A6

Automatic Transfer Switch

C O N T E N T S

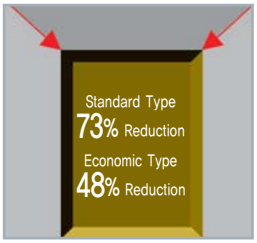
Automatic Transfer Switch _ Feature

100~200A

It is a product that passed a KERI Type Test for the first time in the country. It provides a stable power and a user-centered safety as well as the reliability and safety based on the quality and intensive technology that are recognized even by UL. VITZRO TECH Auto Transfer Switch is designed and produced by applying a new IT technology and it provides an optimal solution that is suitable in any customer's environment. It is a premium product equipped with a user-friendly protection function in order to satisfy diverse needs of customers and to ensure the safety.

Its performance was recognized through technology integration and international standard certifications.

- It is a product applied with the accumulated switch design and application technologies, operating machine design technology and insulation design technology.
- It is a product with the largest short circuit capacity internationally and domestically, applied with the international standards IEC60947-3(Switches) and IEC60947-6(Transfer Switching Equipments).
- It is an automatic transfer switch equipped with the breaking capacity and its reliability has improved.
  (Obtained a short circuit certificate through KERI Type Test)
- It provides the reliability and safety of the electric equipment based on the stable quality and intensive technology via UL1008 certification.
- It is a unique product equipped with both-way breaking capacity considering the distributed power.



It is possible to install a 600mm LV panel board for all types through an optimal reduction of exterior structure

- Standard Type: Reduction of max. 73% / Economic Type: Reduction of max. 48%
- It can be built inside the movable generator or UPS since it is in a miniature structure.
- It is possible to supply a stable power by composing a separate system.
- All types can be installed horizontally and vertically.

It ensured the safety by adopting a transparent terminal cover and insulator molding.

- A transparent insulation cover is applied for the connecting terminal part to improve the insulating performance in terms of foreign substance inflow and to enhance the safety of the operators.
- The breaking part of the ATS is in an enclosed structure with a complete insulator molding. This maximized the safety of the operators and the operational cycle of the device.
- Thanks to the adoption of the transparent terminal cover, it is easy to identify the terminal connection state and to perform the connection by easily controlling the terminal cover.
- It focused on harmonizing with the peripheral devices by building it into a streamlined form.

It is easy carry out maintenance and designed in a safe structure.

- It is easy to attach/detach the insulation cover of the front part so that it is easy to identify the structural health of the breaking part and connecting terminal part.
- It is easy to check the switching performance and main contact state through a simple, removable Arc Shute structure.
- The operational part is protected by a steel cover and the structural health of solenoid can be checked by a simple removable.

Automatic Transfer Switch _ Feature

100~3000A

VITZRO TECH Auto Transfer Switch provides an optimal solution based on the various operational environments. Based on the experiences of switch field accumulated for a long period of time, it provides a user-centered safety and quality and intensive technology recognized at UL. VITZRO TECH ATS is designed and produced by applying IT technology which enables it to provide the optimal solution that is appropriate at any customer's environment. In addition, we have products that are equipped with various specifications to be applied to various operational environments such as a miniature, enclosed type transfer switch and an uninterruptible transfer switch, ranging from low voltage to high voltage vacuum transfer switches. We export the products to Americas, Europe and Middle East and their technology and quality were recognized. It is a premium product fully equipped with the user-centered protection function to ensure the best safety ever.

Each phase is enclosed separately to improve the breaking capacity and safety.

- Each phase is molded and enclosed individually to improve the breaking capacity and to increase the operational cycle of the product.
- The operational cycle is semi-permanent since the arc time generated during the switching is short and contact consumption is small.
- It ensured a steady and stable breaking capacity regardless of the operating voltage through an open operation using a separate breaking spring.

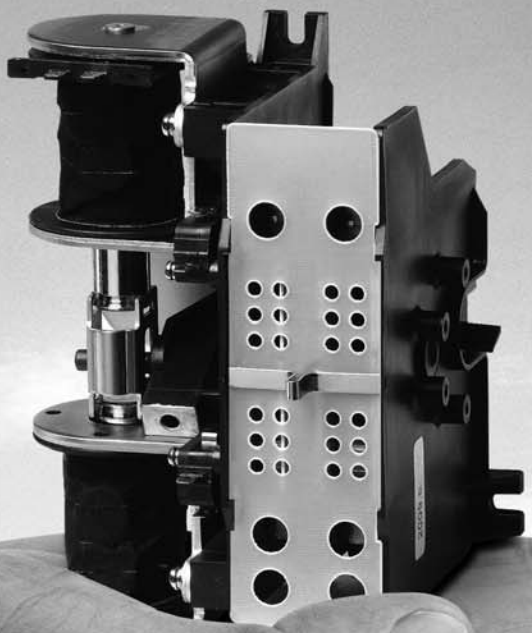
The safety of users has improved.

- It strengthened the main contact protection and breaking capacity using a 4-pole pre-closing and post-breaking structural design.
- The operational cycle of the product is long since it generates little arc due to a superior switching function.

It seems comfortable due to a compact design for the customers.

- It enhanced the user-friendly image by adopting a volumized shape and created the innovativeness by applying a simple, elegant and advanced product image.
- It stressed the reliability by adopting a streamlined form which is a simple and clean shape.
- The products inside the panel board are arranged neatly by applying a clear color.

World-Best ATS Technology achieved by constant researches and continuous technology development -
We invite you to the world of premium electric equipments ever, the finest products in the world.



Miniature ATS HS Type
ATS HS Type

2P | 100A | 200A

Features

Saving power
It is in an instantaneous excitation mode with little operating current (1.6A in case of AC 220V operation)

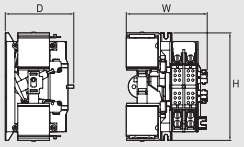
Safe Design
The breaking part is molded for a dust-proof so the operational cycle of the contact part is semi-permanent.

2-Coil Mode
It adopted a simple operation mode using 2 coils

Miniature
It can be built inside the portable generator or UPS

Low Cost
It is a miniature type and it is optimal for a single phase with less than 200A (non-inductive)

Applied Standard
IEC 60947-6-1 / UL1008

Type			21HS	22HS
Rated Current		A	100	100
Rated Voltage		V	AC250	
Poles		P	2	
Connection Method			Front	
Performance				
Short Time Current (1sec)		kA	10	
Short Circuit Peak Current		kA	25	
Switch Capacity			Closing 10 × Ie, Breaking 8 × Ie, Cos Ø= 0.35	
Operational Cycle	Electrical	Times	50, 000	
	Mechanical	Times	250, 000	
Switch Frequency		Times /hr	150 (No.4)	
Transfer Sequence			A ↔ B	
Operating Time	opening	msec	≤30	
	closing	msec	≤60	
Operating Voltage & Current			AC220V, 1.6A	AC220V, 4.85A
External Size & Weight				
		H	165	176
		W	127	151
		D	100	121
Weight		kg	1.1	2.2
Precautions			1) Transfer time is operated at 0.3sec or less. Make sure a full operation is possible with an operation command of 0.5sec or more. 2) When A-side and B-side operation command is done simultaneously, it may lead to coil burning. 3) In case of an operation relay, select a sufficient contact capacity that exceeds the operating current.	

Rating

Standard ATS
WN Type 100A ~ 3000A

New model with improved insulated feature and safety
Neutral Point Mode added
A ↔ Neutral(off) ↔ B

Features

Full insulated feature
The breaking part is fully enclosed in a mold structure to completely prevent electrical accidents due to the insulation degradation resulting from an electric shock due to a physical contact or attachment of dust or foreign substances when used for a long time.

Safe Conduction
All phases are designed to have a certain contact pressure which allows them to maintain a safe conducting performance. It is protected by Latch device so the intensity of the over-current is high in case of a short circuit.

Sophisticated Design
Each phase is fully insulated and is in an independent 1-phase structure. According to the convenience of users, the conduction parts of 3-phase and 4-phase can be combined depending on the capacity and the number of phases.

One-coil Mode
It is a Compact Type where closing of commercial power and reserved power is possible with 1 closing coil.

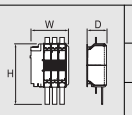
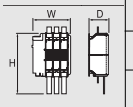
Safe Open Feature
By adopting a unique-structured arc shute, the operational cycle is semi-permanent because the arc breaking time is short and the contact consumption is little. A stable breaking can always be implemented regardless of the operating voltage by applying a trip operation that uses a breaking spring.

Neutral Point Mode
After checking the stability and safety of the circuit, Neutral Point ("OFF" state) is possible due to the trip structure for the transfer mode.
That is, operation by A → off → B, B → off →A as well as A → off → A, B → off → B and instantaneous transfer are possible.

Saving Power
It is in an instantaneous excitation mode with very little power consumption. The contact pressure is protected by Latch device so the intensity of the over-current is high in case of a short circuit. By adopting a unique-structured arc shute, the operational cycle is semi-permanent because the arc breaking time is short and the contact consumption is little

Various Products
There are various products with the rated voltage and current up to 600V, 100-3000A and they are molded in a dust-proof structure. DC load switch is also possible.

Breaking Feature
A stable breaking can always be implemented regardless of the operating voltage by applying a trip operation that uses a breaking spring.

