

SINCE 1979
GAMSCO

Dual-power Automatic Transfer Switches

AUTOMATIC TRANSFER SWITCHES



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Camsco is a progressive company and we constantly challenge ourselves to develop new products to better serve our customers. Our manufacturing facilities are located in China and have ISO-9001 certification, and many of our products are also certified by international standards such as UL and CE.

Camsco will endeavor to provide the best products possible at reasonable prices, and is committed to fostering long-term business relationships with our customers.



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Dual-power Automatic Transfer Switches

Conditions for Normal Installation and Operation

The series is in compliance with the GB14048.11 and the IEC60947-6-1 *Low-voltage switchgear and controlgear—Part 6-1: Multiple function equipment – Transfer switch equipment*

- 1) Ambient air temperature
The temperature should be no higher than +40°C and no lower than -5°C, with a 24-hour average value of no more than +35°C.
- 2) Elevation
The altitude of the installation site should not be above 2000m.
- 3) Atmospheric conditions
The relative humidity of the air at the installation site should not exceed 50% at a maximum temperature of +40°C, and higher relative humidity is only allowed at lower temperatures. The average lowest temperature in the most humid month should not be above +25°C, while the average maximum relative humidity should not exceed 90%. Action should be taken to deal with dew condensation on the product surfaces resulting from temperature changes.
- 4) Pollution level
The pollution level conforms to Level 3 in the GB/T14048.1.
- 5) Installation category
The switch equipment installation complies with Category III as defined in GB/T14048.1
The transfer controller installation complies with Category II as defined in GB/T14048.1
- 6) Installation
Switching devices and transfer controllers can be installed vertically or horizontally in special control or distribution cabinets.
- 7) Use category

Table 1

Main circuit	AC-33B (infrequent operation)	Motor load or composite load inclusive of resistance load and incandescent lamp load of lower than 30%
Auxiliary circuit and transfer controller	AC-15	Load of controlling alternating electromagnet
	DC-13	Load of controlling electromagnet

- 8) Control circuit
The rated voltage of control power U_s for the control device and the transfer controller is AC 220V/230V/50Hz, and the operating condition is a control power voltage of $\geq 85\%U_s$ and $\leq 110\%U_s$. In the absence of special requirements with the customer order all the transfer controllers have a preset undervoltage value of $\sim 180V$ and an overvoltage value of $\sim 250V$.
- 9) Auxiliary circuit
The auxiliary contact circuit has a separate electrical structure of 4 normally open and 4 normally closed contacts. Refer to Table 2 for the rated values of auxiliary contacts.

Table 2

Conventional thermal current I_{th} (A)	Rated isolation voltage U_i (V)	Rated operating current I_e (A)	
		AC220V	DC200V
10	300	3	0.2

Refer to Table 3 for the connection and disconnection capacity of auxiliary contacts.

Table 3

Use category	Connection			Disconnection			Operation frequency and cycle times		
	I/I_e	U/U_e	$\cos \phi$ or T0.95	I/I_e	U/U_e	$\cos \phi$ or T0.95	Cycle times	Operation frequency (cycles/min)	Conduction time (s)
AC-15	10	1.1	0.3	10	1.1	0.3	10	2	≥ 0.05
DC-13	1.1	1.1	6Pe	1.1	1.1	6Pe			

Note: Upper limit of T0.95 $\approx 6Pe \leq 300ms$. The power time of DC-13, if T0.95 is greater than 0.05s, should be T0.95 minimum.



W Series Dual-power Automatic Transfer Switches

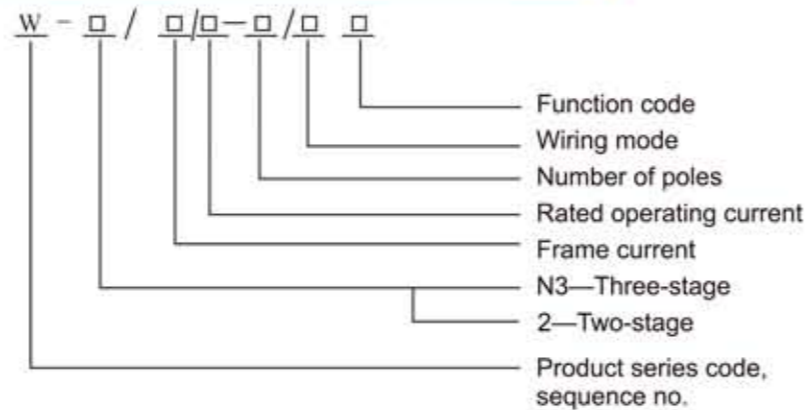
W Series Dual-power Automatic Transfer Switches

The W Series belong to the PC level, and include the types of W2 and W-N3.

W-2 is a two-stage automatic transfer switch. After a switching signal is received the switch transfers power immediately from one source to the other without stopping at an OFF position in the middle. The rated current is 20A~500A.

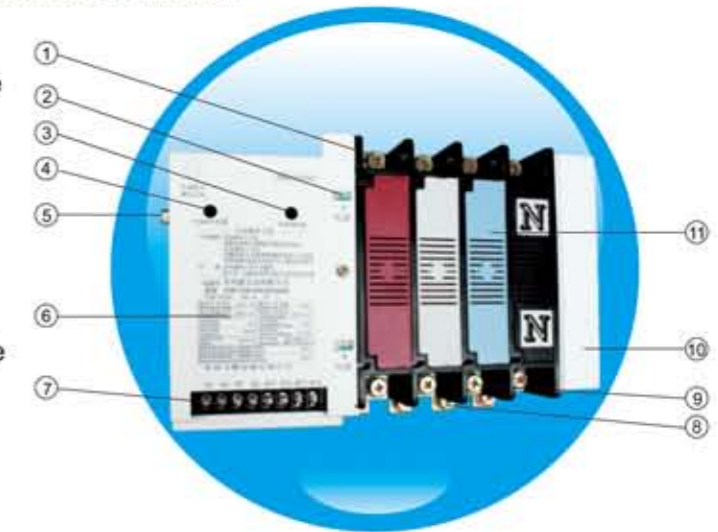
The W-N3 is a three-stage automatic transfer switch. After a switching signal is received the switch may transfer from one power source to another immediately, or after a preset delay, or stop at an OFF position in the middle. The rated current is 20A~5000A.

I. Product codes and meaning



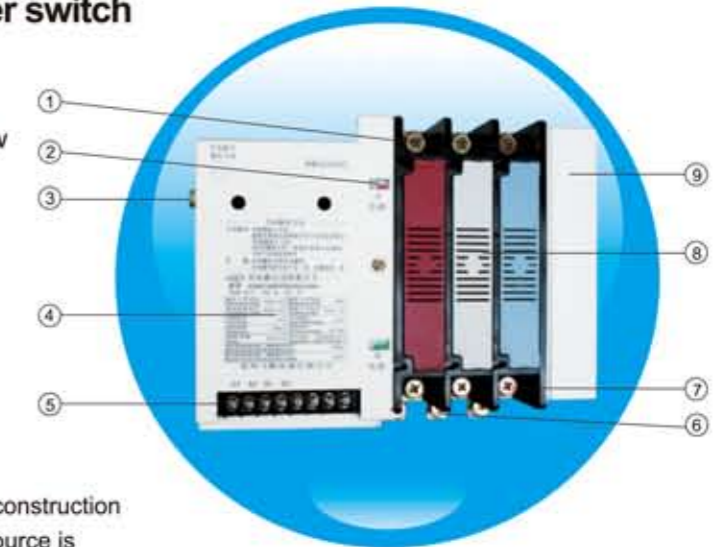
W-N3 three-stage automatic transfer switch (20-5000A)

1. Main circuit terminal on A power side
2. Power connection/break indicator window
3. Selection button
4. Release button
5. Square shaft for manual operation
6. Name plate
7. Control power terminal
8. Main circuit terminal on load side
9. Main circuit terminal on B power side
10. Auxiliary contact cover
11. Protective cover



W-2 two-stage automatic transfer switch (20-500A)

1. Main circuit terminal on A power side
2. Power connection/break indicator window
3. Square shaft for manual operation
4. Name plate
5. Control power terminal
6. Main circuit terminal on load side
7. Main circuit terminal on B power side
8. Protective cover
9. Auxiliary contact cover



Characteristics of ATS switches:

Reliable mechanical interlock: Special eccentric selection construction to ensure only one power source is connected.

High arc-quenching performance: Extinguishes abnormal electrical arcing, short duration of electric arcing and low contact loss.

Multi-disc main arc contract: Enhances the contact area and pressure of contact surfaces, eliminating overheating and contact welding and extending contact lifespan.

High transfer speed: Rapid transfer between the active power and standby power, allowing a customized transfer delay for an ATS with a controller.

Simple construction and small volume: Have reliable operation, a low failure rate and are convenient to install and maintain. Allow rotation with a handle during repair for convenient error detection and troubleshooting. The ATS of the W series are at PC level, are smaller than those of CB level, but have a higher current rating.

OFF position: The W-N3 three-stage transfer switch can be moved conveniently from ON to a disconnected OFF position, while the W-2 two-stage transfer switch does not have an OFF position.

Table 1

Product series code, sequence no.	Rated operating current (A)	Number of poles (P)	Wiring mode	Function code
W-N3 W-2	20, 40, 63, 80, 100, . . .	2, 3, 4	F, B	I Standard type
Frame grading current Inm A	63	20, 40, 63	2: Grade 2 3: Grade 3 4: Grade 4 F: Board front wiring B: Board back wiring	
	125	80, 100, 125		
	250	160, 200, 225, 250		
	500	350, 400, 500		
	800	630, 800		
	1250	1000, 1250		
	1600	1600		
	2500	1600, 2000, 2500		
4000	3150, 4000	II Automatic type		
5000	5000			

- Note: 1) Switch equipment has rated operating voltage of AC660V/690V and DC125V/250V, and control voltage of AC100V, 110V and DC110V, 1250V. Other voltage specifications can be provided to special order.
 2) The communication from the back of the board. This is s interface details need to be specified with the order.
 3) Switches of 500A or below are typically connected from the front of the board, while that of 500A and above are typically connected considered a special order.

