



# WHG Series Intelligent Air Circuit Breaker



## Intelligent Air Circuit Breaker

### Outline


### Scope Of Application

ACB

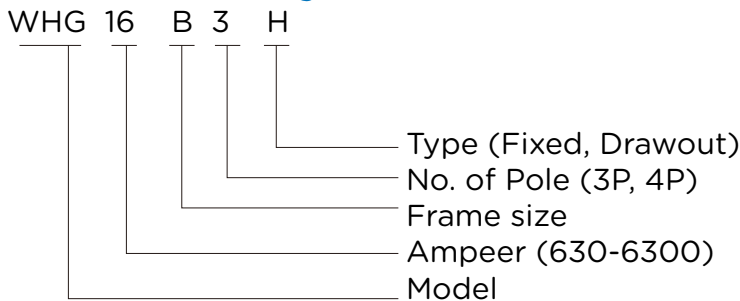


## Intelligent Air Circuit Breaker

WHG series intelligent air circuit breaker is used for controlling low voltage distribution network, is generally mounted in low voltage distribution board as main switch for protection. Its reproductive products: WHG series isolators installed in distribution circuit to make and break the circuit for isolation. Its performance has reached international advanced level of like products.

- 1.1 Rated current 630~6300A;
- 1.2 Short circuit breaking capacity 80~120KA (rms);
- 1.3 Rated working voltage AC690V and below;
- 1.4 3P and 4P;
- 1.5 Draw-out type and fixed type;
- 1.6 Inverse feeders (incoming and outgoing cable) mounting available;
- 1.7 Multiple intelligent controllers provide different functions;
- 1.8 The sign of isolation function is "  "
- 1.9 Comply with standards of IEC60947-2, GB14048.2-2008.

### Model and Meaning



## Categories

Installation way: Fixed type and Draw-out type.

Number of pole: 3 pole, 4 pole.

Tripping type: Manual operation, motor operated (and with manual operation).

Trip categories: Intelligent controller, undervoltage instantaneous trip and shunt trip (or time delay type).

Intelligent controller categories: L type (basic type), M type (standard type), Other type (high-class type).

## 4. Normal working conditions

4.1. Ambient temperature limit within  $-5 \sim +40$  degree, average value within 24h not more than 35 degree (except for special requirement);

4.2. Altitude not more than 2000m;

4.3. Relative humidity not more than 50% at highest temperature 40 degree, at lower temperature humidity is allowed for higher value such as 90% at 20 degree, . It shall apply for special treatment when temperature variation occurs to clotted dew;

4.4. Polluted grade: 3 class;

4.5. The mounting class of main circuit of circuit breaker, absent voltage release coil, source transformer primary winding is IV grade, the left auxiliary circuit, control has III mounting grade;

4.6. The circuit breaker shall be mounted according to this manual. The mounting vertical angle shall not more than 5 degree;

4.7. If circuit breaker installed in small compartment of the switch board, the protection grade up to IP40, added with door frame, protection grade up to Ip54.

## Structure introduction

### Structure characteristics

1.1. The breaker has fixed type and draw-out type. The fixed type breaker loaded into special drawer then it becomes draw-out type breaker. The breaker consist of contact system, arc-extinguishing system, operating mechanism, current transformer, intelligent controller and auxiliary switches, secondary plug and socket, undervoltage and shunt releases, drawer holder for draw-out type breaker has right and left side plates, base, transom and etc.

#### 1.2. Contact system

One integral contact used, namely different parts of the contact has function of its main contact and arcing contact;  
Contact made of new material with the performance of arc high withstand, which it will not lead to high temperature rise even when it break short circuit current.

Contact system adopt the layout mode of multi circuit shunt to reduce the electric stress, improve the electric steadiness.

The distance between moving and static contact is much bigger than 18mm required by standard, completely in compliance with the requirement of safe isolation. The indicator for contact not breaking position is secure and accurate, and only when contact is locked then the breaker can't be closed.

NOTE: "Trip" lock device for breaker is optional but when it used as isolator it is a must.

#### 1.3. Arc-extinguishing chamber.

Each pole has its arc-extinguishing chamber, its function is to separate each electrode, and insulated between each other, isolated from other parts and operator; arc extinguishing chamber enclosed into the insulating base of breaker, enforce the mechanical strength of arc extinguishing chamber wall, and avoid being broken when breaking big short circuit current.

#### 1.4. Operating mechanism, and hand operated, motor operated mechanism

The mechanism is fixed in the front of breaker. Mechanism use five connected rods, free trip structure, energy stored available, once breaker receive the command of closing, breaker can be closed immediately. The stored energy can be released by hand operating button or closing electromagnet. Electric motor driving mechanism become integrated, shaft for energy store coupled with main shaft by active concave and convex part. It is easy to disassembly and assembly.

#### 1.5 Intelligent controller

The frame illustration of intelligent controller (see Pic 1)

#### 1.6. Drawer holder

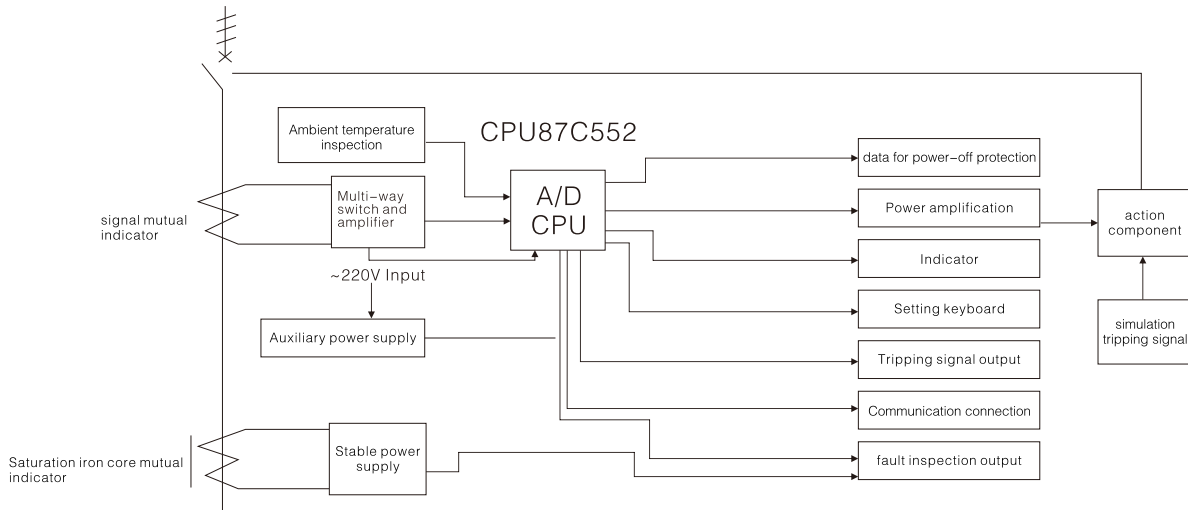
Drawer holder consist of right and left side plates with railway, base, crossarm. Boosting mechanism provided on the base, position indicator is installed, on top of drawer holder installed with static contact of auxiliary circuit. Bridge type main circuit contacts is ahead separated safely by plate.

#### 1.7. The breaker has three positions during moving.

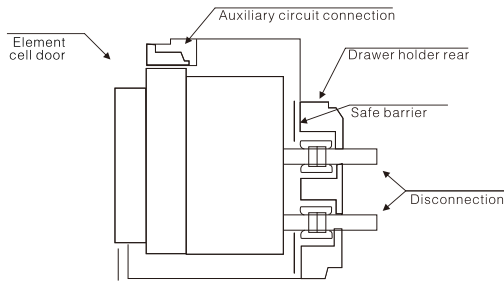
"ON" position, main circuit and auxiliary circuit connected, separated plate opened (Pic2)

"Test" position: Main circuit opened, safe separated plate closed, auxiliary connected only. It can perform necessary operation tests.

