Westinghouse

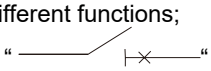
WHG Series Intelligent Air Circuit Breaker

Intelligent Air Circuit Breaker

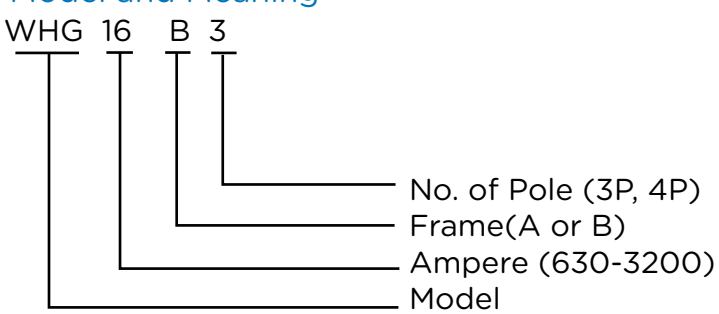
Outline

Intelligent Air Circuit Breaker

Scope Of Application

WHG Series intelligent air circuit breaker is used for control and protection of low voltage distribution network, is generally mounted in low voltage distribution board.
WHG series isolator (Non-auto ACB) installed in distribution circuit to make and break the circuit for isolation.
1.1 Rated current 630~3200A;
1.2 Shot circuit breaking capacity up to 65kA ;
1.3 Rated working voltage Ue – 690V and below;
1.4 3P and 4P;
1.5 Draw-out type and fixed type;
1.6 Interchangeable incoming and outgoing terminals;
1.7 Intelligent controllers Provide different functions;
1.8 The sign of isolation function is “  “
1.9 comply with standards of IEC60947-2;

Model and Meaning



Categories

Installation type : Fixed type or Draw-out type.

Number of pole : 3 pole,4 pole.

Operation: Manual operation or motor operated.
Trip categories : intelligent controller,undervoltage instantaneous or time delay type trip and shunt trip.
Intelligent controller: Epro 10 & Epro 20 M&H Types.

4. Normal working conditions

41. Ambient temperature limit within -5 -+55 degree
42. Altitude not more than 2000m;
4.3. Pollution degree – 3
4.4.The Circuit Breaker shall be mounted according to this manual. The mounting vertical angle shall not more than 5 degree;
4.5.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 execution. 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, cassette for draw-out type breaker.

Derating coefficient

The following table shows that the circuit breaker is continuously loaded under the heating condition specified in GB14048.2 at the ambient working environment temperature

Ambient working environment temperature		+40°C	+45°C	+50°C	+55°C	+60°C
Continuous current carrying capacity	Inm=2000A	1 Inm	0.97Inm	0.91Inm	0.87Inm	0.82Inm
	Inm=3200A	1 Inm	0.96Inm	0.90Inm	0.86Inm	0.80Inm
	Inm=6300A	1 Inm	0.93Inm	0.87Inm	0.82Inm	0.75Inm

If the altitude exceeds 2000m of the applicable working environment, the electrical performance of the circuit breaker can be corrected according to the following table

Altitude (m)	2000	3000	4000	5000
Power Frequency withstand voltage (V)	3500	3150	2500	2000
Work current correction factor	1	0.93	0.88	0.82
Correction coefficient of short circuit breaking capacity	1	0.83	0.71	0.63

1.2. Contact system
One integral contact with main contact and arcing contact functions, for high arc withstand performance with minimal temperature rise.
Contact system is designed to reduce electrical stresses with improved contact pressure.
The distance between moving and fixed contact is much lager than 18mm required by standard, completely in compliance with the requirement of safe isolation.
NOTE: “Trip” lock device for breaker is optional but when it is used as isolator it is a must.

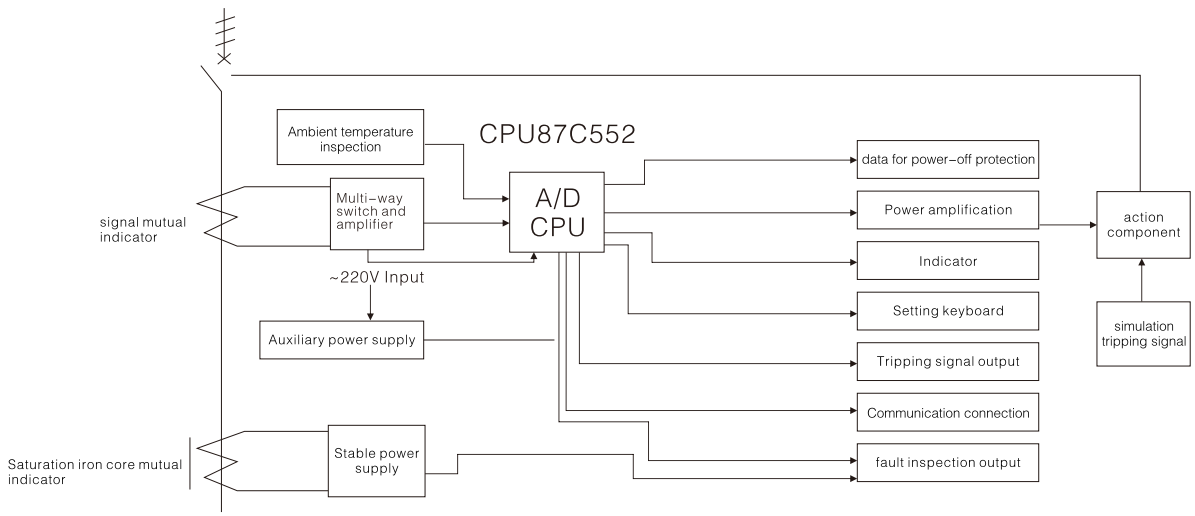
1.3. Arc-extinguishing chamber.
Each pole has its arc-extinguishing chamber, its function is to separate each electrode, and insulate between each other, isolated from other parts and operator; arc extinguishing chamber enclosed into the insulating base of breaker, enforce the mechanical strength of arc extinguishing chamber wall, and avoid any damage when breaking high 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, trip free structure, energy stored spring mechanism, 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. Optional electric motor available for charging the spring

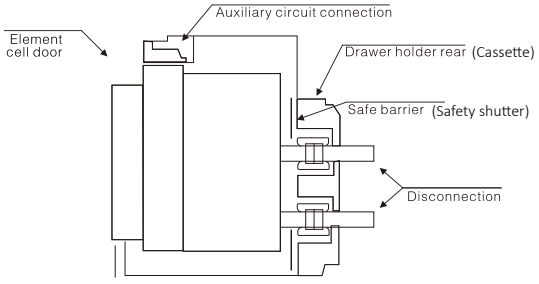
1.5 Intelligent controller (Trip Unit)
The frame illustration of intelligent controller (See page 7 for physical photo)

1.6. Cassette
Cassette consist of right and left side plates with rails, base, crossarm. Racking mechanism provided on the base, position indicator is installed, on top of cassette installed with fixed contact of auxiliary circuit. The main contacts are provided with safety shutters.

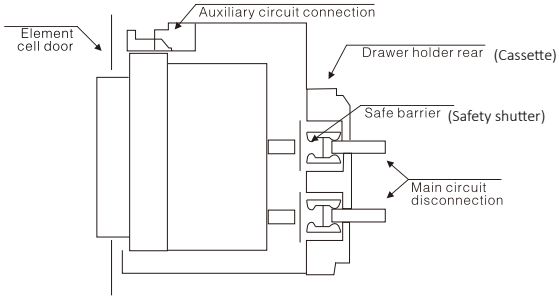
1.7. The breaker has three positions during moving.
Service, test, withdrawn / isolated
“Service Position”, main circuit and auxiliary circuit connected, safety shutter opened (Pic2)
“Test” position: Main circuit opened, safety shutter plate closed, auxiliary connected only.
It can perform necessary operational tests.
“Isolated” position: Main and auxiliary circuits are opened, safety shutter closed (Pic 4)



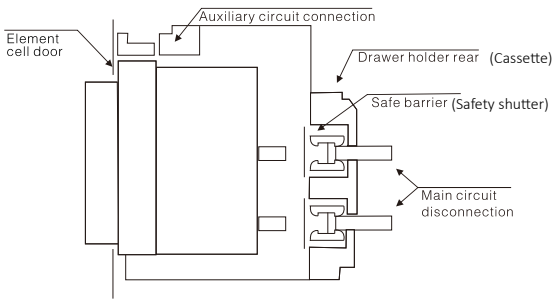
The frame illustration of intelligent controller (Pic 1)



"Service "Position (Pic 2)



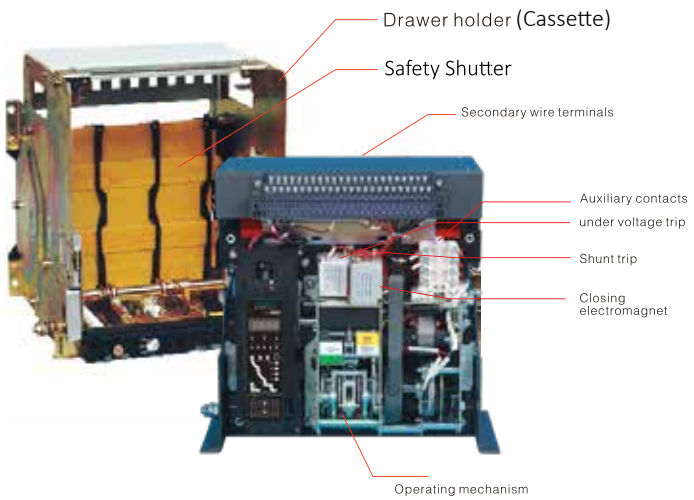
"Test" Position (Pic 3)

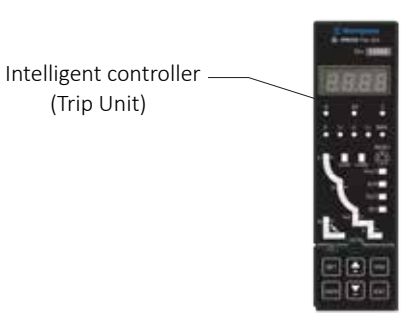


"Isolated/Withdrawn" Position (Pic 3)

Structure anatomy

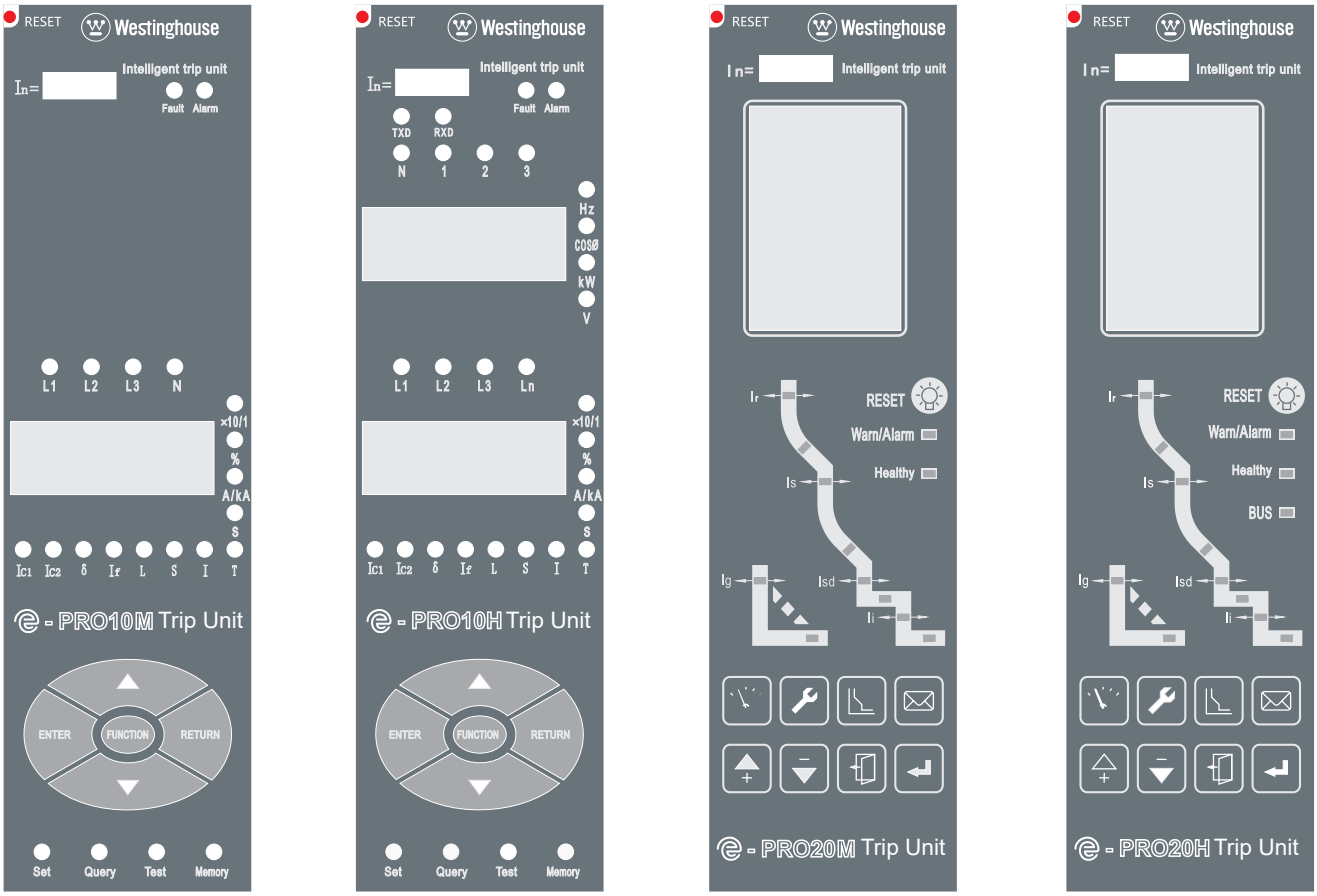
Front indication of breaker





Trip Unit

e-PRO10M Trip Unit | e-PRO10H Trip Unit | e-PRO20M Trip Unit | e-PRO20H Trip Unit