II. Parameters of W-2 stage transfer switch

Table 2

Type	W-2												
Isolation voltage	AC800V												
Impulse withstanding	8kV												
Rated voltage	AC400V (AC660V/690V, DC125V/250V)												
Rated current (A)	20, 40, 63	80, 100, 125	160, 200, 225, 250	350, 400, 500									
Number of throws	dual throw												
Wiring mode	board front												
Number of poles	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	
Weight (Kg)	4.5	5	5.5	5	6.3	6.8	6	6.6	7.3	11	15	18	
Operating current (A)	DC110V/125V	6	6	8	6	6	8	6	8	10	10	10	14
	AC100V/110V	6	6	8	6	6	8	6	8	10	10	10	14
	AC200V/220V/230V	3	3	4	3	3	4	3	4	5	5	5	7
Performance	Short-time withstanding current	10kA						15kA			20kA		
	Rated limited short-circuit current	50kA						65kA					
	Rated limited short-circuit current	100kA						120kA					
	Connection/disconnection capacity	AC-33B (10Ie connected, 10Ie disconnected) cos φ=0.35 (When Ie≤100A, cos φ=0.45) DC-33B(4Ie connected, 4Ie disconnected)L/R=2.5ms											
	Transfer time	Power A→Power B	≤0.2s										
		Power B→Power A											
	Lifespan	Electrical lifespan 6,000 cycles, mechanical lifespan 20,000 cycles											
Operating cycle frequency	120 cycles/hour												
Auxiliary switch	2 normally open and 2 normally closed on power sides A and B; contact capacity: AC 110V 5A/ AC 220V 3A, DC 200V 0.2A												
Accessory	Operating handle												

Note: See notes 1) ~ 3) in Table 1.

III. Parameters of W-N3 stage transfer switch

Table 3

Type	W-N3																		
Isolation voltage	AC800V																		
Impulse withstanding voltage	8kV																		
Rated voltage	AC400V																		
Rated current	20A~63A	80A~125A	160A~250A	350A~500A	630A~800A														
Number of throws	dual throw																		
Wiring mode	board front												Board back (board front as special offer)						
Number of poles	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P				
Weight (Kg)	5.5	5.8	6.4	6	6.5	7.2	6	7.1	7.7	11	15	17.8	25	38	43				
Operating current (A)	DC110V/125V	6	6	8	6	6	8	6	8	10	10	10	14	12	12	12			
	AC100V/110V	6	6	8	6	6	8	6	8	10	10	10	14	12	12	12			
	AC200V/220V/230V	3	3	4	3	3	4	5	5	5	5	5	6	6	6	6			
Tripping current (A)	DC110V/125V	2						3			4								
	AC100V/110V	2						3			4								
	AC200V/220V/230V	1						1.4			2								
Performance	Short-time withstanding current	10kA						15kA			20kA			25kA					
	Rated limited short-circuit	100kA						120kA											
	Rated limited short-circuit	50kA						65kA											
	Connection/disconnection capacity	AC-33B (10Ie connected. 10Ie disconnected) cos φ=0.35 (When Ie≤100A, cos φ=0.45) DC-33B(4Ie connected. 4Ie disconnected) L/R=2.5ms																	
	Transfer time	Power A→ Power B	≤0.2s																
	Lifespan	Electrical lifespan 6,000 cycles, mechanical lifespan 20,000 cycles												Electrical lifespan 3,000 cycles, mechanical lifespan 10,000 cycles					
	Operating cycle frequency	120 cycles/hour																	
Auxiliary switch	2 normally open and 2 normally closed on power sides A and B; contact capacity: AC 110V 5A/ AC 220V 3A, DC 200V 0.2A																		
Accessory	Operating handle																		

Note: 1) Under DC the loop operation is basically the same as that under AC conditions. Please follow the operation instructions for AC.
2) The weight is for reference only.

Table 3 (continued)

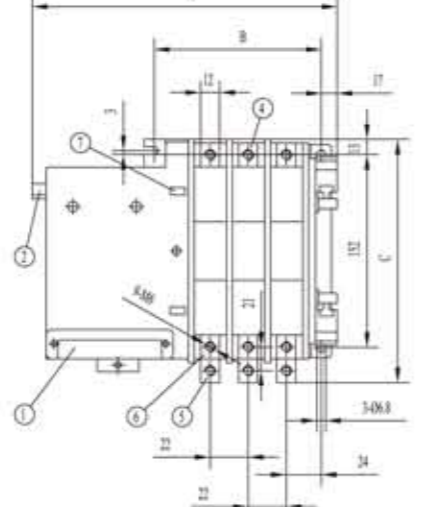
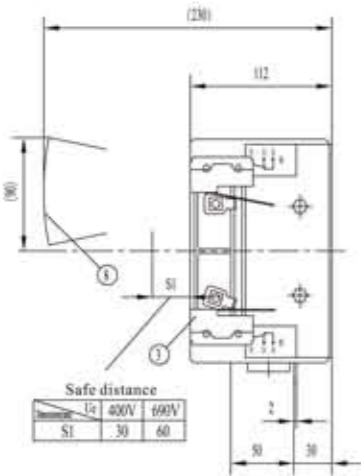
W-N3															
AC800V															
8kV															
AC400V															
1000A ~ 1250A				1600A			1600A ~ 2500A			3150A		4000A		5000A	
dual throw															
board back (board front as special offer)															
2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	3P	4P	3P	4P
37	46	55	36	54	68.6	95	115	135	110	124	140	207		265	
12	12	16	14	16	18	16	20	24	20	24	28	32	36	36	38
12	12	16	14	16	18	16	20	24	20	24	28	32	36	36	38
6	6	8	7	8	9	8	10	12	10	12	16	16	18	18	20
4						6									
4						6									
2						2									
32kA				40kA			50kA			50kA		50kA		50kA	
120kA															
65kA															
AC-33B (10Ie connected. 10Ie disconnected) cos φ=0.35 DC-33B(4Ie connected. 4Ie disconnected) L/R=2.5ms								AC-33B 20kA			AC-33B 30kA			AC-33B 35kA	
≤0.2s															
Electrical lifespan 3,000 cycles, mechanical lifespan 10,000 cycles															
120 cycles/hour								30 cycles/hour							
2 normally open and 2 normally closed on power sides A and B; contact capacity: AC 110V 5A/ AC 220V 3A, DC 200V 0.2A															
Operating handle															

3) The short-time withstanding current, operating current and tripping current figures are for reference only.
4) For products with current rating of 4000A and 5000A4P, the N-pole contact capacity is 2000A and 2500A respectively.

IV. Outer dimensions and installation dimensions

1)W-N3 20~63A
W-2 20~63A

Safe board distance
S1 dimension: 30mm(400V), 60mm(690V)



W-2 Table 4

	A	B	C
2P	182	88	193
3P	204	110	
4P	226	132	

W-N3 Table 5

	A	B	C
2P	202	88	196
3P	224	110	
4P	246	132	

Note: Refer to Table 4 and 5 for the dimensions of A, B and C in the above figure.

2)W-N3 80~125A
W-2 80~125A

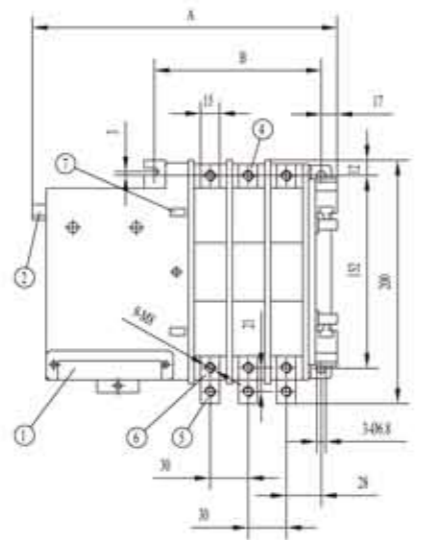
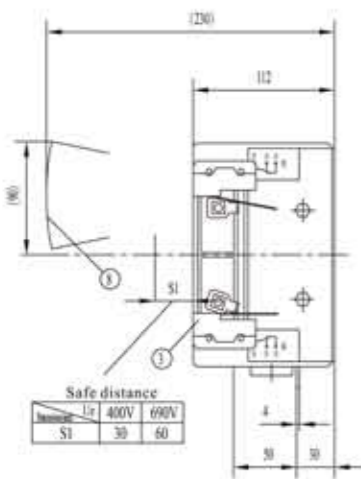


Table 6

	A	B
2P	218	103
3P	248	133
4P	278	163

Note: Refer to Table 6 for the dimensions of A and B in the above figure.

Note: The installation dimensions and outer dimensions in the illustrations are subject to change without notice. Please check them with the actual product before installation.

3) W-N3 160~250A
W-2 160~250A

Safe board distance
S1 dimension: 30mm(400V),60mm(690V)

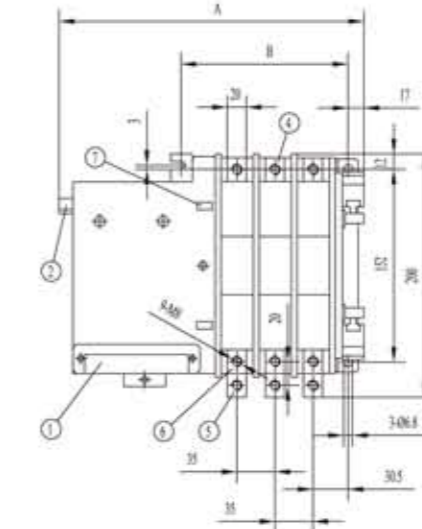
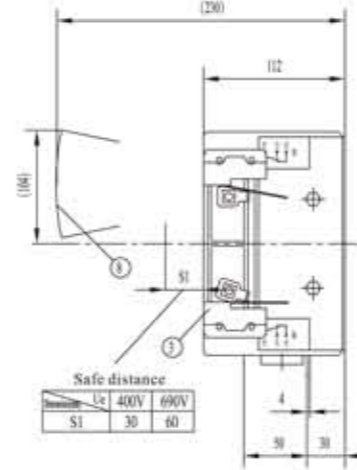


Table 7

	A	B
2P	228	113
3P	263	148
4P	298	183

Note: Refer to Table 7 for the dimensions of A and B in the above figure.