Type				61WN			62WN			64WN			
Rated Current (In)	AC33B		A	100			200			400			
	AC31B			150			300			600			
Rated voltage (Ue)			V	AC600, DC125			AC600, DC125			AC600, DC125			
Poles			P	2, 3, 4			2, 3, 4			2, 3, 4			
Throw			T	Double Throw			Double Throw			Double Throw			
Connection Method	Front			●			●			●			
	Back			●			●			●			
Short Circuit Withstand													
With Circuit Limiting Fuses			kA	200			200			200			
With any Circuit Breaker			kA	10			10			35			
With Specific Circuit Breaker			kA	25			25			45			
Switch Capacity			Class	AC33B			AC33B			AC33B			
Operational Cycle	Electrical		Times	50,000			50,000			50,000			
	Mechanical		Times	250,000			250,000			250,000			
Transfer Sequence				A↔B, A↔Neutral(off)↔B									
Opera-tion Time	A power	closing	msec	≤55			≤55			≤55			
		trip	msec	≤20			≤20			≤20			
	B power	closing	msec	≤80			≤80			≤80			
		trip	msec	≤20			≤20			≤20			
Operating Voltage & Current				2P	3P	4P	2P	3P	4P	2P	3P	4P	
closing	DC110V		A	4	4	5	4	4	5	5	5	7.2	
	AC100/110V		A	4	4	5	4	4	5	5	5	7.2	
	AC200/220V		A	2	2	2.5	2	2	2.5	2.5	2.5	3.6	
Trip	AC/DC110V		A	1.4			1.4			1.4			
	AC220V		A	0.7			0.7			0.7			
External Size & Weight													
Front Size(mm)			H	192	192	192	192	192	192	254	254	254	
			W	218	254	290	218	254	290	248	299	350	
			D	118	118	118	118	118	118	119	119	119	
Back Size(mm)			H	174	174	174	174	174	174	208	208	208	
			W	218	254	290	218	254	290	248	299	350	
			D	144	144	144	144	144	144	164	164	164	
Weight	Front		kg	4.5	6	8	4.5	6	8	7.5	9	10.5	
	Back		kg	4.5	6	8	4.5	6	8	6	8	10	
Other Detailed Info													
Circuit diagram				A6-19			A6-19			A6-19			
Contact Time chart				A6-18			A6-18			A6-18			
Drawing				A6-24			A6-24			A6-25			
Precautions				A6-14			A6-14			A6-14			

(1) AC33B: Motor load or total system load
(2) AC31B: Incandescent lamp control or resistive load
(2) Trip: A circuit is opened to the Neutral Position at OFF state in A or B power

	66WN		68WN		610WN		612WN		616WN		620WN		625WN		630WN	
	600		800		1000		1200		1600		2000		2500		3000	
	800		1000		1200		1400		1800		2500		3000		3500	
	AC600, DC125		AC600, DC125		AC600, DC125		AC600, DC125		AC600, DC125		AC600, DC125		AC600, DC125		AC600, DC125	
	3, 4		3, 4		3, 4		3, 4		3, 4		3, 4		3, 4		3, 4	
	Double Throw		Double Throw		Double Throw		Double Throw		Double Throw		Double Throw		Double Throw		Double Throw	
	●		●		●		●		●		–		–		–	
	●		●		●		●		●		●		●		●	
	200		200		200		200		200		200		200		100	
	35		50		50		50		85		85		100		250	
	65		65		65		65		85		100		100		100	
	AC33B		AC33B		AC33B		AC33B		AC33B		AC33B		AC33B		AC33B	
	50,000		10,000		10,000		10,000		10,000		5,000		5,000		5,000	
	250,000		50,000		50,000		50,000		50,000		10,000		10,000		10,000	
							A↔B, A↔Neutral(off)↔B									
	≤60		≤100		≤100		≤115		≤115		≤140		≤180		≤180	
	≤20		≤30		≤30		≤30		≤30		≤35		≤35		≤35	
	≤90		≤135		≤135		≤145		≤145		≤190		≤220		≤220	
	≤25		≤30		≤30		≤30		≤30		≤35		≤35		≤35	
	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P
	6.4	9	8	10	8	10	8	10	8	10	13	16	13	16	16	18
	6.4	9	8	10	8	10	8	10	8	10	13	16	13	16	16	18
	3.2	4.5	4	5	4	5	4	5	4	5	6.5	8	6.5	8	8	9
	3		3		3		4		4		4		4		4	
	1.5		1.5		1.5		2		2		2		2		2	
	278	278	298	298	298	298	535	535	535	535	–	–	–	–	–	–
	340	400	400	480	400	480	453	536	453	536	–	–	–	–	–	–
	143	143	143	143	143	143	228	228	228	228	–	–	–	–	–	–
	248	248	267	267	267	267	380	380	380	380	380	380	380	380	380	380
	340	400	400	480	400	480	453	536	453	536	528	636	603	736	603	736
	176	176	178	178	178	178	261	261	261	261	261	261	261	261	261	261
	15	18	20	24	21	25	52.5	63.5	58	69	–	–	–	–	–	–
	14	17	19	23	20	24	50	60	55	65	65	85	92.5	119	92.5	119
	A6-19		A6-19		A6-19		A6-19		A6-19		A6-19		A6-19		A6-19	
	A6-18		A6-18		A6-18		A6-18		A6-18		A6-18		A6-18		A6-18	
	A6-26		A6-26		A6-26		A6-27		A6-27		A6-27		A6-28		A6-28	
	A6-14		A6-14		A6-14		A6-14		A6-14		A6-14		A6-14		A6-14	

Rating

Economic Type ATS
W, WP Type

100A ~ 400A

W type Standard Type A ↔ B

WP type Pause Function
Additional Type A ↔ Pause ↔ B

Features

Safe Design

It provides a safe operation by adopting a dust-proof mold structure at the breaking part.

For both AC/DC

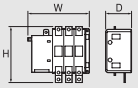
The operating circuit can use both AC/DC.

One Coil Instantaneous Excitation Mode

- It is a power saving structure with an instantaneous excitation mode in one coil.
- The voltage of operating coil is both AC110/220V. (※Refer to the instruction)

*It is an instantaneous operation type where the operation time cannot be adjusted. But, in case of WP Type, a Neutral position is added between A-power source and B-power source which enables it to provide a temporary pause function (pause in OFF state) within 30 seconds that is not connected to both A and B power sources in case of transfer operation.
[Ex When transferring from A-power to B-power
① A Opening→ ② Pause for 3~30 seconds →
③ B Closing

This function is to prevent a short-circuit of load part and power source part by transferring to the other power after a residual voltage is extinct if the existing load is the same as the motor load that generates much residual voltage.
If a pause of more than 30 seconds or OFF status should be maintained, use a standard WN type.

Type			61W	
Rated Current (In)		A	100	
			150	
Rated voltage (Ue)		V	AC600	
Poles		P	3, 4	
Throw		T	One Throw	
Connection Method	Front		●	
	Back		–	
Short Circuit Withstand				
With Circuit Limiting Fuses		kA	200	
With any Circuit Breaker		kA	10	
With Specific Circuit Breaker		kA	22	
Switch Capacity		Class	AC33B	
Operational Cycle	Electrical	Times	50,000	
	Mechanical	Times	250,000	
Transfer Sequence			A ↔ B	
Operation Time	opening	msec	≤30	
	closing	msec	≤60	
	closing off	sec	–	
Operating Voltage & Current			3P	4P
A ↔ B closing	DC110V	A	–	–
	AC100/110V	A	–	–
	AC200/220V	A	10	10
External Size & Weight				
Front Size (mm)		H	171	171
		W	219	219
		D	110	110
Back Size (mm)		H	–	–
		W	–	–
		D	–	–
Weight	Front	kg	2.5	3
	Back	kg	–	–
Other Detailed Info				
Circuit diagram			A6-21	
Contact Time chart			A6-18	
Drawing			A6-31	
Precautions			A6-16	

(1) AC33B: Motor load or total system load
(2) AC31B: Incandescent lamp control or resistive load

	62W		64W			61WP			62WP			64WP		
	200		400			100			200			400		
	300		600			150			300			600		
	AC600		AC600, DC125			AC600, DC125			AC600, DC125			AC600, DC125		
	3, 4		2, 3, 4			2, 3, 4			2, 3, 4			2, 3, 4		
	One Throw		Double Throw			Double Throw			Double Throw			Double Throw		
	●		●			●			●			●		
	–		●			●			●			●		
	200		200			200			200			200		
	10		10			10			10			10		
	22		42			42			42			42		
	AC33B		AC33B			AC33B			AC33B			AC33B		
	50,000		50,000			50,000			50,000			50,000		
	250,000		250,000			250,000			250,000			250,000		
	A ↔ B		A ↔ B			A ↔ B			A ↔ B			A ↔ B		
	≤30		≤60			≤30			≤30			≤60		
	≤60		≤200			≤200			≤200			≤200		
	—		—											
	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P
	–	–	7.5	7.5	11	5.4	5.4	7.5	7.5	7.5	11	11	11	12.8
	–	–	7.5	7.5	11	5.4	5.4	7.5	7.5	7.5	11	11	11	12.8
	10	10	3.8	3.8	5.5	2.7	2.7	3.8	3.8	3.8	5.5	5.5	5.5	6.4
	171	171	254	254	254	191	191	191	252	252	252	254	254	254
	219	219	248	299	350	214	244	274	244	289	334	246	287	348
	110	110	119	119	119	112	112	112	112	112	112	119	119	119
	–	–	208	208	208	176	176	176	176	176	176	208	208	208
	–	–	236	287	338	214	244	274	244	289	334	246	287	348
	–	–	163	163	163	148	148	148	158	158	158	163	163	163
	3.5	4	7.5	8	10.5	4.5	6	8	6	8	10	11	14	18
	–	–	6	8	10	4.5	6	8	6	8	10	11	14	18
	A6-21					A6-20								
	A6-18					A6-18								
	A6-31					A6-33								
	A6-16					A6-16								

Uninterruptible Transfer Type ATS CTTS

100A ~ 3000A

It is a Closed Transition Transfer Switch that automatically transfers without interruption to the control direction within 0.1 second (100ms) by detecting the voltage difference between both powers and frequency difference and checking the synchronizing condition after a simultaneous closing of commercial (A) power and emergency (B) power.

Uninterruptible Transfer Mode added
A ↔ Synchronizing ↔ B

Main Application

Main Plant

Lightning may generate voltage drop for the commercial power or power failure and for the load that requires a long-time recovery, it can be transferred to the emergency power in advance without interruption and back to the commercial power without interruption.

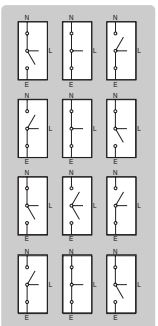
*In case of an uninterruptible transfer,
① Power failure notified by KEPCO
② When the power is recovered and transferred to power plant
③ When an instantaneous power failure is expected due to the weather
④ When testing a generator or equipments

Uninterruptible transfer is possible when performing the planned maintenance or repairing such as the regular inspection of electrical equipments installed at banks and stations.

UPS Power Transfer Equipments

By examining the phase of both UPS powers, if they are within the standard value, an uninterruptible transfer is possible.

Explanation on Transfer Operation

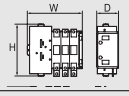
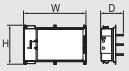


When transferring from commercial power to emergency power, it is transferred to emergency power in the closed state. (Test or Power transfer)

When retransferring from emergency power to commercial power, it is transferred to commercial power in the closed state.