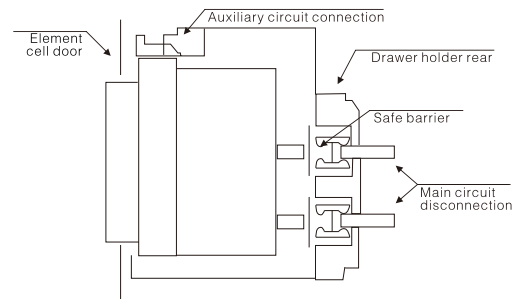
"OFF" position: Main and auxiliary circuits are opened, safe separated closed (Pic 4)



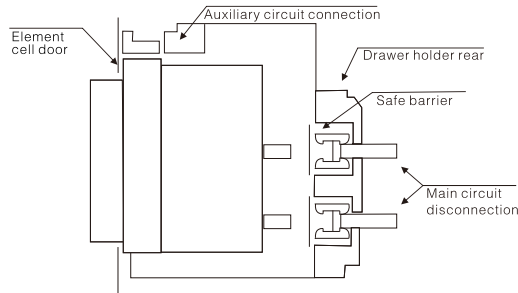
The frame illustration of intelligent controller (Pic 1)



"ON" position (Pic 2)



"Test" position (Pic 3)

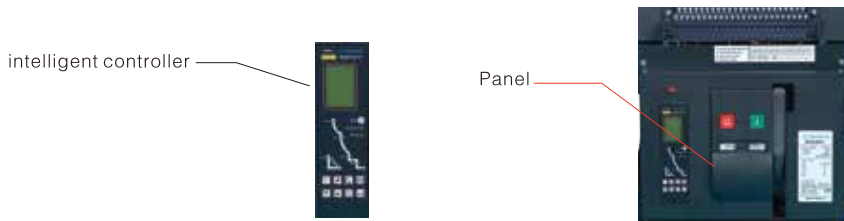
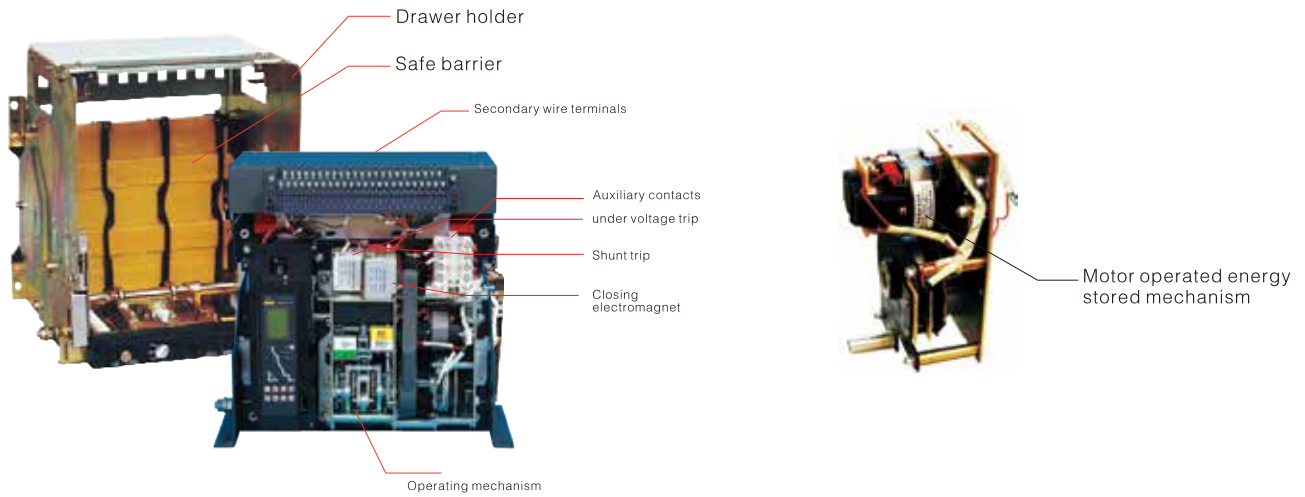


"OFF" position (Pic 4)

Structure anatomy

Front indication of breaker

ACB



## Function instruction for Intelligent Controller

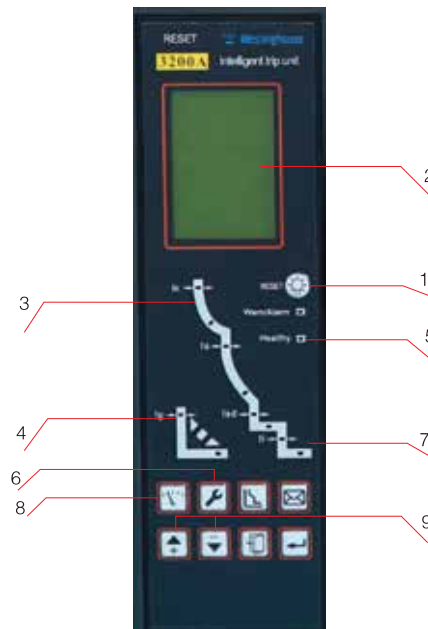


Chart 19

3.1.Reset button.When tripping for fault,if closed again,pls press the reset button otherwise the breaker can't be "OFF"

3.2.Current and time display can show current and time.

3.3.LED luminous indicator shows every status and grade.

3.4.When "select"button is well it show max phase current or max voltage.Press the button,showing every phase of current and voltage circularly.

3.5."Lamp dearing"button for controller setting ,after fault or before breaker closing ,press the button is well to operate.

3.6."Set"button is for inspecting or setting every kind of protection characteristic for current or time ,press this button,showing every status circularly.

3.7."Fault inspection"button shows fault status happened last time and fault current and time.

3.8."Tripping"and "no tripping"button for test time.

3.9."store", "+ "and " - "button for setting current or time.

※Note: Controller type explanation:

1.Basic type: L2,L3,L4 .

2.Standard type: M.

3.Other types: 2M, 2H, 3H.

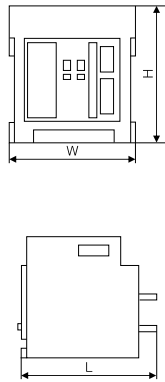
## Technique index and characteristics

### Technique data

Table 1

Type		WHG-2000										
Inm(A)Rated frame current		2000										
In(A)Rated current		630	800						1000			
Ue(V)Rated working voltage		AC400、690 50Hz										
Ui(V)Rated insulating voltage		AC1000										
Uimp(V)Rated impulse withstand voltage		8000										
Power frequency withstand voltage		AC3500V 1min										
pole		3、4	3、4						3、4			
In(A)Rated current of N pole		50%In 100%In										
Rated ultimate short circuit breaking capacity Icu(kA)rms	AC400V	80	80						80			
	AC690V	50	50						50			
Rated operating short circuit breaking capacity Ics(kA)(peak)	AC400V	50	50						50			
	AC690V	40	40						40			
Rated short circuit making capacity Icm(kA)(rms)	AC400V	176	176						176			
	AC690V	105	105						105			
Rated short circuit withstand current (Is)Icw(rms)	AC400V	50	50						50			
	AC690V	40	40						40			
Full breaking time (no additional delay)		25 ~ 30										
(ms)Closing time		(max)70										
Intelligent controller	Basic type	●	●						●			
	Standard type	●	●						●			
	Other type	●	●						●			
Operation performance (times)	AC400V	6500	6500						6500			
	AC690V	3000	3000						3000			
	Maintenance free	15000	15000						15000			
	Maintenance required	30000	30000						30000			
Installation	Connection mode		Vertical in horizontal surface			Vertical in horizontal surface			Vertical in horizontal surface			
	Mode	Draw-out type	● ●			● ●			● ●			
		Fixed type	● ●			● ●			● ●			
	Outline(mm) H × W × L		H	W	L	H	W	L	H	W	L	
	Draw-out type	Horizontal connection	3p	Front installed d								
			Rear installed d	432	375	421	432	375	421	432	375	421
		4p	Front installed d									
			Rear installed d	432	470	421	432	470	421	432	470	421
	Vertical connection	3p	Front installed d									
			Rear installed d									
4p		Front installed d										
		Rear installed d										
Fixed type	Horizontal connection	3p	Front installed d									
			Rear installed d	402	362	323	402	362	323	402	362	323
		4p	Front installed d									
			Rear installed d	402	457	323	402	457	323	402	457	323
	Vertical connection	3p	Front installed d									
			Rear installed d									
		4p	Front installed d									
			Rear installed d									