4) W-N3 350~500A
W-2 350~500A

Safe board distance
S1 dimension: 30mm(400V),60mm(690V)

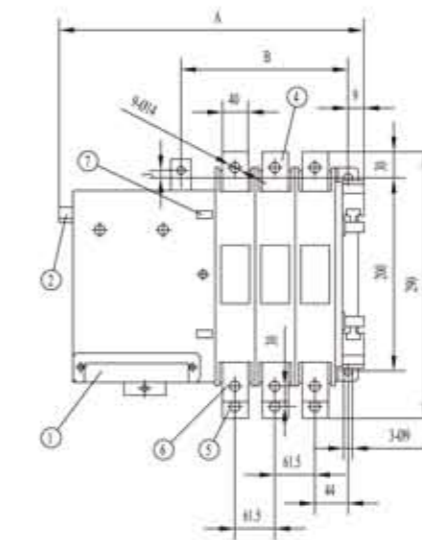
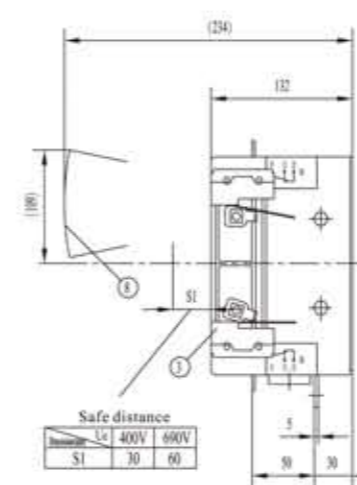


Table 8

	A	B
2P	287	167
3P	350	230
4P	410	290

Note: Refer to Table 8 for the dimensions of A and B in the above figure.

- ① Control circuit wiring terminal
- ② Square shaft for manual operation
- ③ Auxiliary contact
- ④ Main circuit terminal on active side
- ⑤ Main circuit terminal on load side
- ⑥ Main circuit terminal on standby side
- ⑦ ON/OFF indicator
- ⑧ Rotation range of operating handle

5) W-N3 630~1600A

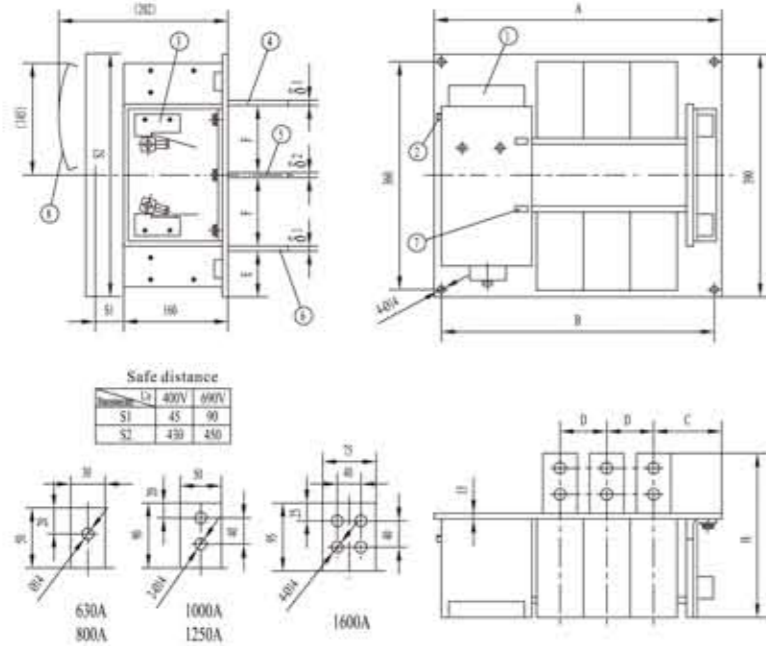


Table 9

Specification	630A 800A	1000A 1250A	1600A	
A	2P	340	370	410
	3P	405	450	510
	4P	470	530	610
B	2P	310	340	380
	3P	375	420	480
	4P	440	500	580
C	80	88	97.5	
D	65	80	100	
E	60	60	57	
F	117.5			
δ 1	10/15	12/15	15	
δ 2	15			
H	210	250	255	

Note: Refer to Table 9 for the dimensions of A-F, H, δ1 and δ2 in the above figure.

6) W-N3 1600~3150A (3P)

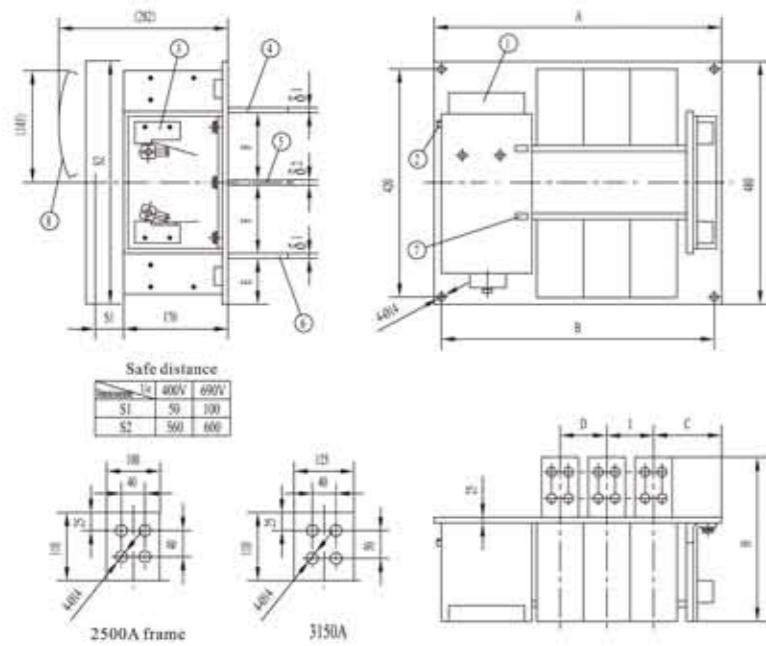
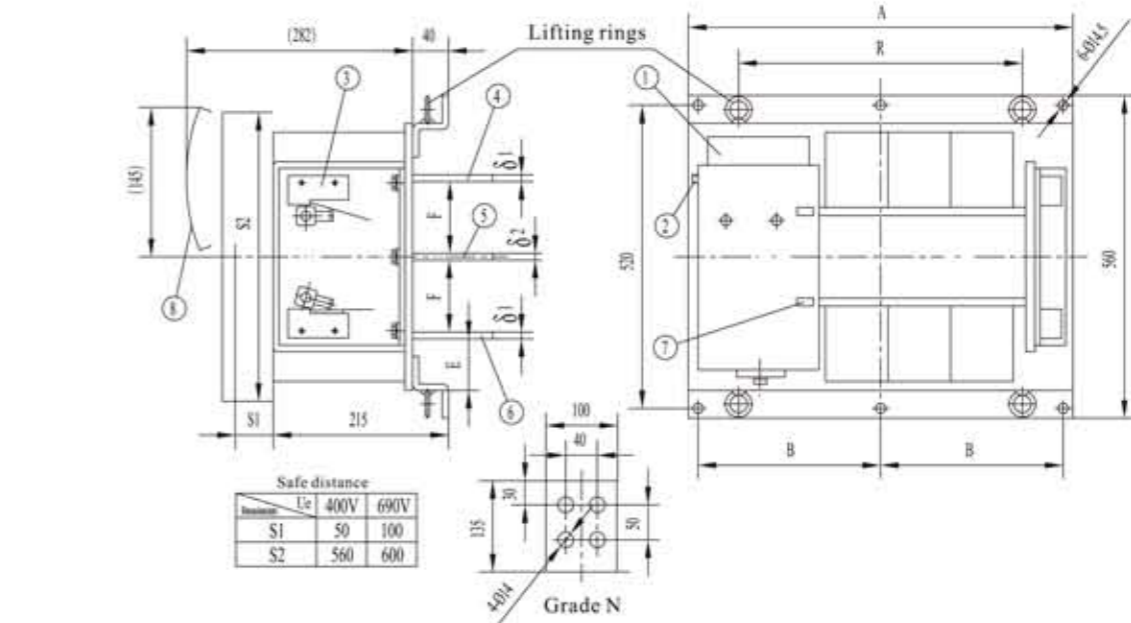


Table 10

Specification	1600A 2000A	2500A	3150A (3P)	
A	3P	680	680	915
	4P	845	850	
B	3P	595	595	860
	4P	790	790	
C	130	130	135	
D	145	145	220	
E	75	75	75	
F	116.5	114	114	
δ 1	15	20		
δ 2	15	20		
H	305	305	335	
I	160	160	220	

Note: Refer to Table 10 for the dimensions of A-F, H, I, δ1 and δ2 in the above figure.

7) W-N3 3150A (4P)~5000A



Note: The automatic transfer switches 3150A (4P), 4000A and 5000A have four lifting rings. Before lifting, confirm that the rings are screwed into the mounting rail of the switch and the bearing capacity of the rope is not less than 500kg. Perform a trial lifting to confirm the center of gravity of the switch to prevent rollover or slipping.

