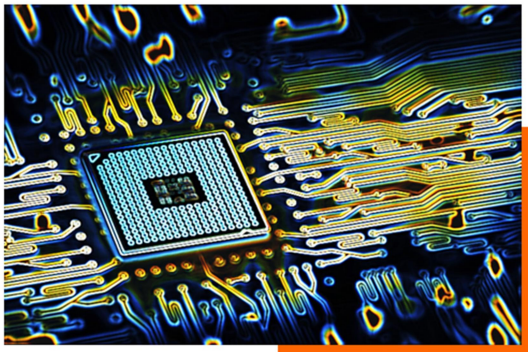

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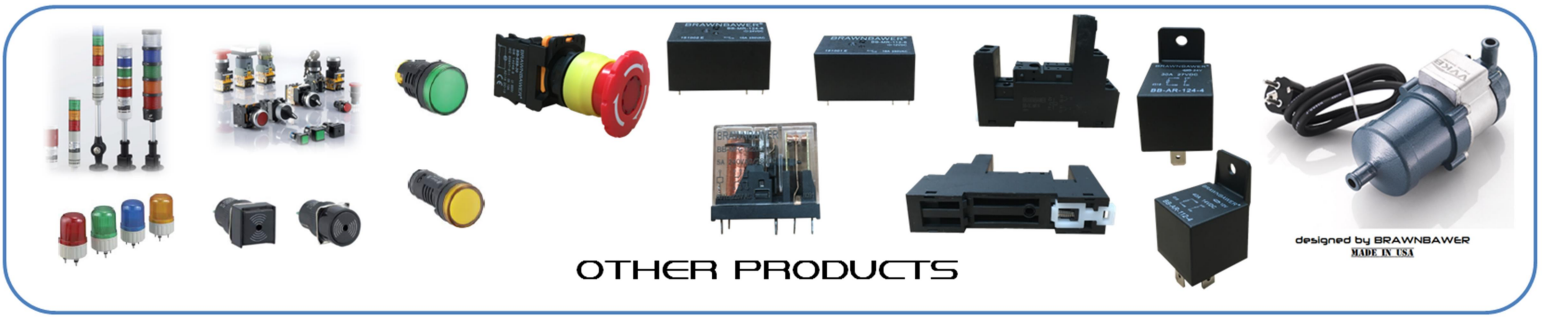


Company Profile

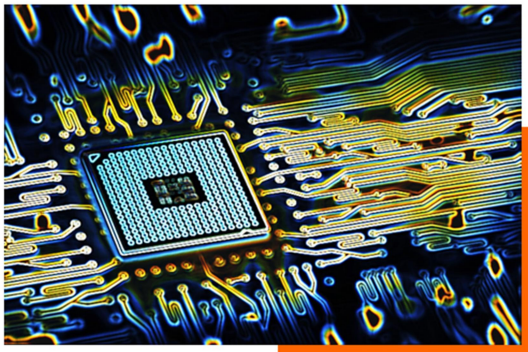
BRAWNBAWER, is a company focused on industrial control electric and mechanic field.

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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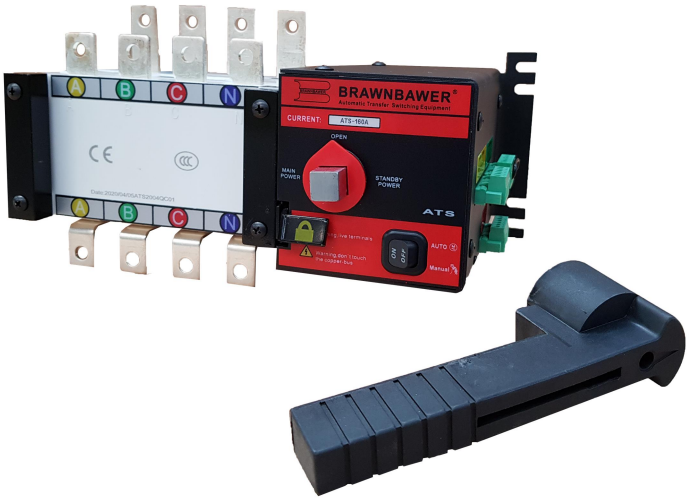


ATS

Automatic Transfer Switch

a) BBA Series PC Class (one-piece structure)

Features

- Voltage and Switch Working Conditions Indications Using LED
- External Replaceable Fuses, Easy For Maintenance
- Built-in Microprogrammed Control Unit Realise Voltage Dectection Function
- Silver Plated High Purity Copper Bars
- Bridge Connect Structure on Load Side
- Three-Sections Design (I – 0 – II), Zero Position For Dual Powers Off
- Pluggable Wiring Terminals
- Mechanical Interlock & Electrical Interlock

II. Products Characteristics

Good installation performance.

Using the double composite contact, horizontal structure, micro motor pre storage and micro control technology,which basically realize the zero flying fox (no arc shield)

The reliable mechanical interlocking and electrical interlocks make a higher security.

Zero crossing technique, in case of emergency, which can be forced the ATS stop at the zero position (simultaneously cut off two power supply).

The obvious functions of on-off position indication, padlock, etc., realize the isolation between the power supply and the load.

High reliability, over 10000 times of service life.

Good electromagnetic compatibility, strong anti-interference ability, no interference to the outside.

High degree of automation.

With the multiple input / output interfaces, so it is convenient for remote PLC control and automation system.

Do not need to be connected with any control components.

Nice appearance, small size and light weight, and it is controlled by the different logic control board.

IV.Working Condition

Ambient air temperature :-25℃~+55℃

Installation location elevation : less than 2000m

Pollution degree: 3

Use category: AC33iB

Install method: horizontal or vertical

I. Introduction

ATS Series Automatic transfer switch is suitable for rated voltage 690V, rated frequency 50/60HZ, rated voltage 440V and below, rated current of 16A-4000A, the main power supply system for power supply, mainly used between in the two powers in the emergency case of the power supply system , in order to make sure the main load of emergency lighting, emergency elevator, lampblack machine to keep continuous and reliable work. It would be widely used for providing uninterrupted and normal power supply for high-rise buildings, hospitals, banks, highways, railways, etc..

Meet the standards:

• IEC60947-1/GB/T14048 (The General Provisions on Low-Voltage Switch and Control Equipment)

• IEC60947-3/GB 1404.8.3 (Low-Voltage Switch and Control Equipment, Low-Voltage Switches, Isolators ,Disconnecting Switches and Fuse Combinations)

• IEC60947-6-1/GB14048.11 (Automatic Transfer Switch Appliance)

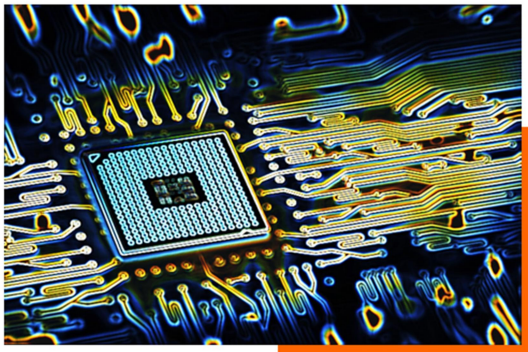
III.Types and Classification

MODEL	A	POLE
BBA-25/3	25	3
BBA-32/3	32	3
BBA-50/3	50	3
BBA-63/3	63	3
BBA-100/3	100	3
BBA-125/3	125	3
BBA-160/3	160	3
BBA-250/3	250	3
BBA-400/3	400	3
BBA-630/3	630	3
BBA-800/3	800	3
BBA-1000/3	1000	3
BBA-1250/3	1250	3
BBA-1600/3	1600	3
BBA-2000/3	2000	3
BBA-2500/3	2500	3
BBA-3200/3	3200	3

MODEL	A	POLE
BBA-25/4	25	4
BBA-32/4	32	4
BBA-50/4	50	4
BBA-63/4	63	4
BBA-100/4	100	4
BBA-125/4	125	4
BBA-160/4	160	4
BBA-250/4	250	4
BBA-400/4	400	4
BBA-630/3	630	4
BBA-800/3	800	4
BBA-1000/4	1000	4
BBA-1250/4	1250	4
BBA-1600/4	1600	4
BBA-2000/4	2000	4
BBA-2500/4	2500	4
BBA-3200/4	3200	4

PC CLASS: 25 TO 3200A

CB CLASS: 6 TO 1250A



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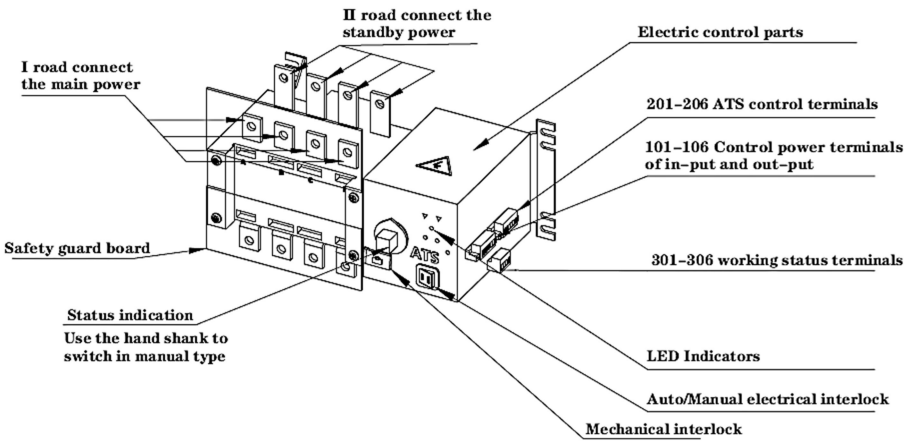
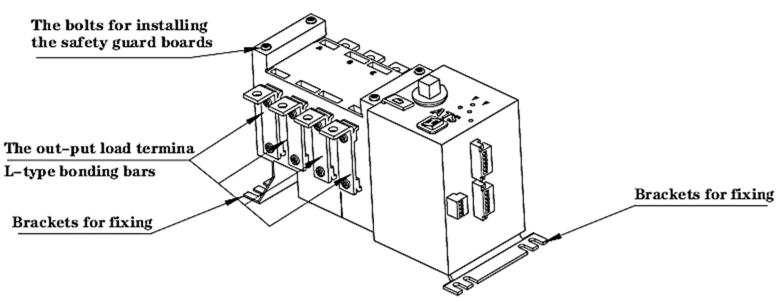
V. Technical Parameters