Installation





## Technique data

Table 1

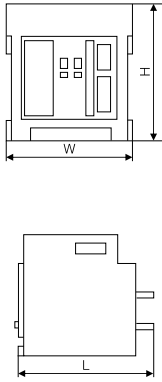
Type		WHG-2000										
Inm(A)Rated frame current		2000										
In(A)Rated current		1250	1600	2000								
Ue(V)Rated working voltage		AC400、690 50Hz										
Ui(V)Rated insulating voltage		AC1000										
Uimp(V)Rated impulse withstand voltage		8000										
Power frequency withstand voltage		AC3500V 1min										
pole		3、4	3、4	3、4								
In(A)Rated current of N pole		50%In 100%In										
Rated ultimate short circuit breaking capacity Icu(kA)rms	AC400V	80	80	80								
	AC690V	50	50	50								
Rated operating short circuit breaking capacity Ioe(kA)(peak)	AC400V	50	50	50								
	AC690V	40	40	40								
Rated short circuit making capacity Icm(kA)(rms)	AC400V	176	176	176								
	AC690V	105	105	105								
Rated short circuit withstand current (Is)lcw(rms)	AC400V	50	50	50								
	AC690V	40	40	40								
Full breaking time (no additional delay)		25 ~ 30										
(ms)Closing time		(max)70										
Intelligent controller	Basic type	●	●	●								
	Standard type	●	●	●								
	Other type	●	●	●								
Operation performance (times)	AC400V	6500	6500	6500								
	AC690V	3000	3000	3000								
	Maintenance free	15000	15000	15000								
	Maintenance required	30000	30000	30000								
Connection mode		Vertical in horizontal surface			Vertical in horizontal surface			Vertical in horizontal surface				
Mode	Draw-out type	● ●	● ●	● ●								
	Fixed type	● ●	● ●	● ●								
Outline(mm) H×W×L		H	W	L	H	W	L	H	W	L		
Installation	Draw-out type	Horizontal connection	3p	Front installed								
			Rear installed	432	375	421	432	375	421	432	375	421
		4p	Front installed									
			Rear installed	432	470	421	432	470	421	432	470	421
	Fixed type	Horizontal connection	3p	Front installed								
			Rear installed	402	362	323	402	362	323	402	362	323
		4p	Front installed									
			Rear installed	402	457	323	402	457	323	402	457	323
Vertical connection	3p	Front installed										
		Rear installed										
	4p	Front installed										
		Rear installed										

### Technique data

Table 2

Type		WHG-3200													
Inm(A)Rated frame current		3200													
In(A)Rated current		2000	2500			2900			3200						
Ue(V)Rated working voltage		AC400、690 50Hz													
Ui(V)Rated insulating voltage		AC1000													
Uimp(V)Rated impulse withstand voltage		8000													
Power frequency withstand voltage		AC3500V 1min													
pole		3、4			3、4			3、4							
In(A)Rated current of N pole		50%In			100%In										
Rated ultimate short circuit breaking capacity Icu(kA)rms	AC400V	100	100			100			100						
	AC690V	65	65			65			65						
Rated operating short circuit breaking capacity Ice(kA)(peak)	AC400V	65	65			65			65						
	AC690V	50	50			50			50						
Rated short circuit making capacity Icm(kA)(rms)	AC400V	220	220			220			220						
	AC690V	143	143			143			143						
Rated short circuit withstand current (Is)Icw(rms)	AC400V	65	65			65			65						
	AC690V	50	50			50			50						
Full breaking time (no additional delay)		25 ~ 30													
(ms)Closing time		(max)70													
Intelligent controller	Basic type	●	●			●			●						
	Standard type	●	●			●			●						
	Other type	●	●			●			●						
Operation performance (times)	AC400V	3000	3000			3000			3000						
	AC690V	1500	1500			1500			1500						
	Maintenance free	10000	10000			10000			10000						
	Maintenance required	20000	20000			20000			20000						
Connection mode		Horizontal			Horizontal			Horizontal			Horizontal				
Mode	Draw-out type	●	●			●			●						
	Fixed type	●	●			●			●						
Outline(mm) H × W × L		H	W	L	H	W	L	H	W	L	H	W	L		
Installation	Draw-out type	Horizontal connection	3p	Front installed											
			Rear installed	432	435	421	432	435	421	432	435	421	432	435	421
		4p	Front installed												
			Rear installed	432	550	421	432	550	421	432	550	421	432	550	421
		Vertical connection	3p	Front installed											
			Rear installed												
Fixed type	Horizontal connection	3p	Front installed												
		Rear installed	402	422	323	402	422	323	402	422	323	402	422	323	
	4p	Front installed													
		Rear installed	402	537	323	402	537	323	402	537	323	402	537	323	
	Vertical connection	3p	Front installed												
		Rear installed													
4p	Front installed														
	Rear installed														

Installation



Technique data

Table 3

Type		WHG-6300										
Inm(A)Rated frame current		6300										
In(A)Rated current		4000	5000			6300						
Ue(V)Rated working voltage		AC400、690 50Hz										
Ui(V)Rated insulating voltage		AC1000										
Uimp(V)Rated impulse withstand voltage		8000										
Power frequency withstand voltage		AC3500V 1min										
pole		3、4	3、4			3						
In(A)Rated current of N pole		50%In 100%In										
Rated ultimate short circuit breaking capacity Icu(kA)rms	AC400V	120	120			120						
	AC690V	85	85			85						
Rated operating short circuit breaking capacity Ics(kA)(peak)	AC400V	100	100			100						
	AC690V	75	75			75						
Rated short circuit making capacity Icm(kA)(rms)	AC400V	264	264			264						
	AC690V	165	165			165						
Rated short circuit withstand current (Is)lcw(rms)	AC400V	100	100			100						
	AC690V	75	75			75						
Full breaking time (no additional delay)		25 ~ 30										
(ms)Closing time		(max)70										
Intelligent controller	Basic type	●	●			●						
	Standard type	●	●			●						
	Other type	●	●			●						
Operation performance (times)	AC400V	500	500			500						
	AC690V	500	500			500						
	Maintenance free	4000	4000			4000						
	Maintenance required	8000	8000			8000						
Installation	Connection mode		Horizontal			Horizontal			Horizontal			
	Mode	Draw-out type	●	●			●			●		
		Fixed type	●	●			●			●		
	Outline(mm) H×W×L		H	W	L	H	W	L	H	W	L	
	Draw-out type	Horizontal connection	3p	Front installed								
			Rear installed	432	813	494	432	813	494	432	928	494
		4p	Front installed									
			Rear installed	432	928	494	432	928	494			
		Vertical connection	3p	Front installed								
			Rear installed									
	Fixed type	Horizontal connection	3p	Front installed								
			Rear installed									
4p		Front installed										
		Rear installed										
Vertical connection		3p	Front installed									
		Rear installed										
4p	Front installed											
	Rear installed											

## Characteristics

### Over load long time delay, reverse time limit operating characteristics

Ir1 Adjustable scope of adjusted current	L type intelligent controller		(0.4 ~ 1.0)In, adjusts by 10% of per grade				
	M H type intelligent controller		(0.4 ~ 1.0)In, adjusts by 2% of per grade				
Permitted current difference is ± 10% permitted operating time is ± 15% (Note: For "t" type no operating with *)	Current	Operating time					
	1.05Ir1	≥ 2h No action					
	1.30Ir1	< 1h Action					
	1.50Ir1(TL)	15s*	30s	60s	120s	240s	480s
2.00Ir1(TL)	8.4s	16.9s	33.7s	67.5s	135s	270s	
Thermal memory function		≤ 30min					