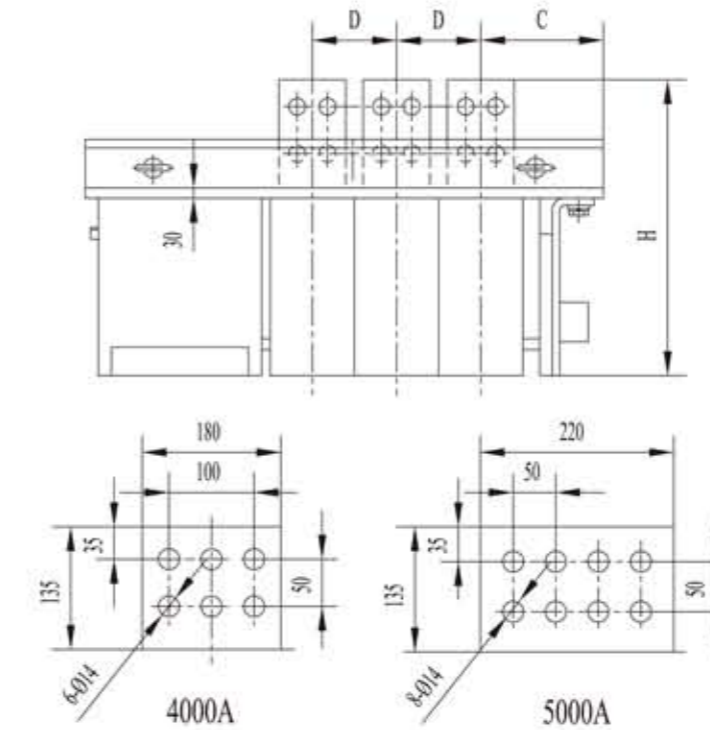


Table 11

Specification	3150A	4000A	5000A
A	3P	915	1080
	4P	1017	1160
B	3P	430×2	500×2
	4P	478×2	470×2
C	135	135	230
D	240	230	270
E	75	75	88
F	114		
δ 1	20		
δ 2	20		
R	800	900	
H	335	350	350

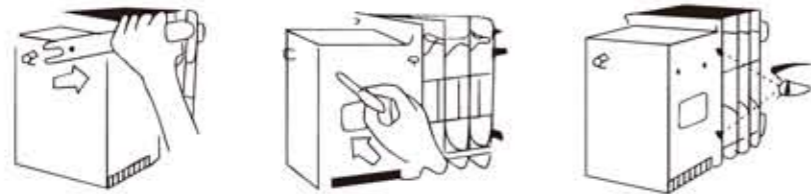
Note: Refer to Table 11 for the dimensions of A-F, δ1, δ2, R, and H in the above figure.

V. Manual operation methods and notices

The connection and disconnection capacity of the W series switches is ensured under electric operation, but when they are operated manually the capacity is uncertain because the speed with which connection and disconnection is made will vary. Loaded connection and disconnection in manual mode will result in excessive damage to the silver alloy contacts. Therefore, manual operation should only be done during inspection and maintenance of the operating mechanism and contacts, or in the case of an electrical fault.

Note: Cut off all the power before manual operation. Make sure the operating handle is removed from the transfer switch after use.

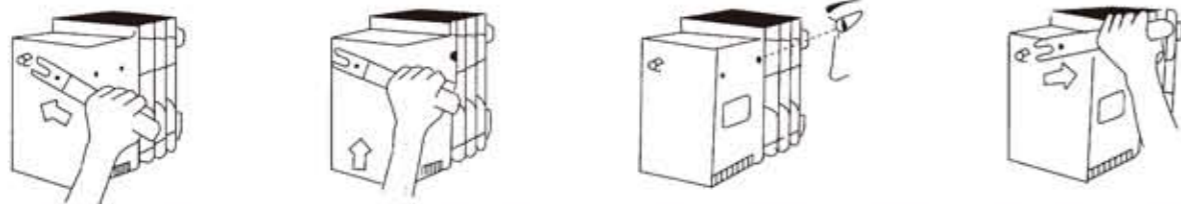
1) Manual tripping is available for W-N3 switches only. The W-2 switches do not have this facility.



After removing the operating handle, insert a screwdriver into the TRIP hole on the left side and push it inwards to trip the switch. Check this in the ON/OFF indicator window.

2) Input method on the A power side

Note: For W-N3 switches, perform this step after finishing step 1); for W-2 switches, perform this step before completing step 1).



Fit the operating handle on the square shaft on the left hand side of the switch.

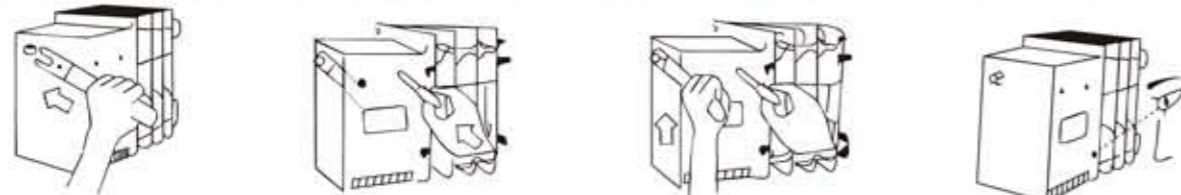
For a W-N3 switch: lift the handle upwards to connect input. For a W-2 switch: turn the handle downwards until you hear two clicks that indicate input.

Check the ON/OFF indicator window to ensure input.

Remove the operating handle after use.

3) Input method on the B power side

Note: For W-N3 switches, perform this step after finishing step 1); for W-2 switches, perform this step before completing step 1).



on the square shaft on the left hand side of the switch.

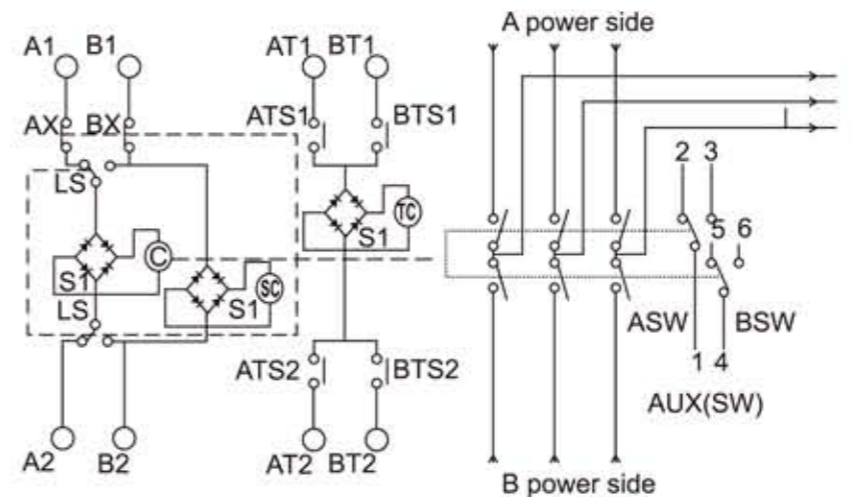
For a W-N3 switch: insert a screw driver into the SELECT hole on the right side and push it inwards. For a W-2 switch: turn the handle downwards until you hear two clicks.

For a W-N3 switch: keep pushing the screw driver and at the same time lift the handle upwards to connect input on the B side.

Check the ON/OFF indicator window to ensure input. Remove the operating handle after use.

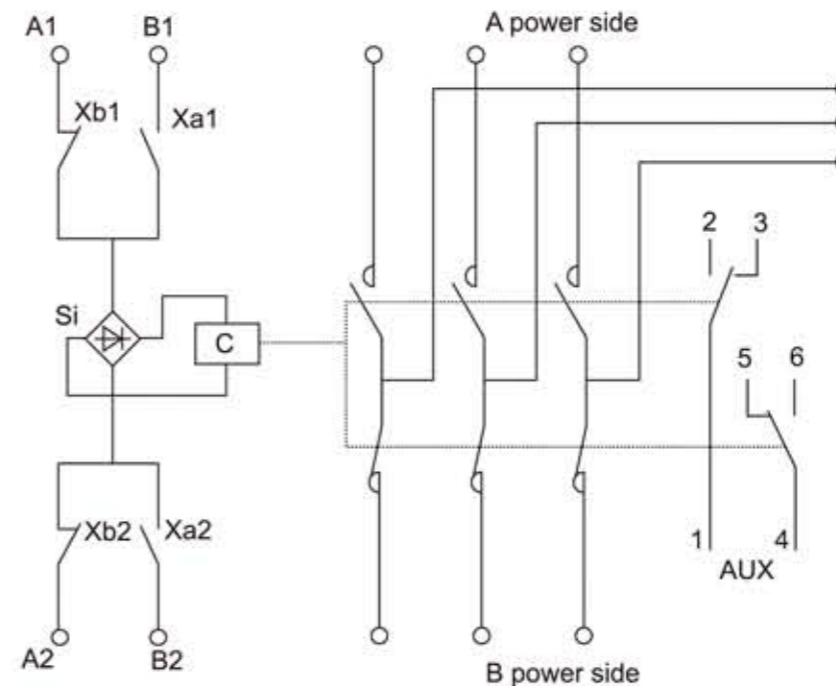
VI. Switch's internal wiring diagrams

1) W-N3 Internal wiring diagram
Two power sources are OFF.



C= Input coil
SC= Selection coil
TC= Tripping coil
S1= Rectifier
LS= Selection switch
ATS1, ATS2=A power OFF terminal
BTS1, BTS2=B power OFF terminal
AX, BX=Control switch
AUX=Auxiliary switch
A1-A2= Input terminal on A power side
B1-B2= Input terminal on B power side
AT1-AT2=Tripping terminal on A power side
BT1-BT2=Tripping terminal on B power side

2) W-2 (two-stage) internal wiring diagram



Xb1, Xb2: Internal control switch
Xa1, Xa2: Internal control switch
C: Input coil
Si: Rectifier
AUX: Auxiliary switch
A1-A2: Input terminal on A power side
B1-B2: Input terminal on B power side

Two separate contacts

A tripping device and an OFF position are provided.

