame Size Rated Current Inm A	Rated current In A	Rated voltage Ue V	Rated ultimate short-circuit breaking capacity Icu kA		Rated operation short-circuit breaking capacity Ics kA		Rated short time withstand current Icw kA (Is)	Power loss(w)	
								Fixed	Open frame
2000	630	AC 50Hz 400 690	400V	690V	400V	690V	400/690V	40	80
	800							60	130
	1000							90	205
	1250		80	50	65	40	50/40	90	205
	1600							140	310
	2000							170	310
3200	2000		100	65	80	65	80/50	170	400
	2500							260	510
	2900							320	650
	3200							420	760
4000	3200		100	65	80	65	80/50	430	780
	3600							440	790
	4000							450	800
6300	4000		120	85	100	75	100/75	1225	
	5000							1250	
	6300							1625	

Note 1: the arcing distance is zero. Note 2: the breaking capacity of upper and lower line are the same.



III.I Main Technical Parameters

The derating coefficient of circuit breaker at different ambient temperature see Table 2

Table 2

Ambient temperature	+40℃	+45℃	+50℃	+55℃	+60℃
Allowable continuous working current	1In	0.95In	0.9In	0.85In	0.8In

Note: in various ambient temperature conditions, measured circuit breaker import terminal temperature reached 110℃ as a benchmark.

2. Release current setting Ir and tolerance are shown in Table 3

Table 3

InmA	Long time delay(Ir1)	Short time delay(Ir2)			Instantaneous(Ir3)			Ground fault(Ir4)	
		L-type	M、H-type	Tolerance	L-type	M、H-type	Tolerance	Inm=2000~4000A	Tolerance
2000	(0.4-1)In	(3-10)In	M:(0.4-15)Ir1 H:(1.5-15)Ir1	±10%	(3-10)In (10-20)In	In~50kA	±15%	(0.2~0.8)In Maximum:1200A Minimum:160A	±10%
⩾3200					(7-14)In	In~75kA In~100kA Inm=6300A		Inm=6300A (0.2~1)In	

Note: when the three section protection, the setting value can not cross

3. Long time delay characteristic protection tripping current is shown in Table 4

Table 4

I	Action time						Tolerance
1.05Ir1	>2h No action						±15%
1.3Ir1	<1h Action						
1.5Ir1	15s	30s	60s	120s	240s	480s	
2.0Ir1	8.4s	16.9s	33.7s	67.5s	135s	270s	

Note: 2.0Ir1 time is calculated byI2T=(1.5Ir1)2tL, where tL is 1.5Ir1 when the action time setting by the user.

4. Short time delay over current protection action characteristics are shown in Table 5

Table 5

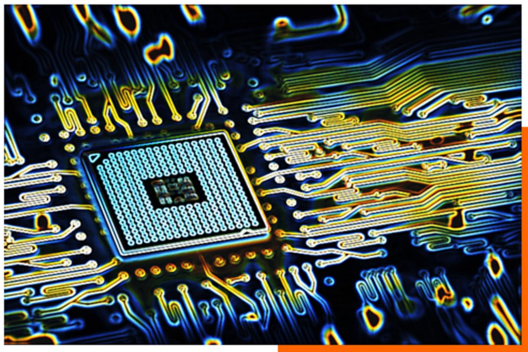
Delay setting time ts(s)	0.1	0.2	0.3	0.4
Delay time (s)	0.06	0.14	0.23	0.35
Action characteristics	I > 8Ir1 Time limit action			
	I < 8Ir1	$T = \frac{(8Ir1)^2 ts}{I^2}$		I=short-circuit current T=Action time

5. Ground fault protection characteristics for the short delay and constant time-lag, see Table 5 limit action time and return time, ground fault factory time setting for "OFF".

6. The operation performance of the circuit breaker is represented by the number of operation cycles, see Table 6.

Table 6

Inm(A)	Number of operation cycles per hour	Mechanical life (Times)		Electrical life (Times)
		Mnintenance-free	Mnintenance	
2000	20	13500	20000	6500
3200	20	10000	20000	3000
4000	15	5000	10000	1500
6300	10	5000	10000	1000



III.II Main Technical Parameters

7. Working voltage of shunt release, under voltage release, electric operating mechanism, release (closing) electromagnet, intelligent release for circuit breaker is shown in Table 7.

Table 7

Type	Rated voltage		
	AC(50Hz) V		DC V
Shunt release	Us	220、380	100、220
Undervoltage release	Ue	220、380	—
Electric operating mechanism	Us	220、380	100、220
Release (dosing) electromagnet	Us	220、380	100、220
Intelligent release	Us	220、380	100、220

Note: Reliable operation voltage range of shunt release is (70%-110%) Us, release (closing) electromagnet and the electric operating mechanism is (85%-110%) Us.