### Short time delay operating characteristics

Ir2 Adjustable scope of adjusted current	L type intelligent controller		In, adjusts by 3.4.5.6.7.8.10 time each grade				
	M H type intelligent controller		In, adjusts by 4% of each grade				
Permitted current difference is ± 10% permitted operating time is ± 15% (Note: For "ts" type no operating with *)	Current	Operating time					
	I ≤ 8Ir1	+OFF reverse time limit			I <sup>2</sup> ts = (8Ir1) <sup>2</sup> tL		
	I > 8Ir1	Definit-time limit	ts Setting time	0.1*	0.2	0.3*	0.4
			(s) Return time	0.06	0.14	0.23	0.35
Thermal memory function		≤ 15min					

### Short time delay operating characteristics

Adjustable range adjusted current permitted difference of ± 15%	L type intelligent controller	Inm=2000A	(10 ~ 20)In				
		Inm=3200A	(7 ~ 14)In				
		Inm=6300A	(7 ~ 14)In				
	M H type intelligent controller	Inm=2000A	1.0In ~ 50KA, Adjusts by 8% of per grade				
		Inm=3200A	1.0In ~ 75KA, Adjusts by 8% of per grade				
		Inm=6300A	1.0In ~ 100KA, Adjusts by 8% of per grade				

### Earthing-fault operating characteristics

Ir4 Adjustable scope of adjusted current	L M H type intelligent controller		(0.2 ~ 0.9)In (max 1200A, min 160A)				
Permitted current difference is ± 10% permitted operating time is ± 15% (Note: For "tg" type no operating time with *)	Operating characteristics		Action within 0.9Ir4 - 1.1Ir4 ≤ 0.9Ir4 no action > 1.1Ir4 action				
	Regular time limit	tg(S) Adjusted current	0.1*	0.2	0.3*	0.4	OFF
		Return time(S)	0.06	0.14	0.23	0.35	Only alarm but no break

load monitoring operating characteristics

model 1	Adjustable range of adjusted current permitted difference of $\pm 10\%$	$(0.1 - 1.0)I_n$ , adjusts by 20A of each grade
	Time delay characteristic $t_1, t_2$	Reverse time limit characteristics $t_{c1} = 1/2t_L$ , $t_{c2} = 1/4t_L$
model 2	Adjustable range of adjusted current permitted difference of $\pm 10\%$	$(0.2 - 0.1)I_n$ , adjusts by 20A of each grade
	Time delay characteristic $t_1, t_2$	Reverse time limit characteristics $t_{c1} = 1/2t_L$
		Reverse time limit characteristics $T_{c2} = 60s$

Note: these parameters for M H type intelligent controller, L type intelligent controller of absence.

conventional parameter enactment when exworks

unless users indicate specially, the factory setting intelligent controller parameters as following:

Type	Overload long time delay adjusting		Short-circuit short time delay adjusting		Short-circuit instantaneous adjusting	Earthing-fault protect and adjust		Loading inspecting adjust	
	$I_{r1}$	$TL(1.5I_{r1})$	$I_{r2}$	$t_s$	$I_{r3}$	$I_{r4}$	$t_G$	ILC1	ILC2
WHG-2000	$I_n$	240s	$8I_{r1}$	0.4s	$12I_n$	$0.5I_n$	0.4s	$I_n$	$I_n$
WHG-3200	$I_n$	240s	$8I_{r1}$	0.4s	$12I_n$	$0.5I_n$	0.4s	$I_n$	$I_n$
WHG-6300	$I_n$	240s	$8I_{r1}$	0.4s	$12I_n$	$0.5I_n$	0.4s	$I_n$	$I_n$

Tripping characteristics curve

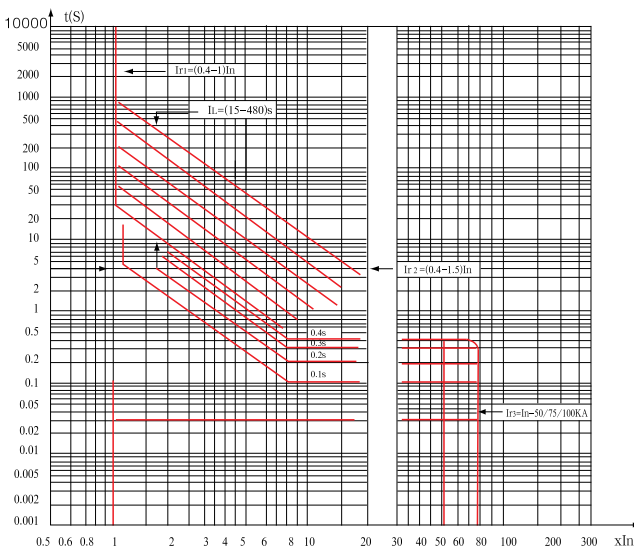


Table 1

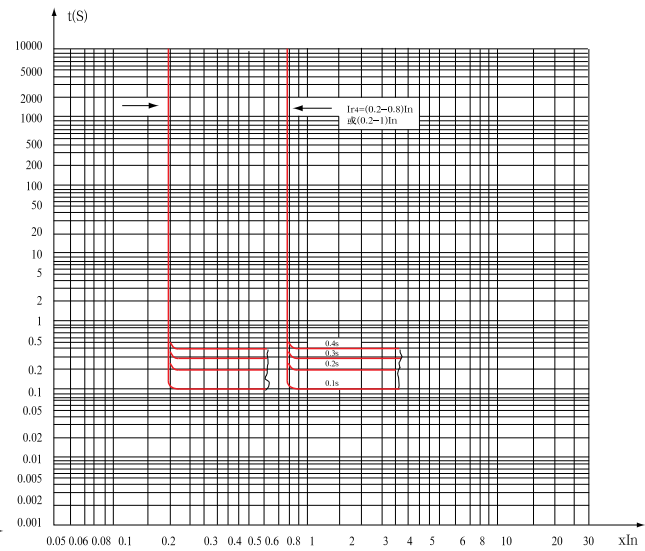


Table 2

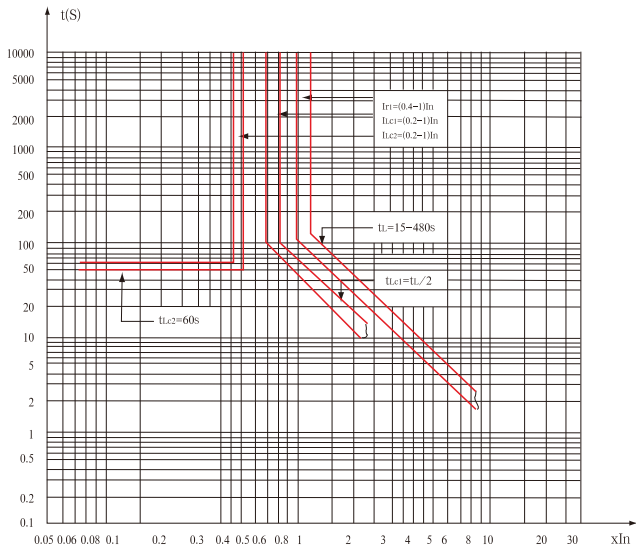


Table 3

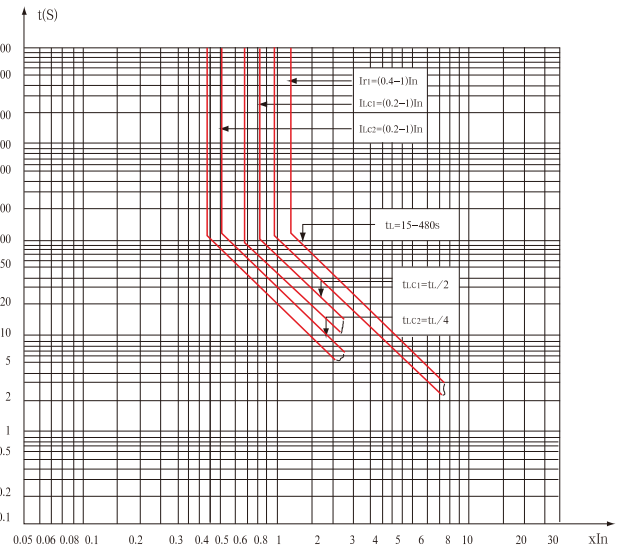


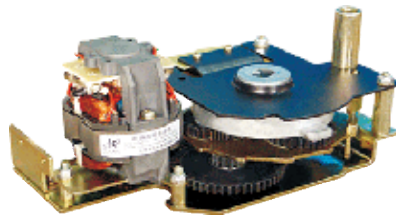
Table 4

Product Accessories

Operation mechanism

Operation mechanism lies in the frontage of breaker, adopted free tripping device of five-barlinkage, and with design of energy storage form. During using process, when operation mechanism is in energy storage position, only if the breaker received the command of closing, it will close immediately. The release of pre-stored energy can be completed by manual energy release button and energy release electromagnet. Energy storage of breaker is operating by electrical-operation device (with manual operation).