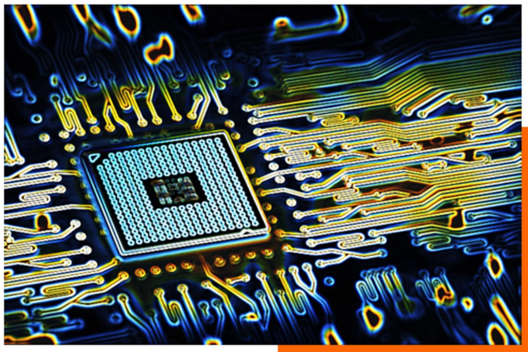
Meet standard : IEC947-6-1/GB 14048. 11

Rated thermal current(Ith)		80A	100A	125A	160A	250A	400A	630A	800A	1000A	1250A	1600A	2000A	2500A	3200A
Rated isolation voltage (Ui)		750V					1000V								
Rated impulse withstand voltage(Uimp)		8KV					12KV								
Rated working voltage (Ue)		AC440V													
Rated working current(Ie)	AC-33IB	80	100	125	160	250	400	630	800	1000	1250	1600	2000	2500	3200
Rated making capacity		10Ie													
Rated breaking capacity		8Ie													
Rated limited breaking current		100KA					70KA		100KA			100KA	80KA		
Rated short-time withstand current		7KA			9KA		13KA		50KA				55KA		
Transfer time		≤0.45S			≤0.45S		≤0.6S		≤1.2S				≤1.4S		
Rated control supply voltage		Standard : AC 220V、Customization AC110V、AC380V、DC12V、DC24V													
Net weight		3.4	3.4	5.2	5.2	8.1	15.8	16.0	36.5	36.8	37	44	96	105	108
Gross weight		4.0	4.0	6.0	6.0	9.6	19.0	19.0	42. 0	42.5	43	50	102	111	114

VI. Structure Specification







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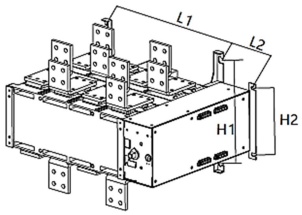
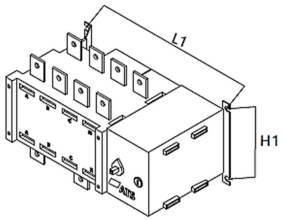
VII. Mounting Dimension



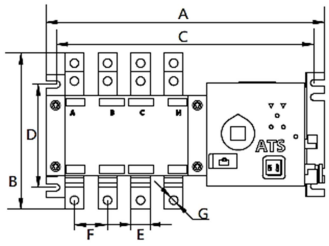


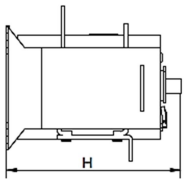
Current (A)	Horizontal hole center distance L1 (mm)	Auxiliary horizontal hole center distance L2 (mm)	Lengthways hole center distance H1 (mm)	Auxiliary lengthways hole center distance H2 (mm)	Hole diameter (mm)
2000-3200	475	150	350	220	13
800-1600	610	/	220	/	11
400-630	425	/	180	/	9
200-300	335	/	80/110	/	7
125-160	278	/	80/110	/	7
20-100	233	/	84	/	7

Note:
1.The mounting brackets of the ATS must be fixed on the same flat plane, the installation hole size should be adjust according to the actual situation, take force to use of the wrong hole size for installation is prohibited , or it will be damaged.

2. Recommend to add the busbars on the 2000A ATS or above, meanwhile use the cable installation will increase the installation support force , so there must increase effective reinforcement measures.

3. The mounting dimension above is suitable for field installation of users. If need more detailed dimensional parameters , as

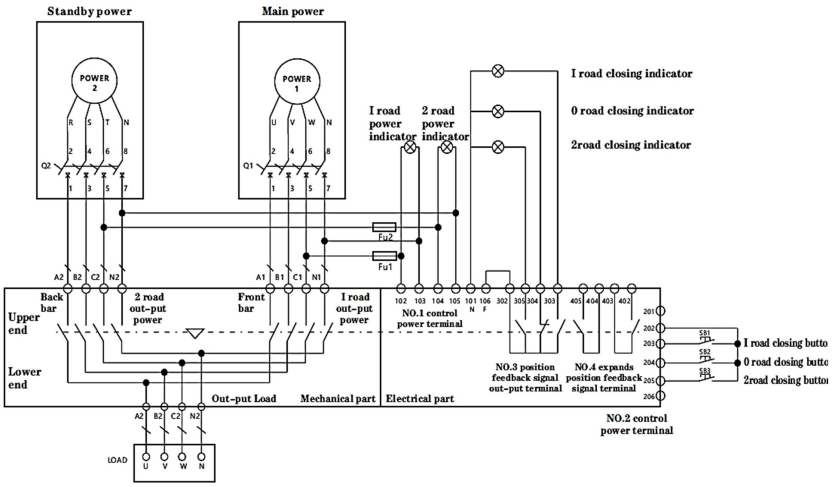




Specifications	A	B	C	D	E	F	G	H
ATS-20-100A	245	126	233	84	14	30	6	133
ATS-20-160A	290	166	278	80/110	20	36	9	184
ATS-200-300A	355	187	335	80/110	25	50	11	184
ATS-400-630A	445	260	425	180	40	65	13	262
ATS-800-1000A	635	350	610	220	63	120	9	321
ATS-1250A	635	350	610	220	63	120	11	321
ATS-1600A	635	375	610	220	80	120	13	321
ATS-2000-3200A	635	422	475	350	80	355	13	505

VIII. Typical Wire Connection Mode

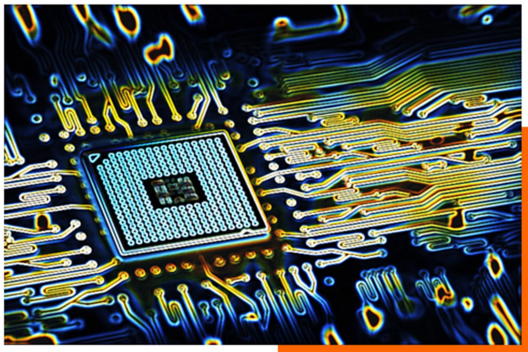
ATS Series Typical Control Schematic Diagram



Note: 1,This drawing is only applicable to the standard ATS using which under the situation of the voltage is AC380V/220V (three phases four wires),and frequency is 50/60HZ.

Note: 2,When using the intelligent controller ,please use the NO.3 terminal as the feedback port of the access control,and the NO.4 terminal as the port of the external indicator.

FU1/FU2 is 2A fuse 101-106,201-206,301-306 are the terminals of ATS 401-406, 501-506 terminals are used for 630A ATS (Mark) This diagram is suitable for 2, 3, 4, 5 connection modes



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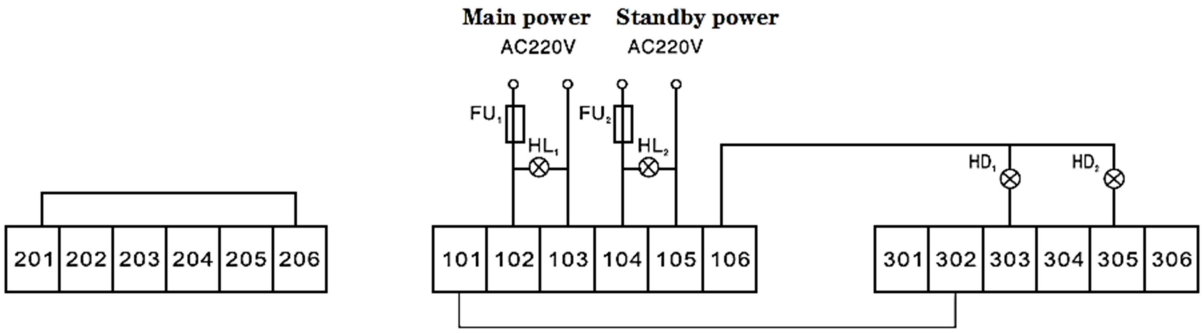
ATS Series Connection Modes

ATS Automatic-type connection mode



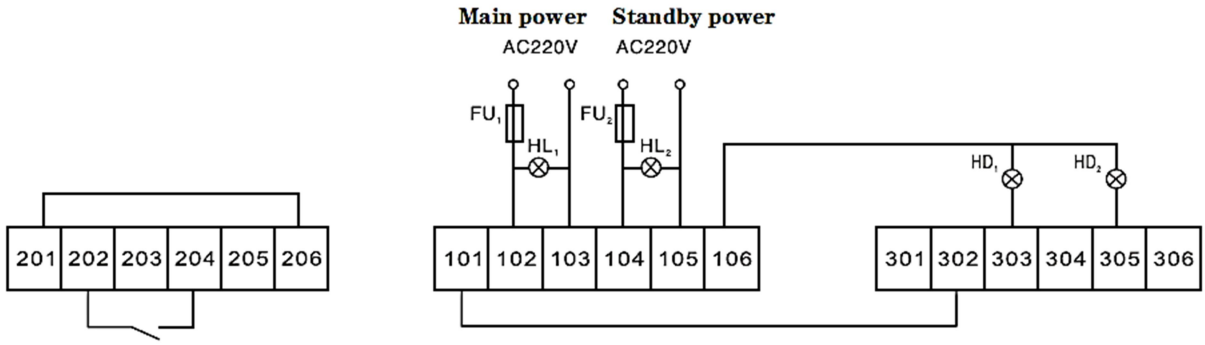
Note:

HI1 and HL2 are common power supply and standby power indicating instructions respectively

HD1 and HD2 are common power supply and standby power input instructions respectively

FU1 and FU2 are 2A fuses 101-106, 201-206 and 301-306 are ATS connection terminals

ATS Automatic-type + Force to O position type (Both powers are break off) connection mode



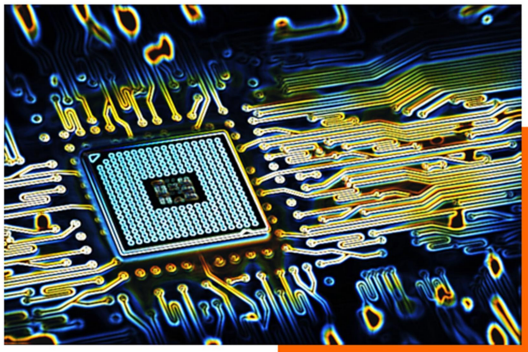
● **Force to "O" position contact terminal (passive)**

Note:

HI1 and HL2 are common power supply and standby power indicating instructions respectively

HD1 and HD2 are common power supply and standby power input instructions respectively

FU1 and FU2 are 2A fuses 101-106, 201-206 and 301-306 are ATS connection terminals



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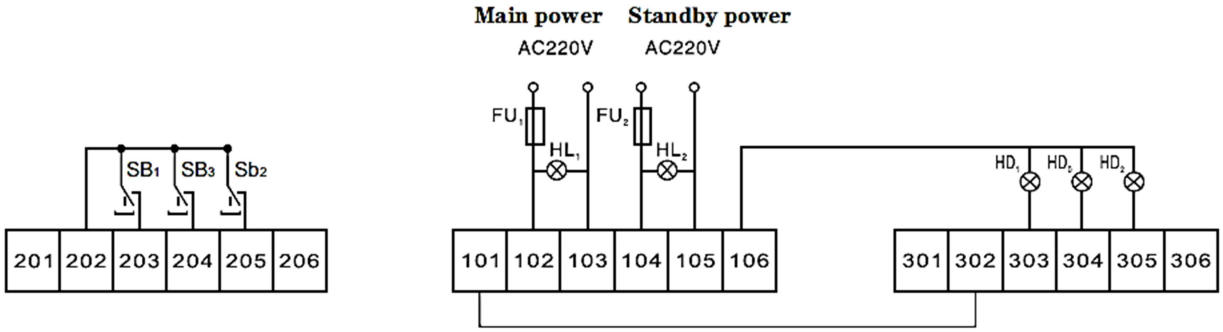
Remote-type connection mode(two Main supply)

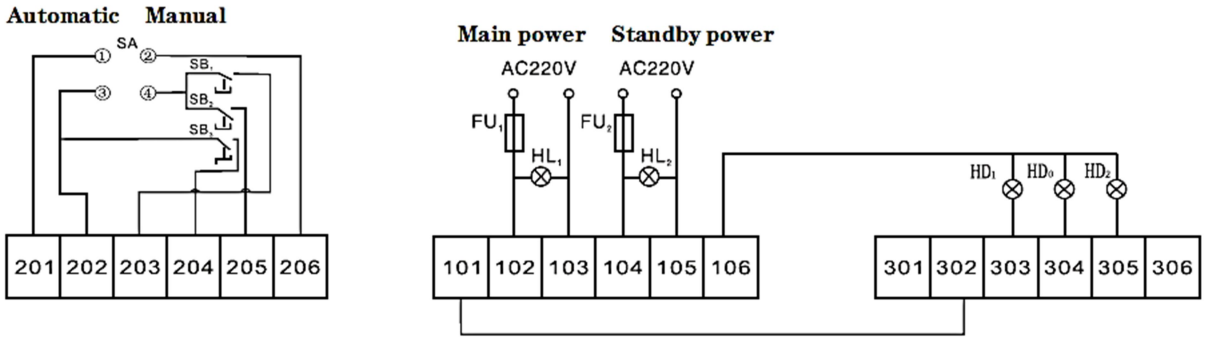


Note: SB1 is the manual power input button (passive contact) for main power supply

SB2 is the manual input button for standby power supply (passive contact)

SB3 is the force to "O" position button (passive contact) (need self lock)

Automatic-type+Manual-type(Remote-type) connection modes (two main supply)

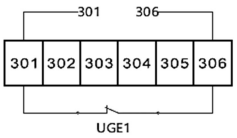


Note: SA is the option button for choosing Automatic-type or Manual-type function / SB1 is the manual power input button (passive contact) for main power supply

SB2 is the manual input button for standby power supply (passive contact) / SB3 is the force to "O" position button (passive contact) (need self lock)

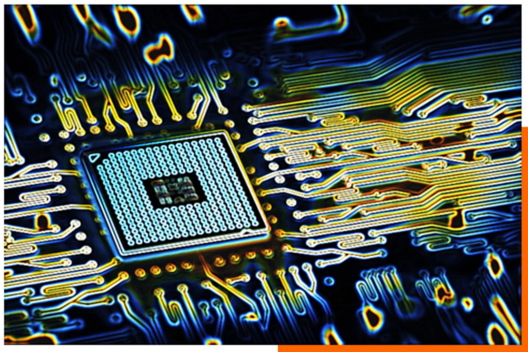
Start signal for the generator connection mode

The generator interface has been supplied (301-306 terminals with the signal of 'UGE1') , the wiring diagram is as follows:



UGE1 passive contact connect generator interface

Note: UGE1 is the generator interface inside of the ATS with the voltage 220V and relay 301-306.



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ATS

Automatic Transfer Switch

b) BBA Series CB Class (Circuit Breaker Type)

Features

- Have Zero-position
- Reasonable structure, compact volume, beautiful appearance.
- Protective cover, much safer and more reliable
- Control part is designed for easy maintenance
- Complete protection functions, provided with protection of short-circuit, overload and etc.
- Noise-free operation, energy saving and consumption reducing, convenient in installation, easy in operation, reliable and stable in performance.
- The interior adopts D type miniature circuit breaker.

I.Introduction

ATS Series Automatic Transfer Switch (ATS) is suitable for double power supply system (AC 50/60Hz, rated voltage is 440V, rated current is 6A-1250A).

The ATS can autotransfer between common power supply and standby power supply to ensure the continuity and reliablity of power supply without manual operation.

The body of ATS consists of forward and reversing motor, circuit breaker, mechanical interlock and controller.

The product are used in some important places where not allow blackout:

I power systems, high-rise buildings, housing estates, military installations, hospitals, airports, communications, fires, etc.

The ATS meet IEC60947-6-1, GB/T14048.11 standards.

II. Overview

ATS Series Automatic Transfer Switch (ATS) is suitable for a three-phase four-wire double power supply system (AC 50/60Hz, rated voltage is 440V, rated current is 6A-1250A), it can connect one or several load circuits from one power supply to another automatically, to ensure the nomal power supply of the load circuit. This Product are used in industrial sites, commercial spaces, high-rise buildings, residential buildings and other important places. The ATS meet IEC60947-6-1, GB/T14048.11 standards.

III. Service Conditions

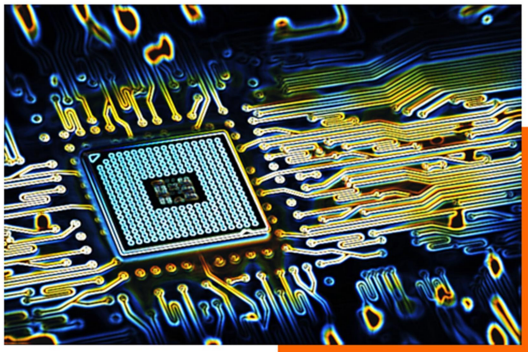
Ambient Air Temperature :

- Maximum Temperature: +40℃
- Minimum Temperature: -5℃
- Average Temperature in 24h: ≤+35℃
- Altitude: Installation altitude ≤2000m
- Atmospheric Conditions: when the maximum temperature is +40℃, the relative humidity is less than 50%, a high relative humidity is allowed when the temperature is low, for example, when the temperature is 20℃, the humidity is 90%. Users should take special measures for condensation caused by temperature changes.
- Pollution Level: 3

IV.Main Technical Parameters

Product Model	Circuit Breaker	Poles	Instantaneous Releaser Form	Rated Current of Circuit Breaker(A)	Rated Working Voltage of Circuit Breaker	Working Voltage of Control Loop
ATS	BBA-63CB	3P	C-type Lighting Protection (general lighting)	1,2,3,4	AC400V/AC230V	AC230V
				5(6),10		
			Tripping Current Range: 5In-10In	15(16),20		
		4P	D-type Power Protection: 10In-14In	25,32,40		
				50,63		

Notes: The input voltage is 230V, only connect to A phase (detection phase) of miniature circuit breaker (MCB).