8. Performance of circuit breaker under voltage release is shown in Table 8

Table 8

Type		Undervoltage delay release	Undervoltage instantaneous release
Release action time		Delay 1、3、5 s	Instantaneous
Release action time	35%–70%Ue	break the circuit breaker	
	≤35%Ue	Circuit breakers are not closed	
	≥85%Ue	Circuit breaker can be reliably closed	
In 1/2 delay time, if the supply voltage is restored to 85%Ue		Circuit breaker is not breaking	

Note: accuracy of delay time is + 10%

9. The performance of auxiliary contact

9.1 6A Conventional thermal current of auxiliary contact is 6A

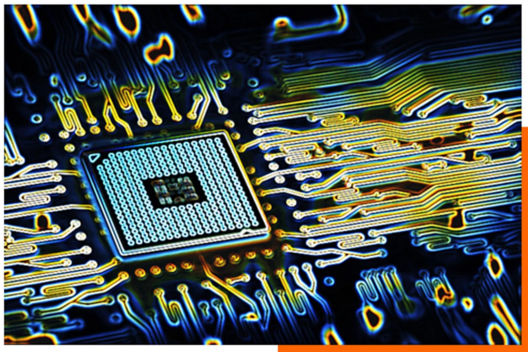
9.2 Auxiliary contact form: four group conversion

9.3 Abnormal connection and breaking capacities of auxiliary contact

Making and breaking capacity of auxiliary contacts in abnormal operating conditions

Table 9

Using sorts	Connect			Breaking			Number on-off operation cycles and operation frequency		
	I/Ie	U/Ue	COS ϕ or T0.95	I/Ie	U/Ue	COS ϕ or T0.95	Number of operation cycles	Number of operation cycles per minute	Power-on time
AC–15	10	1.1	0.3	10	1.1	0.3	10	or the same frequency as main circuit operation	0.05
DC–13	1.1	1.1	6Pe	1.1	1.1	6Pe			



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IV. Basic Function of M or L type Controller

Connecting terminal

There are 47 connecting terminals in circuit breaker, it is simple and easy to use, the wiring diagram is shown in Figure 1.

Other connection of intelligent controller

#1, #2 are working power input

#25, #26 are external connection of neutral pole or current transformer input

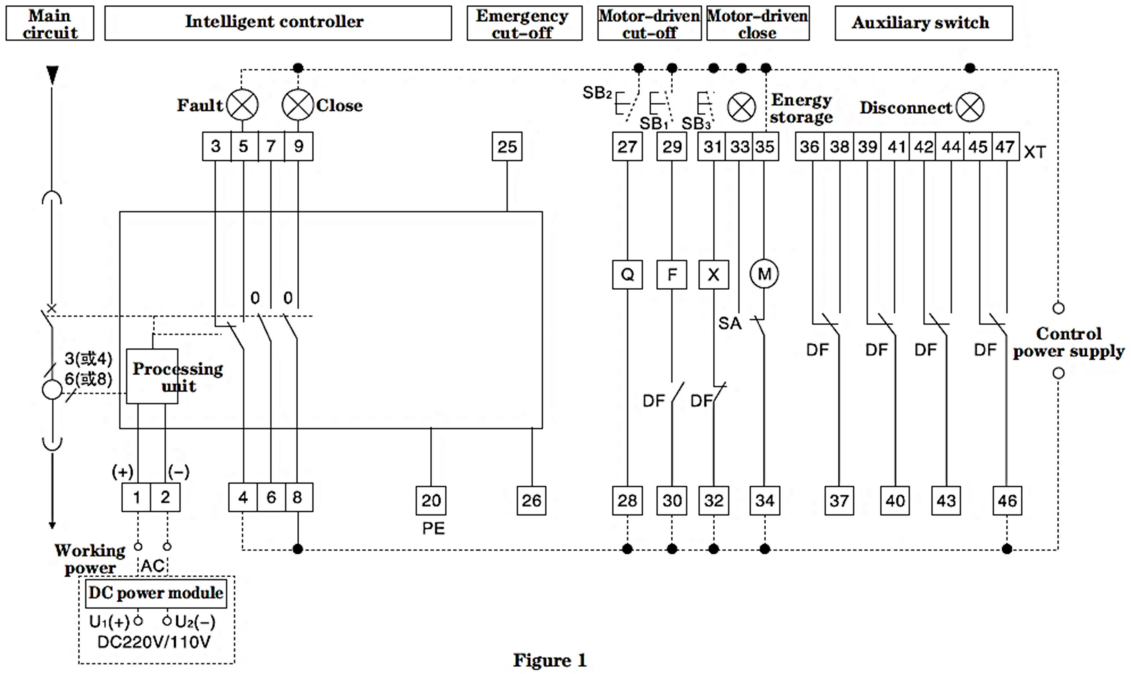


Figure 1

Note:

(1) If control power supply voltage of F, X and M is different, power supply is different.