The characteristic of electrical-operation device is in the following table:



Us Rated controlling voltage	AC(50Hz)		DC	
	220V	380V	110V	220V
Operating voltage	(85% ~ 110%)Us		(85% ~ 110%)Us	
Power consumption	Inm=2000A	85VA	85W	
	Inm=3200A	110VA	110W	
	Inm=6300A	150VA	150W	
energy stored time	≤5s		≤5s	



### Energy release electromagnet

After motor finished energy storage , energy release electromagnet makes the energy storage spring of electrical-operation device release instantaneously,then the breaker closed quickly

The characteristic of Energy release electromagnet in the following

Us Rated controlling voltage	AC(50Hz)		DC	
	220V	380V	110V	220V
Operating voltage	(85% ~ 110%)Us		(85% ~ 110%)Us	
Power consumption	40VA		40W	
Closing time	≤70ms		≤70ms	



Undervoltage trip



Shunt trip



Auxiliary contact

### Undervoltage trip

Undervoltage trip is combined of undervoltage trip coil and controlling unit .There are two types of undervoltage trip,they are undervoltage instantaneous trip and undervoltage time-delay trip.

The characteristic of Undervoltage trip in the following table

Ue Rated controlling voltage		Ac220 50Hz	Ac380 50Hz
Operating voltage		(35% ~ 70%)Ue	
Guarantee closing voltage		(85% ~ 110%)Ue	
Guarantee non-closing voltage		≤35%Ue	
Power consumption		24VA	24VA
Operating time of trip	Undervoltage instantaneous trip	Instantaneous	
	Undervoltage time-dely trip	Within half of time-delay time,when voltage comes back to 85% Ue,breaker will not be "OFF"	

### Shunt trip

Shunt trip is a kind of device applied to make the breaker “OFF” ?

The characteristic of shunt trip is in the following table:

Us Rated controlling voltage	AC(50Hz)		DC	
	AC220V	AC380V	110V	220V
Operating voltage	(70% ~ 110%)Us		(70% ~ 110%)Us	
Power consumption	40VA		40W	
Breaking time	≤30ms		≤30ms	

### Auxiliary contact

The characteristic of auxiliary contact is in the following table:

Usage categories	AC-15		DC-13	
Rated working voltage	AC220V	AC380V	DC110V	DC220V
Rated thermal current	6A		6A	
Rated controlling capacity	300VA		60W	
Contact form	Standard type:4NO 4NC special type 5NO 5NC			

### Key



### “OFF” locking device

OFF Locking device can make the off button in down position, at this time breaker can't do on and offoperation.. One breaker equips with one lock and one key; Two breakers equip with two same locks and keys;three breakers with three same locks and keys.

### Door frame



Door frame installed in the door of small cabinet for sealing protection, up to protection grade IP40, which is suitable for draw-out type and fixed type breaker.



### Phase barrier

Phase barrier can strengthen insulating intensity of phase barrier

### Mechanism interlocking

Suitable for power supply system of multiple power source Mechanism inter locking includes two types: wire rope inter locking and connecting rod inter locking

1. Two horizontal breakers for wire rope interlocking, two same side faces distance is 2m
2. Two or three vertical breakers for connecting rod interlocking, Bottom distance of two breakers in 0.9m.



### Connecting rod interlocking

Two or three piled breakers for connecting rod interlocking.

Three piled breakers for connecting rod interlocking. If two breakers, just delete the breaker on upper most position. (see drawing 1)

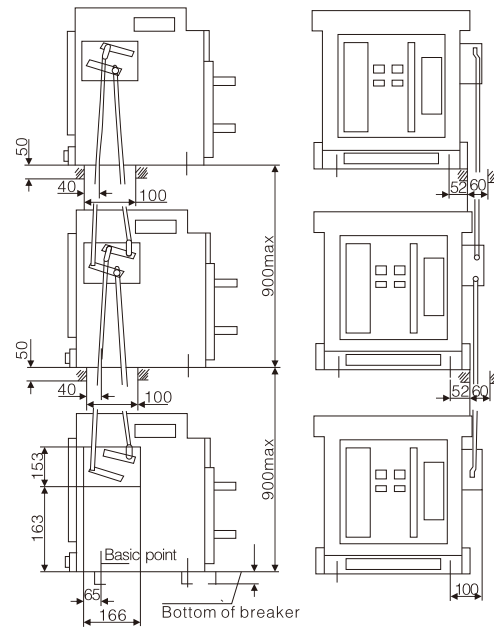
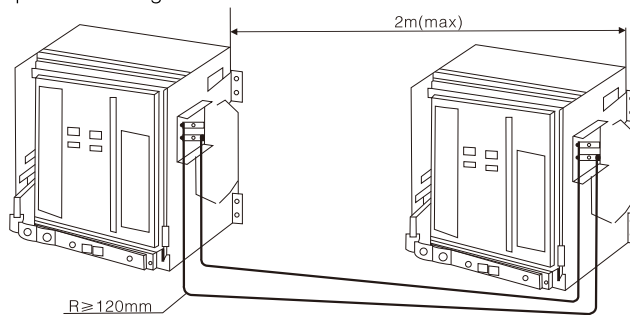


chart 1

### wire rope interlocking



Two horizontal breakers for wire rope interlocking. (see drawing 2)

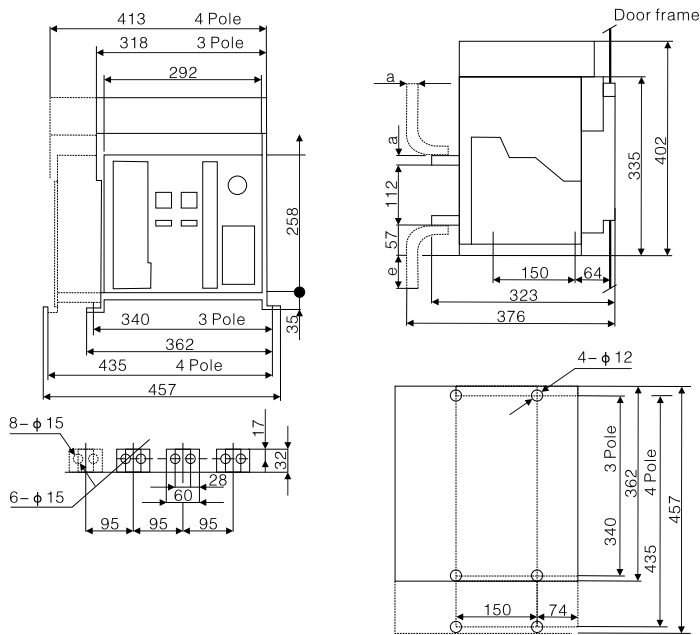
### Other accessories

When choose H Type intelligent controller, power source module, relay module, agreed editor and other accessories are for choosing. when power source is Direct Current, AC module should be added. When choosing selection earth-leakage protection, outside-connected mutual inductor should be added.