Controller functions

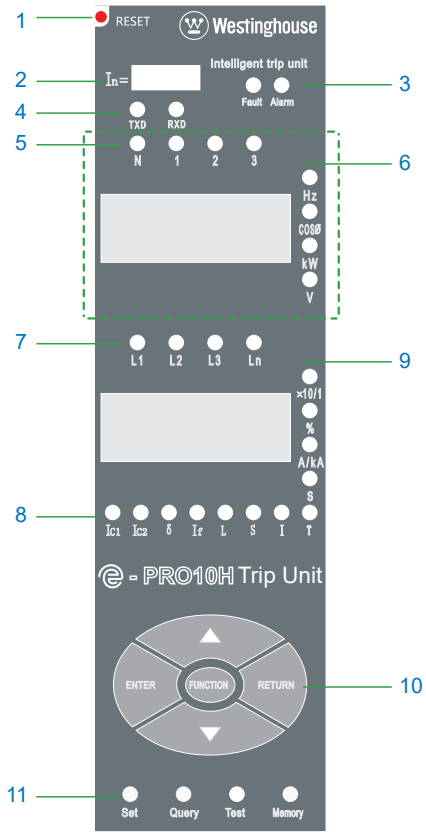
Function items	e-PRO10M	e-PRO10H	e-PRO20M	e-PRO20H
Display interface				
Digital tube display	●	●	—	—
LCD display	—	—	●	●
Protection function				
Overload long delay protection	●	●	●	●
Overload thermal memory	●	●	●	●
Overload pre-alarm/alarm signaling operation	●/○	●/○	●/○	●/○
Short-circuit short delay protection	●	●	●	●
Short delay thermal memory	●	●	●	●
Short-circuit instantaneous protection	●	●	●	●
Grounding protection（Differential T）	●	●	●	●
Grounding alarm/ alarm signaling operation	●/○	●/○	●/○	●/○
Leakage protection/alarm/ alarm signaling operation （and grounding protection for selection）	○/○/○	○/○/○	○/○/○	○/○/○
Neutral solidly grounding protection	●	●	●	●
Current asymmetric protection/alarm/alarm signaling operation	●/●/○	●/●/○	●/●/○	●/●/○
MCR/HSISC	○/○	○/○	○/○	○/○
Load monitor/alarm/alarm signaling operation	○/○/○	●/●/○	○/○/○	●/●/○

Trip Unit

Function items	e-PRO10M	e-PRO10H	e-PRO20M	e-PRO20H
Protection function				
Under-voltage protection/ alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Over-voltage protection/ alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Voltage asymmetric protection/alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Phase sequence protection/alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Under-frequency protection /alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Over-frequency protection /alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Current allowable-value protection/alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Reverse-power protection/alarm/alarm signaling operation	—	—	●/●/○	●/●/○
Testing functions				
Current testing（Phase-poles, N pole and Grounding）	●	●	●	●
Voltage testing（Phase-voltage, Cable-voltage and Voltage asymmetric rate）	○	● (no-voltage asymmetric rate)	●	●
Phase sequence testing	—	—	●	●
Frequency testing	○	●	●	●
Allowable-value testing（Current）	—	—	●	●
Allowable-value testing（Power）	—	—	●	●
Power testing（Active & Reactive power）	○	●（active power）	●	●
Power factor testing	—	●（total power factor）	●	●
Power energy testing（Active & Reactive power energy）	—	—	●	●
Harmonics testing	—	—	○	○
Maintenance functions				
Fault status indicating	●	●	●	●
Fault record and query	●	●	●	●
Past record of peak current	—	—	●	●
Past record of alarm and query	—	—	●	●
Fault to trip signaling operation	●	●	●	●
Self-diagnostics function	●	●	●	●
Analog tripping test function	●	●	●	●
Contacts abrasion equivalent(alarm) query	●	●	●	●
Operation times query	●	●	●	●
Clock functions	○	○	●	●
Other				
Signal unit	○	●	○	●
Communication	—	●	—	●
Regional selection interlock	○	○	○	○

Remarks：“●”with this function“○”functions for selection“—”without this function

Trip Unit

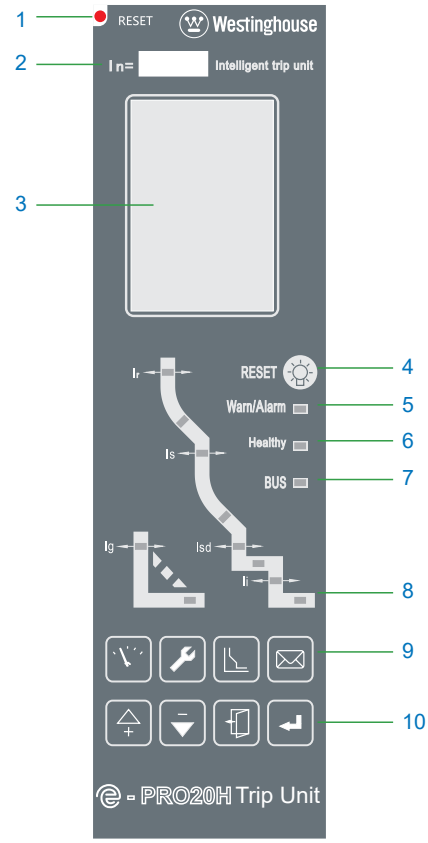


e-PRO10M / e-PRO10H type Trip Unit

1. Fault to trip & reset
2. Rated current for name-plate
3. In sequence of fault & alarm indicating
4. In sequence of communication emission & receiver indicating
5. In sequence of N phase, A phase, B phase, C phase voltage indicating
6. In sequence of frequency, power factor, power, voltage indicating from upper to bottom
7. In sequence of A phase, B phase, C phase, N phase current indicating
8. In sequence of load monitor 1,load monitor 2,asymmetric current, grounding protection, over-load long delay, short-circuit instantaneous indicating
9. In sequence of opening & closing time, main contacts abrasion rate, current unit, time, self-diagnostics fault statues indicating from upper to bottom
10. 5 pieces operation buttons
11. In sequence of controller setting,query,testing, store service statues indicating

Notes:

1. The dashed box is controller with voltage indicating function. Without indicating if no.,
2. Serial 4 is controller with communication function. Without indicating if no.
3. A/KA of serial 9,light fixed is current A and continuous blinking in kA
4. kW of serial ,light fixed is active power and continuous blinking is reactive power



e-PRO20M / e-PRO PRO20H type Trip Unit

1. Fault to trip & reset
2. Rated current for name-plate
3. LCD indicating interface
4. Fault/alarm resetting button
5. Fault/alarm LED indicating (LED without light while normal working.LED with continuous blinking quickly while fault to trip.LED with light fixed while alarm)
6. LED always continuous blinking while controller on power and normal working status
7. Communication indicating (Modbus：extinguish without communication. Continuous blinking while communication. Proibus：extinguish without communication. Light fixed while communication)
8. Curre LED (Fault to trip at corresponding LED light flash indicating fault type. LED light fixed indicating present setting items while protective parameter setting)
9. In sequence of testing function, setting function, protection function and information function button from left to right.
10. In sequence of upward, downward, ESC and selection OK button from left to right

Remarks：Serial 7 is controller with communication functi on. No indicating if no-communication function.

Trip Unit Setting and Protective Characteristics

Over- load long delay protection e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type			
Current setting IR		（0.4~1.0 or 1.25）In or OFF（OFF-function close） Notes：Distribution protection is 1.0 In. Generator protection 1.25In。	
6 categories protective curre		SI：Normal inverse time =0.01396 T_R/（N0.02-1） VI：Fast inverse time t= T_R/（N-1） EI（G）：Express inverse time（use of general distribution protection）t=3 T_R/（N2-1） EI（M）：Express inverse time（use of generator protection）t=2.95 T_R× In [N2/（N2-1.15）] HV：High voltage fuse compatibility t=15T_R/(N4-1) I^2t Normal distribution protection t=2.25T_R/N2（factory default） N=I/Ir I-fault current t-long delay acting time Ir-long delay setting current T_R-long delay setting time Remarks：only normal distribution protection I2t for e-PRO10M/ e-PRO10H type controller. other protection curre shall be order. e-PRO20M/ e-PRO20H type controller with 6 protective curre for selection.	
6）Normal distribution protection I^2t time setting T_R（1.5Ir）		e-PRO10M/ e-PRO10H：15,20,25,30,40,50,60,80,100,120,160,200,240,320,400,480（s）	
		e-PRO20M/ e-PRO20H：15,30,60,120,240,360,480,600,720,840,960（s）	
1）-5）Protective curre type		e-PRO20M/ e-PRO20H：C1-C16over-load long delay protective operating delay time in the drop-down list	
Protective characteristics（Accuracy±10%）		Current（I/Ir）	Trip time
		1.05	＞2h no-acting
		1.3 (Distribution protection)	＜2h acting
		1.2（Motor protection）	＜2h acting
		≥1.2Ir	Acting time as per 6 categories protection type formula calculator or curre query
Thermal memory time		e-PRO10M/ e-PRO10H type：30 ms （ON）or power failure release e-PRO20M/ e-PRO20H type： instantaneous,10ms,20ms,30ms,45ms,1h,2hrs,3hrs or power failure release Remarks：connecting controller for auxiliary power supply with thermal memory function and auxiliary power supply failure, that is, release thermal memory.	
Short- circuit short delay e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type			
Current setting Isd		（1.5~15）I_R or OFF（OFF-function close）	
Time setting Tsd (s)	Tsd1 inverse time	e-PRO10M/ e-PRO10H type：0.1~1 e-PRO20M/ e-PRO20H type：0.1,0.2,0.3,0.4（selection: 0.1~1）	
	Tsd2 definite time		
Protective characteristics（Accuracy±10%）		Current（I/Isd）	Trip time
		≤0.9	No-acting
		≥1.1	inverse time Isd≤I≤8I $_R$	curre 1-5 and over-load long delay simultaneously, but curre speed faster 10 times. curre 6 characteristics formula t=64Tsd/N2
			definite time I＞8I_R（or I≥Isd）	delay protection as per definite time delay setting time Tsd
Thermal memory time		e-PRO10M/ e-PRO10H type：15min（ON）or power failure release e-PRO20M/ e-PRO20H type ：instantaneous,10ms,20ms,30ms,45ms,1h,2hrs,3hrs or power failure release Remarks：connecting controller for auxiliary power supply with thermal memory function and auxiliary power supply failure, that is, release thermal memory.	
Short- circuit instantaneous protection e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type			
Current setting Ii		e-PRO10M/ e-PRO10H type：1.0In~50kA or OFF（OFF-function close） e-PRO20M/ e-PRO20H type：（1.0~20）In or OFF（OFF-function close）	
Protective characteristics（Accuracy±10%）		Current（I/Ii）	trip time
		≤0.85	no-acting
		＞1.15	＜40ms acting

Trip Unit Setting and Protective Characteristics

MCR/ HSISC protection e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type				
Current setting I_{MCR}	Factory default ：35kA Remarks：this is factory default which the user cannot adjust（30~100kA for selection）			
Current setting I_{HSISC}	WHG 2-2500：50kA WHG 2-4000、6300：65kA Remarks：this is factory default which the user cannot adjust（30~100kA for selection）			
Protective characteristics（Accuracy±10%）	Current（I/I_{MCR}/ $_{HSISC}$）	Trip time		
	＜0.8	no-acting		
	＞1.0	＜30ms acting		
Grounding protection/ alarm e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type				
Protection type	Differential type（T）, Earth curr ent type（W）,alterna tive. factory default i s differential type（T）			
Current setting Ig	（0.2~1.0）In or OFF（OFF-fucntion close）			
Time setting Tg	Definite time delay Tg (s)	0.1~1or OFF（OFF-only alarm and no trip）		
	Inverse time factor KG	1.5~6 or OFF（OFF-grounding protection is definite time）		
Protective characteristics（Accuracy±10%）	Current （I/ Ig）	Trip time		
	≤0.8	No-acting（no alarm）		
	≥1.0	（I/ Ig）＜KG	Inverse time delay acting（or alarm）t=Tg×KG×Ig/I	
			Definite time delay acting (or alarm）as per time setting	
Grounding alarm e-PRO20M/ e-PRO20H type				
Performance mode	Alarm /Close			
Alarm operating current setting	（0.2~1.0）In			
Alarm operating delay time setting	0.1~1.0（s）			
Alarm return current setting	（0.2~1.0）In			
Alarm return delay time setting	0.1~1.0（s）			
Alarm operating characteristics（Accuracy±10%）	Multiple of current (I/I setting)	Acting time		
	＜0.8	No-alarm		
	≥1.0	Alarm（time as per alarm operating time setting）		
Alarm return characteristics（Accuracy±10%）	≥1.0	Alarm without return		
	≤0.9	alarm return（time as per alarm operating time setting）		
Neutral protection e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type				
Neutral protection setting	e-PRO10M/ e-PRO10H type：50%In,100%In or OFF e-PRO20M/ e-PRO20H type：50%In,100%In,160%In,200%In or OFF OFF-close N phase protective function			
Protective characteristics	Same as phase and poles over-load long delay protection, short-circuit short delay protection,short-circuit instantaneous protection and grounding protection.			
Leakage protection/ alarm e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type				
Current setting IΔn （A）	0.5~30 or OFF（OFF-function close）			
Operating delay time TΔn （s）	Instantaneous,0.06,0.08,0.17,0.25,0.33,0.42,0.5,0.58,0.67,0.75,0.83			
Protective characteristics（Accuracy±10%）	Multiple of current（I/IΔn）	Trip time		
	＜0.8	No-acting		
	≥1.0	Acting（ time in the drop-down list）		

Trip Unit Setting and Protective Characteristics

Trip time t (s) Accuracy (±10%)	Setting time	Instantaneous	0.06	0.08	0.17	0.25	0.33	0.42	0.5	0.58	0.67	0.75	0.83
	IΔn	0.04	0.36	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
	2IΔn	0.04	0.18	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5
	5IΔn	0.04	0.072	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
	10IΔn												

Alarm performance mode（e-PRO20M/ e-PRO20H type controller）	Alarm/ Close	
Alarm acting current setting	0.5~30（A）	
Alarm acting delay time setting	0.1~1.0（s）	
Alarm return current setting	0.5~30（A）	
Alarm return delay time setting	0.1~1.0（s）	
Alarm operating characteristics （Accuracy±10%）	Multiple of current （I/ IΔn）	Acting time
	＜0.8	No alarm
	≥1.0	Alarm（time as per alarm acting time setting）
Alarm return characteristics（Accuracy ±10%）	≥1.0	Alarm without return
	≤0.9	Alarm return（time as per alarm return time setting）