(2) Terminal #35 can be directly connected to the power supply (automatic pre storage), also can be connected with power supply when it is cascaded with a normally open button (manual pre storage).

(3) Terminal #6-#7 can output normally closed contact as users' requirements.

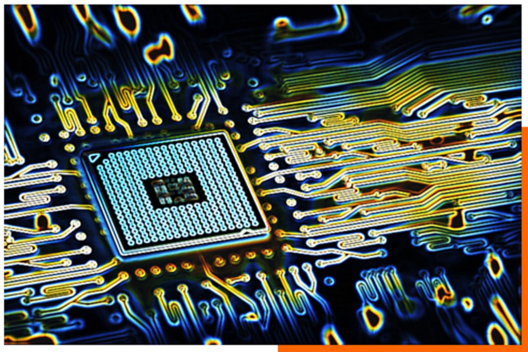
(4) Accessories are prepared by user.

(5) When working power supply of intelligent controller is DC power, general configuration is "built in" (none specified) DC power supply module, Terminal #1, #2 can be directly connected to the DC power. If users select "plug-in" module, terminal #1, #2 can not be directly connected to the DC power, and DC power supply must be input from the DC power module U1 (+), U2 (-), the two output terminals are respectively corresponding connect to the secondary wiring terminal input 1 (+) and 2 (-).

SB1 shunt button (prepared by user) **X closing electromagnet** **DF auxiliary contact** **Q undervoltage release or undervoltage delay release**

SB2 undervoltage button (prepared by user) **Menergy storage motor** **F shunt release** **O normally open contact (3A/AC380V)**

SB3 closing button (prepared by user) **XT connection terminal** **SA motor microswitch** **Signal lamp (prepared by user)**



V. Installation and Appearance Dimention of Fixed Circuit Breaker

BBAC-2000/3, 2000/4 Fixed Circuit Breaker (see Figure 2)

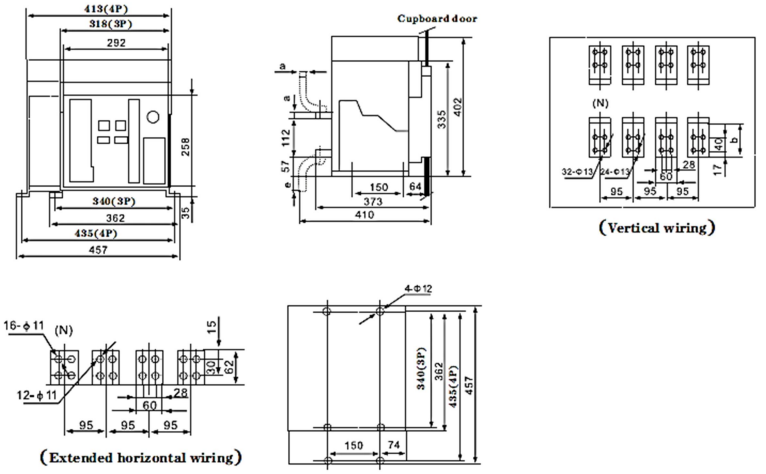


Figure 2

In	a mm	b mm	e mm
400-800A	10	85	29
1000-1600A	15	95	38
2000A	20	105	48

BBAC-3200/3, 3200/4 Fixed Circuit Breaker (see Figure 3)