When transferring from commercial power to emergency power, it is transferred to emergency power in the open state.
(In case of a commercial power failure)

When retransferring from emergency power to commercial power, it is transferred to commercial power in the closed state.
(Uninterruptible transfer to the commercial power)

Type				61CT		
Rated Current (In)			A	100		
Rated voltage (Ue)			V	AC 600, DC125		
Poles			P	2, 3, 4		
Throw			T	Double Throw		
Connection Method	Front			●		
	Back			●		
Performance						
Short Time Current(1sec)			kA	5		
Short Circuit Peak Current			kA	12.5		
Switch Capacity			Class	AC33B		
Operational Cycle	Electrical		Times	50,000		
	Mechanical		Times	250,000		
Transfer Sequence						
Conditions of uninterruptible transfer						
Opera-tion Time	Apower	closing	msec	≤55		
		trip	msec	≤20		
	Bpower	closing	msec	≤80		
		trip	msec	≤20		
Operating Voltage & Current				2P	3P	4P
Closing	DC110V		A	4	4	5
	AC100/110V		A	4	4	5
	AC200/220V		A	2	2	2.5
Trip	AC/DC110V		A	1.4		
	AC220V		A	0.7		
External Size & Weight						
Front Size (mm)			H	268	268	268
			W	211	241	271
			D	112	112	112
Back Size (mm)			H	–	–	–
			W	–	–	–
			D	–	–	–
Weight	Front		kg	6.5	8	10
	Back		kg	6.5	8	10
Other Detailed Info						
Circuit diagram				A6-23		
Drawing				A6-36		
Precautions				A6-20		

(1) Switch Capacity : AC3 Class : Closing 10 × Ie, Breaking 8 × Ie, cosØ = 0.35 / DC1 Class : Closing 1.1 × Ie, Breaking 1.1 × Ie, L/R= 1ms
AC2 Class : Closing 4 × Ie, Breaking 4 × Ie, cosØ = 0.65
(2) Trip: A circuit is opened to the Neutral Position at OFF state in A or B power

	62CT	64CT	66CT	610CT	616CT	620CT	630CT
	200	400	600	800, 1000	1200, 1600	2000	3000
	AC 600, DC125	AC 600, DC125	AC 600, DC125	AC 600, DC125	AC 600, DC125	AC 600, DC125	AC 600, DC125
	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4
	Double Throw	Double Throw	Double Throw	Double Throw	Double Throw	Double Throw	
	●	●	●	●	●	–	–
	●	●	●	●	●	●	●
	10	12	15	22	25	35	50
	25	30	37.5	50	55	60	80
	AC33B	AC33B	AC33B	AC33B	AC33B	AC33B	AC33B
	50,000	50,000	10,000	10,000	10,000	5,000	5,000
	250,000	250,000	50,000	50,000	50,000	10,000	10,000
	A ↔ B, A ↔ Neutral (off) ↔ B, A ↔ Overlapping (overlapping) ↔ B						
	Phase difference : Within electrical angle 10° , Frequency difference : Within 0.2Hz , Voltage : Voltage difference with the commercial one is within 5% , Instantaneous Interconnection Time : Within 0.05 second						
	≤55	≤60	≤100	≤115	≤115	≤180	≤140
	≤20	≤25	≤30	≤30	≤30	≤30	≤35
	≤80	≤90	≤135	≤145	≤150	≤220	≤190
	≤20	≤25	≤30	≤30	≤30	≤30	≤35
	2P / 3P / 4P	2P / 3P / 4P	3P / 4P	3P / 4P	3P / 4P	3P / 4P	3P / 4p
	5 / 5 / 7	6.4 / 6.4 / 9	7 / 8	8 / 10	10 / 13	13 / 16	16 / 18
	5 / 5 / 7	6.4 / 6.4 / 9	7 / 8	8 / 10	10 / 13	13 / 16	16 / 18
	2.5 / 2.5 / 3.6	3.2 / 3.2 / 4.5	3.5 / 4	4 / 5	5 / 6.5	6.5 / 8	8 / 9
	1.4	2	2	2	2	4	4
	0.7	1	1	1	1	2	2
	283 / 283 / 283	307 / 307 / 307	545 / 545	609 / 609	645 / 645	– / –	– / –
	241 / 286 / 331	293 / 353 / 413	465 / 530	510 / 590	570 / 670	– / –	– / –
	112 / 112 / 132	132 / 132 / 220	220 / 220	220 /	220 / 220	– / –	– / –
	– / – / –	– / – / –	– / –	– / –	– / –	600 / 600	600 / 600
	– / – / –	– / – / –	– / –	– / –	– / –	683 / 818	833 / 1018
	– / – / –	– / – / –	– / –	– / –	– / –	329 / 329	364 / 364
	8 / 10 / 12	14 / 17 / 21	53 / 61	66 / 76	72 / 84		
	8 / 10 / 12	14 / 17 / 21	43 / 52	5043 / 61	57 / 69	130 / 150	165 / 205
	A6-23		A6-23			A6-23	
	A6-36	A6-37	A6-37			A6-38	
	A6-20		A6-20			A6-20	

Low Voltage Auto Transfer Switch ···ATS, CTTS

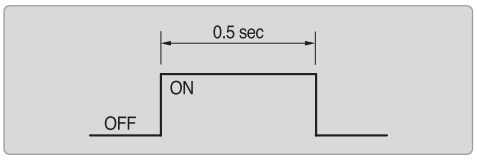
Consideration points when applying and selecting

Relevant Standards

- UL 1008
- IEC 60947-6-1

Control Command

Closing and trip transfer operation is completed within 0.3 second but set Sequence so that it can be operated with a control command of 0.5sec or more.



Interlock

Install an interlock (electrical) so that A power source and B power source are not commanded simultaneously at the operating circuit.
In case of WN Type, set a Sequence so that closing command and trip command are not in the same direction.

TR Capacity for Operating Circuit

The TR capacity of operating circuit should be calculated as shown below and use the capacity that exceeds the calculated value.
Operating Voltage × Operating Current × 0.5 = ( )VA

ex) Operating Voltage AC220V Operating Current 4A
220 × 4 × 0.5 = 440VA
Use TR with 440VA or above.

Control Circuit

ATS is designed to turn OFF the operating current using an internal SW after the operation is completed. When the operating current is turned OFF by an auxiliary SW of body, it may lead to malfunctioning.

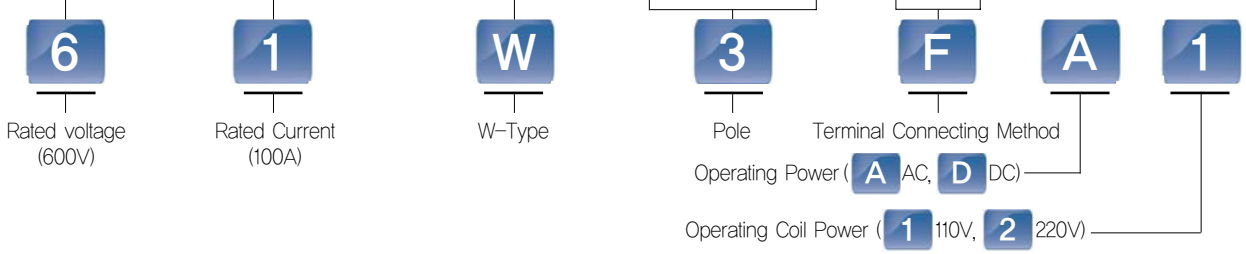
Selection of Control Relay

Use the selected voltage Relay 27, 84 and Timer with contact conducting current that exceeds the ATS operating current.
Considering the chattering of control relay, select a relay that can interrupt the operating current which is safer.

* When the operating power is unstable, use a voltage fixed relay.

Type & Marking Method

Type			Poles			Connection Method		Overview
Voltage	Current	Type	2	3	4	Front	Back	
						F	B	
2 AC250V	1 100A	HS	○	–	–	○	–	Miniature Type
	2 200A							
6 AC600V DC125V	1 100A	W	○	○	○	○	○	Economic Type
	2 200A		○	○	○	○	○	
	4 400A		○	○	○	○	○	
6 AC600V DC125V	1 100A	WP	○	○	○	○	○	
	2 200A		○	○	○	○	○	
	4 400A		○	○	○	○	○	
6 AC600V DC125V	1 100A	WN	○	○	○	○	○	Standard Type
	2 200A		○	○	○	○	○	
	4 400A		○	○	○	○	○	
	6 600A		–	○	○	○	○	
	10 800/1,000A		–	○	○	○	○	
	16 1,200/1,600A		–	○	○	○	○	
6 AC600V	20 2,000A		–	○	○	–	○	
	30 3,000A		–	○	○	–	○	
6 AC600V DC125V	6 600A	WS	○	○	○	○	○	Standard Type
	10 800/1,000A		○	○	○	○	○	
	16 1200/1,600A		○	○	○	○	○	
	20 2,000A		○	○	○	○	○	
	30 3,000A		–	○	○	–	○	
6 AC600V DC125V	1 100A	CT	○	○	○	○	○	CTTS
	2 200A		○	○	○	○	○	
	4 400A		○	○	○	○	○	
	6 600A		–	○	○	○	○	
	10 800/1,000A		–	○	○	○	○	
	16 1200/1,600A		–	○	○	○	○	
6 AC600V	20 2,000A		–	○	○	–	○	
	30 3,000A		–	○	○	–	○	



Low Voltage Auto Transfer Switch ATS, CTTS

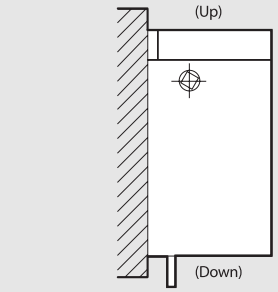
Installation Location

Avoid high-temperature and highly humid places and places with poisonous gas.

Installation Direction

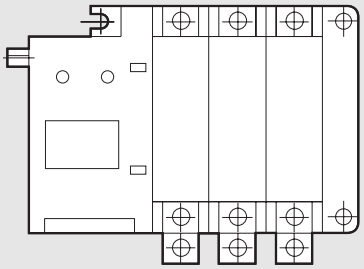
ATS is designed to use it by installing it in a certain direction. When the installation direction is changed, the feature will be changed. So, install it accurately.
ATS should be installed so that the body rating plate can be read properly when facing the front and it should be installed without any twist, vertical to the panel.

* If a normal installation is not possible due to problems on wiring or equipment arrangement, consult with our company.



Operating Power

In case of DC operation and if a dropper circuit is included in the operating power, the operating power of ATS must be connected to the input part of dropper circuit.



Control Circuit Connection

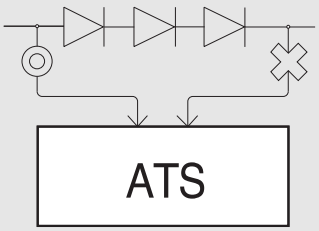
Use a control power and control line with extra length.
In case of DC operation, be cautious of battery shortage and charging shortage.

Main Circuit Connection

Firmly connect it by selecting wire size and solderless terminal that meets the current capacity.
Be careful not to add an excessive stress to the main circuit terminal.
Especially, when connecting using a Busbar, be careful not to add an excessive stress to the main circuit terminal.

Precautions when Operating Handle

Manual operation of ATS should be carried out only when a detailed inspection of operating part and charging part is performed at no-load status.
There may be some differences in switch force, switch speed and so on based on the manual operation of the operator, so ATS features cannot be guaranteed.