The operation sequences are:
A→OFF→A and B→OFF→B, or
A→OFF→B and B→OFF→A



Tripping characteristic

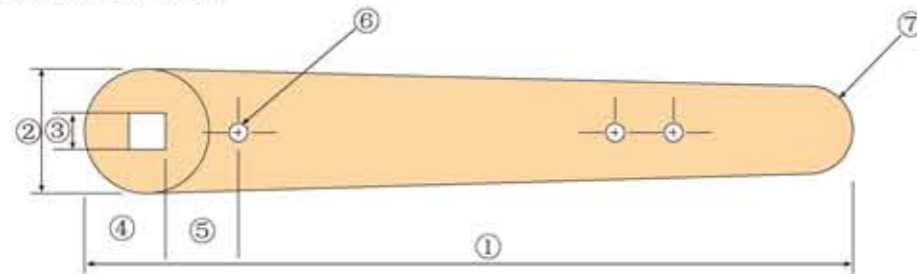
Based on the operating voltage, a constant tripping function is enabled by the spring.

Safety design

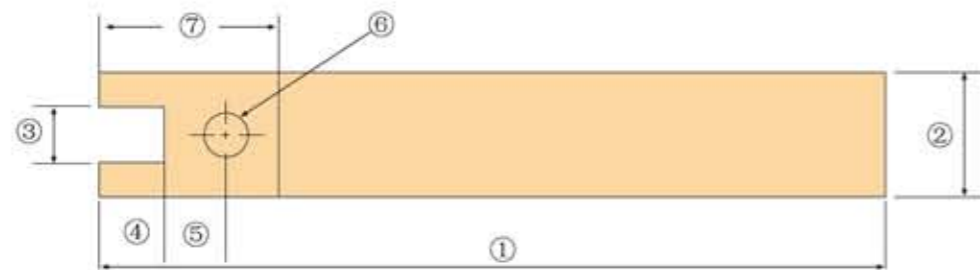
Dustproof resin protective cover for safe operation

Operating handle

Refer to applications and options for details.



	①	②	③	④	⑤	⑥	⑦	T
63A~500A	210	34	10	22	20	Φ5(3)	Φ24	6(7)



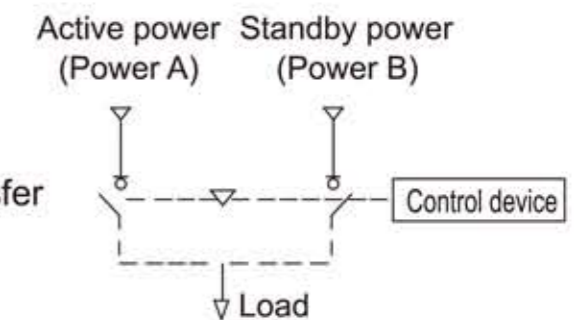
	①	②	③	④	⑤	⑥	⑦	t
600A~1600A	250	38(40)	16.1	20	15	φ8	41	6(8)
2000A 3000A	320	50(52)	19.1	25	15	φ8	50	9(11)
4000A 5000A	420	50(52)	19.1	25	15	φ8	50	9(11)

W 2C Series Dual-power Automatic Transfer Switches (ATSE)

I. W2C series dual-power automatic transfer switches

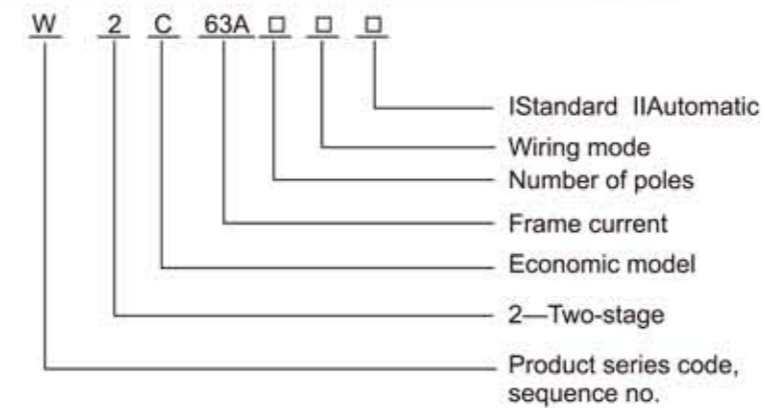
To meet the needs of our customers, we have recently released the W2C economic and practical PC-level two-stage automatic transfer switches. These single-pole double-throw switches have independent electromagnetic operation that features rapid transfer, compact structure and reliability.

System diagram



Application scope: Normal-emergent transfer

Product codes and meanings



II. Technical parameters

Refer to Table 1 for the switch technical parameters.

Table 1

Rated voltage (V)		AC400		
Rated impulse withstanding voltage (kV)		6		
Rated current (A)		16、20、25、32、40、50、63		
Rated isolation voltage (V)		AC690		
Coil driving power		AC220/230V、3.5A		
Rated limited short-circuit current (kA)		20		
Use category		AC-31B		
Lifespan (time)	Mechanical	8000		
	Electric	3000		
Number of poles		2P	3P	4P
Weight (kg)		4	4.5	5.5
Operation cycle (s)		30		

II. Technical parameters

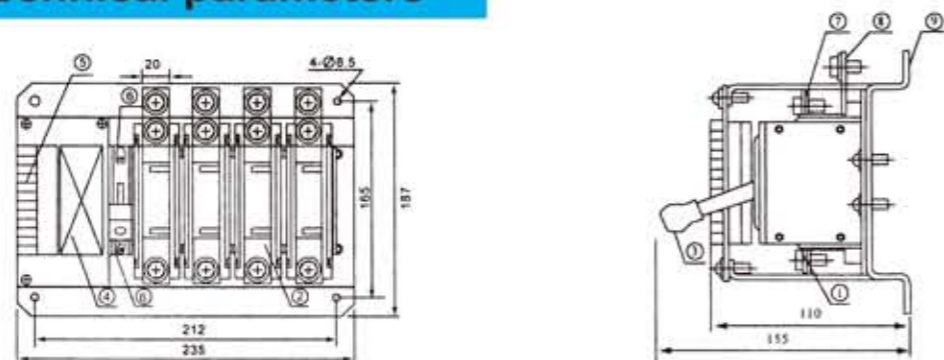
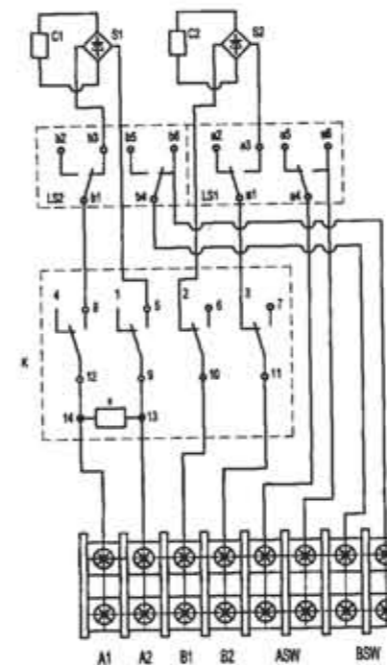


Figure 2 Outer dimensions and installations dimension

- ① Load bus ② Power module ③ Operating handle ④ Name plate ⑤ Control circuit wiring terminal
- ⑥ Mechanical indication of power transfer ⑦ Active power bus ⑧ Standby power bus ⑨ Base

II. Technical parameters

Refer to Figure 3 for the internal wiring diagram of the switches with automatic input and recovery. In case of a voltage drop or undervoltage of the active power (A), relay K is released, the standby power (B) passes K to select the switch LS1 to activate the input coil C2, the switch transfers to the standby power (B), the mechanism detects the switch between LS1 and LS2 to cut the C2 current, at the same time a standby power switch-on signal is output from the BSW terminal. When the active power (A) returns, K is closed, the active power (A) passes K and selects the switch LS2 to activate input coil C1, the switch transfers to active power (A), the mechanism detects a switch between LS1 and LS2 to cut the C1 current, and at the same time an active power switch-on signal is output from the ASW terminal.



Note: A1, A2—Active power (A) input terminal (connected to AC 220V)
 B1, B2—Standby power (B) input terminal (connected to AC 220V)
 ASW—Signal output terminal for active power switch-on
 BSW—Signal output terminal for standby power switch-on

K—Relay
 C1, C2—Input coil
 S1, S2—rectifier
 Ls1, LS2—Position selection switch

Figure 3 Internal wiring diagram (the switch in position B)

V. Wiring Information

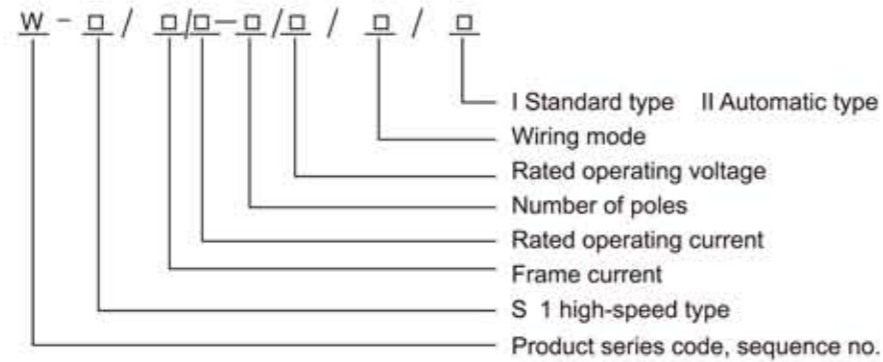
1. Make sure the wiring is carried out by professionals who have a proper understanding of this manual.
2. Before wiring examine the switch to ensure that it is undamaged. Operate the switch using the operating handle and use a multimeter to check that all the phases of the active (standby) power and load connection/disconnection are normal.
3. When wiring pay special attention to the following.
 - a. The phase sequences of the active and standby power should be verified to be the same.
Verify that the voltage of the active and standby control power are both 220VAC.
 - b. Perform the wiring according to the labels that identify the wiring terminals of the main circuit and the control circuit.
 - c. Ensure the switch is grounded properly.
4. Use the operating handle only for switch debugging and maintenance in the power off state. Do not use the operating handle with a load. The handle should be removed before the switch is put under power.