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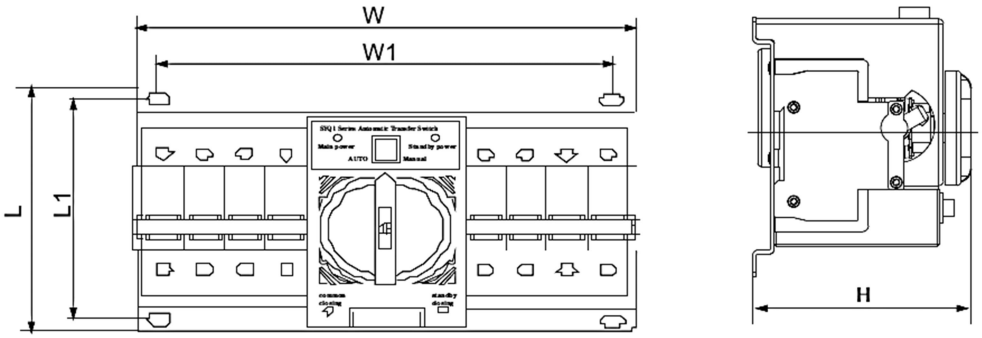
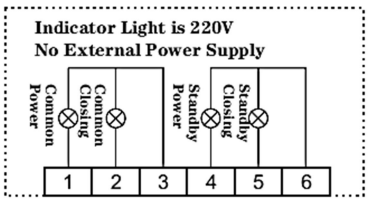
V. Outline and Installation Dimension

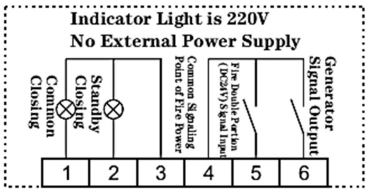


ATS-63 (basic type) terminal wiring principle



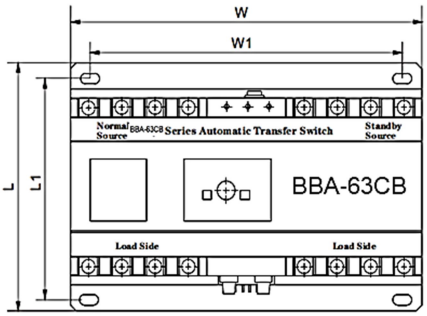
Terminal:
1: Common Power Indicated Output
2: Common Closing Indicated Output
3: Common Zero Line Output
4: Standby Power Indicated Output
5: Standby Closing Indicated Output
6: Standby Zero Line Output
Plug common zero line into terminal 3
Plug standby zero line into terminal 6

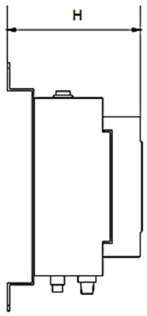
ATS-63 (fire、power type) terminal wiring principle



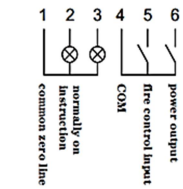
Terminal:
1: Common Closing Indicated Output
2: Standby Closing Indicated Output
3: Zero Line Output
4: Common Signaling Point of Fire Power
5: Fire Double Portion (DC24V) Signal Input
6: Generator Signal Output
Notes: If it is a three-pole ATS, please plug standby zero line into terminal 3

Specification \ Dimension	W	W1	L	L1	H
ATS-63/2P	150	135	132	120	122
ATS-63/3P	185	165	132	120	122
ATS-63/4P	220	200	132	120	122



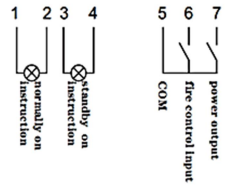


Note: If the ATS is two-pole, please connect zero line with 1

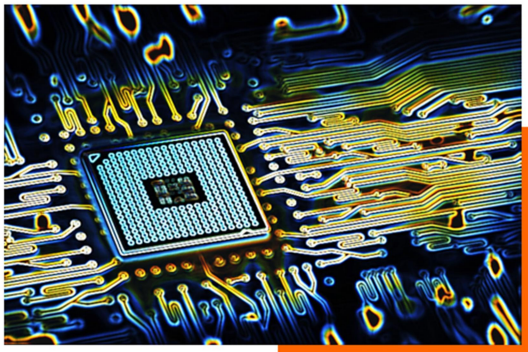


(AC220V) (without this feature, null)
ATS-100~250

Specification \ Dimension	W	W1	L	L1	H
ATS-100/3P	336	317	174	146.5	112
ATS-100/4P	366.5	347.5	174	146.5	112
ATS-225/3P	376.5	356	189	162	132
ATS-225/4P	411.5	391	189	162	132
ATS-400/3P	460	420	350	302	220
ATS-400/4P	510	470	350	330	220
ATS-630/3P	530	490	350	330	245
ATS-630/4P	590	550	350	330	245



Note: If the ATS is three-pole, please connect common zero line with 1, standby zero line with 3
ATS-400~630



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MCB

High Breaking Miniature Circuit Breaker

a) BBMC – 6 / 63 Series

I.Scope of Application

This product is suitable for short circuit protection and overload protection, it is used in distribution system for lighting distribution systems or motors. It has compact appearance, light weight, excellent performance, reliable high breaking capacity, rapid release, rail installation, shell and components are made of high impact resistance and flame retardant plastics and long service life, it is mainly used for overload and short circuit protection for power supply which is AC 50Hz, rated voltage to 400V, rated current to 63A, at the same time, electrical equipment and lighting circuits can be broken down frequently under normal conditions.

II.Characteristic

1.Breaking capacity (see Table 1) Table 1

Rated current (A)	Poles	Voltage (V)	Rated ultimate short-circuit breaking capacity		Tripping current range of instantaneous release
			Breaking current	cosΦ	
6、10、16、20 25、32、40	1P	220	4000	0.65~0.7	3In ~ 5In(Type B) 5In ~ 10In(Type C) 10In ~ 20In(Type D)
	2P,3P, 4P	400	4000		
50、63	1P	220	3000	0.75~0.8	
	2P,3P, 4P	400	3000		

2.Protective characteristics of over-current tripping device (see Table 2) Table 2

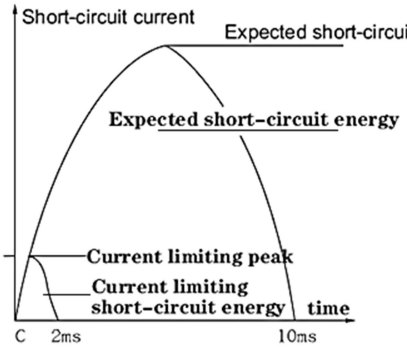
Serial number	Release type	Rated current of release	I/In	Tripping time	Starting state	ambient temp
1	B、C、D	≤63	1.13	t≤1h No tripping	cold state	30℃~50℃
2			1.45	t<1h Tripping	thermal state	
3		≤32	2.55	1s<t<60s Tripping	cold state	
4		>32		1s<t<120s Tripping	cold state	
5	B	Tripping	3	≤0.1s No tripping	cold state	
	C		5			
	D		10			
6	B		5	<0.1 Tripping	cold state	
	C		10			
	D		20			

3.Current limiting characteristic

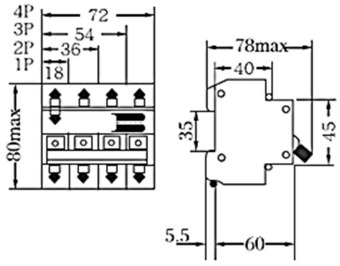
BBMC series miniature circuit breakers have high current limiting capability, thereby limiting the damage performance caused by short-circuit (see current limiting characteristic diagram)

III. Appearance Installation Dimensions

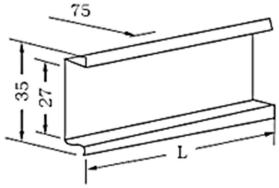
Current limiting characteristic

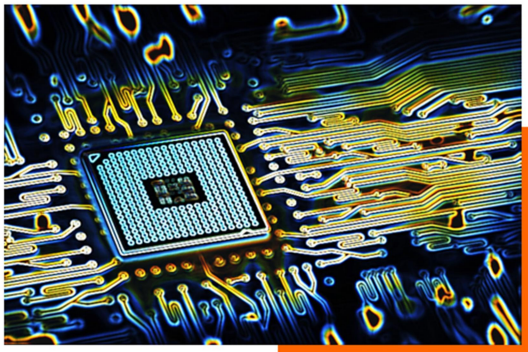


Appearance installation dimensions



DIN-Rail mounting dimensional drawing





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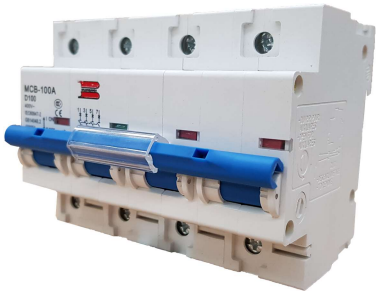
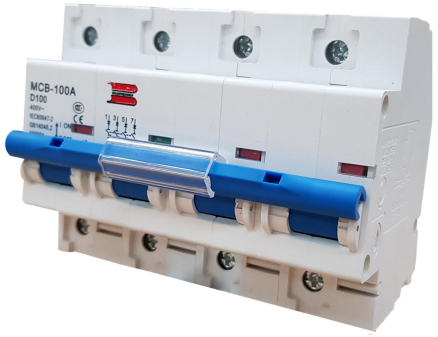




MCB

High Breaking Miniature Circuit Breaker

b) BBMC – 100 / 125 Series

I.Scope of Application

BBMC-125 is suitable for short circuit protection and overload protection, it is used in distribution system for lighting distribution systems or motors. It has compact appearance, light weight, excellent performance, reliable high breaking capacity, rapid release, rail installation, shell and components are made of high impact resistance and flame retardant plastics and long service life, it is mainly used for overload and short circuit protection for power supply which is AC 50Hz, rated voltage to 230/400V, rated current to 125A, at the same time, electrical equipment and lighting circuits can be broken down frequently under normal conditions.