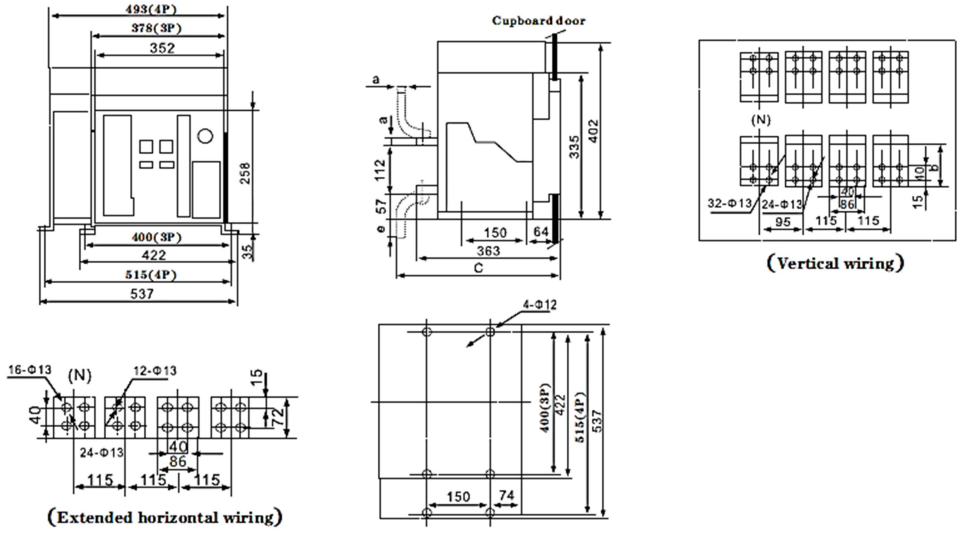
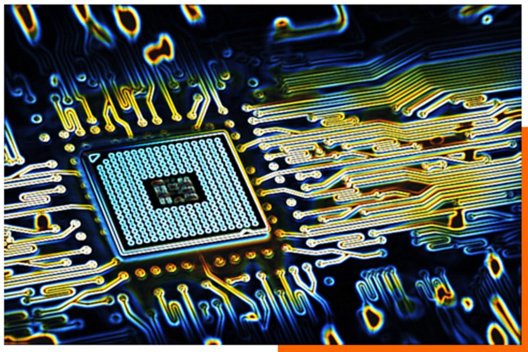


Figure 3

In	a mm	b mm	c mm	e mm
2000A,2500A	20	115	408	58
2900A,3200A	30	135	428	78



VI. Installation and Appearance Dimention of Open Frame Circuit Breaker

BBAC-1000, 2000/3 - 4 Open Frame Circuit Breaker (see Figure 4)

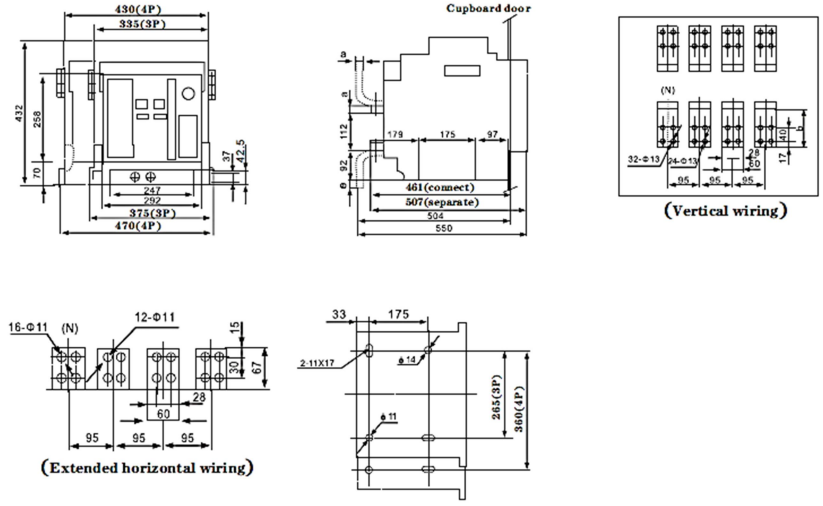


Figure 4

In	a mm	b mm	e mm
400-800A	10	95	3
1000-1600A	15	105	13
2000A	20	115	23

BBAC-3200/3, 3200/4 Open Frame Circuit Breaker (see Figure 5)