W-S1 High-speed Dual-power Transfer Switches

W-S1 high-speed dual-power transfer switches

The WS-1 high-speed dual-power transfer switch series are PC-level two-stage transfer switches designed to meet stringent transfer time requirements. With a transfer time of only 3~8ms, this series are appropriate for use when the active and standby power share the same voltage and phases.

I. Product codes and meanings

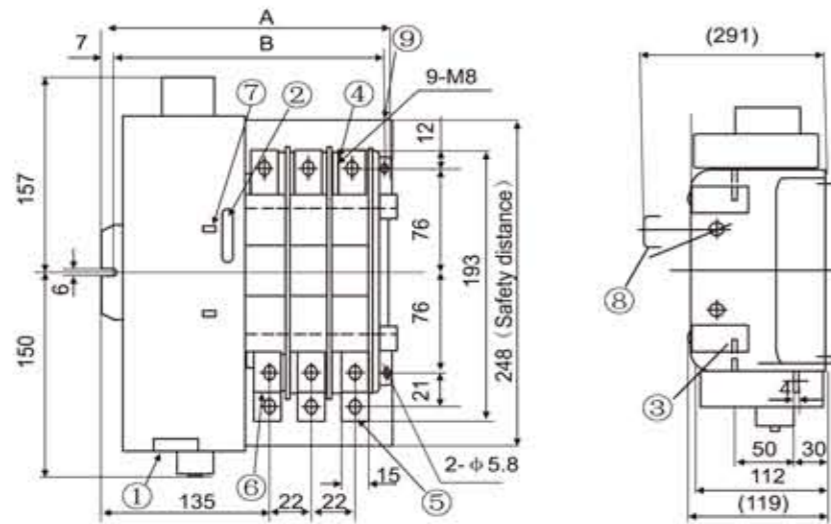


II. Technical Parameters

Type	63A	125A	250A	500A	
Rated voltage	AC660V/400V				
Rated current	63A	125A	250A	500A	
Frequency	50/60Hz				
Contact transfer duration	3~8ms				
Number of throws	Dual throw				
Wiring mode	Board front				
Weight (Kg)	2P	6.5kg	8kg	15kg	
	3P	8kg	10kg	18kg	
	4P	10kg	12kg	22kg	
Operating current	AC200/220V	2P	2A	3.5A	3.5A
		3P	2A	3.5A	3.5A
		4P	3A	4A	4A
	AC/DC 100/110V	2P	4A	7A	8A
		3P	4A	7A	8A
		4P	5A	8A	9A
Rated short-time current	5kA (1 sec)		10kA (1 sec)	12kA (1 sec)	
Mechanical lifespan	20000 cycles				
Operating cycle frequency	150 cycles/hr				
Operating environment	Ambient temperature -10 ~ +45°C, relative humidity 45~85%RH				
Auxiliary switch	Switch capacity: AC220V 3A AC110V 5A; DC200V 0.2A				
Operating voltage range	85~110% of the rated operating voltage				
Withstanding voltage	Main circuit	2500V			
	Control circuit	2000V			
Accessory	Operating handle				
Executive standard	GB14048.11				

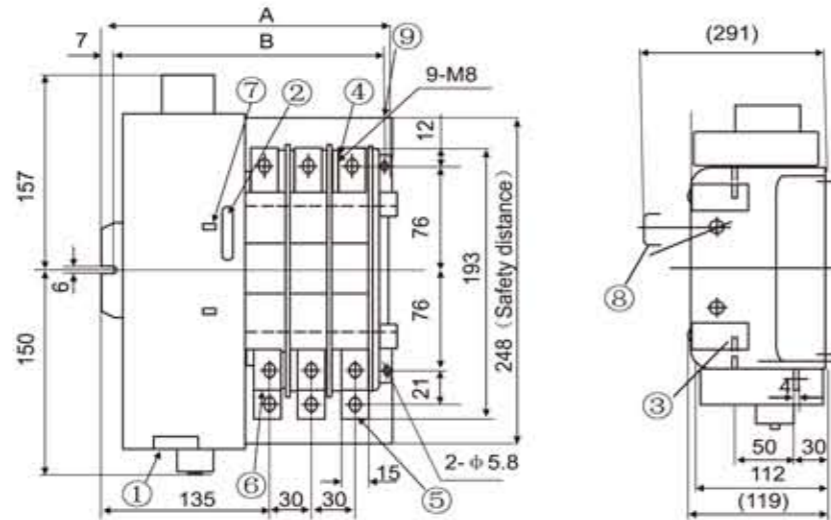
III. Outer dimensions

1 W-S1.63



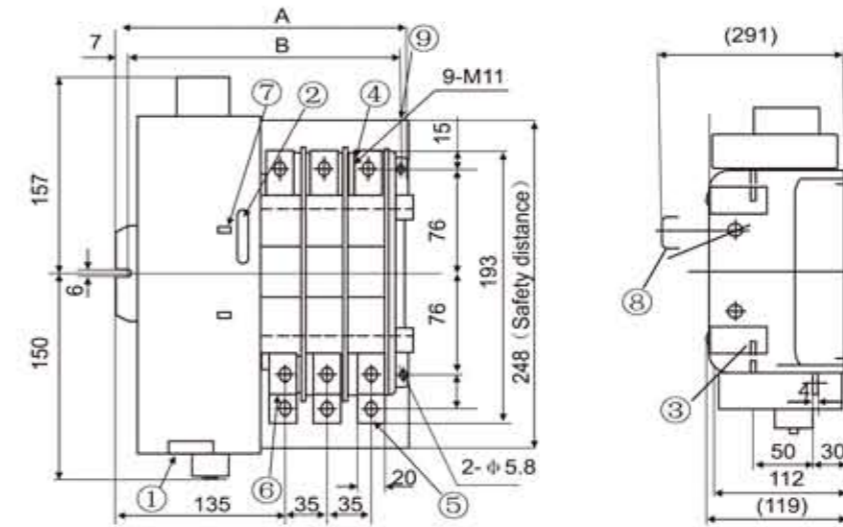
/	A	B
2P	189	170
3P	211	192
4P	233	214

2 W-S1/125



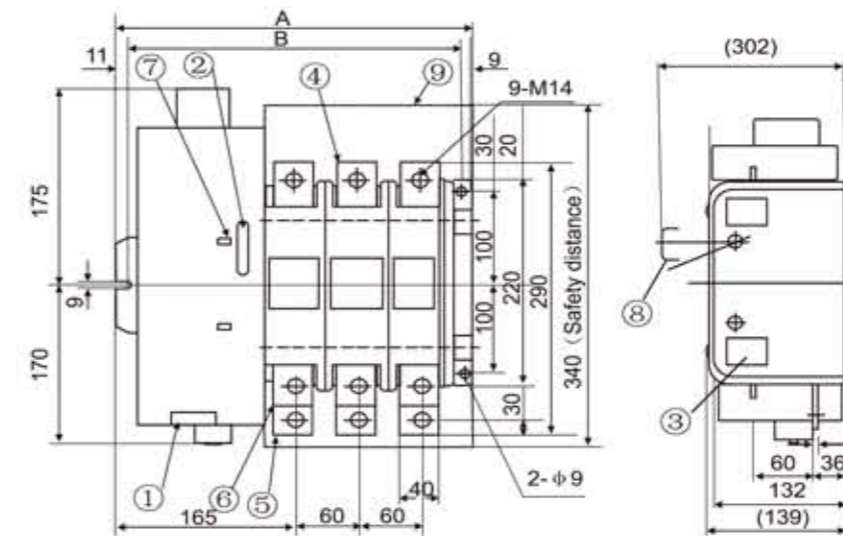
/	A	B
2P	205	186
3P	235	216
4P	265	246

3 W-S1.250



/	A	B
2P	215	196
3P	250	231
4P	285	266

4 W-S1.500

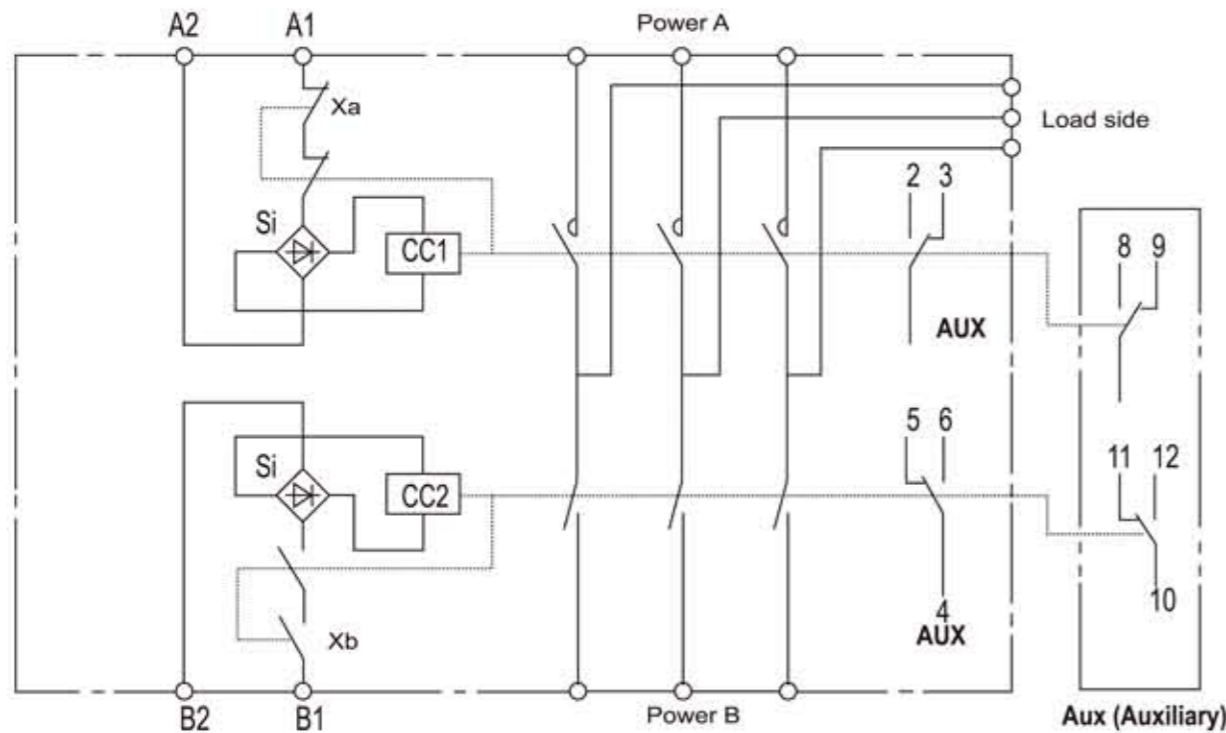


/	A	B
2P	282	258
3P	342	318
4P	402	378

Component names:

- ① Control circuit wiring terminal
- ② Operating handle socket
- ③ Auxiliary switch
- ④ Main circuit terminal on A power side
- ⑤ Main circuit terminal on load side
- ⑥ Main circuit terminal on B power side
- ⑦ ON/OFF indicator
- ⑧ Operating handle (flexible)

IV. Operation loop



A1-A1: Input terminal on A power side B1-B2: Input terminal on B power side
 Xa-Xb: Control switch CC1, CC2: Closed coil Si: Rectifier AUX: Auxiliary switch

V. Operation instructions

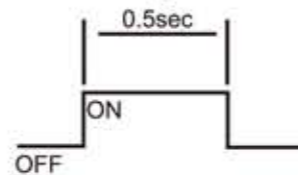
- 1) When installing the switch avoid high temperatures, steam or harmful gas (exhaust gas) and dust.



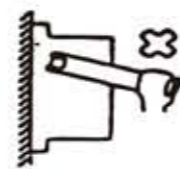
- 3) The switch will stay in the input state when an input command and a tripping command are sent to the same power side simultaneously. Please avoid doing this, otherwise the coils will remain excited.



- 2) To ensure reliable operation, maintain control commands for longer than 0.5 second.



- 4) Apply electric operation and try to avoid manual operation.



- 5) Under DC conditions, if the power has a step-down loop (DROPPER), connect the power to the input side of the step-down loop rather than the output side.



- 6) Make sure the operating power cables are long enough and pay special attention to the storage battery capacity.



- 7) Excitation in the W-S1 series is instantaneous and the operating power is cut off after the input operation ends instead of being cut by the external operating power via the auxiliary switch (AUX.SW.).

- 8) Please contact the company if you have a need for products with special features and specifications.

VI. Installation

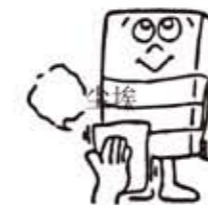
The switches must be installed in the correct orientation because of their structure and mode of operation. Incorrect orientation will result in changes to the switch characteristics. Please ensure the switches are installed correctly. Contact the company if this cannot be done as stipulated for wiring or mechanical reasons. The switches should be installed vertically, parallel with the vertical plane of the switchboard, and with the nameplate visible from the front.

VII. Maintenance, examination and storage

Note: Examination and maintenance should be carried out by professionals with all the external power cut off.

+++ To maintain performance and a good operating state of the switches, perform the first maintenance within one year of installation. After this, periodical maintenance should be carried out annually. The basic items to be inspected are listed as below.

- 1) Keep the switches clean to prevent failure due to dust, dirt, or rust.
- 2) Perform a visual inspection of the contact parts for deformation, damage or change in color. Clear off metal deposits and burns on the contact surface and around the contact.
- 3) Poor contact can be the result of rust, oxidation or dust on the contact surface. During maintenance, check connection/disconnection operation (measure the contact resistance if necessary), and fasten any loose connecting parts.



- 4) Under DC conditions, pay attention to the storage battery capacity and the charging.



Charging deficiency

- 5) Before using switches that have become damp, or have not been used for some time, remove the dust, dirt and dry them well. Then measure the isolation resistance of every two poles, inlet lines and outlet lines, the main/auxiliary circuit and the installation metal board (box) using a Megger. These values should be no less than 10MΩ. If this is not possible, the switches must be taken out of use.



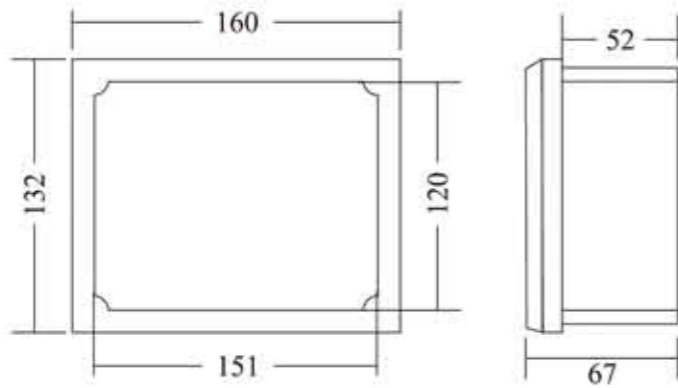
- 6) New switches or those unused for a long period should be stored in an environment similar to the operating environment. Measures should be taken to, avoid dust, dampness, shock or accident.

WST-1 Controller (Intelligent)

W ST-1 Controller

The WST-1 controller is newly developed device that matches a range of dual-power transfer switches. It has excellent performance and powerful functions that include delay, over and under voltage protection, open phase protection, overcurrent protection, line voltage and current display, power indication, remote clearing, automatic generator startup, a 485 communications interface, timing, automatic input and recovery as well as automatic input and nonautomatic recovery.

WST-1 Controller Installation dimensions

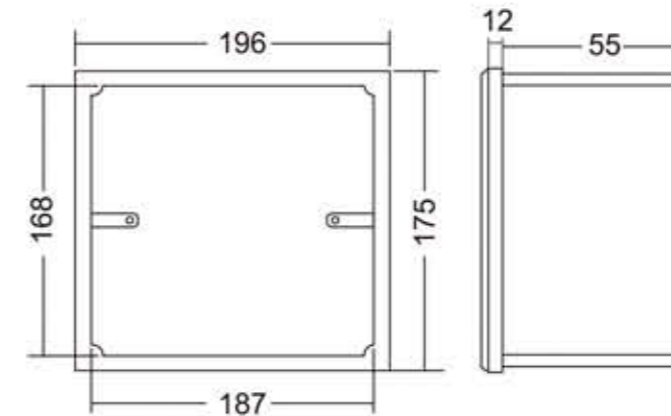


WST-3 Controller

W ST-3 Controller

The WST-3 controller is an updated version of the original ATS-487 controller. It has powerful functions, excellent performance and is suitable for use with a range of dual-power transfer switches. Refer to the Controller Selection Sheet for the protection and display functions.

Installation dimensions

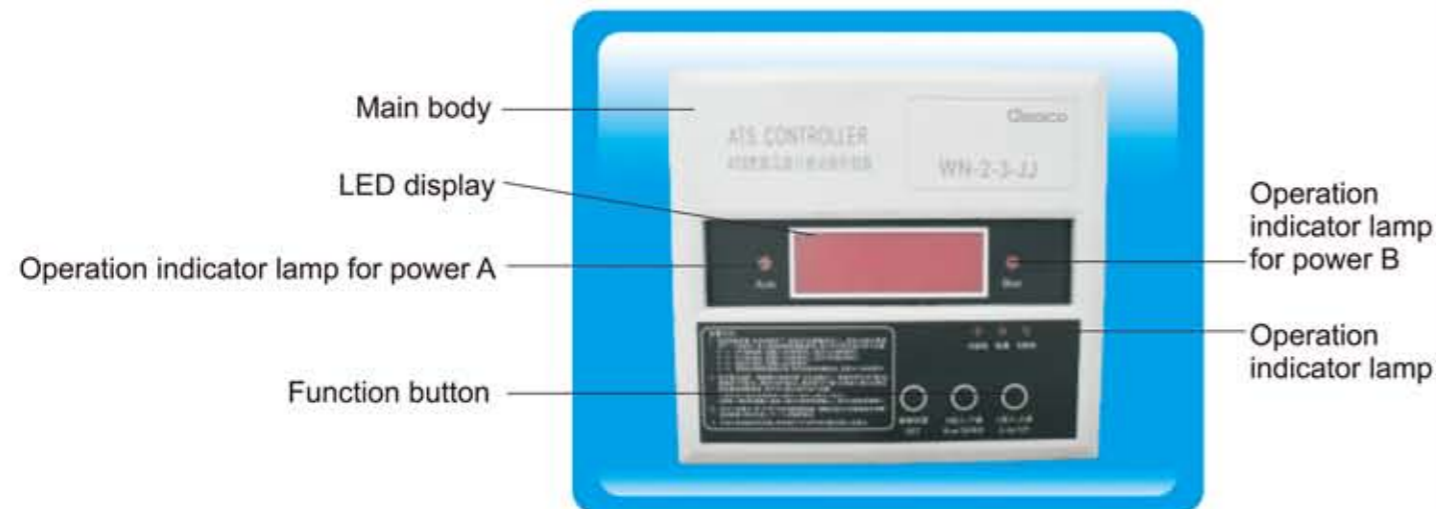
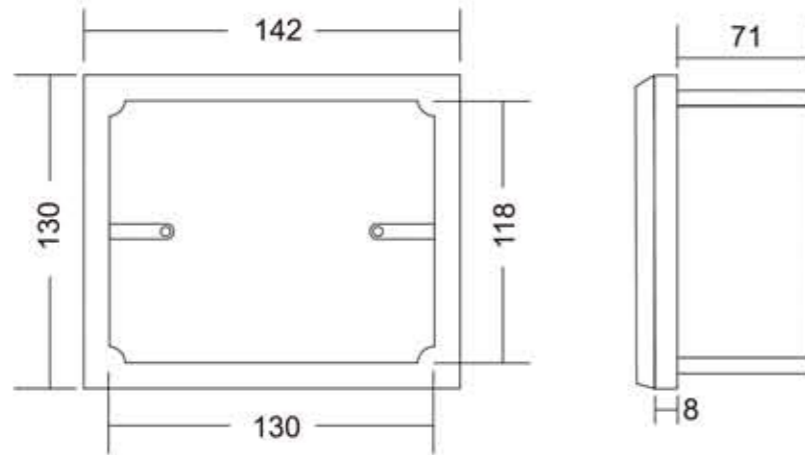


W-2-3-JJ Controller (Concise)

W-2-3-JJ Controller (Concise)

The W-2-3-JJ controller (concise) is a concise intelligent control device matching the W automatic transfer switch series (abbreviated as switches below). It has a delay function, open phase protection, power indication, remote clearing, and automatic generator startup.