II.Main Technical Parameters

1、Rated current of circuit breaker：63A、80A、100A、125A

2、Poles of circuit breaker: 1P, 2P, 3P, 4P

3、The circuit breaker is an embedded installation (mounted on the mounting rail)

4、Rated working voltage of circuit breaker

5、Rated breaking capacity：Icn=10000A, Ics=7500A

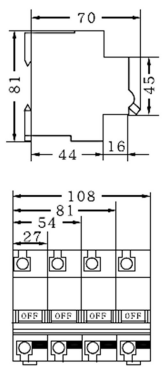
6、Over current tripping characteristics are shown in Table 1 (ambient temperature is 30 ~35 C)

Table 1

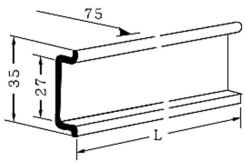
Serial number	Rated current of release	Starting state	Test current	Regulation time	Expected results	Remarks
a	≤63A	cold state	1.05In	t≥1h	No tripping	
	>63A			t≥2h		
b	In≤63A	next to the a test	1.30In	t<1h	Tripping	The current rises steadily to the specified value within 5semarks
	In>63A			t<2h		
c	63、80、100A 、125A	cold state	2.55In	1s<t<120s	Tripping	
d	All values	cold state	5In(10In)	t≥0.1s	No tripping	The value in parentheses is D
e	All values	cold state	10In(20In)	t<0.1s	Tripping	The value in parentheses is D

III. Appearance and Installation Dimensions

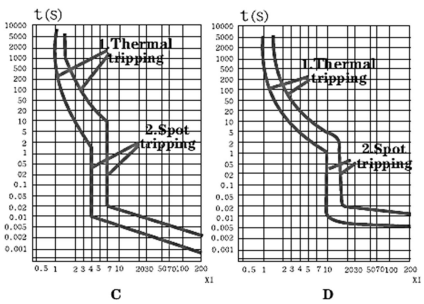
Overall dimensions

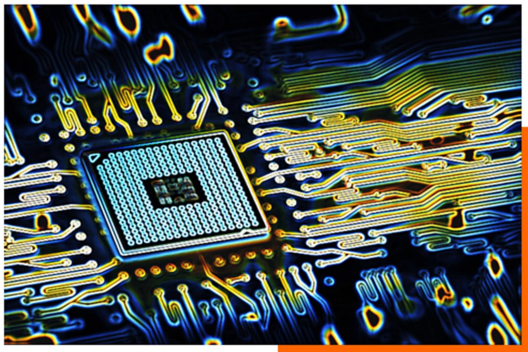


DIN-Rail mounting dimension



Thermal / electromagnetic tripping characteristic





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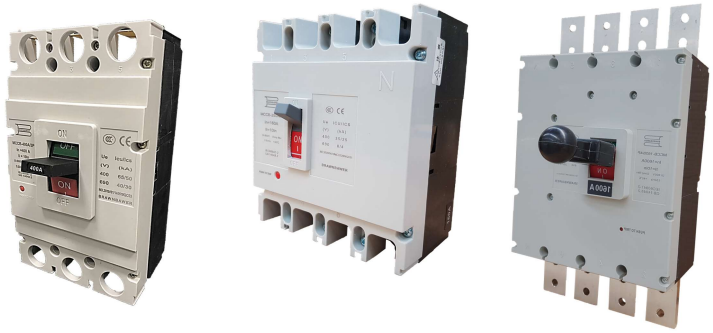


MCCB

BBCB Series Moulded Case Circuit Breaker

I.Range of Application

Moulded Case Circuit Breaker (MCCB)is one of the company's new circuit breakers which combined the international advanced design,manufacturing technology and develop . According to its rated limit short circuit sectional capacity (ICU), is divided into L-type (standard type), M-type (high break type), H-type (higher break type).It has the characteristics of small size, high breaking, short flying arc and anti-vibration, and is an ideal product for land and ship use. Its rated insulation voltage 800V (BBCB-63 is 500V), suitable for AC 50HZ, 690V and the following circuit for continuous frequent conversion and motor infrequent start-up. Circuit Breaker has overload, short circuit and under-voltage protection device, which can protect the line and power equipment from being damaged.

Vertical installation and horizontal installation

Meet the standards: IEC60947-2、GB14048.2

II.Types and Classification

MODEL	A	POLE
BBCB-16	16	3/4
BBCB-25	25	3/4
BBCB-32	32	3/4
BBCB-40	40	3/4
BBCB-50	50	3/4
BBCB-63	63	3/4
BBCB-80	80	3/4
BBCB-100	100	3/4
BBCB-125	125	3/4
BBCB-160	160	3/4

MODEL	A	POLE
BBCB-200	200	3/4
BBCB-250	250	3/4
BBCB-300	300	3/4
BBCB-400	400	3/4
BBCB-500	500	3/4
BBCB-630	630	3/4
BBCB-800	800	3/4
BBCB-1000	1000	3/4
BBCB-1250	1250	3/4
BBCB-1600	1600	3/4

III.Specification

Rated current of overcurrent release (A): respectively,BBCB-63: 6, 10, 16, 20, 25, 32, 40, 50, 63A; BBCB- 100: 10, 16, 20, 25, 32, 40, 63, 80, 100A; BBCB-250:100, 125, 140, 160, 180, 200, 225, 250 BBCB- 400:225, 250, 315, 350, 400A BBCB-630:400, 500, 630A BBCB-800:630, 700, 800A, BBCB-1000,1250,1600A

Note1: The 6A case only have the electromagnetic (instantaneous) type;

Note2: the specifications in the parentheses are not recommended.

IV.Technical Parameters

1.Thermal magnetic circuit breaker has the inverse time characteristic, electromagnetic tripping is instantaneous action, characteristics refer to Table2(power distribution)

Table1

Rated current of the release	Thermal magnetic release (ambient air temperature+40			Electromagnetic release tripping current(A)
	1.05 In(cold state) no action time(h)	1.30 In(hot state) action time(h)	3.0 In Returns the properties of the current return time(s)	
10≤In≤63	1	1	5	10In ± 20%
63<In≤100	2	2	8	
100<In≤800	2	2	12	10In ± 20%和 5In ± 20%

2. Productive motor refer to Table3(ambient air temperature 40℃)

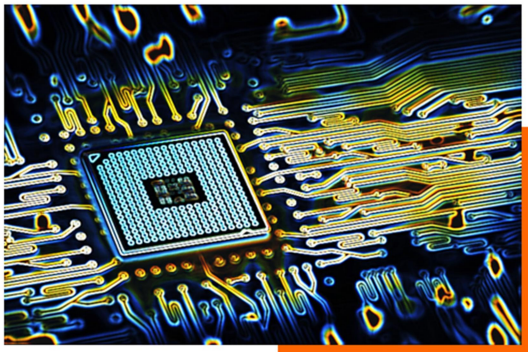
Table2

Testing current name	The multiple of rated current	Time		Initial State
		10≤In≤225	225<In≤800	
Conventional non-tripping current	1.0			Cold State
Conventional tripping current	1.2			Hot State
	1.5	<4min	<8min	Hot State
	7.2	4s<Tp≤10s	6s<Tp≤20s	Cold State

3. The current of the protective electric motor of the electromagnetic release is 12In±20%（A）

4. If the applied voltage of the shunt release is between 70%~110% of the rated control power voltage, it can reliably breaking the circuit breaker.

5. When the supply voltage drops to the rage of 70%~35% of the rated working voltage of the under-voltage release, the under-voltage release can reliably breaking the circuit breaker. If the supply voltage is below 35% of the normal-voltage of the under-voltage release , the under-voltage release could prevent the breaker of closing; when the supply voltage is above 85% of the rated working voltage of the under-voltage, the under-voltage could ensure the breaking closing.



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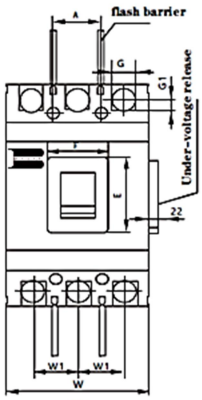
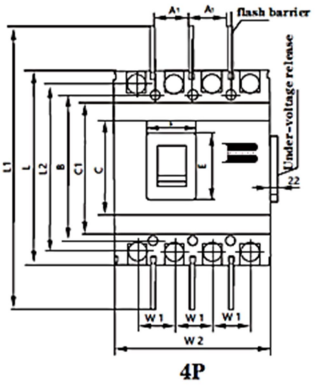
V. Appearance and Mounting Dimension





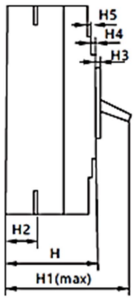
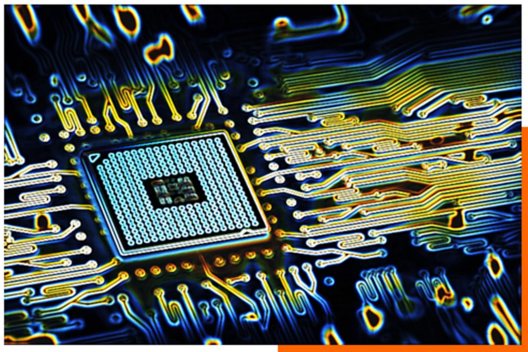


Table 3.