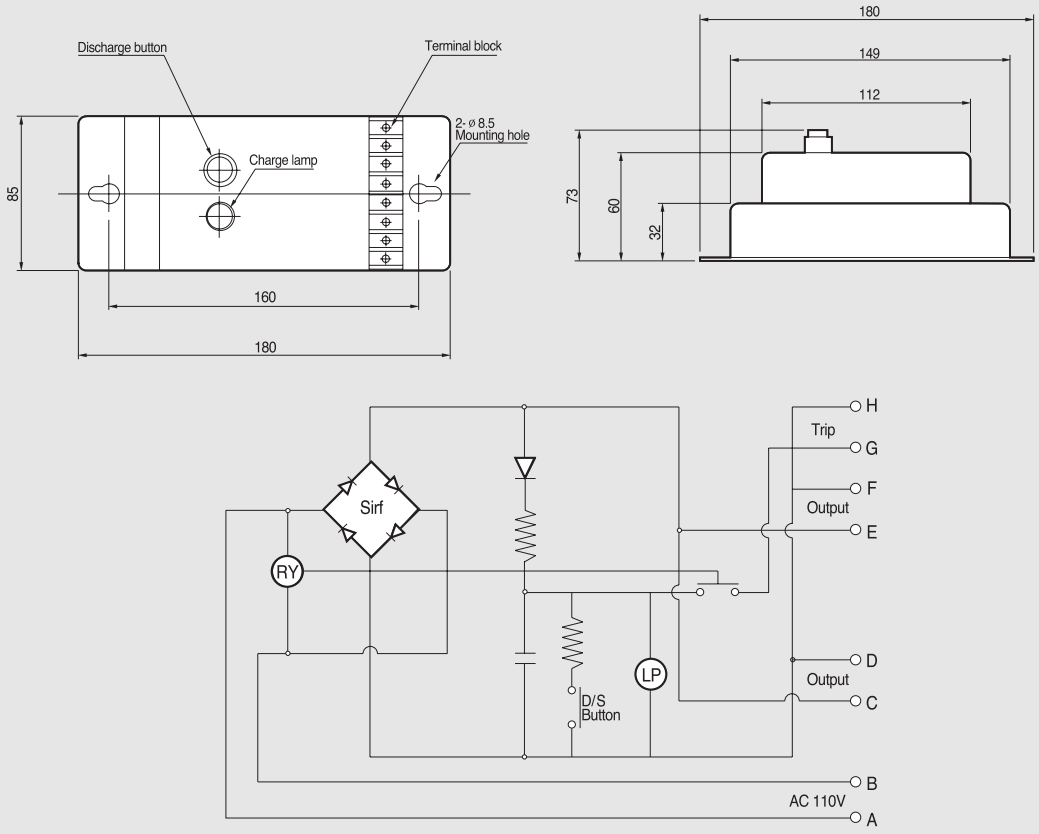
Maintenance & Inspection

Conduct maintenance and inspection at regular cycle in order to maintain the performance of ATS steadily and well.

* Refer to the maintenance and inspection items presented in the instruction manual for the detailed information.

Option

Conderser Trip Device



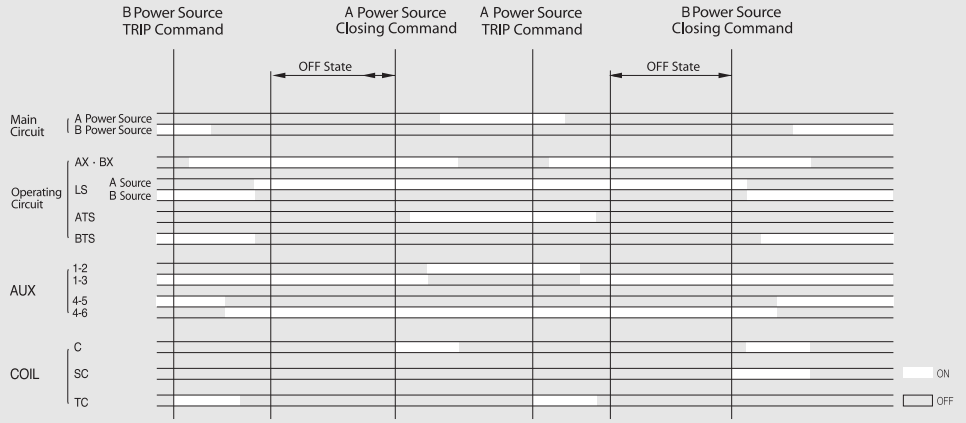
1) When using as CTD
When G, H terminals are connected to Trip Circuit during a power failure, it immediately trips. If tripping is required at an optional time,it can be used by adding S/W. (Normal operation is possible within 30 seconds)

2) When using as Rectifier
C.D and E.F output terminals can be used as DC power. (Close, Open, Motor OCR Power and etc)

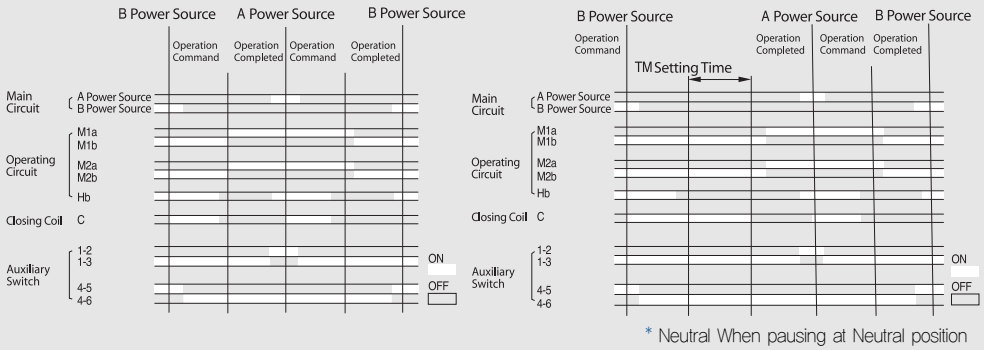
Low Voltage Auto Transfer Switch
ATS, CTTS

Contact Time Chart

WN Type

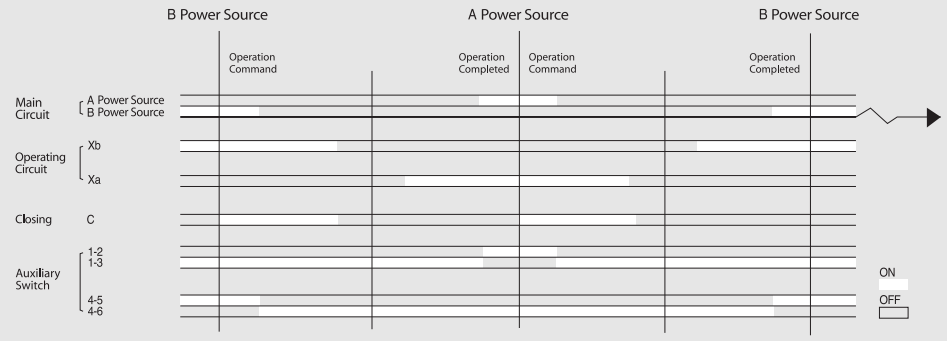


WP Type

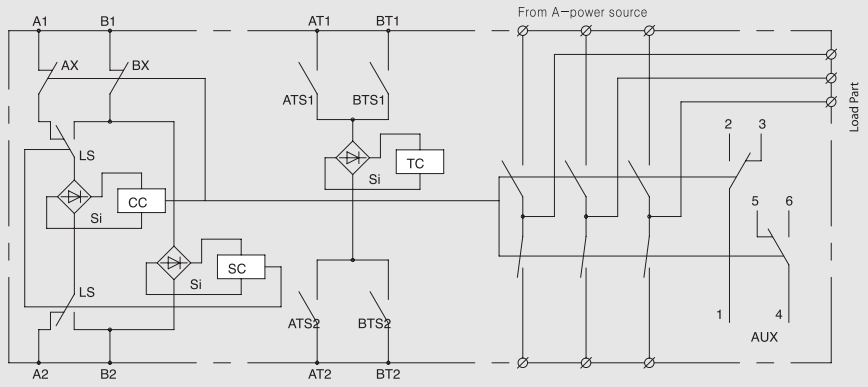


* Neutral When pausing at Neutral position

W Type

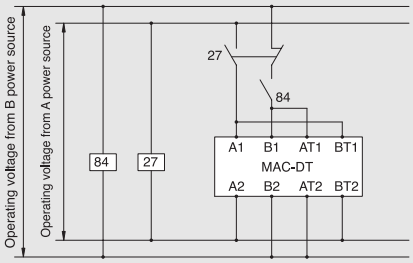


WN Type Internal Circuit

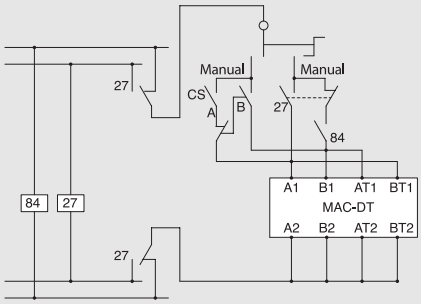


WN Type Operating Circuit

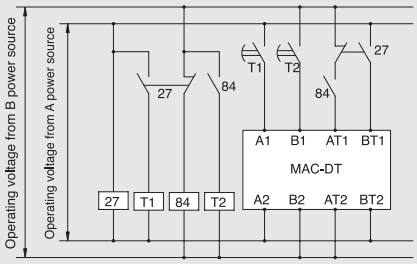
In case of a Normal Transfer
(In case of an Instantaneous Transfer)



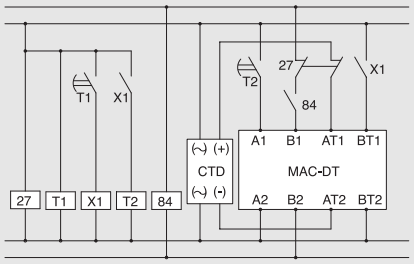
In case of Manual-Auto COS Part



When using a TIMER for Transfer



In case of a Condenser Trip

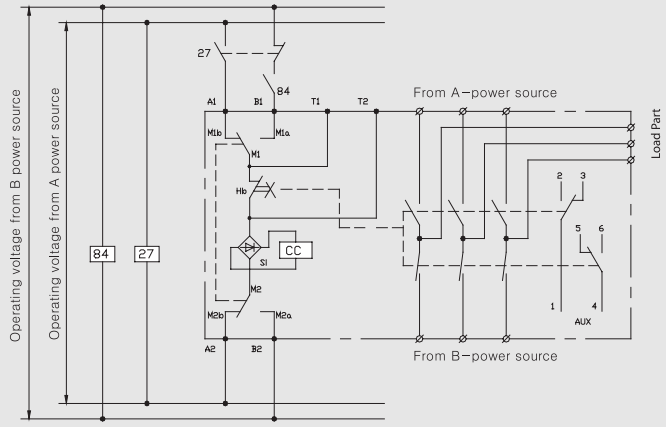


Low Voltage Automatic Transfer Switch ATS, CTTS

WP Type

Internal Circuit

Control Circuit in case of a pause at neutral point



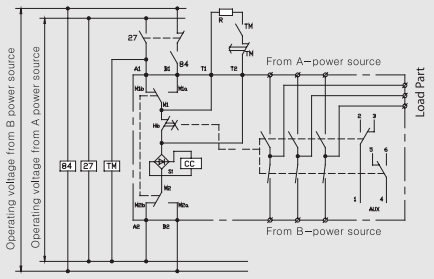
CC : Closing Coil
Si : Silicon Rectifier
Hb : Both Power OFF Pause Switch
M_1, M_2 : Limit Switch for Operating Power Transfer
AUX : Auxiliary Switch
27, 84 : Voltage Relay