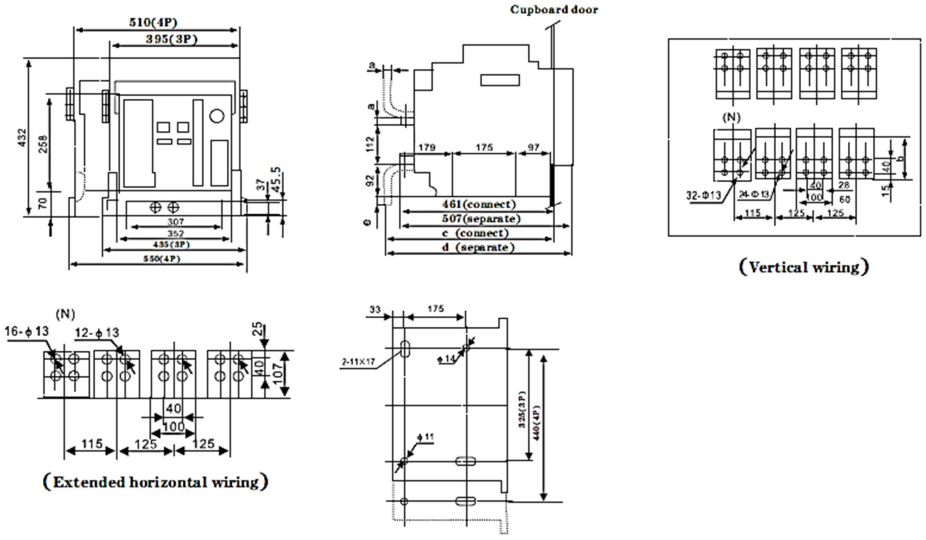
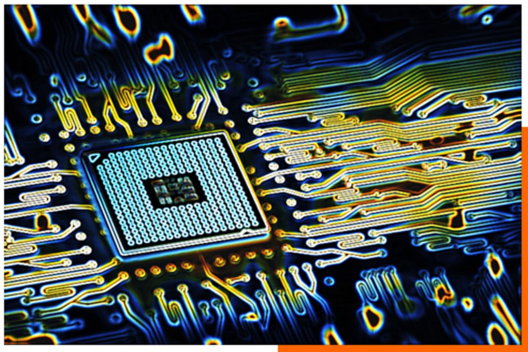


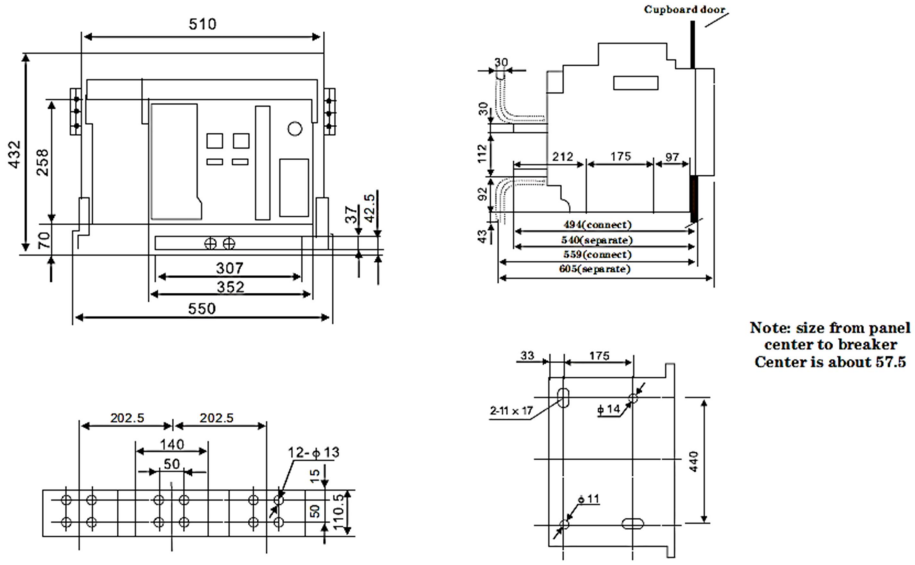
Figure 5

In	a mm	b mm	c mm	d mm	e mm
2000A,2500A	20	115	506	552	23
2900A,3200A	30	135	526	572	43