Current asymmetric protection/ Alarm e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type

e-PRO10M/ e-PRO10H type	Current asymmetric rate setting δ	(40%~100%) or OFF（OFF-function close）	
	Acting delay time setting Tδ	0.1~1.0（s）or OFF（OFF-alarm no trip）	
e-PRO20M/ e-PRO20H type	Performance mode	Alarm /Trip /Close	
	Protective start setting	5%~60%	
	Acting delay time setting Tδ	0.1~40（s）	
	Alarm acting return setting	5%~Start setting	Performance mode is alarm for setting this item
	Alarm return delay time	10~200（s）	
Protective characteristics（Accuracy ±10%）	Actual current asymmetric rate/setting	Trip time	
	＜0.9	No-acting（No-alarm）	
	≥1.1	Acting（or alarm）as per setting delay time	
Alarm return characteristics（Accuracy±10%）	Actual current asymmetric rate/setting	Acting time	
	≥1.1	No return	
	≤0.9	Return as per alarm return delay time	

Allowable current value protection/ Alarm e-PRO20M/ e-PRO20H type

Performance mode	Close / Trip / Alarm （required current value protection for each phase setting）	
Protection/Alarm start setting	（0.2~1.0）In	
Protection acting delay time setting	15~1500（s）	
Alarm acting return setting	0.2In~ Start value	Performance mode is alarm for setting this item
Alarm return delay time	15~3000（s）	
Protective characteristics（Accuracy ±10%）	Multiple of current (I/I operating setting)	Trip time
	＜0.9	No-acting（No-alarm）
	≥1.1	Acting（or alarm）as per setting delay time
Alarm return characteristics（Accuracy±10%）	Multiple of current (I/I operating setting)	Acting time
	≥1.1	No return
	≤0.9	Return as per alarm return delay setting time

Trip Unit Setting and Protective Characteristics

Under-voltage protection / Alarm e-PRO20M/ e-PRO20H type		
Performance mode	Close / Trip / Alarm	
Protection/Alarm start setting	100（v）~Return value	
Protection acting delay time setting	0.2~60（s）	
Alarm acting return setting	Start value~1200（v）	Performance mode is alarm for setting this item,. Return value≥ start value
Alarm return delay time	0.2~60（s）	
Protective characteristics （Accuracy±10%）	Multiple of voltage (Umin /Acting setting)	Trip time
	＞1.1	No-acting（No-alarm）
	≤0.9	Acting（or alarm）as per setting delay time
Alarm return characteristics （Accuracy±10%）	Multiple of voltage (U min /Operating setting)	Acting time
	＜0.9	No return
	≥1.1	Return as per alarm return delay setting time
Over-voltage protection/ Alarm e-PRO20M/ e-PRO20H type		
Performance mode	Close / Trip / Alarm	
Protection/Alarm start setting	Return value ~1200（v）	
Protection acting delay time setting	0.2~60（s）	
Alarm acting return setting	100（v）~ Start value	Performance mode is alarm for setting this item,. Return value≥ start value
Alarm return delay time	0.2~60（s）	
Protective characteristics （Accuracy±10%）	Multiple of voltage（U min /Acting setting）	Trip time
	＜0.9	No-acting（No-alarm）
	≥1.1	Acting（or alarm）as per setting delay time
Alarm return characteristics （Accuracy±10%）	Multiple of voltage（U min /Return setting）	Acting time
	≥1.1	No return
	≤0.9	Return as per alarm return delay setting time
Voltage asymmetric protection/ Alarm e-PRO20M/ e-PRO20H type		
Performance mode	Close / Trip / Alarm	
Protection/Alarm start setting	2%~30%	
Protection acting delay time setting	0.2~60（s）	
Alarm acting return setting	2%~ Start value	Performance mode is alarm for setting this item,. Return value≥ start value
Alarm return delay time	0.2~60（s）	
Protective characteristics （Accuracy±10%）	Actual voltage asymmetric rate/setting	Trip time
	＜0.9	No-acting（No-alarm）
	≥1.1	Acting（or alarm）as per setting delay time
Alarm return characteristics (Accuracy±10%)	Actual voltage asymmetric rate/setting	Acting time
	＞1.1	No return
	≤0.9	Return as per alarm return delay setting time

Trip Unit Setting and Protective Characteristics

Under- frequency, Over- frequency/ Alarm e-PRO20M/ e-PRO20H type				
Performance mode	Close / Trip / Alarm			
Under-frequency	Protection/Alarm start setting	45（Hz）~ Return value		
	Acting delay time setting	0.2~5.0（s）		
	Alarm acting return setting	Start value ~65（Hz）	Performance mode is alarm for setting this item. Return value ≥ start value	
	Alarm return delay time setting	0.2~36（s）		
Over-frequency	Protection/Alarm start setting	Return value ~65（Hz）		
	Acting delay time setting	0.2~5.0（s）		
	Alarm acting return setting	45（Hz）~Start value	Performance mode is alarm for setting this item. Return value ≥ start value	
	Alarm return delay time setting	0.2~36（s）		
Protection/Alarm acting characteristics	Same as under-voltage, over-voltage protection/Alarm			
Reverse power protection/ Alarm e-PRO20M/ e-PRO20H type				
Performance mode	Close / Trip / Alarm			
Protection/Alarm start setting	5~500（kW）			
Protection acting delay time setting	0.2~20（s）			
Alarm acting return setting	5（kW）~ Start value	Performance mode is alarm for setting this item. Return value ≥ start value		
Alarm return delay time	1.0~360（s）			
Protection/Alarm operating characteristics	Same as over-voltage protection/Alarm			
Phase sequence / Alarm e-PRO20M/ e-PRO20H type				
Performance mode Acting sequence setting range	Close / Trip / Alarm Δφ：A,B,C / Δφ：A,C,B			
Acting/Alarm characteristics	Instantaneous			
Load monitor e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type				
e-PRO10M/ e-PRO10H type	Current setting IC1、IC2	（0.2~1）In or OFF（OFF-function close）		
	Time setting	15, 20, 25, 30, 40, 50, 60, 80, 100, 120,160, 200, 240, 320, 400, 480（s）		
	Output characteristics（Accuracy±10%）	Load monitor mode	Multiple of current	Acting time
		Mode 1 (Independent control two branches load)	≤1.05IC1 or IC2	No operation
			＞1.2 IC1or IC2	Delay replay operating（same as over-load delay characteristics curre）
		Mode 2（Control the same branch load，require IC1＞IC2）	≤1.05 IC1	No operation
			＞1.2 IC1	Delay relay operating (same as over-load delay characteristics curre)
			＜IC2	Delay relay operating (delay fixed 60s)
	Thermal memory time	30min（OFF）or power failure release		
e-PRO20M/ e-PRO20H type	Operating mode		Current setting	Time setting
	Dischargel	Current mode 1	（0.2~1.0）In	(20%~80%) TR (TR: over-load long delay acting time)
		Current mode 2		
		Power mode 1	200~10000（kW）	10~3600（s）
		Power mode 2		
	DischargeII	Current mode 1	（0.2~1.0）In	(20%~80%) TR (TR: over-load long delay acting time)
		Current mode 2	0.2In~ Dischargel	10~600（s）
		Power mode 1	200~10000（kW）	10~3600（s）
		Power mode 2	100（kW）~ Dischargel	

Trip Unit Setting and Protective Characteristics

Signal unit（for selection）e-PRO10M/ e-PRO10H type & e-PRO20M/ e-PRO20H type					
e-PRO10M/ e-PRO10H Type controller					
Controller type	Contact 1		Contact 2	Contact 3	Contact 4
2M	Load monitor 1 Discharge output		Load monitor 2 Discharge output	Alarm for system self-diagnostic fault alarm	Alarm for fault to trip
2H	Load monitor 1 Discharge output		Load monitor 2 Discharge output	Remote control opening	Remote control closing
Output function for signal contacts （Programmable）	1.alarm for short-circuit instantaneous fault to trip 2.alarm for grounding fault or residual current fault to trip 3.alarm for current asymmetric fault to trip 4.alarm for short-circuit delay fault to trip 5.alarm for over-load long delay fault to trip 6.alarm for fault to trip 7.load monitor 1discharge output 8. load monitor 2 discharge output 9. alarm for system self-diagnostic fault 10.alarm for power grid fault status				
e-PRO10M/ e-PRO10H type controller					
Function setting	In the drop- list for Switch output （DO） parameter				
Performance mode	Normally open level		Normally close level	Normally open impulse	Normally close impulse
Impulse time	/			1~360（s）	
Switch variable output （DO） parameter setting	General	Alarm	Fault to trip	Self-diagnostic alarm	Load monitor 1
	Load monitor 2	Over-load pre-report	Over-load fault	Short delay fault	Instantaneous fault
	Grounding/ Leakage fault	Grounding fault	Asymmetric current fault	Neutral phase fault	Under-voltage fault
	Over-voltage fault	Voltage asymmetric fault	Under-frequency fault	Over-frequency fault	Allowable-value fault
	Reverse power fault	Regional interlock	Closing	Opening	Phase sequence fault
	MCR/HSISC fault	Grounding interlock	Short-circuit interlock	A phase allowable-value fault	B phase allowable-value fault
	C phase allowable-value fault	N phase allowable-value fault	Allowable-value threshold		

Controller Factory Setting (Approval)

Protection characteristics		Setting current	Setting time	Remarks
Over-load long delay		1.0In	30s	Thermal memory（ON-30ms）
Short-circuit short delay	Inverse time	4Ir	/	—
	Definite time	6Ir	0.2s	
Short-circuit instantaneous		10In	—	—
Neutral protection		100%In	—	—
Grounding protection	In≤1250A	0.8In	Alarm no trip	—
	In≥1600A	1200A		
Asymmetry current		OFF	—	The user open by themselves according to their request

Trip Unit Setting and Protective Characteristics

Over- load long delay protective operating delay table C1- C16 e-PRO10M/ e-PRO10H type

Curre type	Fault current	Delay time（s）															
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
SI	1.5Ir	0.61	0.98	1.47	2.46	3.68	4.91	6.14	8.29	11.1	17.2	24.6	36.8	49.1	61.4	73.7	86
	6Ir	0.14	0.22	0.33	0.55	0.82	1.1	1.37	2.06	2.47	3.84	5.48	8.22	10	13.7	16.4	19.2
	7.2Ir	0.12	0.2	0.3	0.5	0.75	0.99	1.24	1.86	2.23	3.48	4.97	7.45	9.93	12.4	14.9	17.4
VI	1.5Ir	2	3.2	4.8	8	12	16	20	27	36	56	80	120	160	200	240	280
	6Ir	0.2	0.32	0.48	0.8	1.2	1.6	2	2.7	3.6	5.6	8	12	16	20	24	28
	7.2Ir	0.16	0.26	0.39	0.65	0.97	1.29	1.61	2.18	2.9	4.52	6.45	9.68	12.9	16.1	19.4	22.6
EI（G）	1.5Ir	8	12.8	19.2	32	48	64	80	108	144	224	320	480	640	800	960	1120
	6Ir	0.29	0.46	0.69	1.14	1.71	2.29	2.86	3.86	5.14	8	11.4	17.1	22.9	28.6	34.3	37.1
	7.2Ir	0.2	0.32	0.47	0.79	1.18	1.57	1.97	2.66	3.54	5.51	7.87	11.8	15.7	19.7	23.6	25.6
EI（M）	1.5Ir	6.22	9.96	14.9	24.9	37.3	49.8	62.2	84	112	174	249	373	498	622	747	871
	6Ir	0.28	0.45	0.68	1.13	1.69	2.26	2.82	3.81	5.08	7.9	11.3	16.9	22.6	28.2	33.9	36.7
	7.2Ir	0.2	0.31	0.47	0.78	1.17	1.56	1.95	2.63	3.51	5.46	7.8	11.7	15.6	19.5	23.4	25.4
HV	1.5Ir	2.46	3.94	5.9	9.85	14.8	19.7	24.6	33.2	44.3	68.9	98.5	147	197	246	295	344
	6Ir	0.01	0.01	0.02	0.03	0.05	0.06	0.08	0.1	0.14	0.22	0.31	0.46	0.62	0.77	0.93	1
	7.2Ir	0	0.01	0.01	0.02	0.02	0.03	0.04	0.05	0.07	0.1	0.15	0.22	0.3	0.37	0.45	0.48
I2t	1.5Ir	15	30	60	120	240	360	480	600	720	840	960					
	6Ir	0.938	1.875	3.75	7.5	15	22.5	30	37.5	45	52.5	60					
	7.2Ir	0.651	1.302	2.604	5.208	10.4	15.6	20.8	26.0	31.3	36.5	41.7					

Controller service power supply

Instrument transformer and auxiliary power supply for controller service source, so as to ensure normal operation for low current or normal breaking for fault by means of 1& 2 power supply modes simultaneously

1）CT power supply

Normal service conditions for controller ：Primary single phase current no less than 0.4In.Three- phase no less than 0.2In.Rated curr ent ≤ 400A, main circuits primary current no less than 1.0In， three-phase no less than 0.6In. Otherwise, it shall be connected auxiliary power supply.

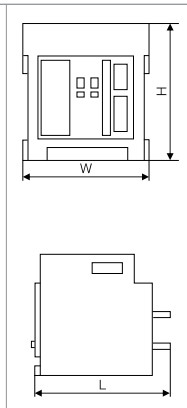
2）Auxiliary power supply

-Normal service conditions for controller（85%~110%）Us
-AC voltage（50/60Hz）：AC230V,AC400V,AC110V
-DC voltage：DC220V,DC110V,DC24V
-Voltage for 1 & 2 contacts of DC24V
-External DC power mod ule shall convert DC 110V/DC220V into DC24V by the user incoming.