Operating Terminal
$A_1 - A_2$: A Power Source Closing Terminal
$B_1 - B_2$: B Power Source Closing Terminal
$T_1 - T_2$: Timer Connecting Termina

Operating Circuit 1

Pausing at Neutral Point when transferring B → A

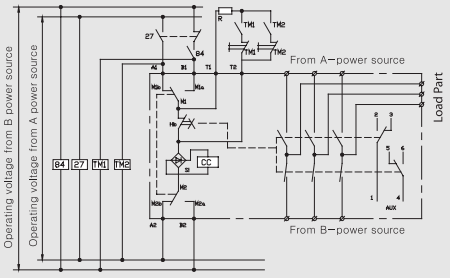
TM : Timer
R : Limited Resistance
27, 84 : Voltage Relay



Operating Circuit 2

Pausing at Neutral Point when transferring from both ways, A → B, B → A

TM1, TM2 : Timer
R : Limited Resistance
27, 84 : Voltage Relay



Precautions

- To pause at a neutral position, connect a Timer and limited resistance to T1, T2 terminals.
  * Prepare a separate Timer and limited resistance.
- If the pause time is less than 3 seconds at the neutral position, the limited resistance should not be installed.
- The operating voltage to use when pausing at the neutral position should be AC110, AC220V.
- When operating continuously, it should be within 5 times.
  When operating continuously for more than 5 times, it may malfunction due to overheating of coil or coil may be burned. Be cautious.
- When it is required to pause for more than 30 seconds (Both power OFF), use WN–Type of our company.

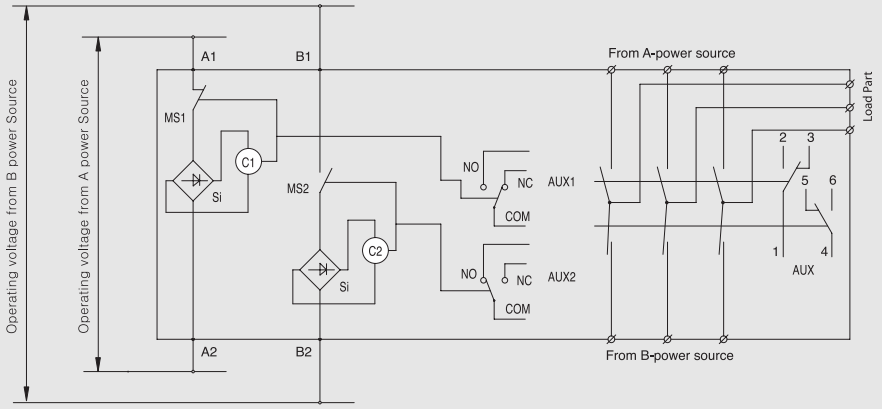
Limited Resistance

Type		61WP ~ 62WP		64WP	
Operating Voltage		AC110V	AC110V	AC110V	AC220V
Timer Used		Select a Timer that can interrupt the operating current.			
Timer Adjusting Time		3sec ~ 30sec			
Limited Resistance	Rated Power	200W	200W	200W	200W
	Resistance	50Ω	50Ω	50Ω	200Ω

W Type

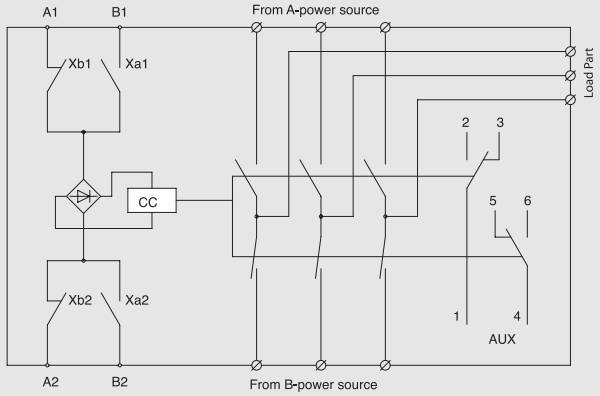
100~200A

Control Circuit Diagram



400A

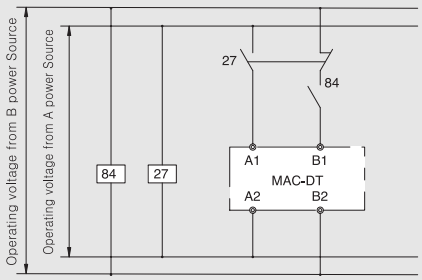
Internal Circuit



$Xa_1 - Xa_2$, $Xb_1 - Xb_2$: Control Switch
CC : Closing Coil
Si : Silicon Rectifier

Operating Termina
$A_1 - A_2$: A-Power Source Closing Termina
$B_1 - B_2$: B-Power Source Closing Termina
AUX : Auxiliary Switch

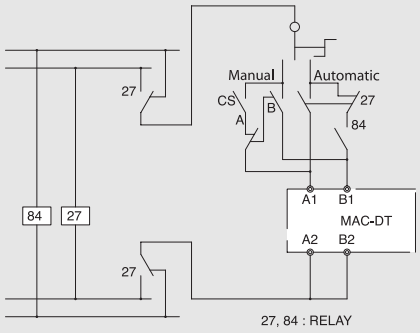
Operating Circui 1



In case of a Normal Transfer
(In case of an Instantaneous Transfer)

* 27, 84:Voltage Relay

Operating Circui 2



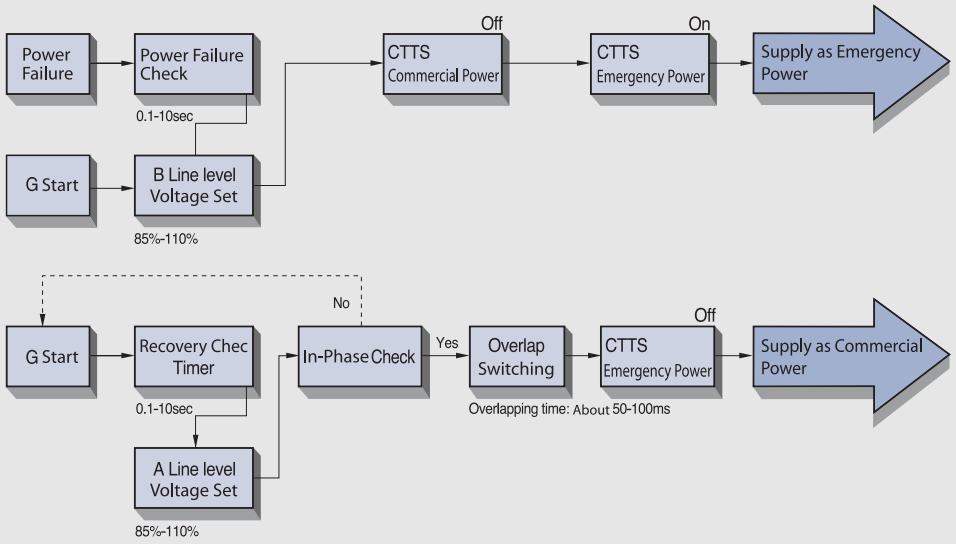
In case of Manual-Auto COS Part

* 27, 84:Voltage Relay

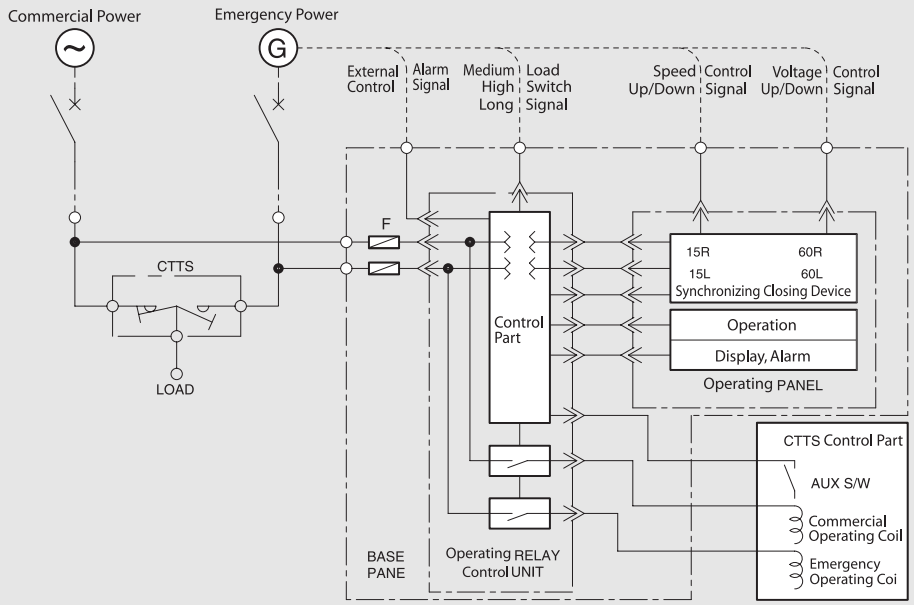
Low Voltage Automatic Transfer Switch
ATS, CTTS