## External and assembly dimensions

15-2 fixed type breakers External and assembly dimensions see pic 15-1、15-2

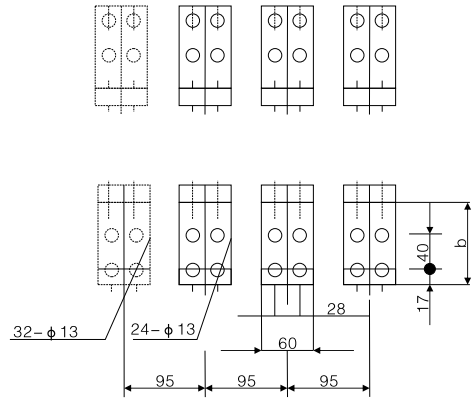
ACB



(Inm=2000A)

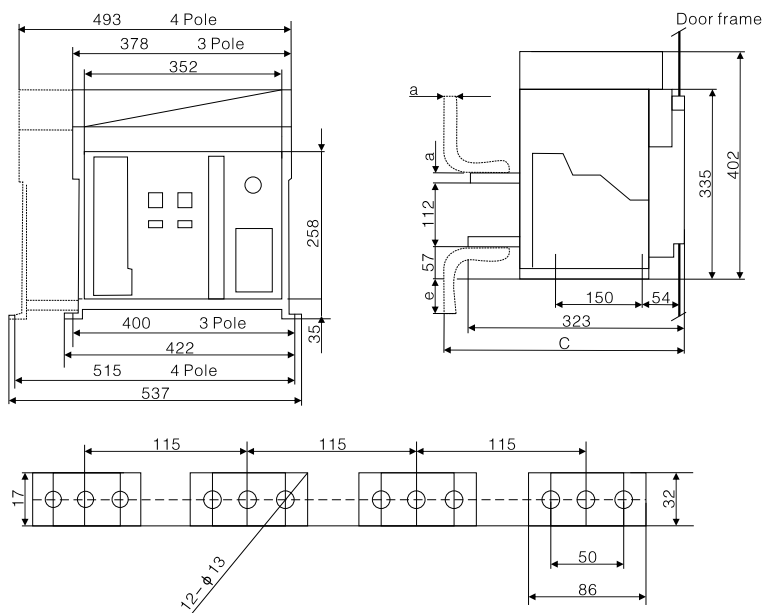
fixed type breakers External and assembly dimensions

Fixed type breakers see drawing 15



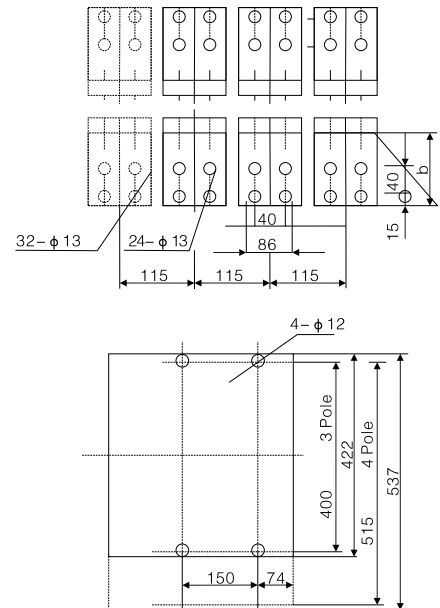
rear-front connected

In/A	a/mm	b/mm	e/mm
630-800	10	95	38
1000-1600	15	105	48
2000	20	115	58



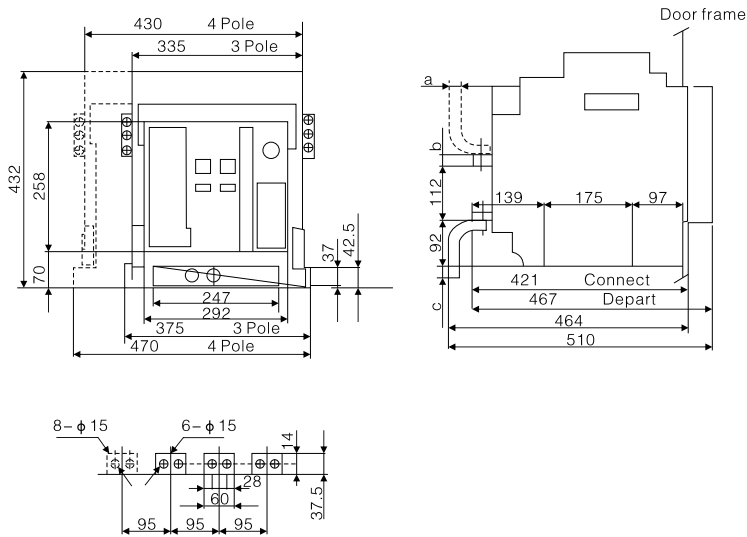
(Inm=3200A)

fixed type breakers External and assembly dimensions

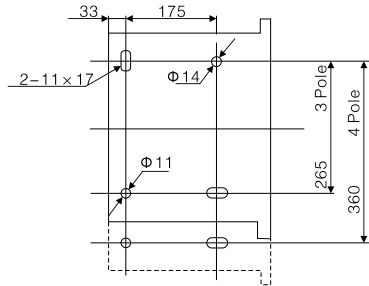
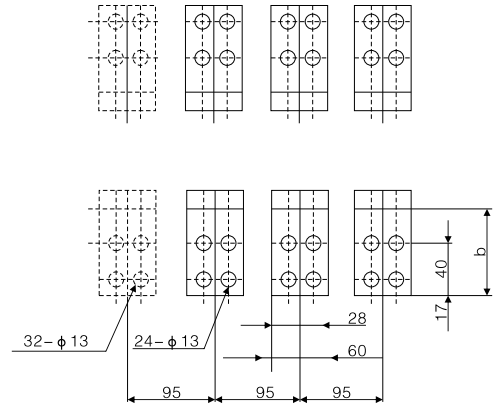


In/A	a/mm	b/mm	c/mm	e/mm
2000.2500	20	115	408	58
2900.3200	30	135	428	78

Draw-out type breaker's external and assembly dimensions see drawing 16-1 16-2 16-3 16-4



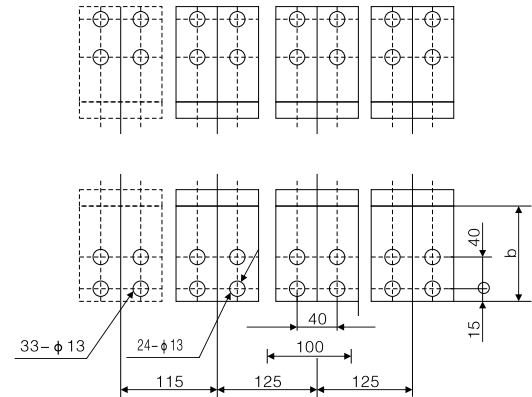
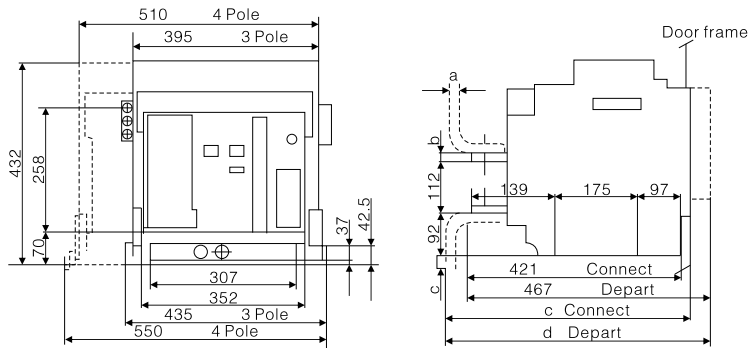
Draw-out type breaker see drawing 16

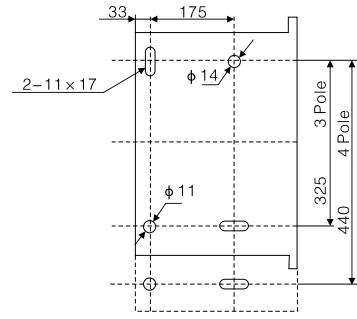
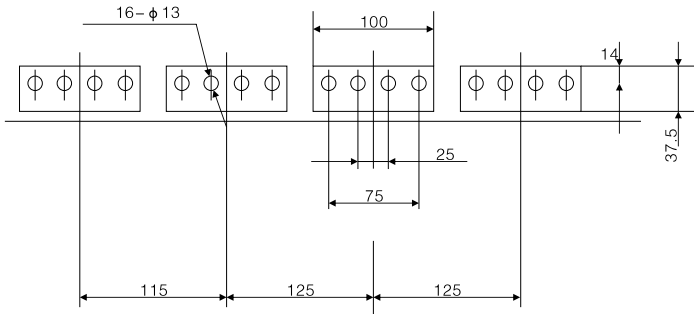