TECHNICAL DATA

Table 1

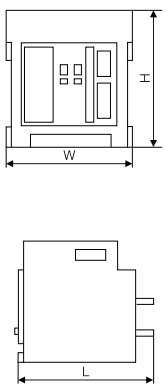
Type			WHG-2000		
Inm(A)Rated frame current			2000		
In(A)Rated current			630	800	1000
Ue(V)Rated working voltage			AC400, 500V 50-60Hz		
Ui(V)Rated insulating voltage			AC1000		
Uimp(V)Rated impulse withstand voltage			12kV		
Power frequency withstand voltage			AC3500V 1min		
pole			3、4	3、4	3、4
In(A)Rated current of N pole			100%In		
Rated ultimate short circuit breaking capacity Icu(kA)rms	AC400, 500V		65	65	65
Rated operating short circuit breaking capacity Ics(kA)rms	AC400, 500V		65	65	65
Rated short circuit making capacity Icm(kA) Peak	AC400, 500V		176	176	176
Rated short circuit withstand current (1s)Icw(rms)	AC400, 500V		50	50	50
Full breaking time (no additional delay) (ms)			25～30		
Closing time (ms)			(max)70		
Intelligent controller			●	●	●
Operation performance (No of Opera on)	AC400, 500V Electrical		6500	6500	6500
	Maintenance free Mechanical		15000	15000	15000
	Maintenance required Mechanical		30000	30000	30000
Installation	Terminal Connec on 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	432 375 421	432 375 421	432 375 421
	Draw–out type Horizontal connection 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
	Fixed type Horizontal connection 4p	Front installed			
		Rear installed	402 457 323	402 457 323	402 457 323



TECHNICAL DATA

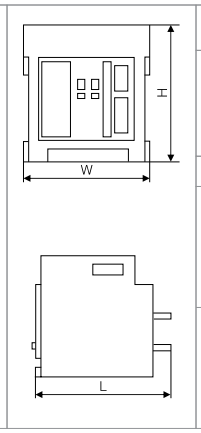
Table 1

Type			WHG-2000		
Inm(A)Rated frame current			2000		
In(A)Rated current			1250	1600	2000
Ue(V)Rated working voltage			AC400, 500V 50-60Hz		
Ui(V)Rated insulating voltage			AC1000		
Uimp(V)Rated impulse withstand voltage			12kV		
Power frequency withstand voltage			AC3500V 1min		
pole			3、4	3、4	3、4
In(A)Rated current of N pole			100%In		
Rated ultimate short circuit breaking capacity Icu(kA)rms		AC400, 500V	65	65	65
Rated operating short circuit breaking capacity Ics(kA)rms		AC400, 500V	65	65	65
Rated short circuit making capacity Icm(kA)Peak		AC400, 500V	176	176	176
Rated short circuit withstand current (1s) Icw(rms)		AC400, 500V	50	50	50
Full breaking time (no additional delay) (ms)			25～30		
Closing time (ms)			(max)70		
Intelligent controller		Basic type	●	●	●
Operation performance (No of Opera on)		AC400, 500V Electrical	6500	6500	6500
		Maintenance free Mechanical	15000	15000	15000
		Maintenance required Mechanical	30000	30000	30000
Installation	Terminal Connec on 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			
		3p Rear installed	432 375 421	432 375 421	432 375 421
		4p Front installed			
		4p Rear installed	432 470 421	432 470 421	432 470 421
	Fixed type / Horizontal connection	3p Front installed			
		3p Rear installed	402 362 323	402 362 323	402 362 323
		4p Front installed			
		4p Rear installed	402 457 323	402 457 323	402 457 323



TECHNICAL DATA

Table 2

Type			WHG-3200									
Inm(A)Rated frame current			3200									
In(A)Rated current			2500			2900			3200			
Ue(V)Rated working voltage			AC400, 500V 50-60Hz									
Ui(V)Rated insulating voltage			AC1000									
Uimp(V)Rated impulse withstand voltage			12kV									
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	AC400, 500V		85			85			85			
Rated operating short circuit breaking capacity Ics(kA)rms	AC400, 500V		85			85			85			
Rated short circuit making capacity Icm(kA) Peak	AC400, 500V		220			220			220			
Rated short circuit withstand current (1s) Icw(rms)	AC400, 500V		65			65			65			
Full breaking time (no additional delay) (ms)			25～30									
Closing time (ms)			(max)70									
Intelligent controller	Basic type		●			●			●			●
Operation performance (No of Opera on)	AC400, 500V Electrical		3000			3000 3000			3000			3000
	Maintenance free Mechanical		10000			10000			10000			10000
	Maintenance required Mechanical		20000			20000			20000			20000
Installation 	Terminal Connec on 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
	Draw-out type Horizontal connection 3p	Front installed												
		Rear installed	432	435	421	432	435	421	432	435	421	432	435	421
	Draw-out type Horizontal connection 4p	Front installed												
		Rear installed	432	550	421	432	550	421	432	550	421	432	550	421
	Fixed type Horizontal connection 3p	Front installed												
		Rear installed	402	422	323	402	422	323	402	422	323	402	422	323
	Fixed type Horizontal connection 4p	Front installed												
		Rear installed	402	537	323	402	537	323	402	537	323	402	537	323

TECHNICAL DATA

Type			WSG-2500H	WSG-4000H	WSG-7500H
Inm(A) Rated frame current			2500	4000	7500
In(A) Rated current			(400)630A,800A, 1000A, 1250A, 1600A,2000A,2500A	2000A,2500A, 2900A, 3200A, 3600A,3900A,4000A	4000A, 5000A, 6300A, 7500A
Ue(V) Rated working voltage			50/60Hz,AC400V,500V, 690V.800V,1000V	50/60Hz,AC400V,500V, 690V.800V,1000V	50/60Hz,AC400V,415V, 690V.800V,1000V
Ui(V) Rated insulation voltage			1000V	1000V	1000V
Uimp(kV) Rated impulse withstand voltage			12	12	12
U(V)Imin Power frequency withstand voltage			AC 50/60Hz 3500	AC 50/60Hz 3500	AC 50/60Hz 3500
Pole			3P/4P	3P/4P	3P/4P
Rated Ultimate short-circuit breaking capacity (valid value) Icu(kA)	400V		65	100	150
	690V		50	80	100
	800/1000V		36	50	65
Rated Service short-circuit breaking capacity (RMS) Ics(kA)	400V		100	100	150
	690V		65	80	100
	800/1000V		36	50	65
Rated short-time withstand current Tls) (effective va I ue) Icw(kA)	400V		65	100	150
	690V		65	80	100
	800/1000V		36	50	65
Full break time (no additional delay)ms			12 ~ 18	12 ~ 18	12 ~ 18
Closing time (ms)			≤60	≤60	≤60
Operating Performance	Electrical life		2000	2000	2000
	Mechanical life	Maintenance-free	10000	10000	10000
		Be maintained	20000	20000	20000

load monitoring operating characteristics

model 1	Adjustable range of adjusted current permitted difference of ± 10%	(0.1–1.0)In,adjusts by 20Aof each grade
	Time dely characteristicstI1tI2	Reverse time limit characteristics tc1=1/2tL、tc2=1/4tL
model 2	Adjustable range of adjusted current permitted difference of ± 10%	(0.2–0.1)In,adjusts by 20Aof each grade
	Time dely characteristicstI1tI2	Reverse time limit characteristics tc1=1/2tL
		Reverse time limit characteristics Tc2=60s

The factory setting intelligent controller parameters are as follows.

Type	Overload long time dely adjusting		Short– circuitshort time dely adjusting		Short– circuit instantaneous adjusting	Earthing– fault protect and adjust		Loading inspecting adjust	
	Ir1	TL(1.5Ir1)	Ir2	ts	Ir3	Ir4	tG	ILC1	ILC2
WHG-2000	In	240s	8Ir1	0.4s	12In	0.5In	0.4s	In	In
WHG-3200	In	240s	8Ir1	0.4s	12In	0.5In	0.4s	In	In

Tripping characteristics curve

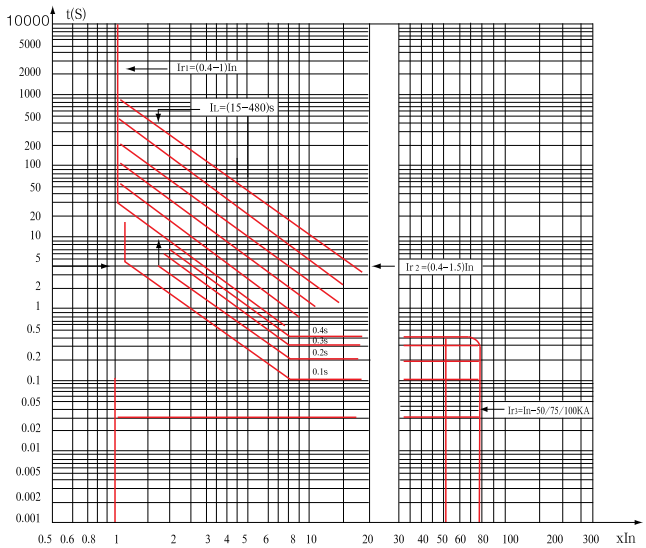


Table 1

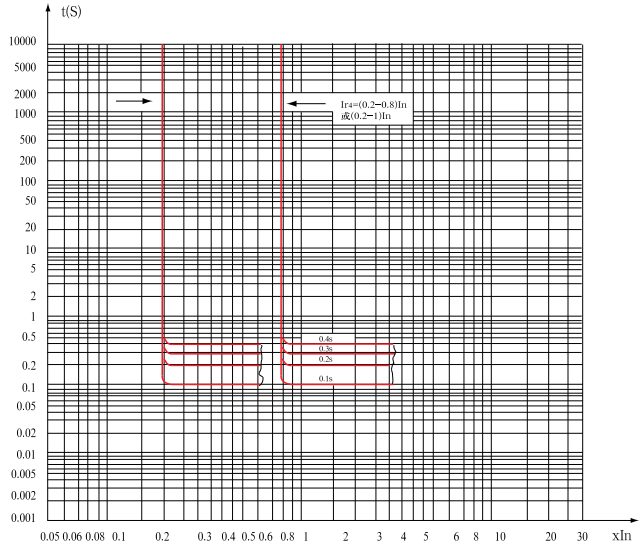


Table 2

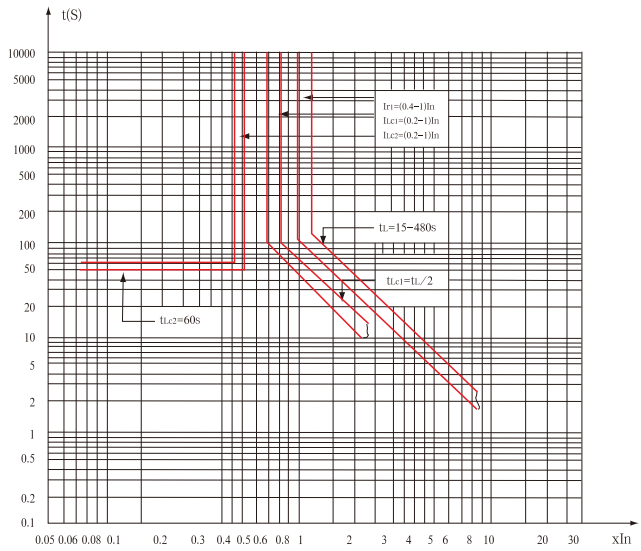


Table 3

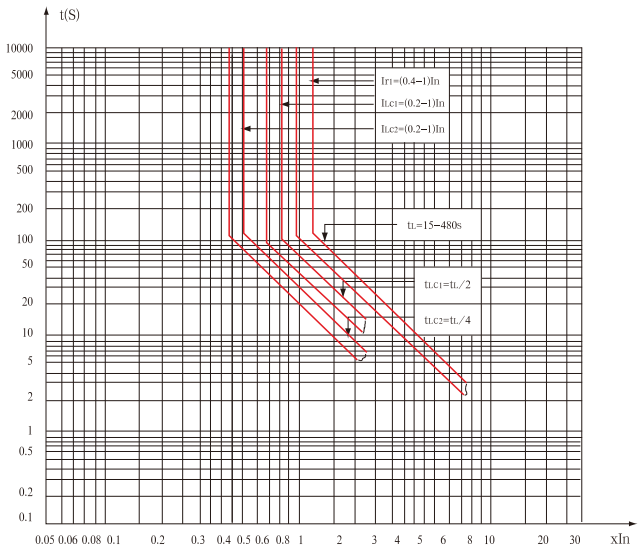


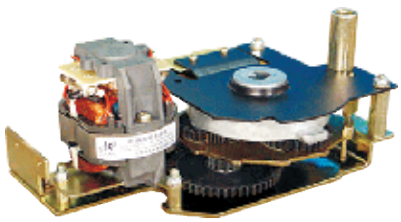
Table 4

Product Accessories

Operation mechanism

Opera ng mechanism is located in the front of the breaker , with trip free mechanism and with stored energy for closing. If the breaker receives the mechanical command for closing, it will close immediately. The breaker can also be closed by using the manual closing bu on.

The cholesteric of Motor Opera ng device is in the following table:



Us Rated controlling voltage		AC (50-60Hz)		DC	
		220V	380V	110V	220V
Operating voltage		(85% ~ 110%)Us		(85% ~ 110%)Us	
Power consumption	Inm=2000A	85VA		85W	
	Inm=3200A	110VA		110W	
energy stored time		≤5s		≤5s	

CLOSING COIL

The closing coil will close the breaker when it receives closing command.

The characteris c of closing coil is the following

Us Rated controlling voltage	AC (50-60Hz)		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

The undervoltage trip combines the undervoltage trip coil and a controlling unit. there are two types of Undervoltage trips, Undervoltage instantaneous trip and undervoltage me-delay trip

The characteris c of Undervoltage trip unit.

Ue Rated controlling voltage		AC 220 (50-60Hz)	AC 380 (50-60Hz)
Operating voltage		(35% ~ 70%)Ue	
Guarantee closing voltage		(85% ~ 110%)Ue	
Guarantee non-closing voltage		≤35%Ue	
Power consumption		24VA	24VA
Opreating time of trip	Undervoltage instantaneous trip		
	Undervoltage time-dely trip		

Shunt Trip

Us Rated controlling voltage	AC (50-60Hz)		DC	
	AC220V	AC380V	110V	220V
Operating voltage	(70%～110%)Us		(70%～110%)Us	
Power consumption	40VA		40W	
Breaking time	⩽30ms		⩽30ms	

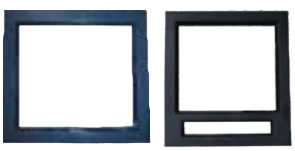
Auxiliary contact

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 Interlock

"OFF" Position Locking device

Door Frame



Door frame avilable in IP40 degree of protec on

Phase Barrier

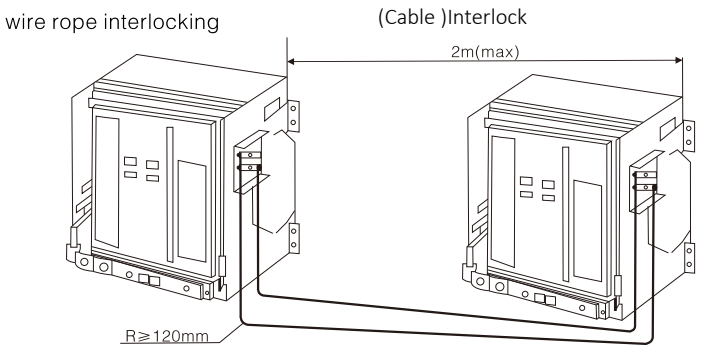
Mechanism interlocking - cable type

Two horizantal breakers for wire rope interlocking, Max distance is 2m

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)



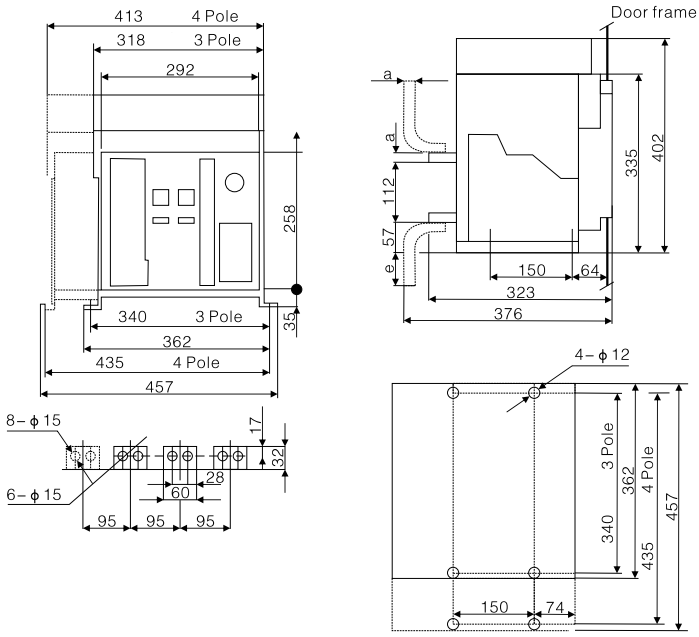
Two horizontal treakers for wire rope interlocking.