CTTS

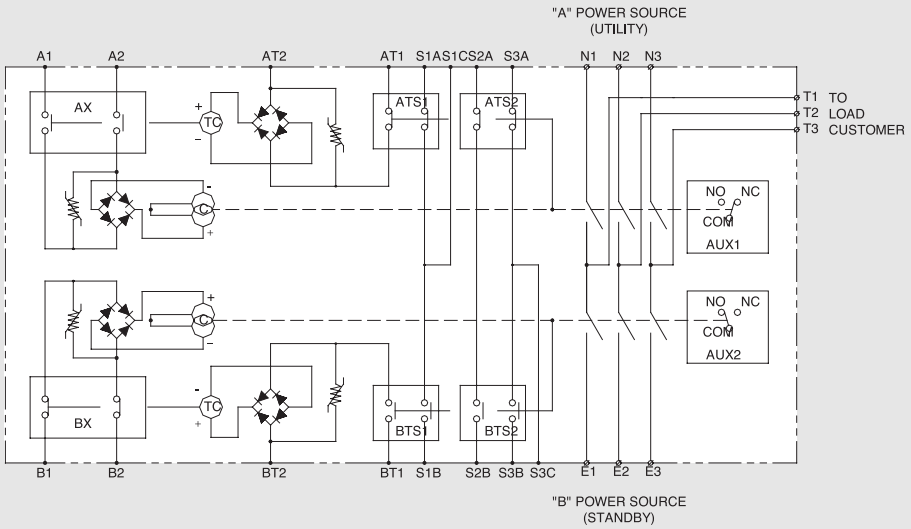
Operational Flow Chart



Operating Circuit



Internal Circuit



A_1, A_2	"A" Power source side(On)
AT_1, AT_2	"A" Power source side(Trip)
ATS_1, ATS_2	Switch, Position contacts
BTS_1, BTS_2	
$AUX_{1,2}$	Switch, Auxiliary
AX, BX	Switch, Control
B_1, B_2	"B" Power source side(On)
BT_1, BT_2	"B" Power source side(Trip)
C	Coil, Closing
COM	Common
CTTS	Closed transition transfer switch
E_1, E_2, E_3	Standby power source conn.
NO	Normally open
NC	Normally closed
N_1, N_2, N_3	Utility power source
S1A, S1B, S1C	Switch, Position sensing
S2A, S2B	
S3A, S3B, S3C	
TC	Coli, Trip
T_1, T_2, T_3	Costomer load conn.

All contacts of switch shown in :
Utility : Closed
Standby : Open

× : Closed ○ : Open

Utility side	Switch position	Utility closed	Neutral	Utility open
Aux. 1	COM – NC	×	○	○
	COM – NO	○	×	×

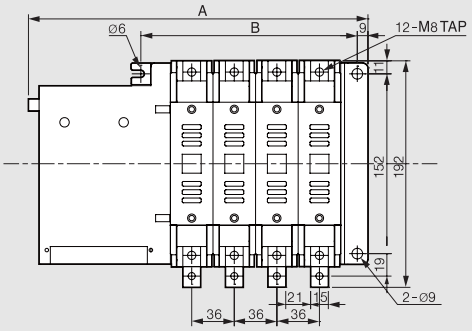
Standby side	Switch position	Standby Open	Neutral	Standby closed
Aux. 2	COM – NC	○	○	×
	COM – NO	×	×	○

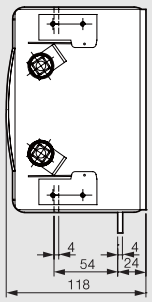
Low Voltage Automatic Transfer Switch
ATS, CTTS

WN Type

61WN~62WN

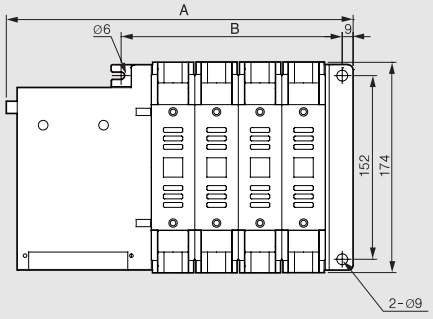
FRONT

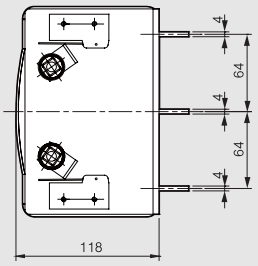


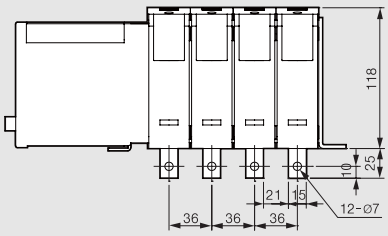


	A	B
2P	215	111
3P	251	147
4P	287	183

BACK





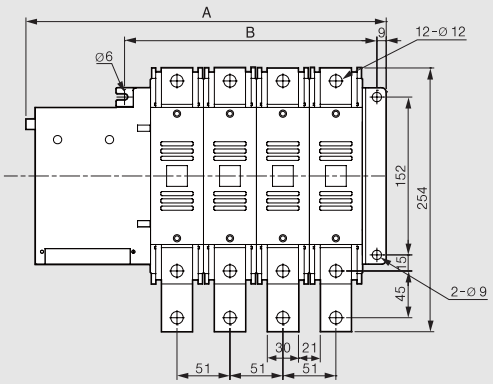


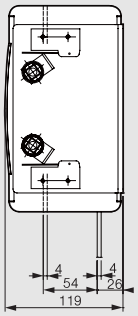
	A	B
2P	215	111
3P	251	147
4P	287	183

WN Type

64WN

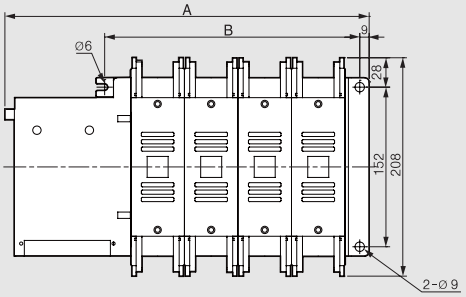
FRONT

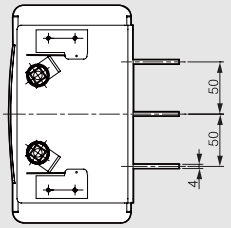


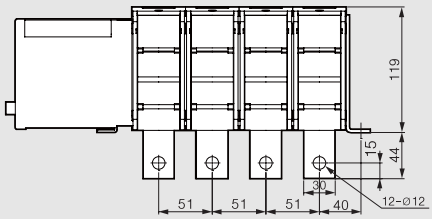


	A	B
2P	245	141
3P	296	192
4P	347	243

BACK







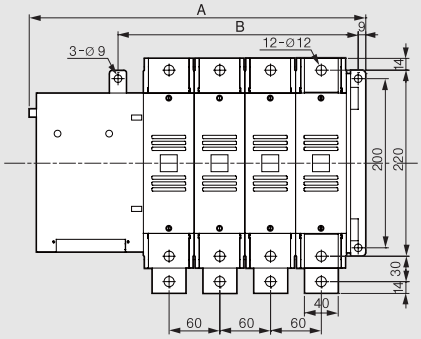
	A	B
2P	245	141
3P	296	192
4P	347	243

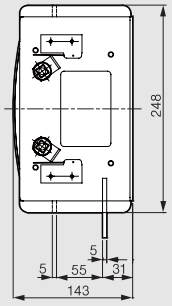
Low Voltage
Automatic
Transfer Switch
ATS, CTTS

WN Type

66WN

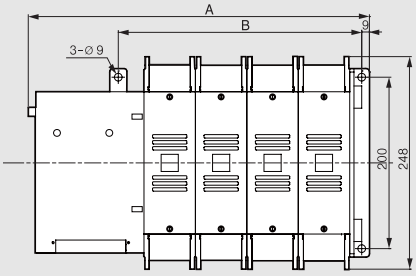
FRONT

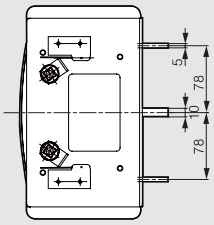


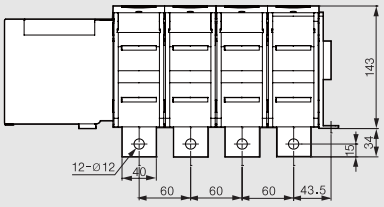


	A	B
3P	340	224
4P	400	284

BACK





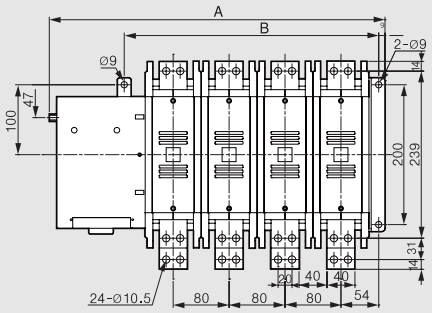


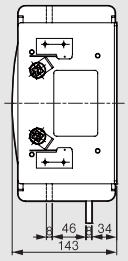
	A	B
3P	340	224
4P	400	284

WN Type

68WN

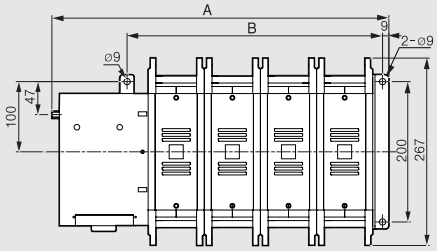
FRONT

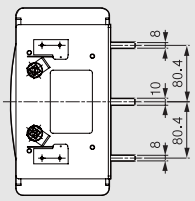


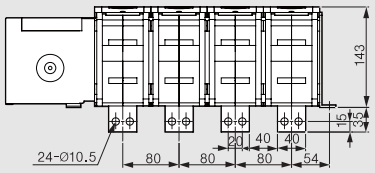


	A	B
3P	400	284
4P	480	364

BACK







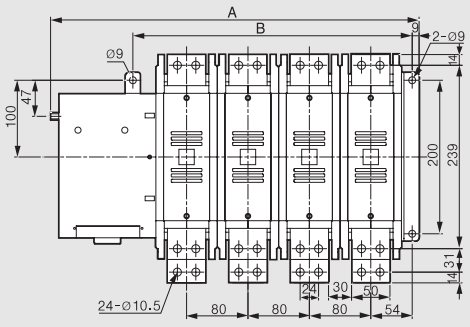
	A	B
3P	400	284
4P	480	364

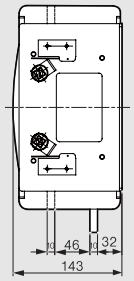
Low Voltage
Automatic
Transfer Switch
ATS, CTTS