Specification	Pole	Appearance dimension																	Mounting dimension			
		C	C1	E	F	G	G1	H	H1	H2	H3	H4	H5	L	L1	L2	W	W1	W2	A1	A	B	ϕd
BBCB-63L	3	85	/	48	22	14	6.5	74	90.5	28	4	6	/	135	235	117	76	25	/	/	25	117	4.5
BBCB-63M	3	85	/	48	22	14	6.5	74	90.5	28	4	6	/	135	235	117	76	25	102.5	/	25	117	4.5
BBCB-125L	3	84	/	50.5	22	17.5	7.5	68	86	24	4	7	/	150	255	136	90	30	/	/	30	130.5	4.5x6
BBCB-125M BBCB-125H	3	84	/	50.5	22	17.5	7.5	68	86	24	4	7	/	150	255	136	90	30	/	/	30	130.5	4.5x6
BBCB-250L	3	102	/	50	22	23	11.5	86	110	24	4	5	/	165	360	144	105	35	/	/	35	126	4.5x6
BBCB-250M BBCB-250H	3	102	/	50	22	23	11.5	103	127	24	4	5	/	165	360	144	105	35	140	/	35	126	4.5x6
BBCB-400L BBCB-400M BBCB-400H	3	127.5	173.5	88.5	65	30.5	11	105	155	38	6.5	5.5	5	257	457	224	150	48	/	/	44	194	7
BBCB-400L BBCB-400M BBCB-400H	4	127.5	173.5	88.5	65	30.5	12	105	155	38	6	5	4.5	257	457	224	/	48	197.5	50	44	194	7
BBCB-630L BBCB-630M BBCB-630H	3	134	184.5	89	65.5	44	13.5	110	160	43	7	3.5	4.5	270	470	234	182	58	/	/	58	200	7
BBCB-630L BBCB-630M BBCB-630H	4	134	184.5	89	65.5	44	15.5	110	160	43	6.5	3.5	4.5	270	470	234	/	58	240	58	58	200	7
BBCB-800L BBCB-800M BBCB-800H	3	136	204	81	66	45	12.5	116	147	32	4.5	5	8	280	470	243	210	70	210	/	70	243	7
BBCB-800L BBCB-800M BBCB-800H	4	136	204	81	66	45	12	116	168	41.5	4.5	5	8	280	485	243	/	70	280	/	70	243	7
BBCB-1250	3	/	/	100	78	45	/	139	190	55	/	/	/	330	470	/	210	70	280	/	70	300	/
BBCB-1250	4	/	/	100	78	45	/	139	190	55	/	/	/	330	470	/	280	70	280	/	70	300	/
BBCB-1600	3	/	/	100	78	45	/	139	190	55	/	/	/	330	510	/	210	70	280	/	70	300	/
BBCB-1600	4	/	/	100	78	45	/	139	190	55	/	/	/	330	510	/	280	70	280	/	70	300	/



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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.

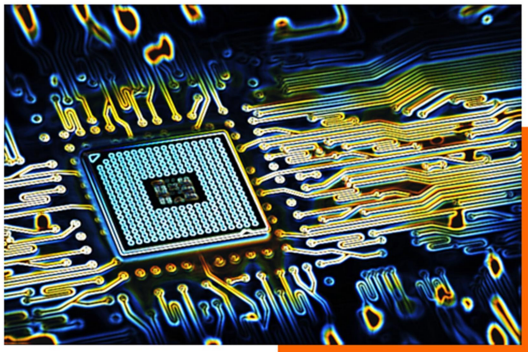
III. Main Technical Parameters

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

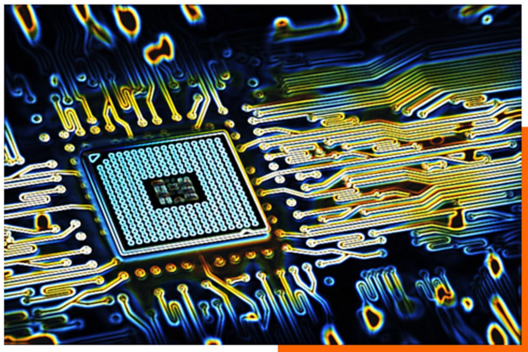
Delay setting time ts(s)	0.1	0.2	0.3	0.4
Delay time (s)	0.06	0.14	0.23	0.35
Action characteristics	I > 8Ir1 Time limit action			
	I < 8Ir1	$T = \frac{(8Ir1)^2 ts}{I^2}$		I=short-circuit current T=Action time

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

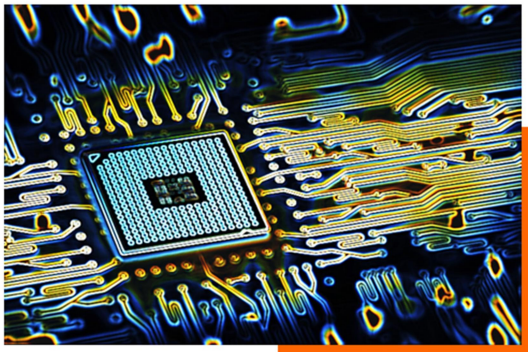
9.2 Auxiliary contact form: four group conversion

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

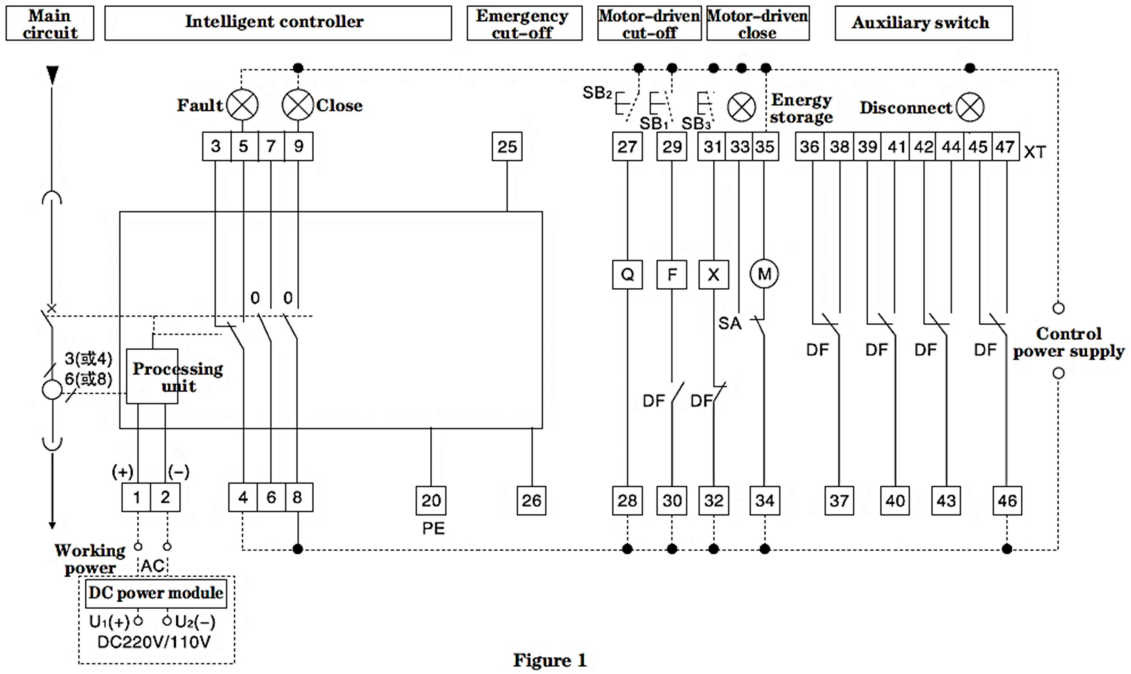


Figure 1

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.

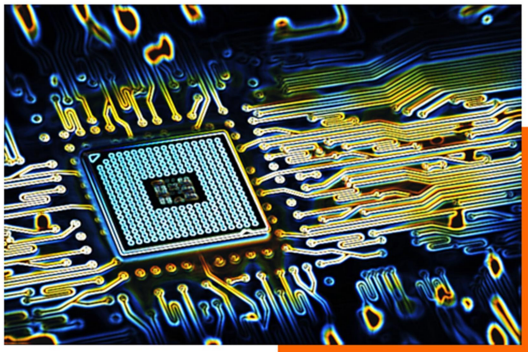
(4) Accessories are prepared by user.

(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)

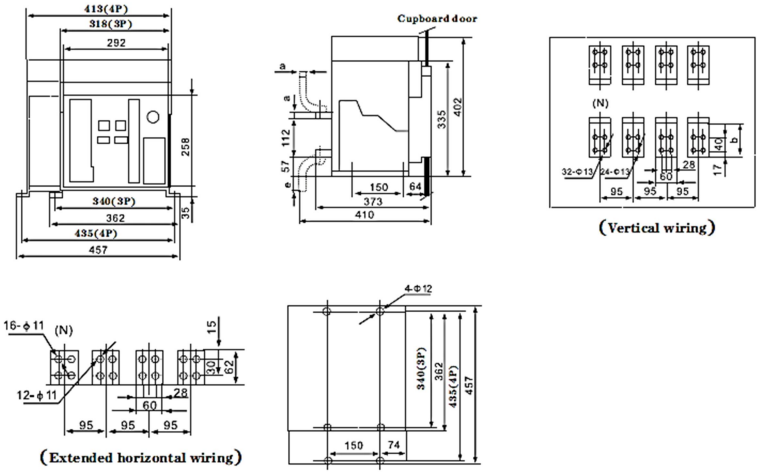


Figure 2

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)

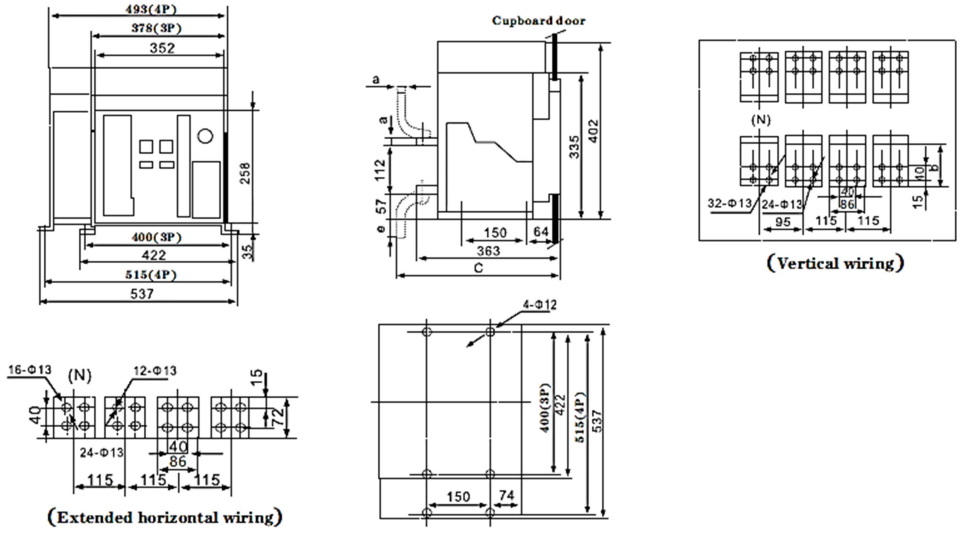
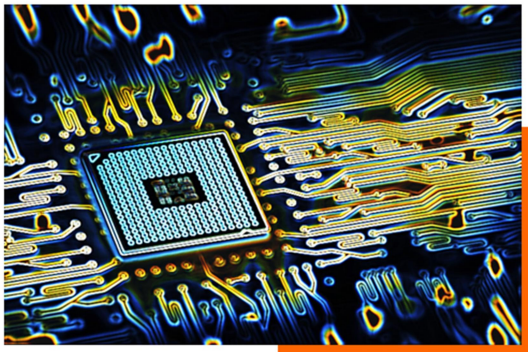