VI.I Installation and Appearance Dimention of Open Frame Circuit Breaker

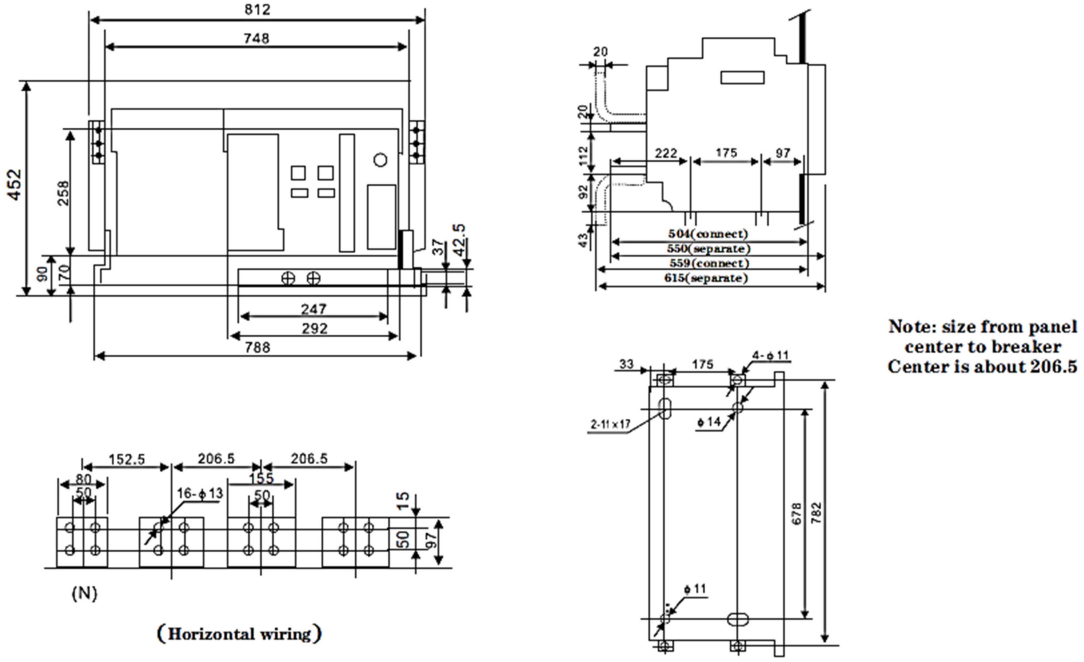
BBAC-4000/3 Open Frame Circuit Breaker (see Figure 6)



Note: size from panel center to breaker Center is about 57.5

Figure 6

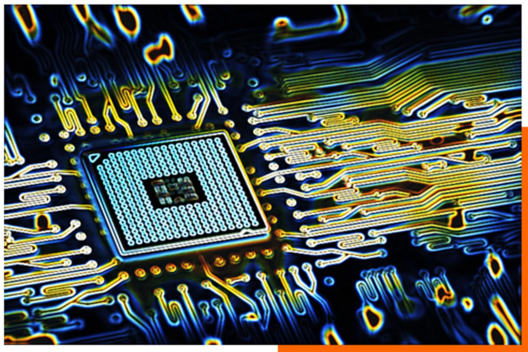
BBAC-4000/4 Open Frame Circuit Breaker (see Figure 7)



(Horizontal wiring)

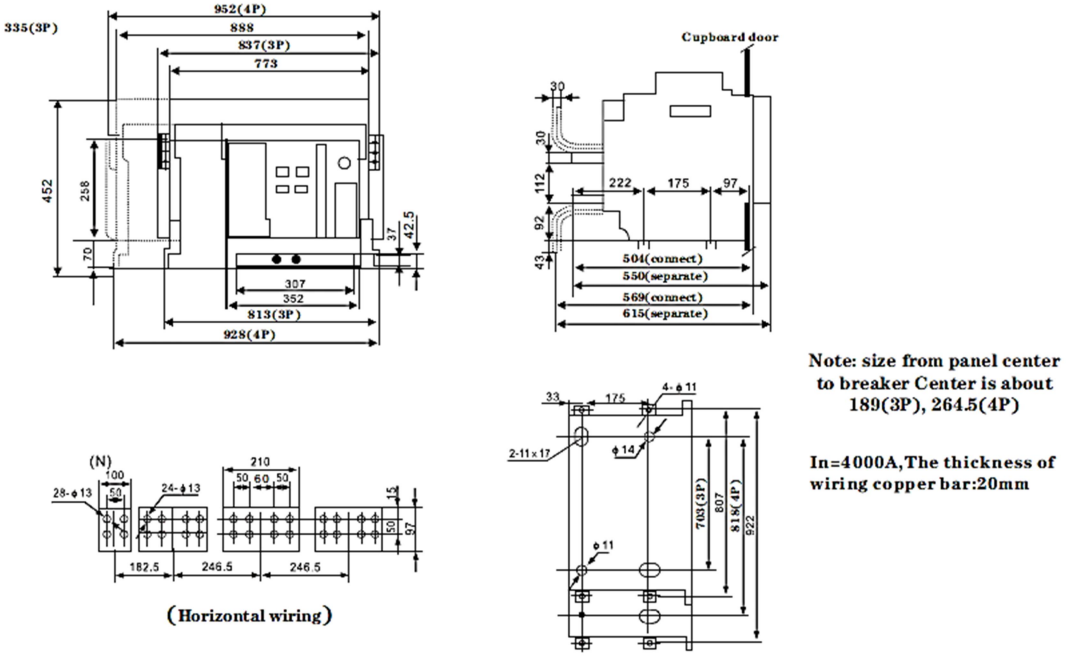
Note: size from panel center to breaker Center is about 206.5

Figure 7



VI.II Installation and Appearance Dimention of Open Frame Circuit Breaker

BBAC-6300/3, 6300/4 in 4000A, 5000A Open Frame Circuit Breaker (see Figure 8)