In/A	a/mm	b/mm	e/mm
630-800	10	95	3
1000-1600	15	105	13
2000	20	115	23

(Inm=2000A)

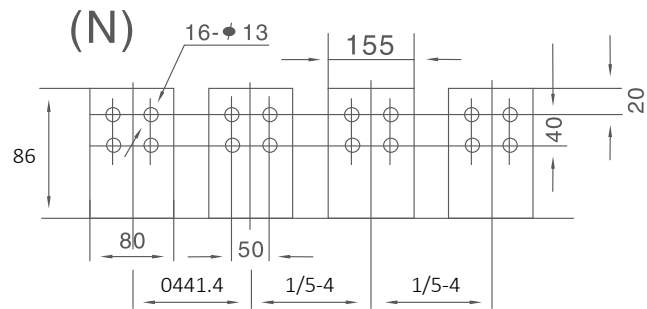
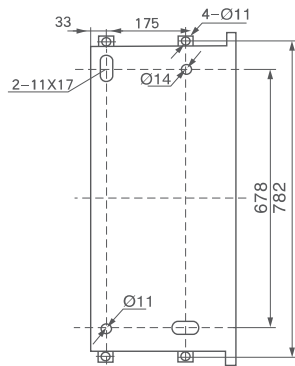
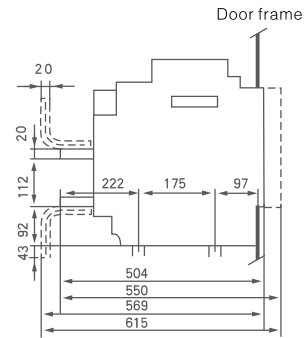
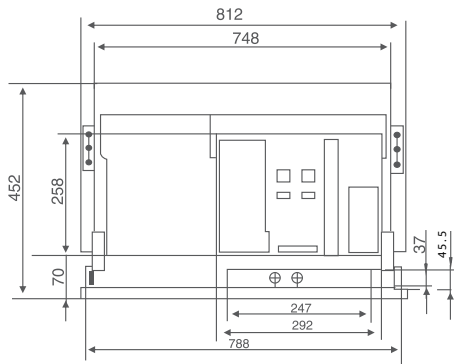
Draw-out type breaker's external and assembly dimensions see drawing (Inm=2000A)



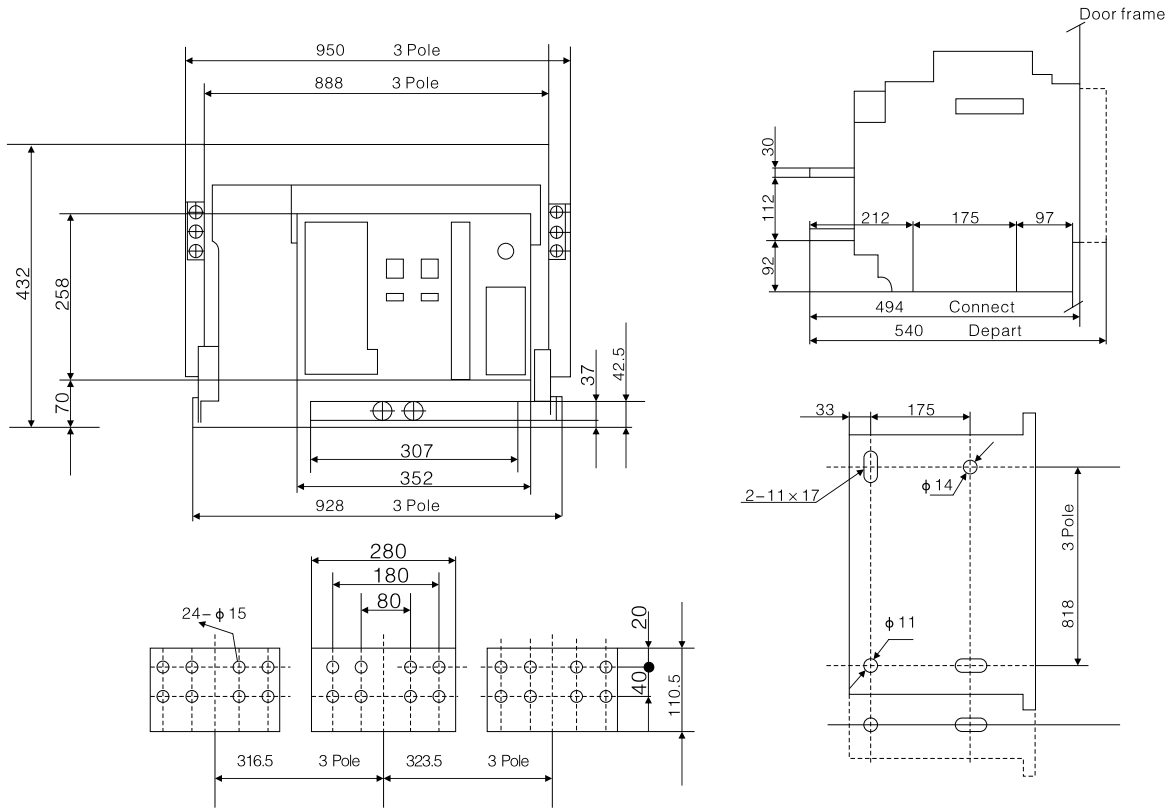


In/A	a/mm	b/mm	c/mm	d/mm	e/mm
2000.2500	20	115	506	552	23
2900.3200	30	135	526	572	43