Figure 3

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)

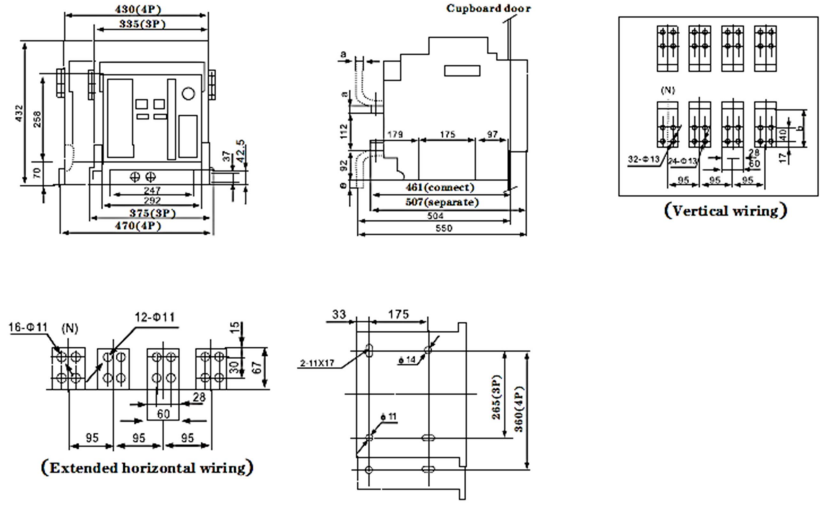


Figure 4

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)

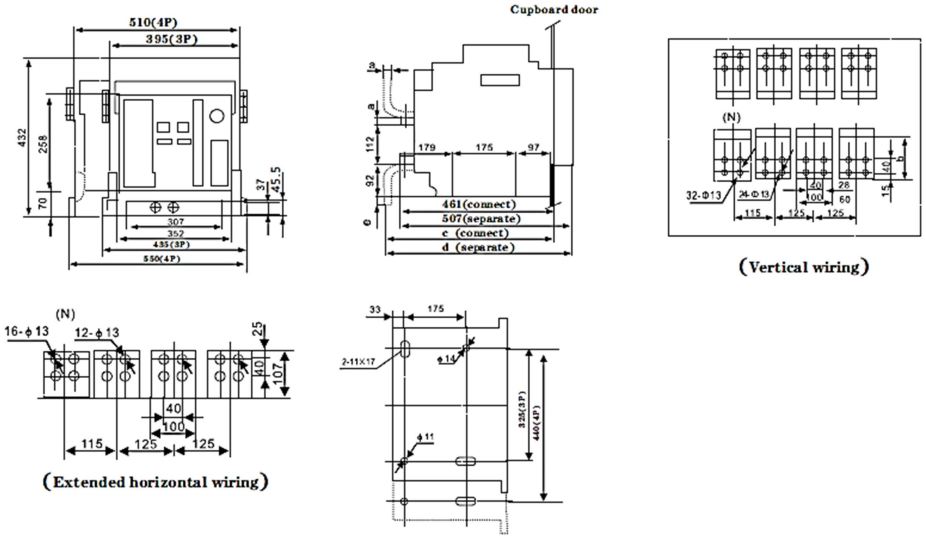
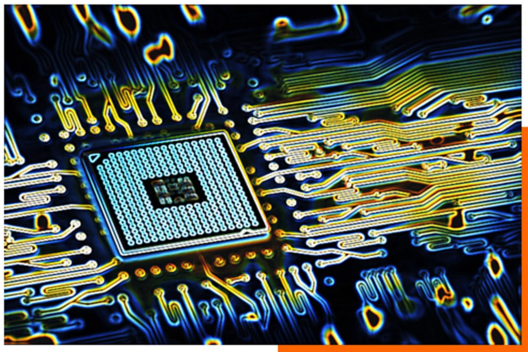


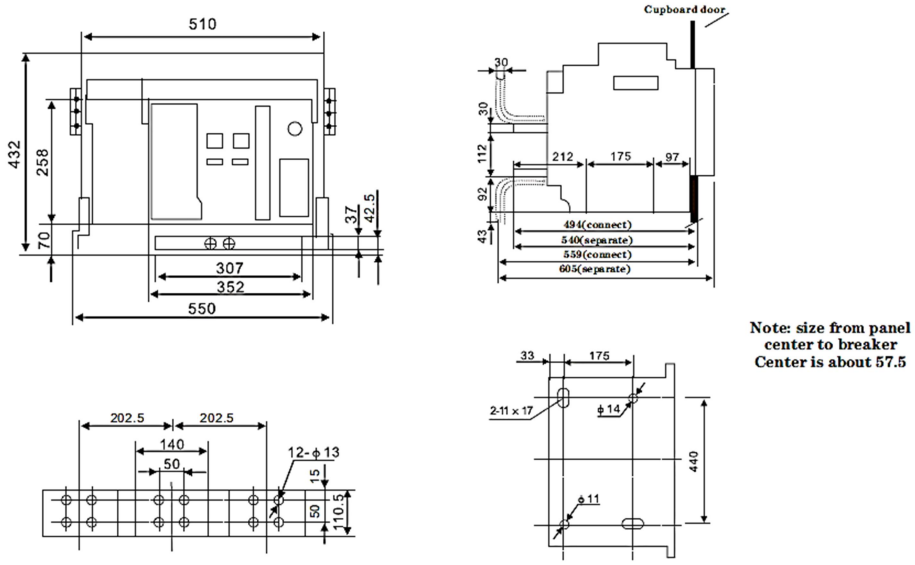
Figure 5

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

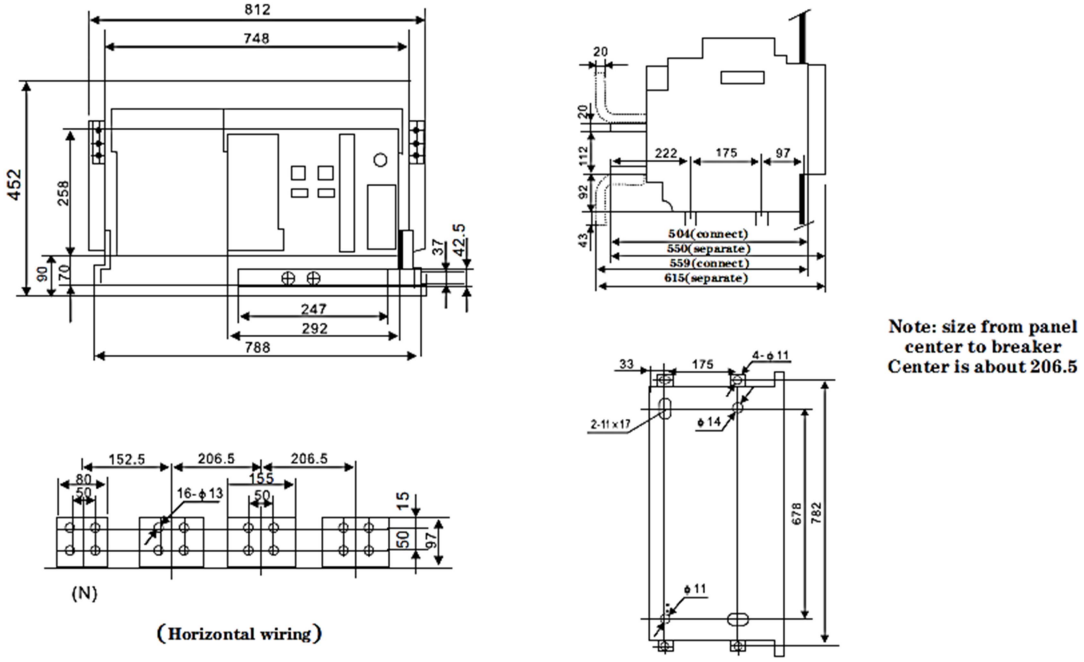
BBAC-4000/3 Open Frame Circuit Breaker (see Figure 6)



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

Figure 6

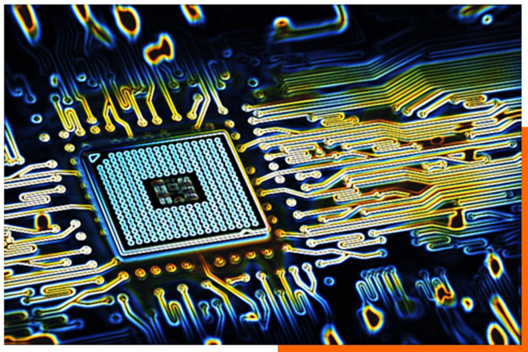
BBAC-4000/4 Open Frame Circuit Breaker (see Figure 7)



(Horizontal wiring)