Installation Dimensions



W-S Series Manual Dual-power Transfer Switches

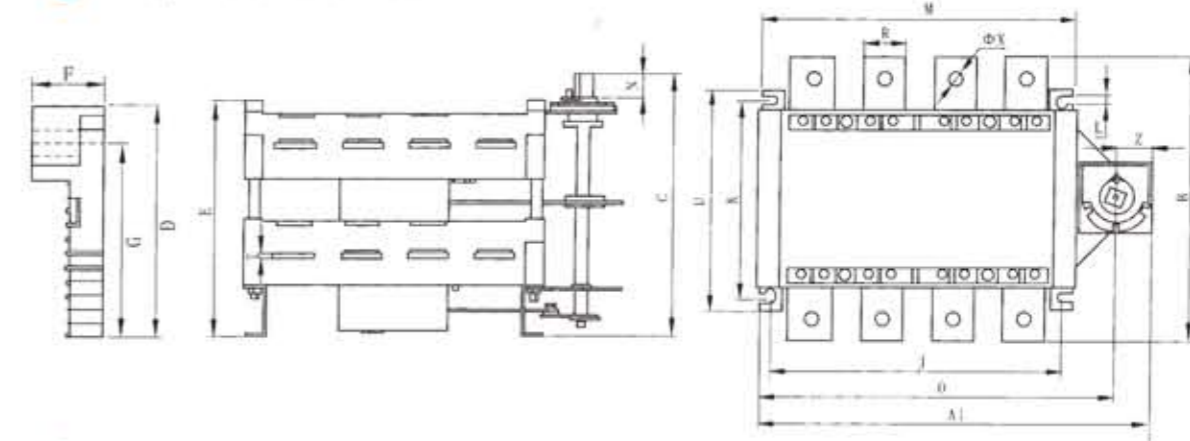
I. Functions and characteristics

The W-S series are mainly used in transfer control via manual switches in power supply systems. Feedback points for gear signals are provided as needed.

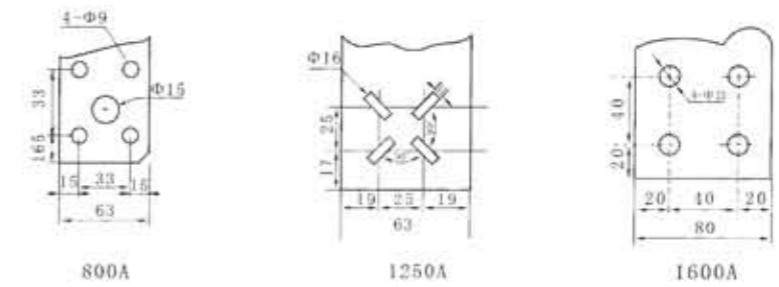
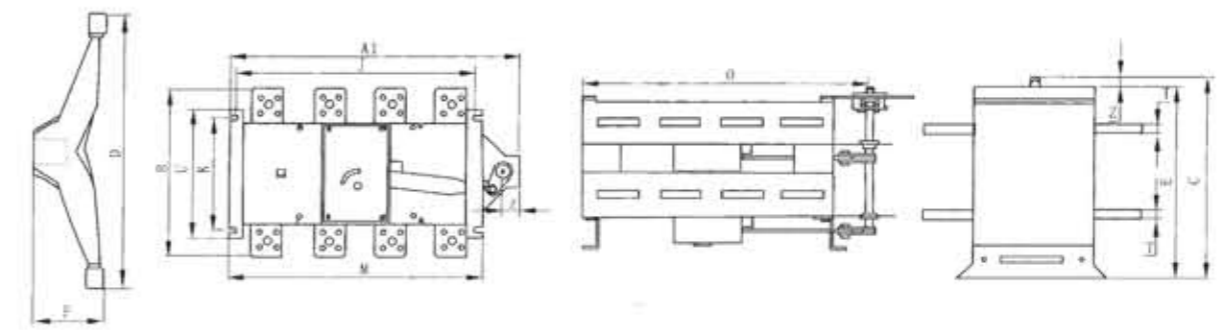


II. Outer dimensions and installation dimensions

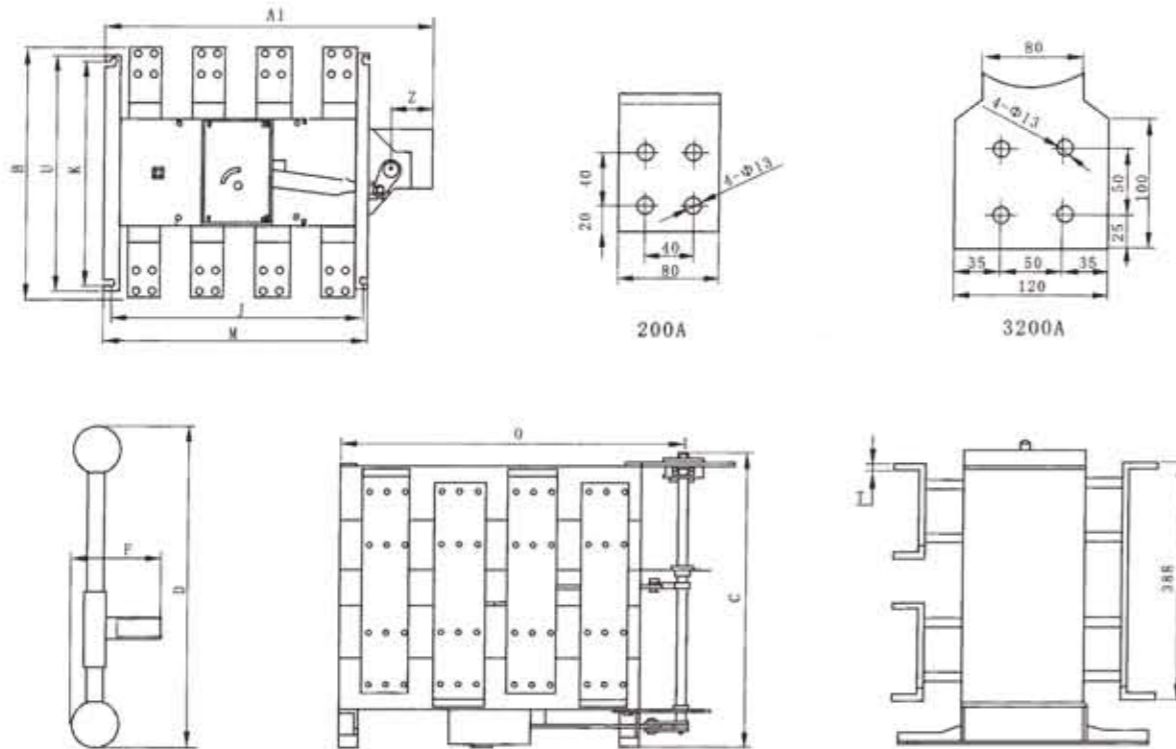
● W-S/100、250、630



● W-S/1600



● W-S/3200



Specification	Outer dimensions						Installation dimensions					Wiring dimensions			Operating handle			
	A1	B	C	E	M	U	J	K	L	Z	N	R	T	ΦX	D	F	G	
100	3																	
	4	236	135	165	143	170	130	155	110	7	32.5	22	20	2.5	9	167	54.5	145
250	3												3.5					
	4	296	159.5	190	166	228	130	213	110	7	32.5	22	25	6	11	167	54.5	145
630	3	301	260	257	236	230	210	210	178	9	32.5	22	40	6	13	167	54.5	145
	4	368	260	254	232	290	270	270	178	9	32.5	22	40	15	13	167	54.5	145
1600	3	484	360	328	300	378	360	360	220	11	63	28	80	15	4-13	330	72	
	4	596	360	328	300	492	470	470	220	11	63	28	80	15	4-13	330	72	
3200	3	484	510	495		378	360	360	355	11	63	20	120	15	4-13	550	85	550
	4	596	510	495		492	470	470	355	11	63	20	120	15	4-13	550	85	550

III. Controller selection sheet

Controller	Function	Application scope
WST-3	<ul style="list-style-type: none"> ◇ Delay ◇ Overvoltage protection ◇ Undervoltage protection ◇ Open phase protection ◇ Overcurrent protection ◇ Line voltage display ◇ Current display ◇ Power indication ◇ Remote clearing ◇ Generator startup (automatic) ◇ 485 communications interface (optional) 	Universal
WST-1	<ul style="list-style-type: none"> ◇ Delay ◇ Overvoltage protection ◇ Undervoltage protection ◇ Open phase protection ◇ Overcurrent protection ◇ Line voltage display ◇ Current display ◇ Power indication ◇ Remote clearing ◇ Generator startup (automatic) ◇ 485 communications interface (optional) ◇ Timing ◇ Automatic input and recovery; automatic input and nonautomatic recovery 	Universal
WN-2-3-JJ (Concise)	<ul style="list-style-type: none"> ◇ Delay ◇ Open phase protection ◇ Power indication ◇ Remote clearing ◇ Generator startup (automatic) 	Below 630A