External and assembly dimensions

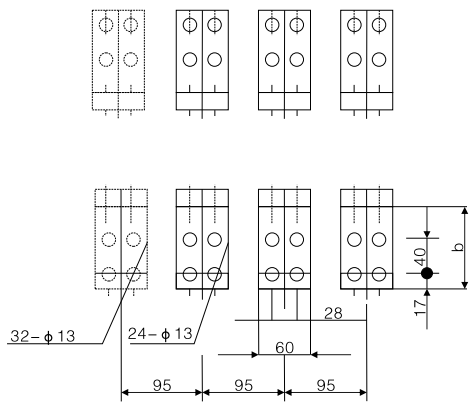
fixed type breakers External and assembly dimensions

WHG 2000A

3,4Pole



Fixed type breakers see drawing 15

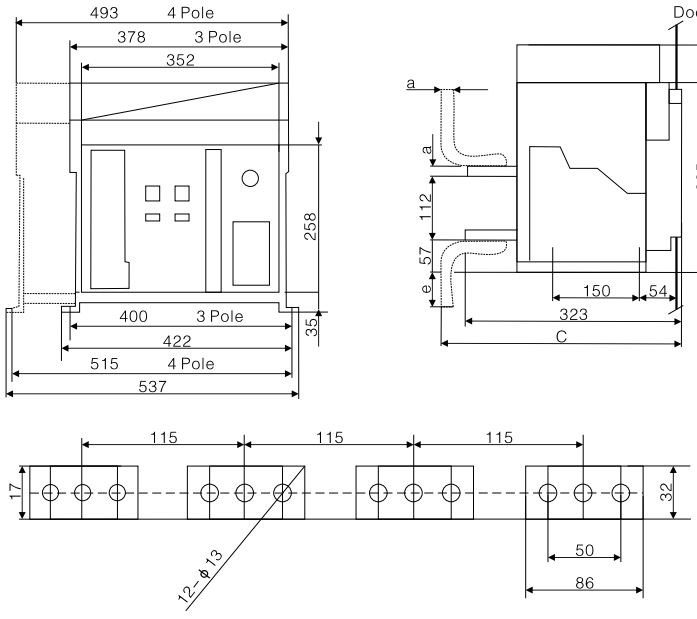


rear-front connected

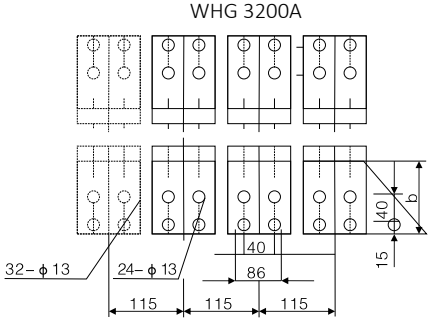
In/A	a/mm	b/mm	e/mm
630-800	10	95	38
1000-1600	15	105	48
2000	20	115	58

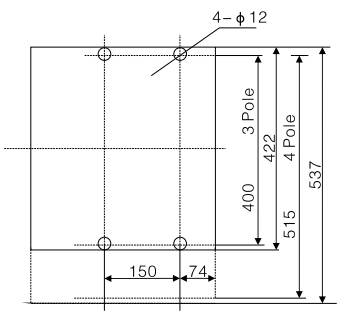
(Inm=2000A)
fixed type breakers External and assembly dimensions

3,4Pole



WHG 3200A





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

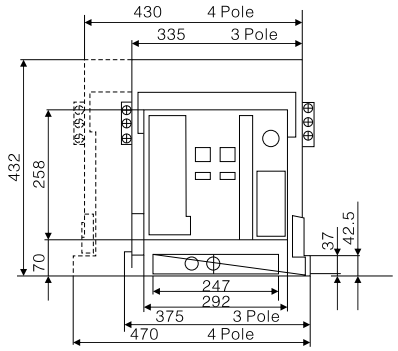
(Inm=3200A)
fixed type breakers External and assembly dimensions

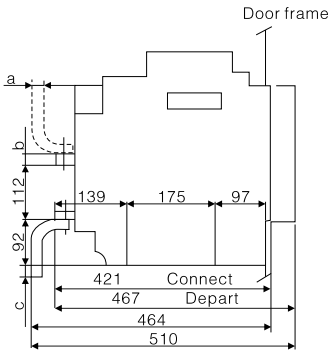
TECHNICAL DATA

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

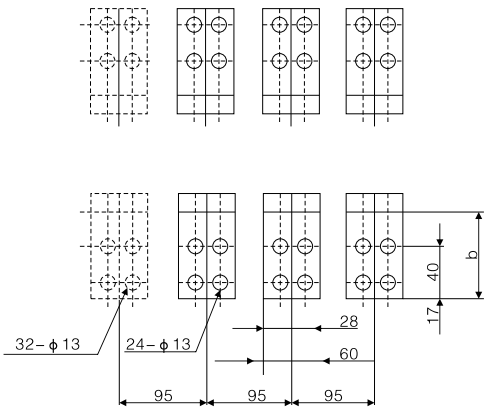
WHG 2000A

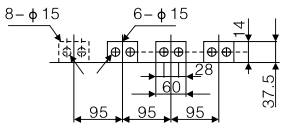
3,4Pole

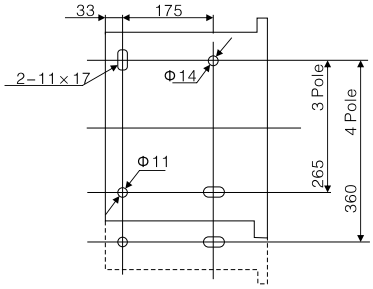




Draw–out type breaker







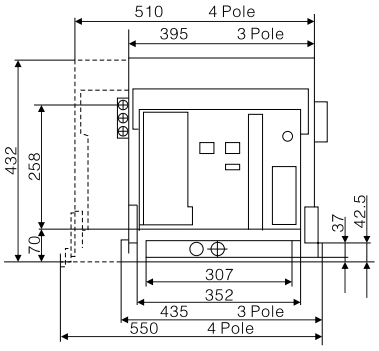
In/A	a/mm	b/mm	e/mm
630–800	10	95	3
1000–1600	15	105	13
2000	20	115	23

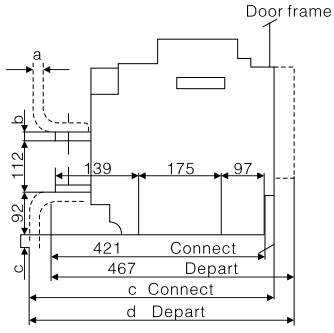
(Inm=2000A)

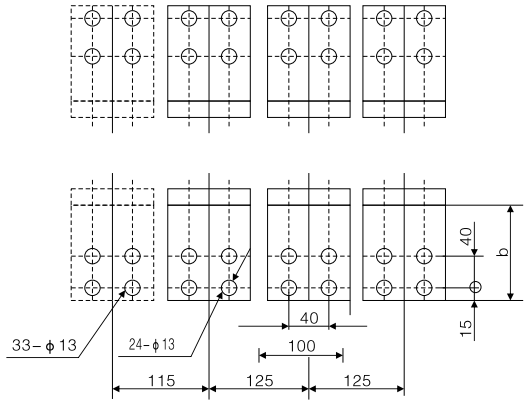
Draw–out type breaker's external and assembly dimensions see drawing (Inm=2000A)

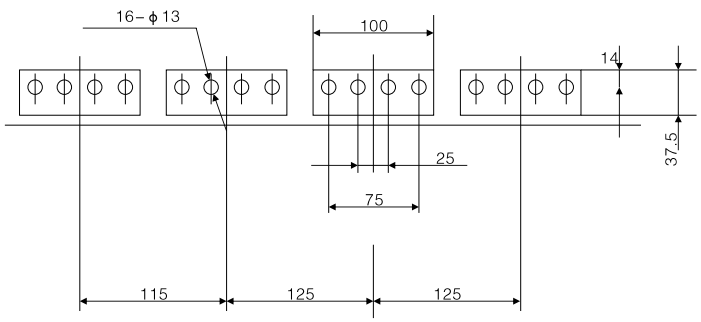
3,4Pole

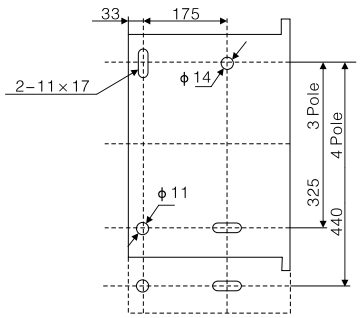
WHG 3200A







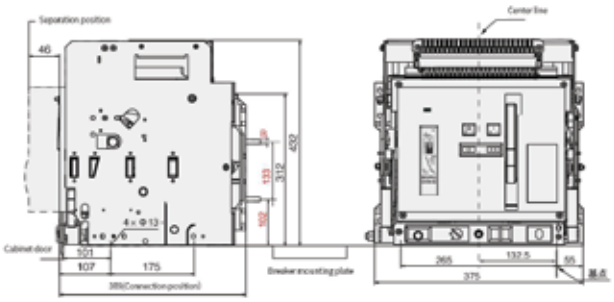




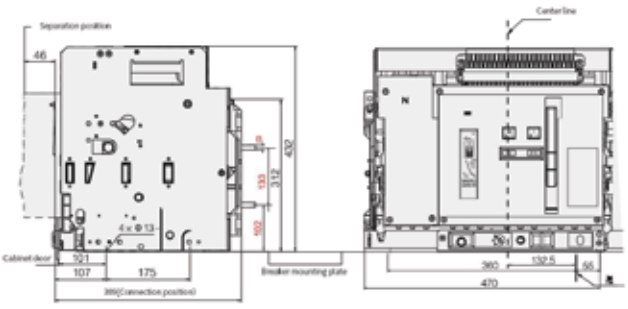
In/A	a/mm	b/mm	c/mm	d/mm	e/mm
2500	20	115	506	552	23
3200	30	135	526	572	43

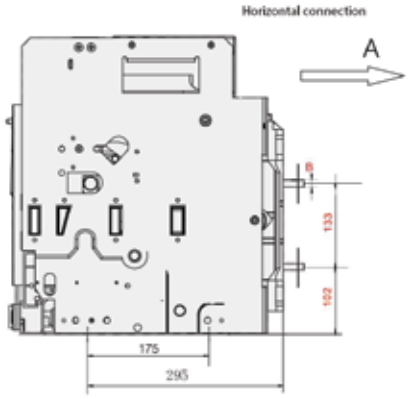
WSG-2500H Outline and mounting dimensions drawing

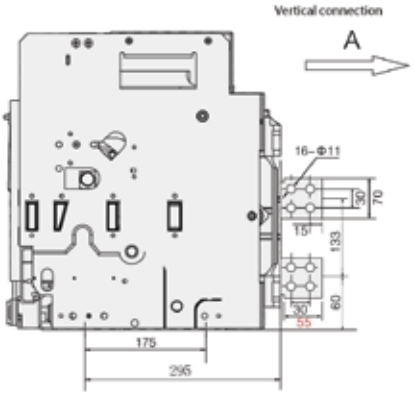
WSG-2500H Draw out type circuit breaker (3 Pole)



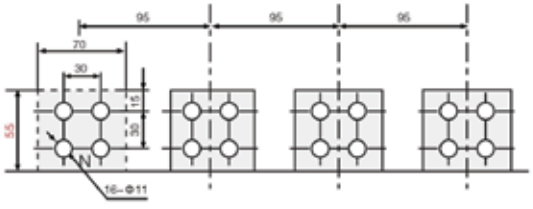
WSG-2500H Draw out type circuit breaker (4 Pole)



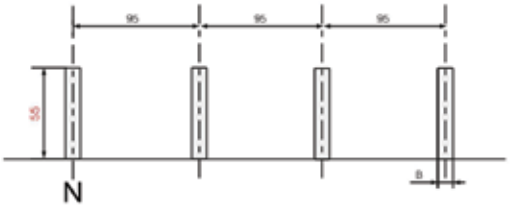


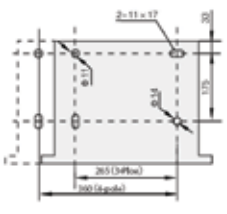


Standard horizontal connection

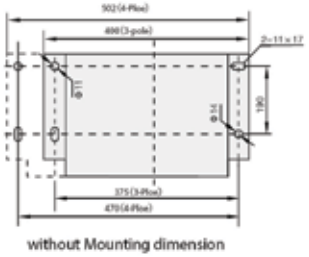


Vertical connection





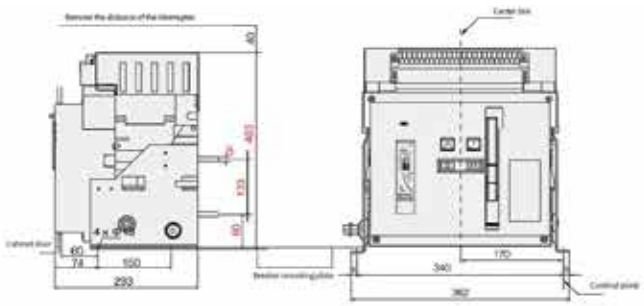
Internal mounting dimension



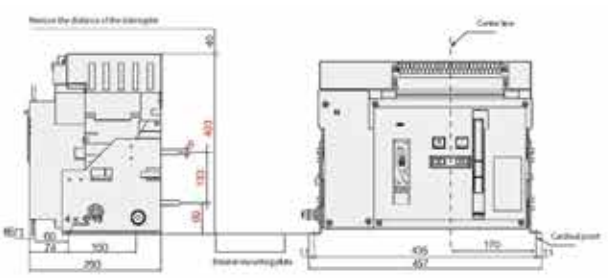
without Mounting dimension

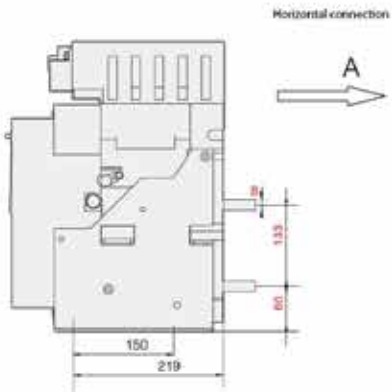
Rated current (A)	Dimension(B)
630~800	10
1000~1600	15
2000~2500	20