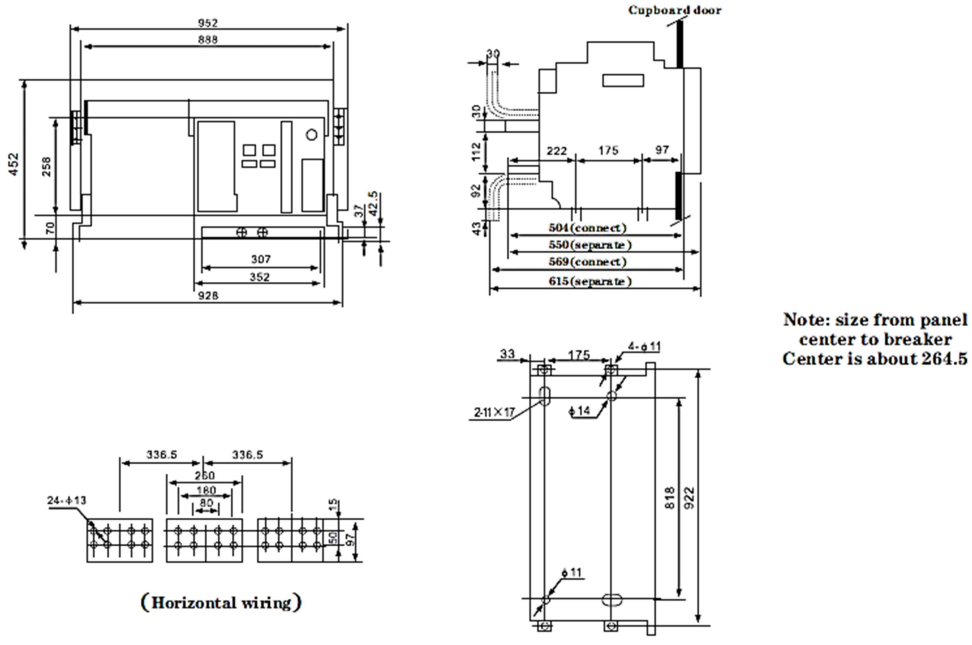


Note: size from panel center to breaker Center is about 189(3P), 264.5(4P)

In=4000A,The thickness of wiring copper bar:20mm

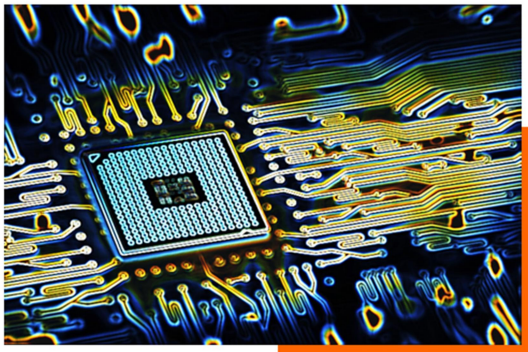
Figure 8

BBAC-6300/3 in 6300A Open Frame Circuit Breaker (see Figure 9)



Note: size from panel center to breaker Center is about 264.5

Figure 9



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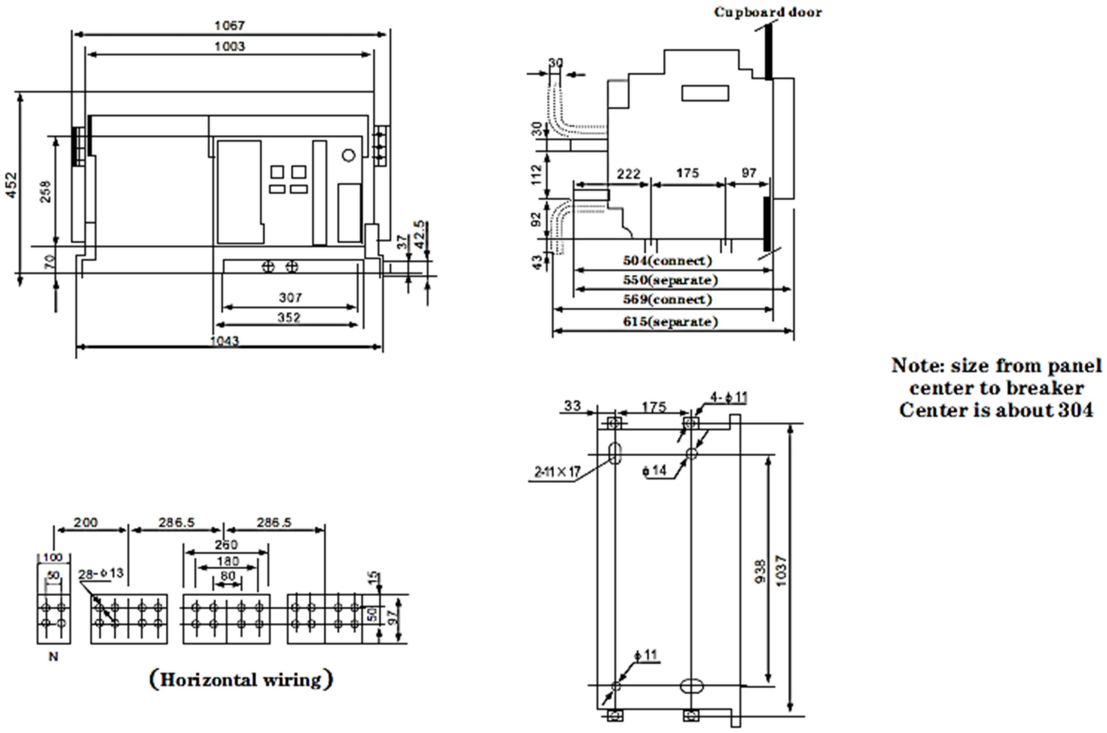
VI.III Installation and Appearance Dimention of Open Frame Circuit Breaker