WN Type

610WN

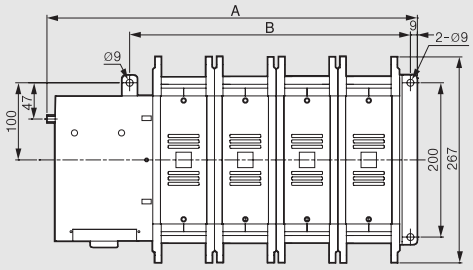
FRONT

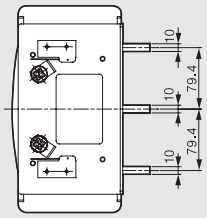


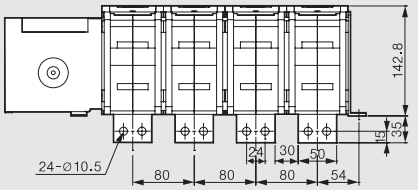


	A	B
3P	400	284
4P	480	364

BACK





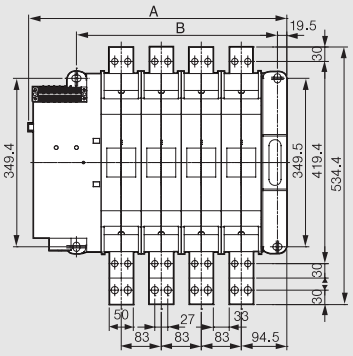


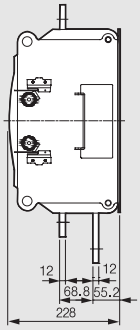
	A	B
3P	400	284
4P	480	364

WN Type

612WN

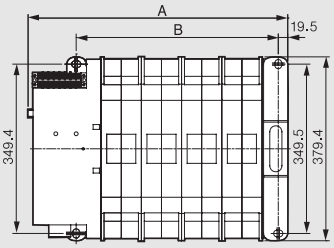
FRONT

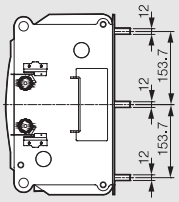


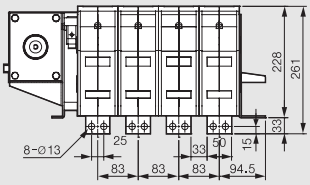


	A	B
3P	452.7	334
4P	535.7	417

BACK







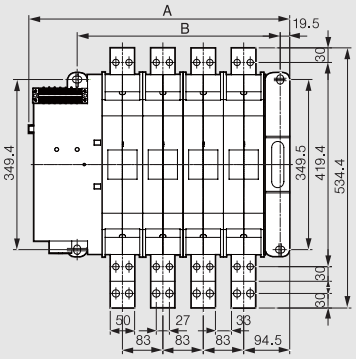
	A	B
3P	452.7	334
4P	535.7	417

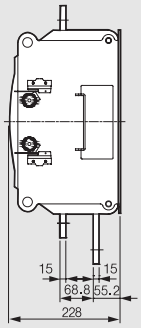
Low Voltage
Automatic
Transfer Switch
ATS, CTTS

WN Type

616WN

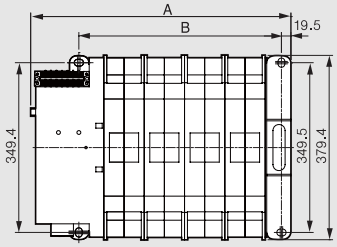
FRONT

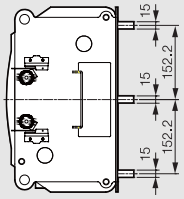


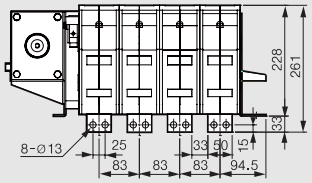


	A	B
3P	452.7	334
4P	535.7	417

BACK





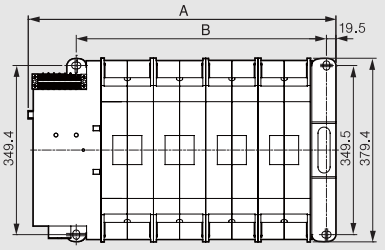


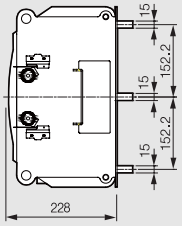
	A	B
3P	452.7	334
4P	535.7	417

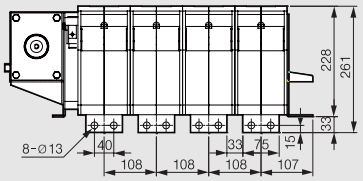
WN Type

620WN

BACK







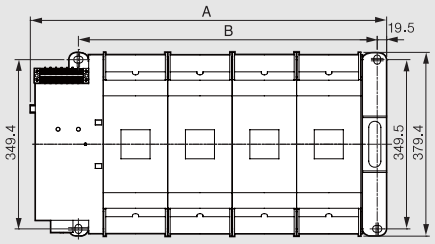
	A	B
3P	527.7	409
4P	635.7	517

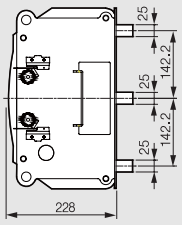
Low Voltage
Automatic
Transfer Switch
ATS, CTTS

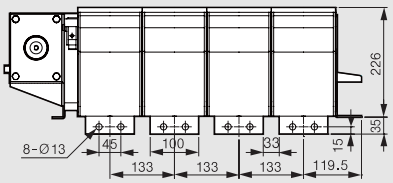
WN Type

625~630WN

BACK







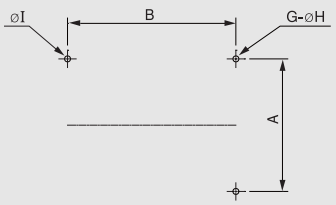
	A	B
3P	602.7	484
4P	735.7	617

Panel Processing Dimension

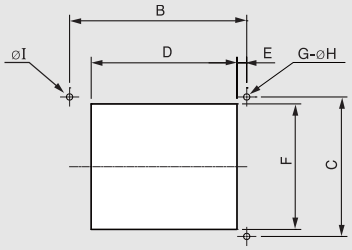
WN Type

100A~1000A

FRONT

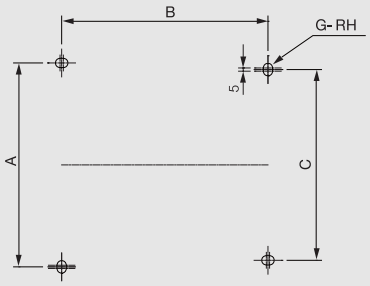


BACK

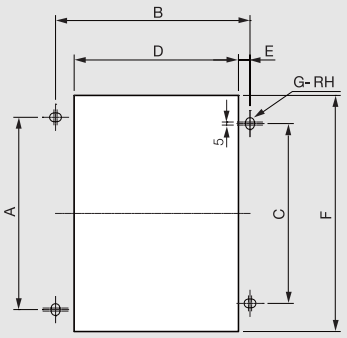


1200A~3000A

FRONT



BACK

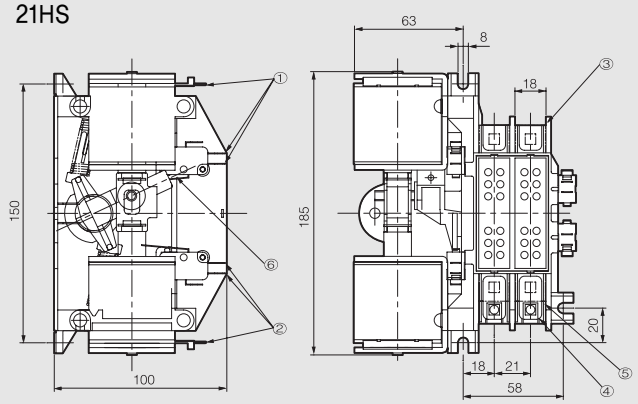


TYPE		100~200A FRONT	100~200A BACK	400A FRONT	400A BACK	600A FRONT	600A BACK	800A FRONT	800A BACK	1000A FRONT	1000A BACK	1200A FRONT	1200A BACK	1600A FRONT	1600A BACK	2000A BACK	3000A BACK
A		152	–	152	–	200	–	200	200	200	200	350	350	350	350	350	350
B	2P	111	111	141	141	–	–	–	–	–	–	–	–	–	–	–	–
	3P	147	147	192	192	224	224	284	284	284	284	334	334	334	334	409	484
	4P	183	183	243	243	284	284	364	364	364	364	417	417	417	417	517	617
C		–	152	–	152	–	200	200	200	200	200	350	350	350	350	350	350
D	2P	–	90	–	120	–	–	–	–	–	–	–	–	–	–	–	–
	3P	–	125	–	170	–	200	–	250	–	250	–	279	–	279	354	429
	4P	–	160	–	220	–	260	–	330	–	330	–	362	–	362	462	562
E		–	9.5	–	9.5	–	9	–	9	–	9	–	18.5	–	18.5	18.5	18.5
F		–	172	–	155	–	215	–	240	–	240	–	390	–	390	390	390
G		2	2	2	2	2	2	2	2	2	2	8	8	8	8	8	8
H		10	10	10	10	10	10	10	10	10	10	7	7	7	7	7	7
I		7	7	7	7	10	10	10	10	10	10	–	–	–	–	–	–

Low Voltage
Automatic
Transfer Switch
ATS, CTTS

HS Type

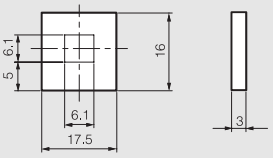
21HS



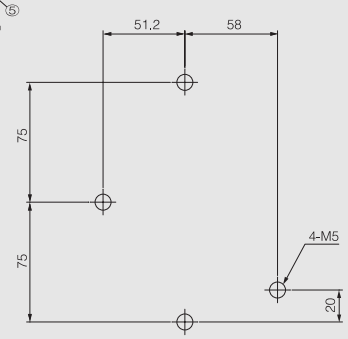
Parts Name

① A Operating circuit terminal
② B Operating circuit terminal
③ A power source side main circuit terminal
④ Loading side main circuit terminal
⑤ B power source side main circuit terminal
⑥ Manual operating lever

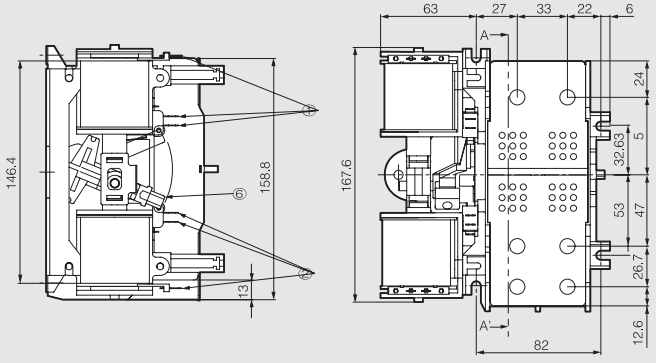
Bus Dimension



Panel Processing Dimension
(Front)/100A 2P

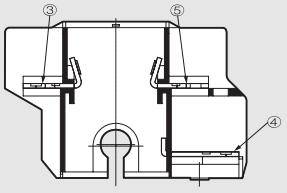


22HS



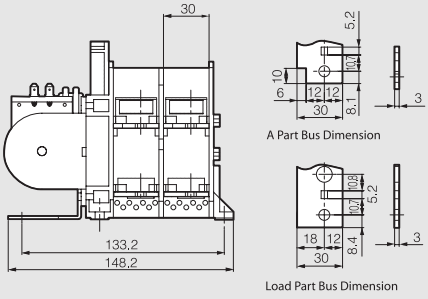
Parts Name

① A Operating circuit terminal
② B Operating circuit terminal
③ A power source side main circuit terminal
④ Loading side main circuit terminal
⑤ B power source side main circuit terminal
⑥ Manual operating lever