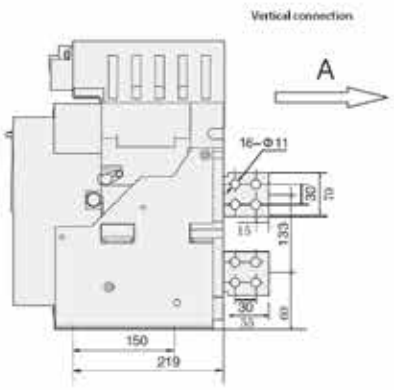
WSG-2500H Fixed type circuit breaker (3 Pole)



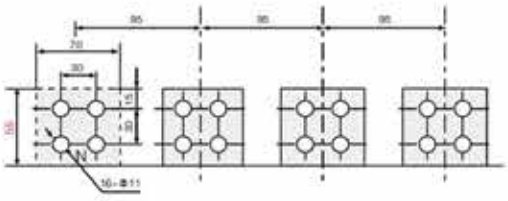
WSG-2500H Fixed type circuit breaker (4 Pole)



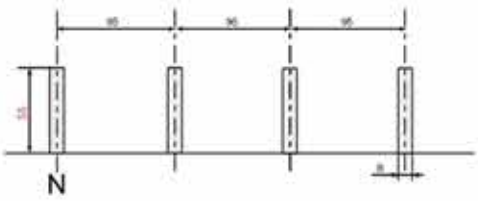


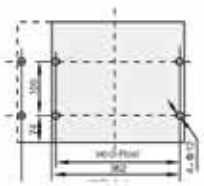


Standard horizontal connection



Vertical connection

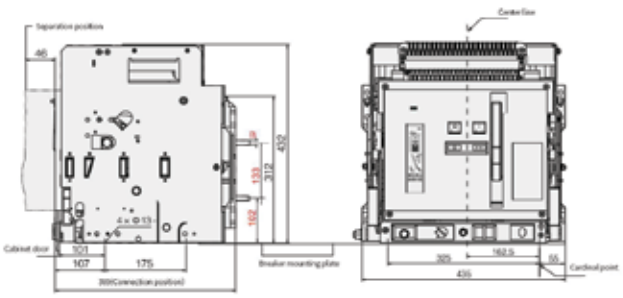




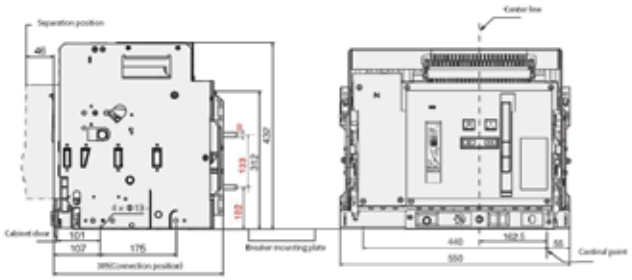
Rated current (A)	Dimension(B)
630~800	10
1000~1600	15
2000~2500	20

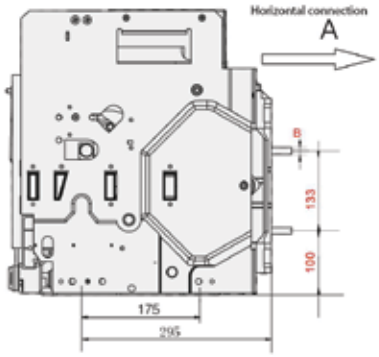
WSG-4000H Outline and mounting dimensions drawing

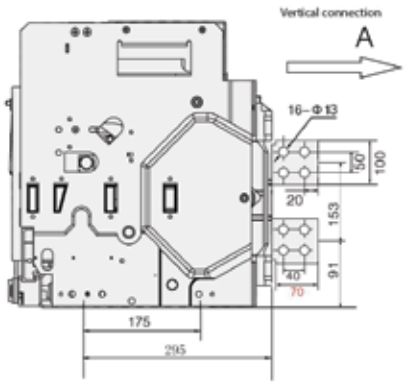
WSG-4000H Draw out type circuit breaker (3 Pole)



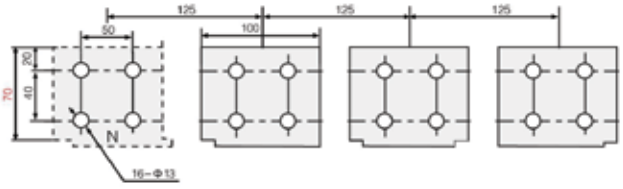
WSG-4000H Draw out type circuit breaker (4 Pole)

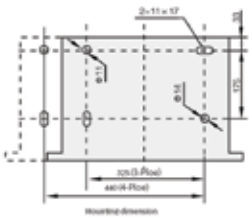


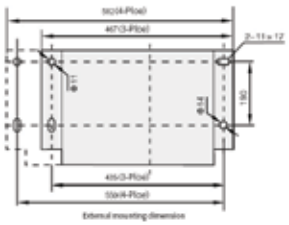




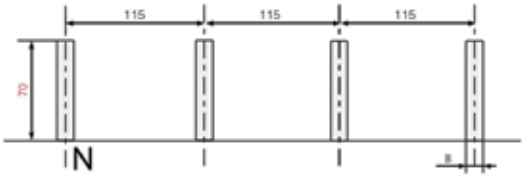
Standard horizontal connection







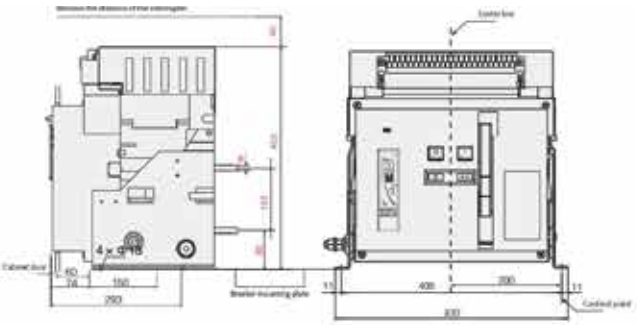
Vertical connection



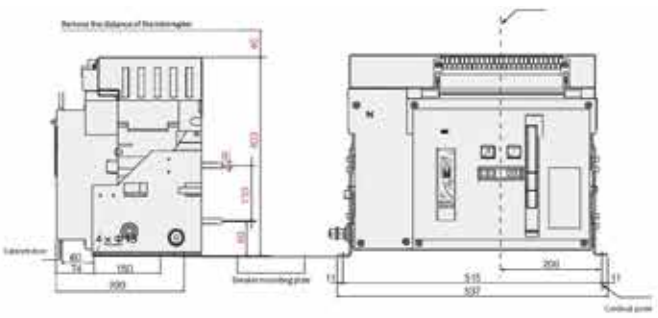
Rated current (A)	Dimension(B)
2000、2500	20
2900、3200 3600、4000	30

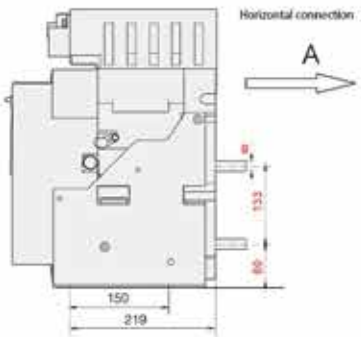
WSG-4000H Breaker Drawing

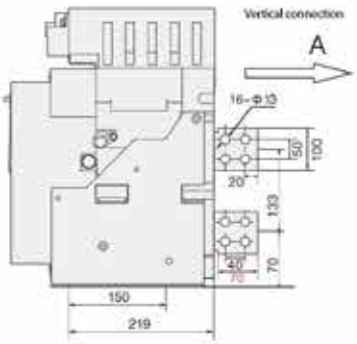
WSG-4000H Fixed type circuit breaker (3 Pole)



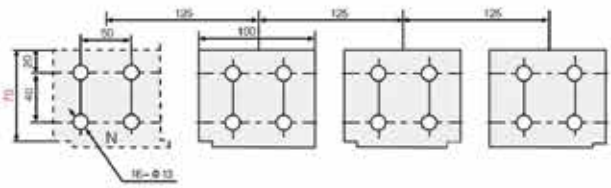
WSG-4000H Fixed type circuit breaker (4 Pole)



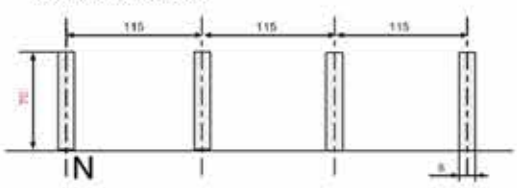


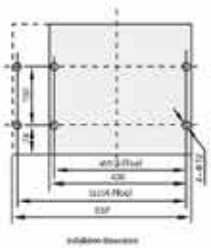


Standard horizontal connection



Vertical connection

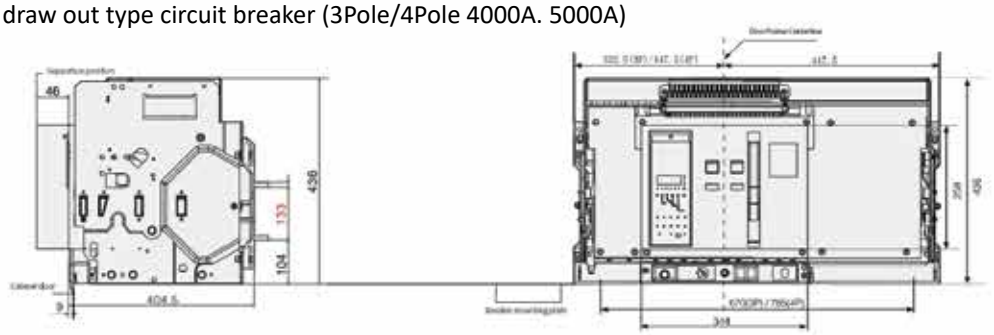


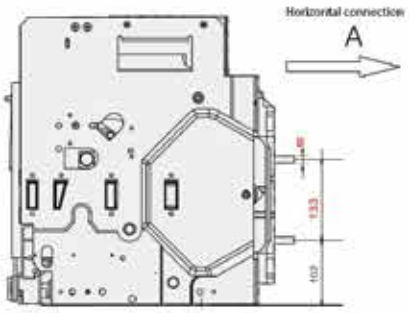


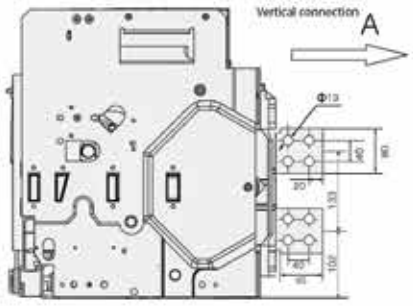
Rated current (A)	Dimension(B)
2000、2500	20
2900、3200 3600、4000	30

WSG-7500H Outline and mounting dimensions drawing

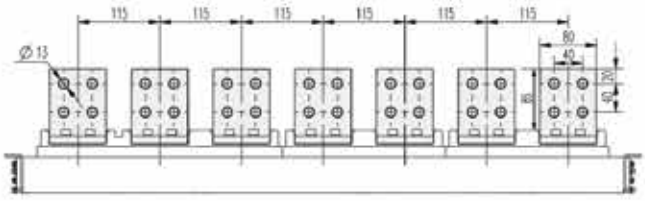
WSG-7500H draw out type circuit breaker (3Pole/4Pole 4000A. 5000A)



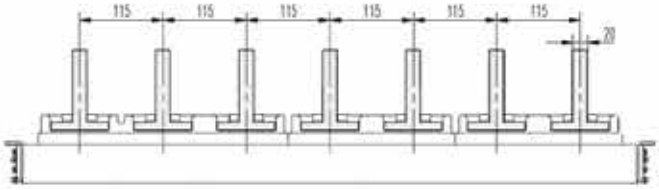


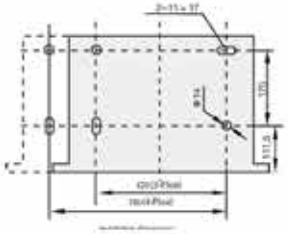


Standard horizontal connection



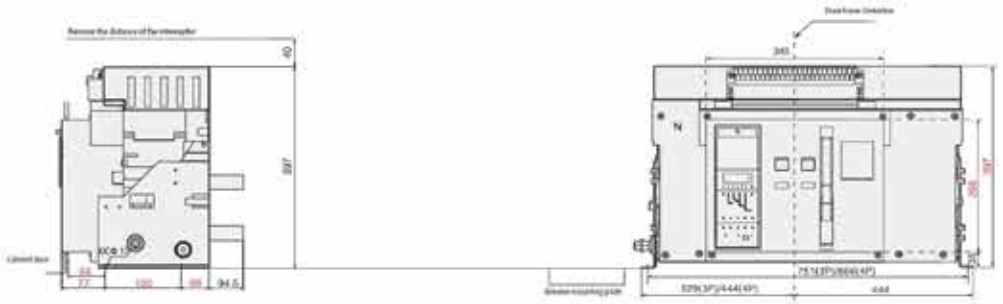
Vertical connection

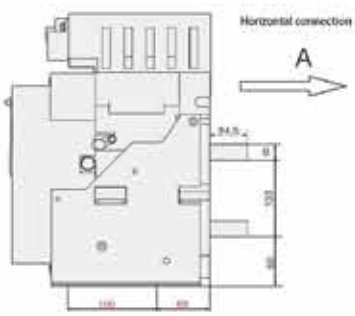


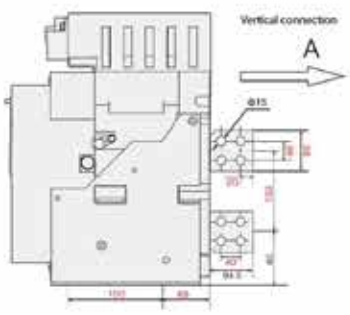


Rated current (A)	Dimension(B)
4000	20
5000	

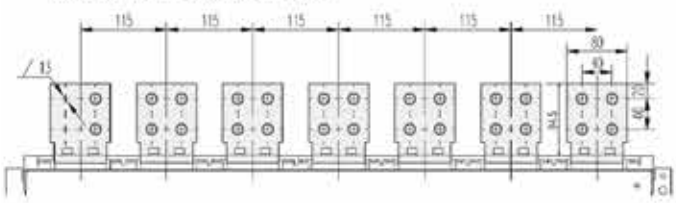
WSG-7500H Fixed type circuit breaker (3Pole/4Pole 4000A. 5000A)