BBAC-6300, 6300/4 in 6300A Open Frame Circuit Breaker (see Figure 10)



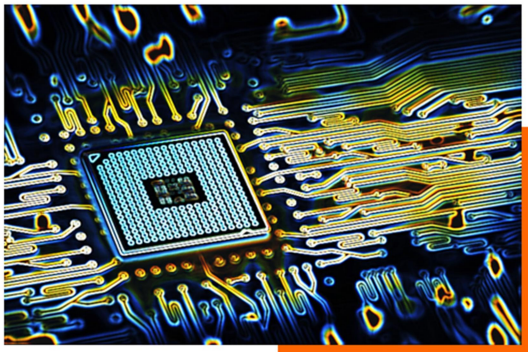
Note: size from panel center to breaker Center is about 304

Figure 10

Specifications and Quantity of Connecting Copper Bar (see table below)

Rated current	External copper bar specifications	Quantity of each pole
630A	40X5	2
800A	50X5	2
1000A	60X5	2
1250A	80X5	2
1600A	100X5	2
2000A	100X5	3
2500A	100X5	4

Rated current	External copper bar specifications	Quantity of each pole
2900A	100X10	3
3200A	120X10	3
3600A	120X10	4
4000A	120X10	4
5000A	120X10	5
6300A	120X10	6



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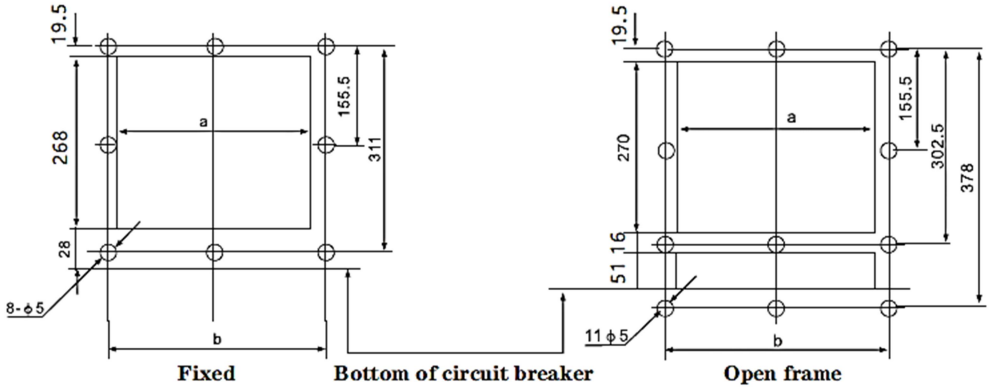
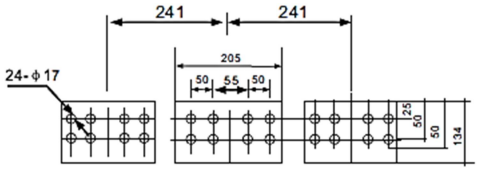
VII. Door Frame Size and Installation Hole Spacing



Inm	a mm	b mm	c mm
2000	306	345	0
3200、4000/3	366	405	0
4000/4	306	345	0
6300	366	405	0

Installation and appearance dimention of fixed circuit breaker

Current specification	Current specification
5000A	30
4000A	20



(Horizontal wiring)