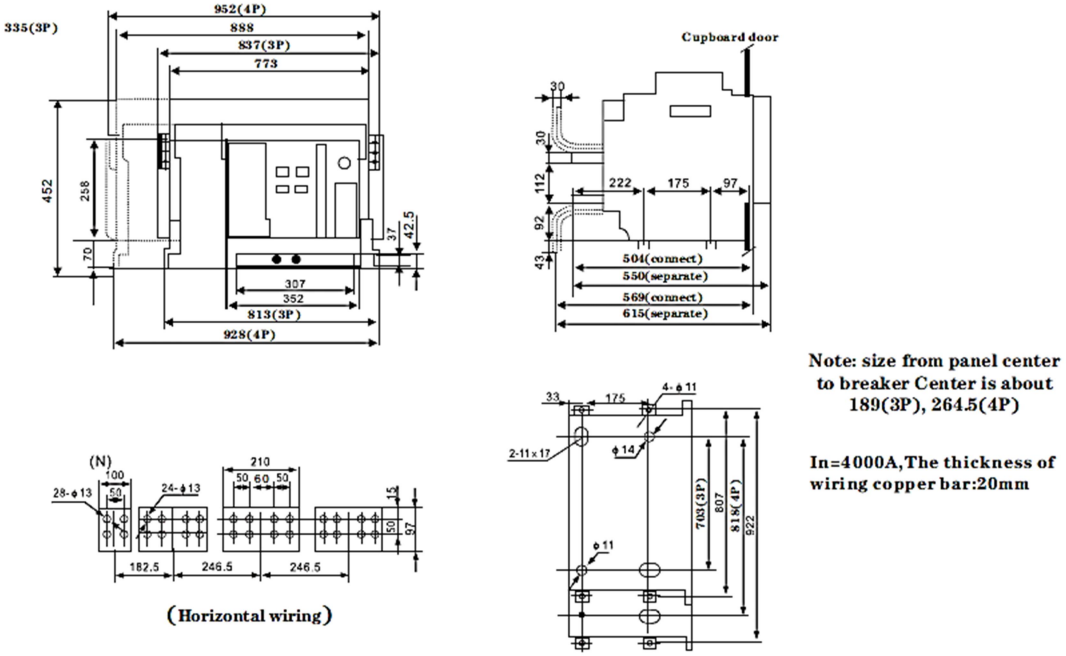
Note: size from panel center to breaker Center is about 206.5

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)

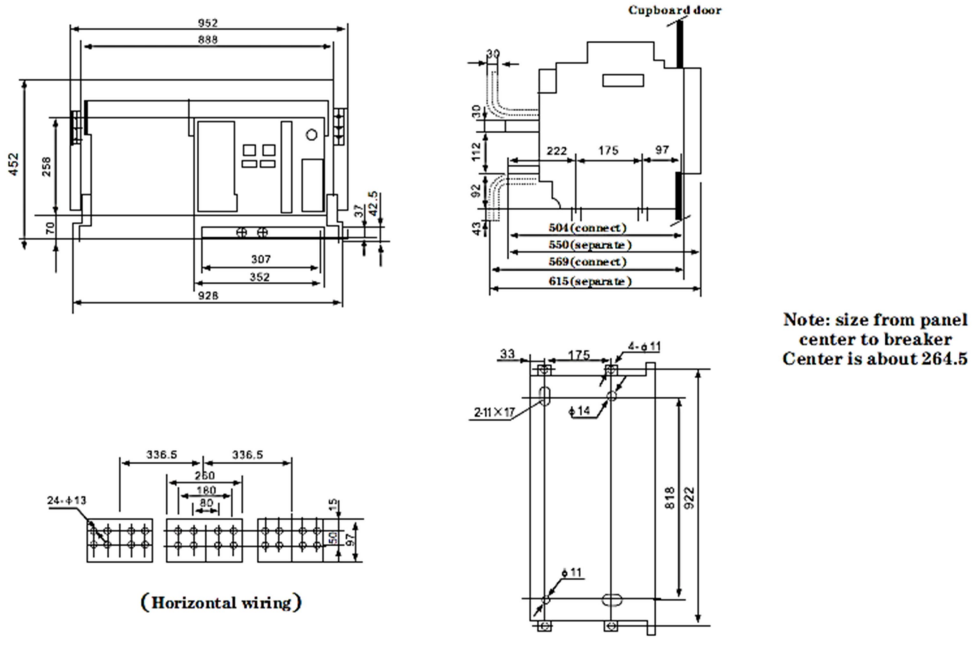


Note: size from panel center to breaker Center is about 189(3P), 264.5(4P)

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

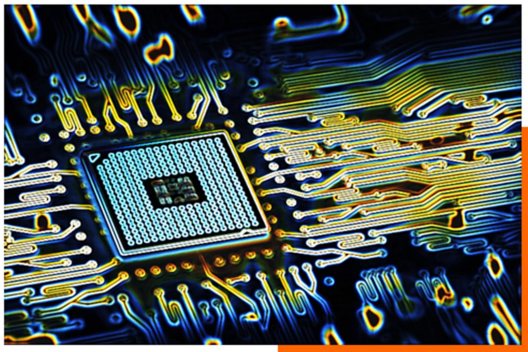
Figure 8

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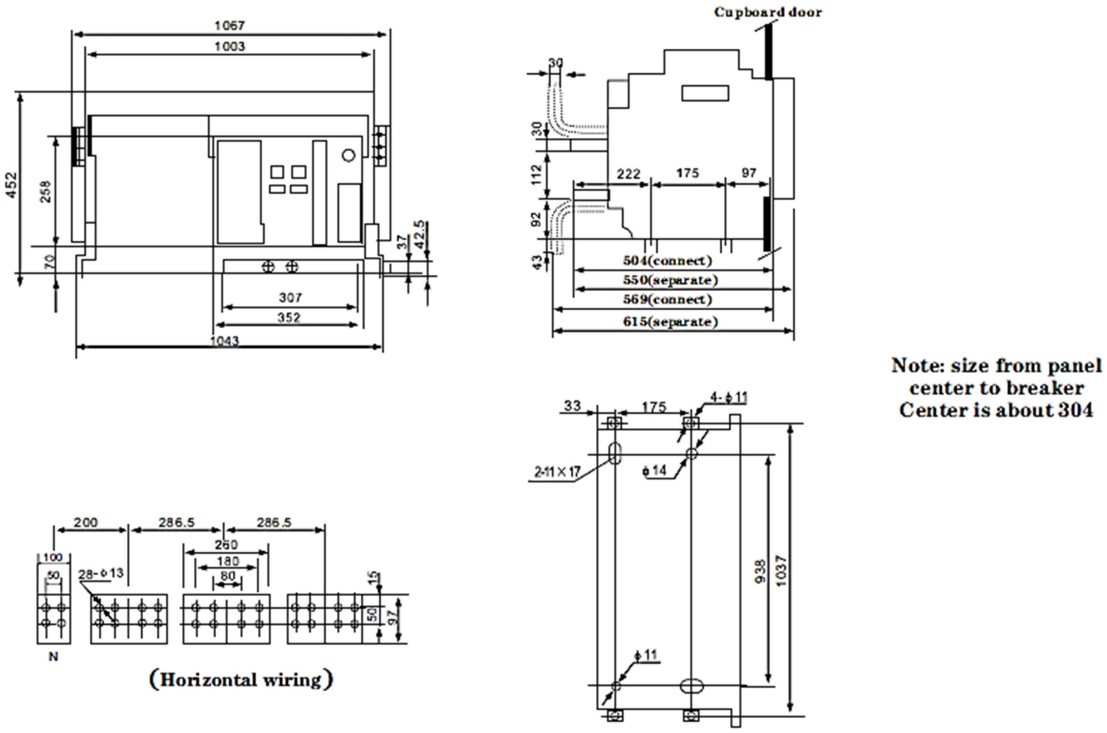
VI.III Installation and Appearance Dimention of Open Frame Circuit Breaker

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



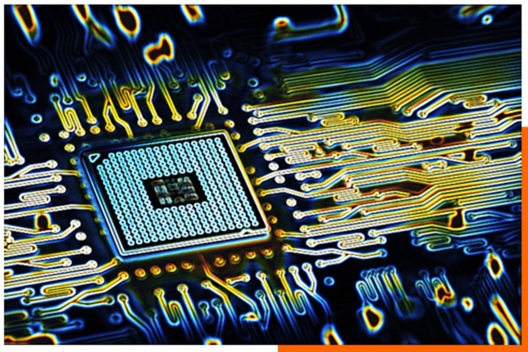
Note: size from panel center to breaker Center is about 304

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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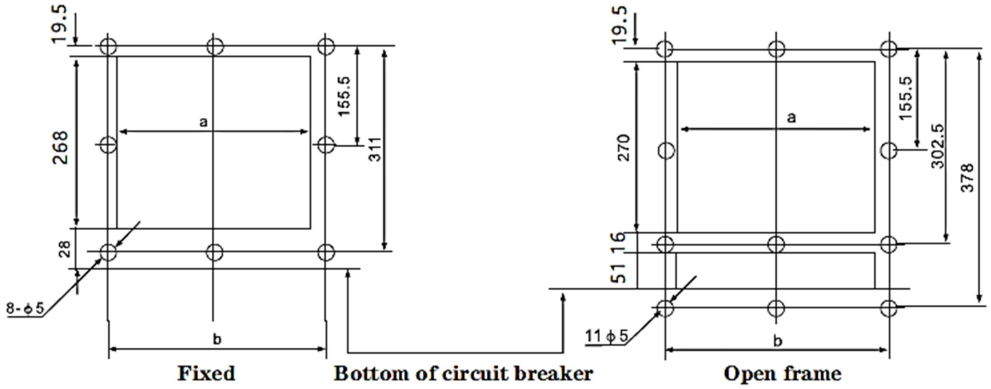
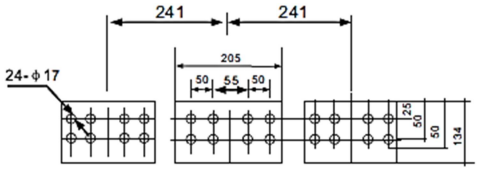
VII. Door Frame Size and Installation Hole Spacing



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)