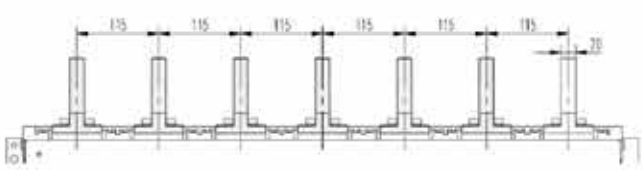


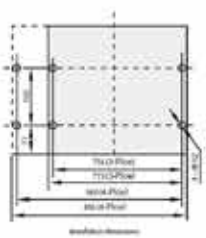


Standard horizontal connection



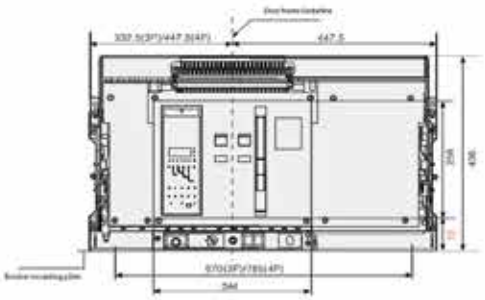
Vertical connection

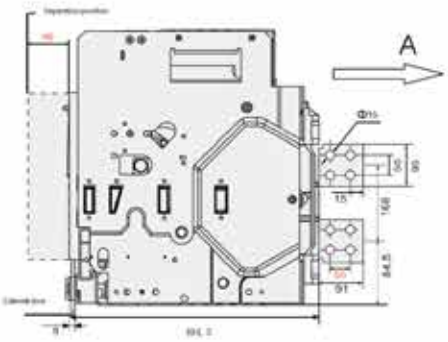




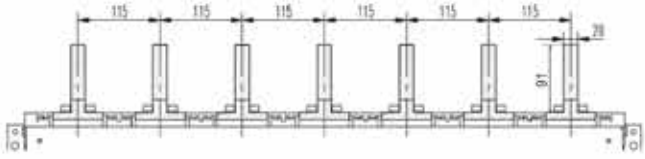
Rated current (A)	Dimension(B)
4000	20
5000	

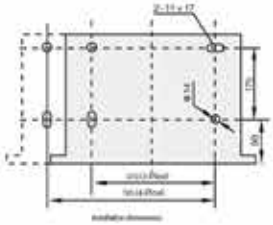
WSG-7500H Draw Out type circuit breaker (3Pole/4Pole 6000A)





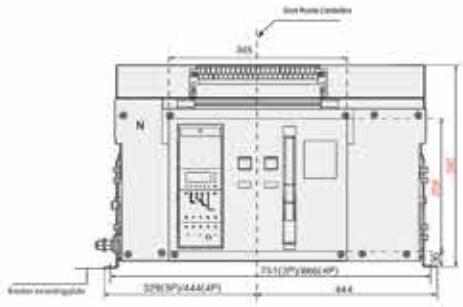
Vertical connection

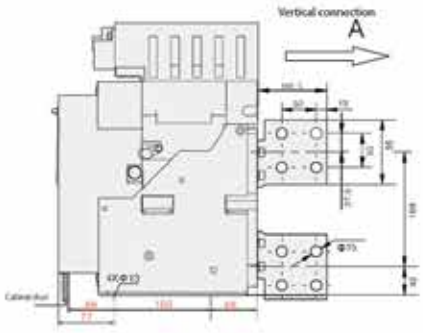




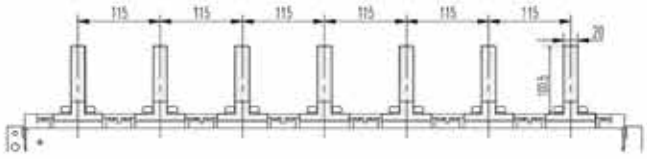
Rated current (A)	Dimension(B)
6300A	20

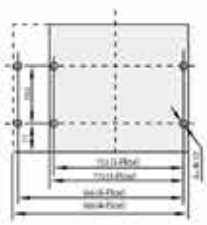
WSG-7500H Fixed type circuit breaker (3Pole/4Pole 6000A)





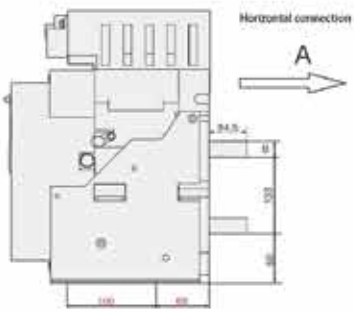
Vertical connection

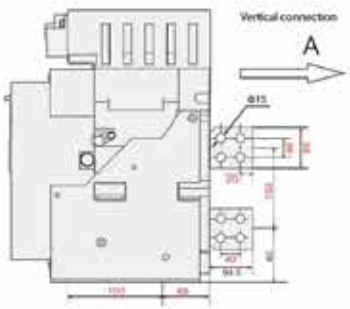




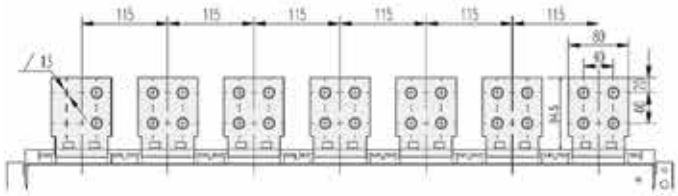
Rated current (A)	Dimension(B)
6300A	20

WSG-7500H Fixed type circuit breaker (3Pole/4Pole 4000A. 5000A)

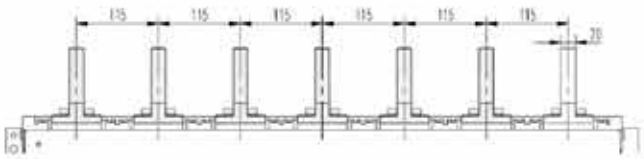


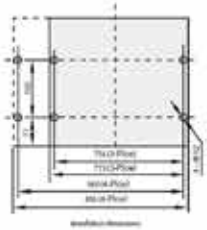


Standard horizontal connection



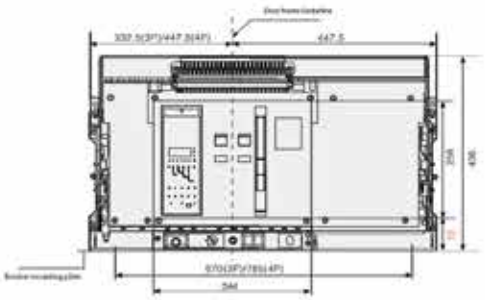
Vertical connection

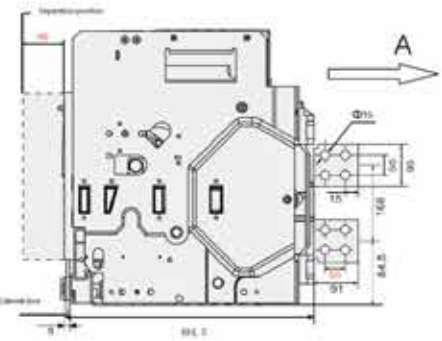




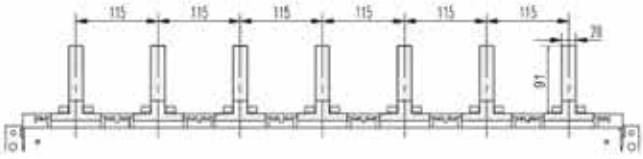
Rated current (A)	Dimension(B)
4000	20
5000	

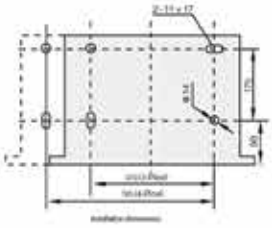
WSG-7500H Draw Out type circuit breaker (3Pole/4Pole 6000A)





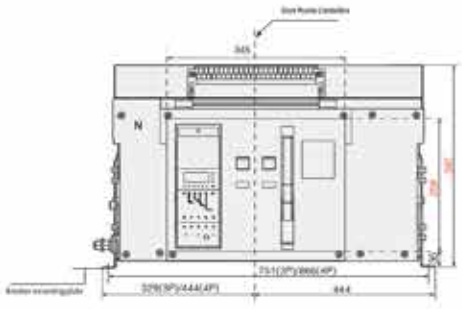
Vertical connection

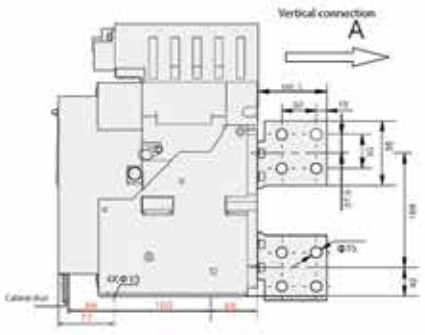




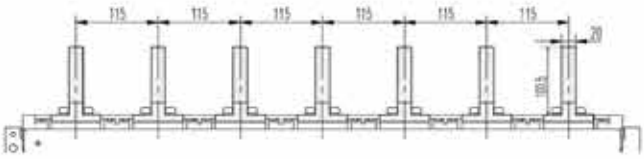
Rated current (A)	Dimension(B)
6300A	20

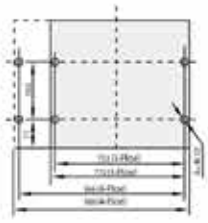
WSG-7500H Fixed type circuit breaker (3Pole/4Pole 6000A)





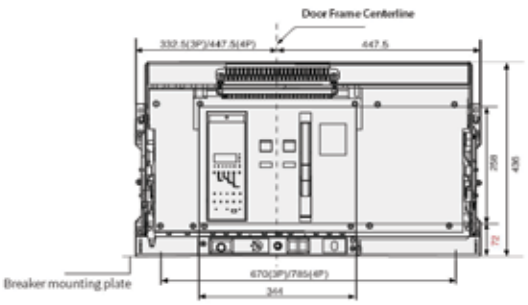
Vertical connection



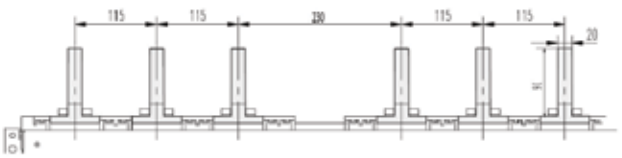


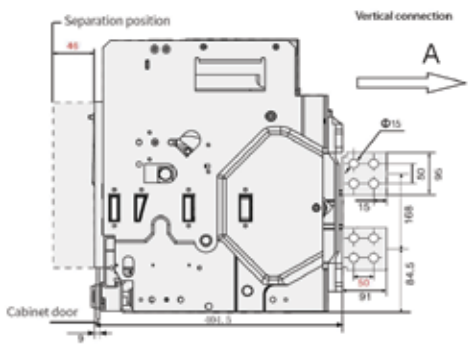
Rated current (A)	Dimension(B)
6300A	20

WSG-7500H Draw out circuit breaker (7500A)