Draw-out type breaker's external and assembly dimensions see drawing



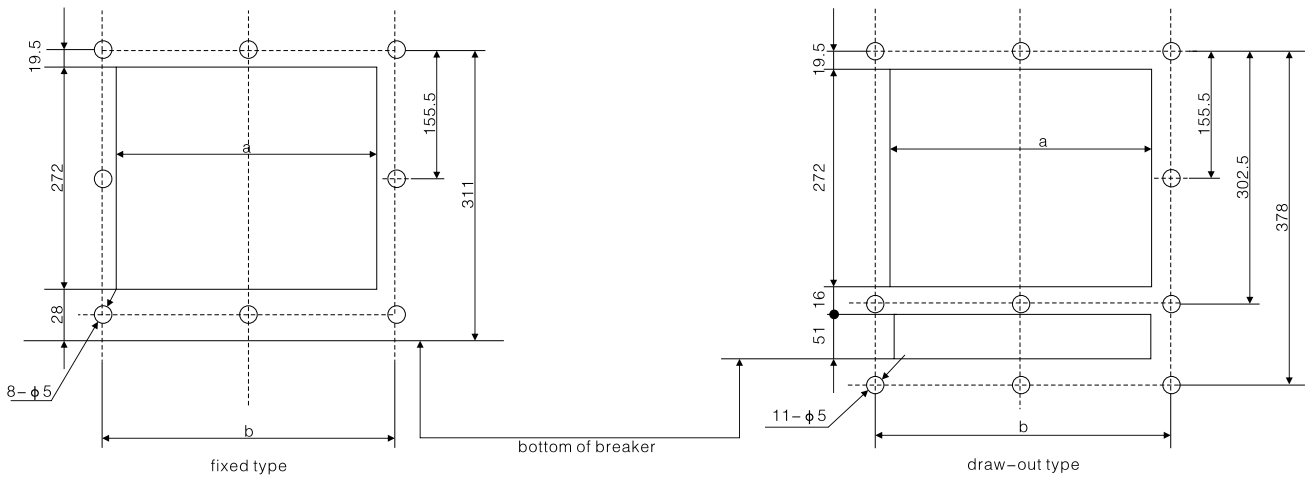
WHG-4000



Inm=6300A)6300A

Draw-out type breaker's external and assembly dimensions see 16-4

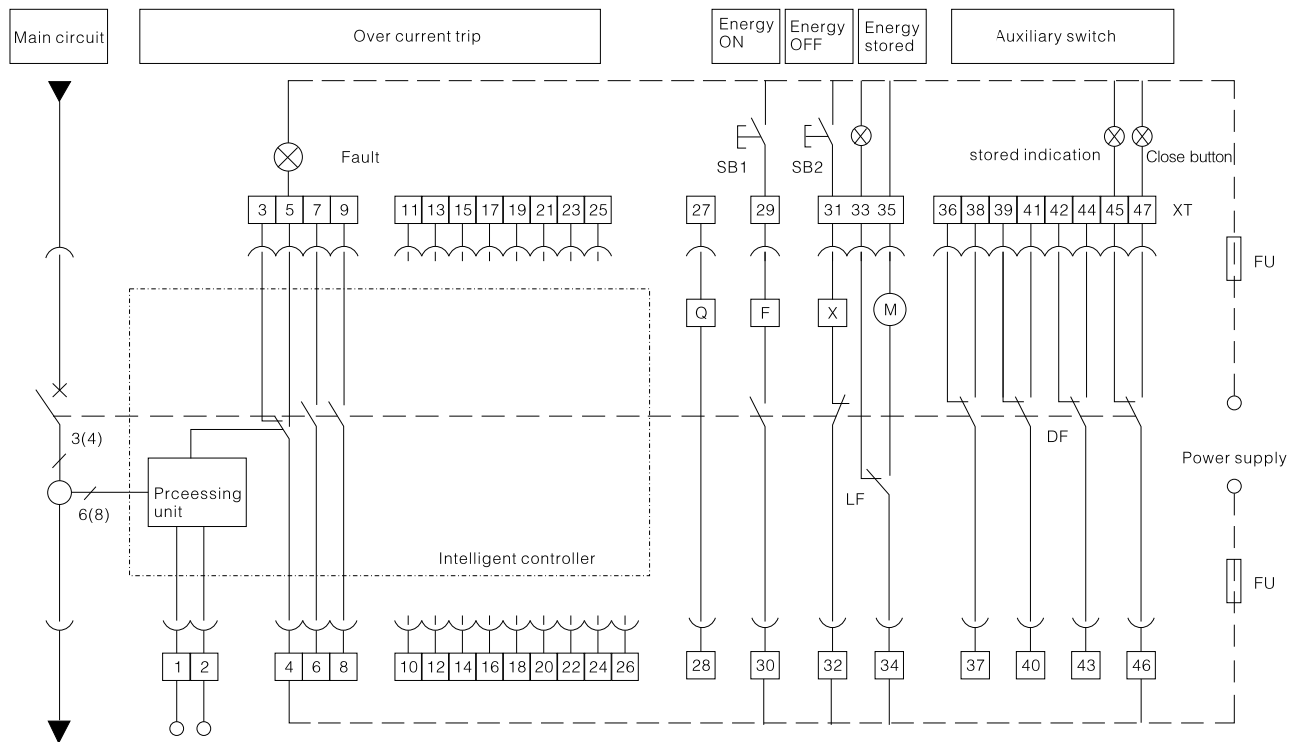
### Hole opening chart of cabinet door for fixed type, Draw-out type breaker



Inm/A	a/mm	b/mm
2000	306	345
3200-6300	366	405

## Connection diagram of secondary circuit coils

Typical secondary circuit connection diagram



SB1- shunt button  
 SB2- closing button  
 Q- undervoltage trip (#27.#28connected in main circuit )  
 F- shunt trip  
 X- energy release electromagnet  
 M- energy stored mechanism  
 XT- wire terminal  
 LF- the limit contact of energy stored mechanism  
 FU- ( 6A ) fuse

### #1-#2:

Input terminal of controller's auxiliary power supply (when power supply of controller is DC #1#2 have been connected into current module power supply of external DC should be connected into DC module ,terminal number is U+U- )  
 #10-#11: Rs485communication port terminal (suitable for H type )  
 #12、#21: L M type are signal output terminal (selected function )  
 #12-#19: H type is signal output terminal (Adjustable output )  
 #20: H type is PE terminal protection of the earth  
 #21: H type is signal of voltage LINinput terminal  
 #22-#24: M H type are three- phase voltage input terminal (M type is selected function)  
 #25-#26: external connected mutual (for earth- leakage protect function)

## Install usage with maintenance

### Mounting

1. When insulating resistance reached to users' request the breaker can be used.
2. Before installation, please measure the insulating resistance of breakers by 1000VDC megger. The resistance under  $25 \pm 5^{\circ}\text{C}$  degree and humidity 50~70% shall not less than  $20\text{M}\Omega$ , or the breaker shall be dried. When insulating resistance reached to users' request, then breaker can be used.
3. During installation, the base is in horizon, and fixed by M10 screws.
4. During installation the breaker shall be securely earthed, where there shall have legible mark.
5. No matter it comes from upper or downward of breaker, it does not effect the performances of breaker.
6. After installation and wiring according to diagram, before main circuit energized, (the indicator on the drawer holder of draw-out breaker shall be in "test" position), it shall perform the following operation tests.
  - a. Check if undervoltage trip, shunt releases, closing electromagnet, and motor operated mechanism are in compliance or not (before closing breaker, undervoltage trip release shall be energized)
  - b. Sway the handle up and down 7 times, then it display "Energy stored" and make a sound of "kada", it mean energy storing finished. Push button or make closing electromagnet energized, then breaker can be closed securely (in the case that the controller being securely reset)
  - c. Make Motor operated till it display "Energy stored" and make a sound of "kada", it mean energy storing finished. Push button or make "closing" electromagnet energized, then breaker can be closed securely.
  - d. After breaker closed, no matter which button of absent voltage, shunt release or in the panel is pushed, this test shall all make breaker trip from intelligent controller.

### Fault analysis and solutions

Table 3

No.	Fault phenomenon	Reason	solution
1	breaker can not be closed	Absent voltage release has no power supply, unenergized Intelligent controller make action, but the red button in control panel does not reset. Operating mechanism has no energy stored. Draw-out breaker is not in "ON" or "Test" position, key for "OFF" position is locked.	Check circuit, switch on the power supply for absent voltage release Push "Reset" button hand or motor operating make mechanism energy stored Sway the handle and make break locate in "ON" or "TEST" position. Use special key to open the lock.

## Fault analysis and solutions

No.	Fault phenomenon	Reason	solution
2	Breaker can not make energy stored by motor	Power supply for the motor operated mechanism is not closed or the power is not enough.	Check the circuit, switch on power supply The operating voltage shall be more than 85% Ue
3	Closing electromagnet can't make breaker closed	No power supply, power is not enough	Check the circuit, switch on power supply The operating voltage shall be more than 85% Ue
4	Shunt release can't make breaker trip	No power supply, power is not enough	Check the circuit, switch on power supply The operating voltage shall be more than 85% Ue
5	The fault current is more than the setting values of long time delay, short time delay, and instantaneous, but the breaker only trip instantaneously without short time delay or long time delay.	Values of long time delay, short time delay, instantaneous settings are in adjacent range, not reasonably.	Reset the value in compliance with specified range as $I_{r1} < I_{r2} < I_{r3}$
6	Breaker trip frequently	The on-site loading lead to over loading trip, it is caused that thermal overloading record is not be cleaned off on time, so it reclosed.	Cut off the power supply for controller one time, or after 30min reclose breaker
7	The handle for draw-out type breaker can't be inserted into the breaker	Railway or breaker is not pushed inside completely in place.	Push railway or breaker inside completely
8	When the breaker is in "OFF" position, the breaker is not allowed to be drawn out	Handle not pulled out, breaker does not reach completely "OFF" position	Pull out handle Sway the handle and make breaker under "OFF" position





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