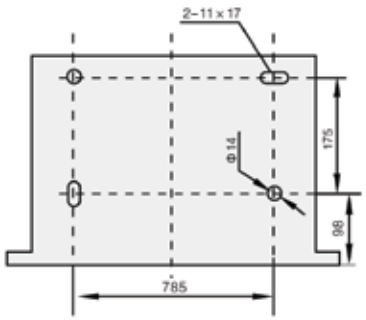


Vertical connection





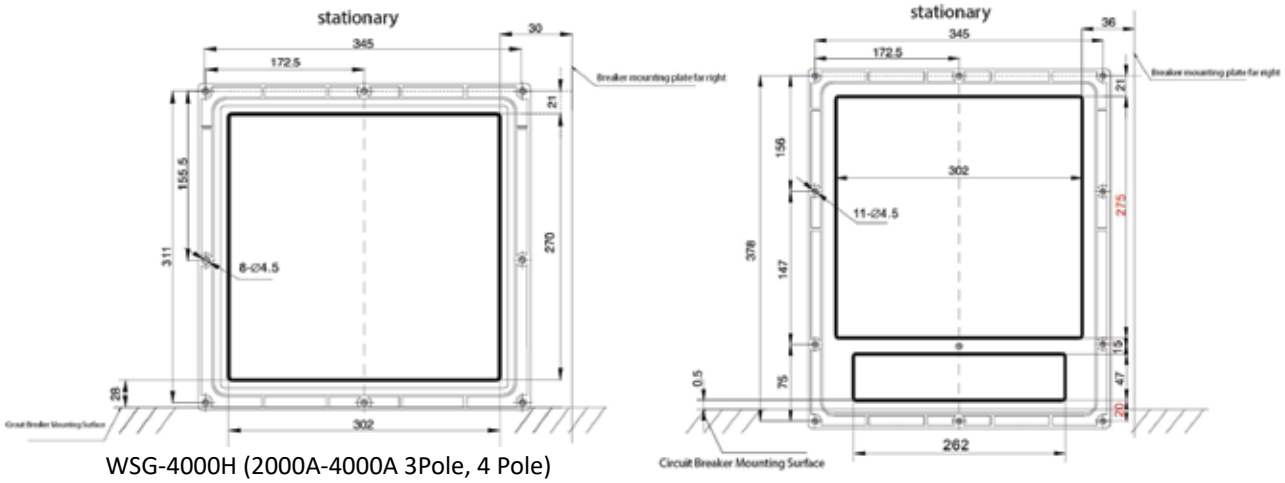
Rated current (A)	Dimension(B)
7500A	20



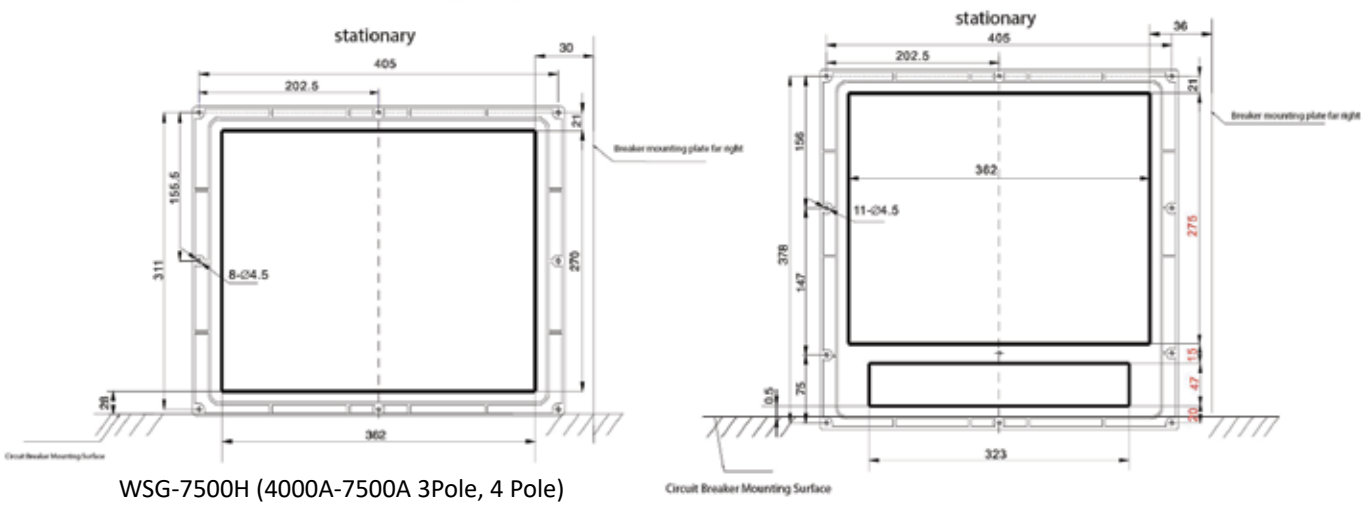
Installation dimensions

Door Frame Size and Mounting Hole spacing

WSG-2500H (630A-2500A 3Pole, 4 Pole)

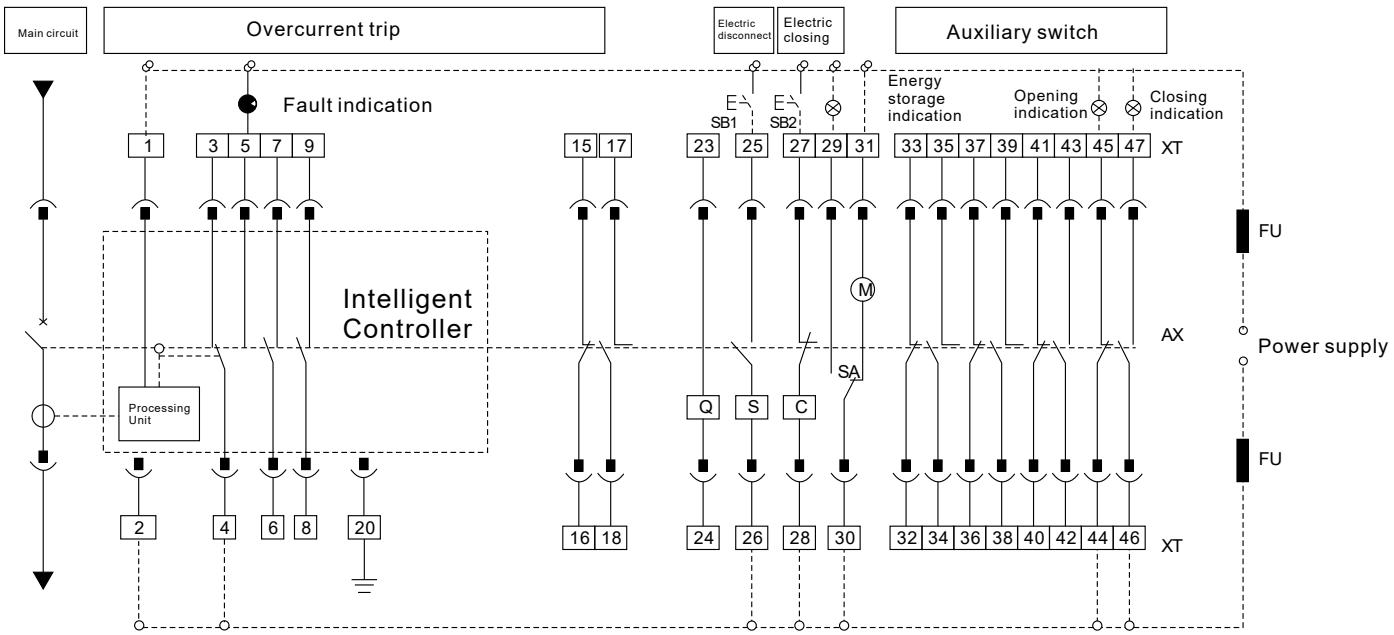


WSG-4000H (2000A-4000A 3Pole, 4 Pole)



WSG-7500H (4000A-7500A 3Pole, 4 Pole)

Connection diagram of secondary circuit coils

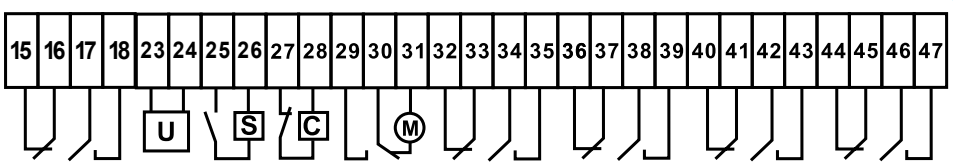


Note:
1. The dotted line is connected by user.
2. Terminal function # 1 . # 2 : Auxiliary Power Input , DC when # 1 foot is positive # 3 , # 4 # 5 : Fault trip contact # 6 , # 7 # , 8 # , 9 # : State auxiliary contact # 20: Ground Wire

3. Code name
AX: CIRCUIT BREAKER AUXI LIARY SWITCH
SB1: SHUNT BUTTON
SB2: Close Bu on
Q : Under-voltage release (terminals 23, 24 should be connected in the main circuit)
S : shunt release
C : Close electromagnet
M : Storage Motor
SA: Spring charging indica on
XT: Circuit Breaker Secondary Loop Terminal
Fu: Fuse
30, 31: direct power (automa c pre-storage energy) Can also be a series open bu on, a er the power supply
(manual pre-storage energy) power: If the processing unit,
Q, S , C and other rated voltage should be connected separately can not power supply

The auxiliary switch consists offive normally open contacts and five normally closed contacts

U: Undervoltage Release
S: Shunt Release ST
C: Closing coil CC
M: Motor charge



Installation, Usage, and Maintenance Instruction.

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±5℃ degree and humidity 50~70% shall not less than 20MΩ, or the breaker shall be dried. When insulating resistance reached to users'request,then breaker can be uesed.

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 incomes 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 is 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 tnip release shall be energized)

b. Sway the handle up and down 7times, 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	Voltage release has no power supply, unenergized The intelligent controller takes action, but the red button in the control panel does not reset. The operating mechanism has no energy stored. deaw-out breaker is not in the “Service” or Test” Position, the key for ”OFF” position is locked.	Check the circuit, Switch on the power supply for voltage release Push the “Reset” button hand the motor operation make “mechanism energy stored sway the handle and make break locate is ”Service” or “Test” position. use the 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 Ir1<Ir2<Ir3
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

Order Reference Table

ACB WHG SERIES - FIXED		
Reference No.	**Catalogue No.**	**DESCRIPTION**
ACB 3P FIXED TYPE WITH CT AND AUX CONTACT, OCR CONTROL UNIT		
W605950	WHG06A3H	ACB FIXED TYPE 3P 630A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605918	WHG08A3H	ACB FIXED TYPE 3P 800A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605920	WHG10A3H	ACB FIXED TYPE 3P 1000A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605922	WHG12A3H	ACB FIXED TYPE 3P 1250A 65kAWITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605924	WHG16A3H	ACB FIXED TYPE 3P 1600A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605926	WHG20A3H	ACB FIXED TYPE 3P 2000A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x20MM)
W605928	WHG25B3H	ACB FIXED TYPE 3P 2500A 85kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 86x20MM)
W605930	WHG32B3H	ACB FIXED TYPE 3P 3200A 85kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 86x30MM)
ACB 4P FIXED TYPE WITH CT AND AUX CONTACT, OCR CONTROL UNIT		
W605951	WHG06A4H	ACB FIXED TYPE 4P 630A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605919	WHG08A4H	ACB FIXED TYPE 4P 800A 65kA WITH CT AND AUXILIARY CONTRACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605921	WHG10A4H	ACB FIXED TYPE 4P 1000A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605923	WHG12A4H	ACB FIXED TYPE 4P 1250A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605925	WHG16A4H	ACB FIXED TYPE 4P 1600A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W605927	WHG20A4H	ACB FIXED TYPE 4P 2000A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x20MM)
W605929	WHG25B4H	ACB FIXED TYPE 4P 2500A 85kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 86x20MM)
W605931	WHG32B4H	ACB FIXED TYPE 4P 3200A 85kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 86x30MM)
ACB ACCESSORIES		
W606545	WAM5	ACB MOTOR (A) AC230V/DC220V WITH BOLT
W606546	WMB5	ACB MOTOR (B) AC230V/DC220V WITH MOUNTING SCREW
W606547	WU5	ACB UNDERVOLTAGE TRIP COIL W / UNDERVOLTAGE RELEASE AC230V/ DC220V
W606548	WC5	CLOSING COIL CC AC230/DC220V
W606549	WMIC3M	MECHANICAL INTERLOCK CABLE 3M FOR ACB
W606550	WS5	SHUNT TRIP AC230/DC220V

Order Reference Table

ACB WHG SERIES-DRAWOUT		
Reference No.	**Catalogue No.**	**DESCRIPTION**
ACB 3P DRAWOUT TYPE WITH CT AND AUX CONTACT, OCR CONTROL UNIT		
W611467	WHG06A3B	ACB DRAWOUT TYPE 3P 630A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611468	WHG08A3B	ACB DRAWOUT TYPE 3P 800A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611469	WHG10A3B	ACB DRAWOUT TYPE 3P 1000A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611470	WHG12A3B	ACB DRAWOUT TYPE 3P 1250A 65kAWITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611471	WHG16A3B	ACB DRAWOUT TYPE 3P 1600A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611472	WHG20A3B	ACB DRAWOUT TYPE 3P 2000A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x20MM)
W611473	WHG25B3B	ACB DRAWOUT TYPE 3P 2500A 85kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 86x20MM)
W611474	WHG32B3B	ACB DRAWOUT TYPE 3P 3200A 85kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 86x30MM)
ACB 4P DRAWOUT TYPE WITH CT AND AUX CONTRACT, OCR CONTROL UNIT		
W611475	WHG06A4B	ACB DRAWOUT TYPE 4P 630A 65kA WITH CT , AUXILIARY CONTACT , OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611476	WHG08A4B	ACB DRAWOUT TYPE 4P 800A 65kA WITH CT AND AUXILIARY CONTRACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611477	WHG10A4B	ACB DRAWOUT TYPE 4P 1000A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611478	WHG12A4B	ACB DRAWOUT TYPE 4P 1250A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611479	WHG16A4B	ACB DRAWOUT TYPE 4P 1600A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x15MM)
W611480	WHG20A4B	ACB DRAWOUT TYPE 4P 2000A 65kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 60x20MM)
W611481	WHG25B4B	ACB DRAWOUT TYPE 4P 2500A 85kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 86x20MM)
W611482	WHG32B4B	ACB DRAWOUT TYPE 4P 3200A 85kA WITH CT AND AUXILIARY CONTACT, OCR CONTROL UNIT (BUSBAR SIZE: 86x30MM)

Order Reference Table
ACB WSG SERIES 800V

ACB WSG SERIES 800V		
Reference No.	Catalogue No.	DESCRIPTION
ACB 3P FIXED TYPE		
W611420	WSG06B3H	ACB FIXED TYPE 3P 630A
W611421	WSG08B3H	ACB FIXED TYPE 3P 800A
W611422	WSG10B3H	ACB FIXED TYPE 3P 1000A
W611423	WSG12B3H	ACB FIXED TYPE 3P 1250A
W609458	WSG16B3H	ACB FIXED TYPE 3P 1600A
W611424	WSG20B3H	ACB FIXED TYPE 3P 2000A
W611425	WSG25B3H	ACB FIXED TYPE 3P 2500A
W611426	WSG32B3H	ACB FIXED TYPE 3P 3200A
W611427	WSG40B3H	ACB FIXED TYPE 3P 4000A
W611428	WSG50B3H	ACB FIXED TYPE 3P 5000A
W611429	WSG63B3H	ACB FIXED TYPE 3P 6300A
W611430	WSG75B3H	ACB FIXED TYPE 3P 7500A
ACB 4P FIXED TYPE		
W611431	WSG06B4H	ACB FIXED TYPE 4P 630A
W611432	WSG08B4H	ACB FIXED TYPE 4P 800A
W611433	WSG10B4H	ACB FIXED TYPE 4P 1000A
W611434	WSG12B4H	ACB FIXED TYPE 4P 1250A
W611435	WSG16B4H	ACB FIXED TYPE 4P 1600A
W611436	WSG20B4H	ACB FIXED TYPE 4P 2000A
W611437	WSG25B4H	ACB FIXED TYPE 4P 2500A
W611438	WSG32B4H	ACB FIXED TYPE 4P 3200A
W611439	WSG40B4H	ACB FIXED TYPE 4P 4000A
W611440	WSG50B4H	ACB FIXED TYPE 4P 5000A
W611441	WSG63B4H	ACB FIXED TYPE 4P 6300A
W611442	WSG75B4H	ACB FIXED TYPE 4P 7500A

Westinghouse
Pennsylvania , USA

Westinghouse LV MV Product sp. z o.o.
Warsaw, Poland

Westinghouse Lv Mv Product Sdn. Bhd.
Penang, Malaysia

Westinghouse LV MV Product
Dubai, UAE

Westinghouse LV MV Product
Istanbul, Turkey

WWW.westinghouselvmv.com

Email: info@westinghouselvmv.com

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