Section A-A'

Bus Dimension

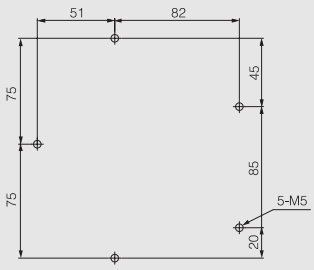


A Part Bus Dimension

B Part Bus Dimension

Load Part Bus Dimension

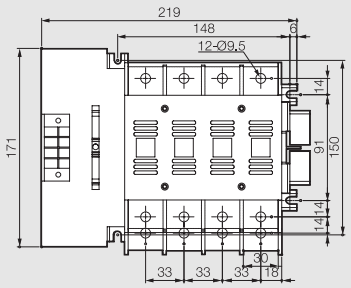
Panel Processing Dimension
(Front)/200A 2P

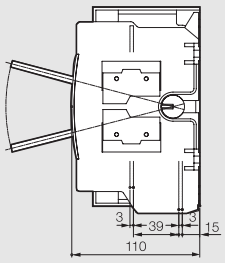


W Type

61W~62W

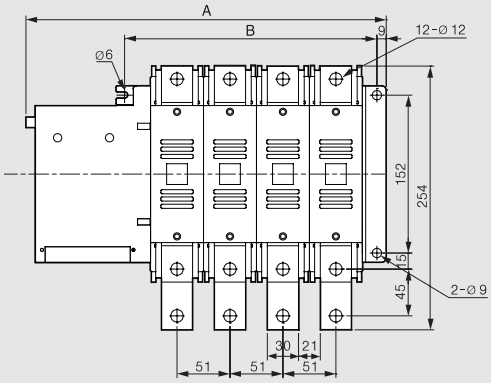
FRONT

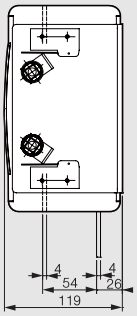




64W

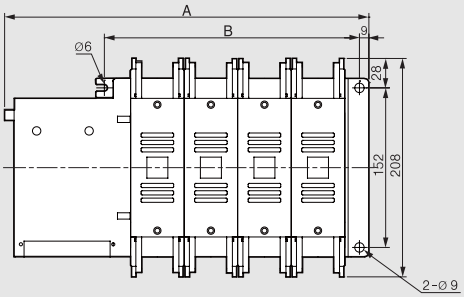
FRONT

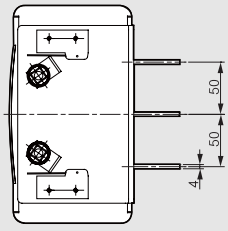


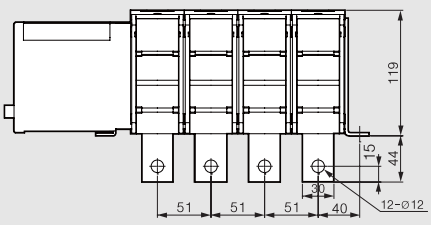


Type	A	B
2P	245	141
3P	296	192
4P	347	243

BACK







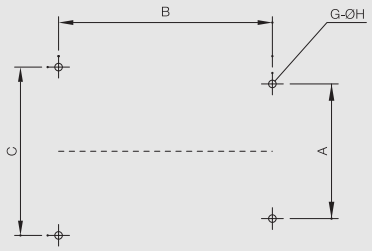
Type	A	B
2P	245	141
3P	296	192
4P	347	243

Panel Processing Dimension

W Type

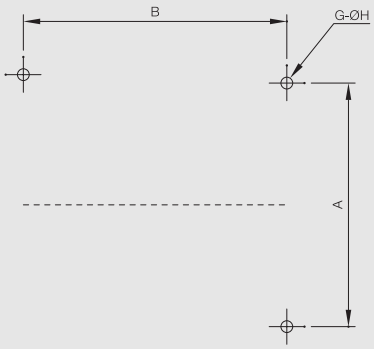
100A~200A

FRONT

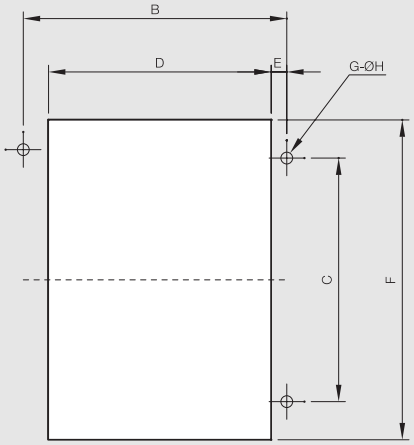


400A

FRONT



BACK

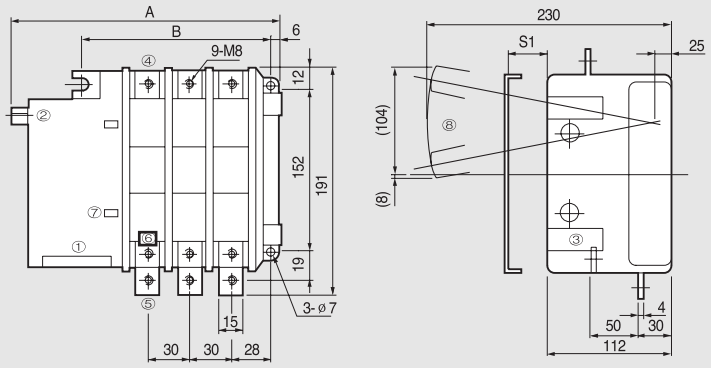


Type		100A~200A FRONT	400A FRONT	400A BACK
A		91	152	–
B	2P	–	141	141
	3P	148	192	192
	4P	148	243	243
C		150	152	152
D	3P	–	–	120
	4P	–	–	170
		–	–	220
E		–	–	9.5
F		–	–	155
G		4	3	3
H		9	9	9

Low Voltage Automatic Transfer Switch
ATS, CTTS

WP Type

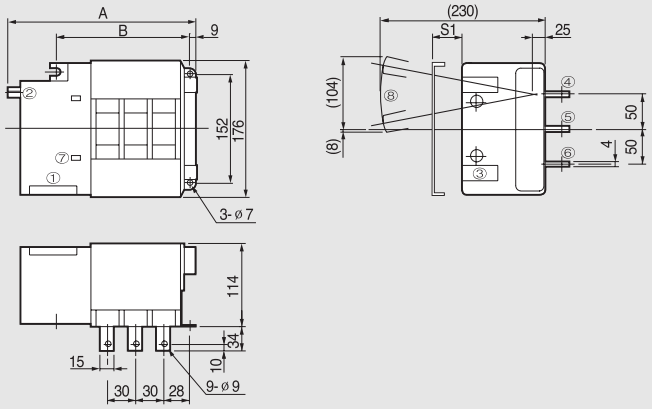
61WP Front connection



Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	214	113
3P	244	143
4P	274	173

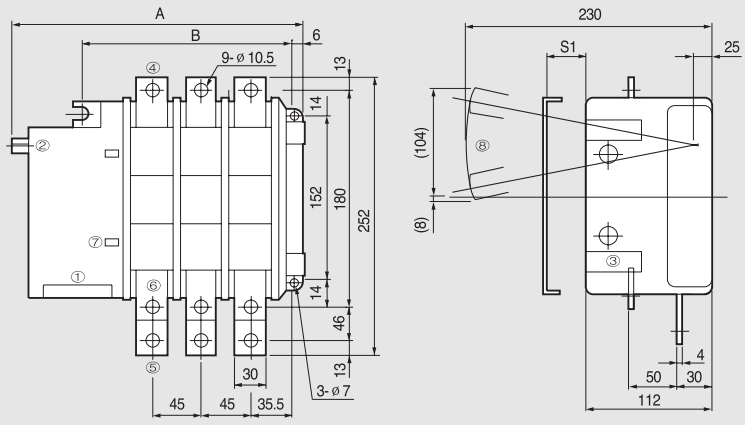
61WP Back connection



Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	214	113
3P	244	143
4P	274	173

62WP Front connection



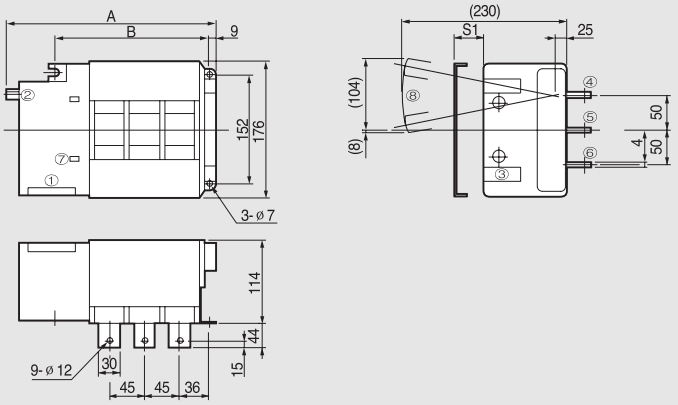
Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	244	143
3P	289	188
4P	334	233

Low Voltage
Automatic
Transfer Switch
ATS, CTTS

WP Type

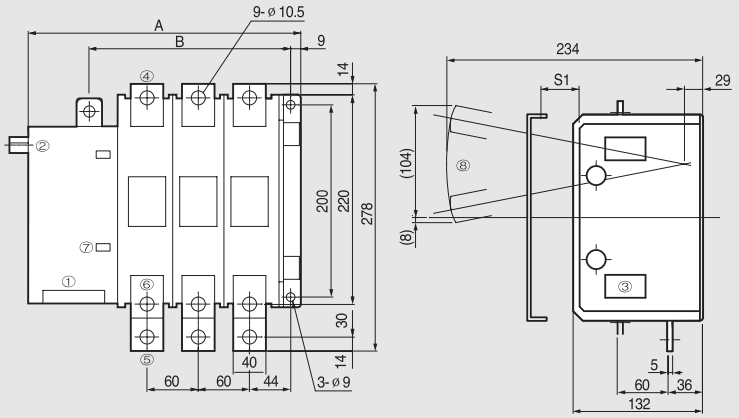
62WP Back connection



Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	244	143
3P	289	188
4P	334	233

64WP Front connection

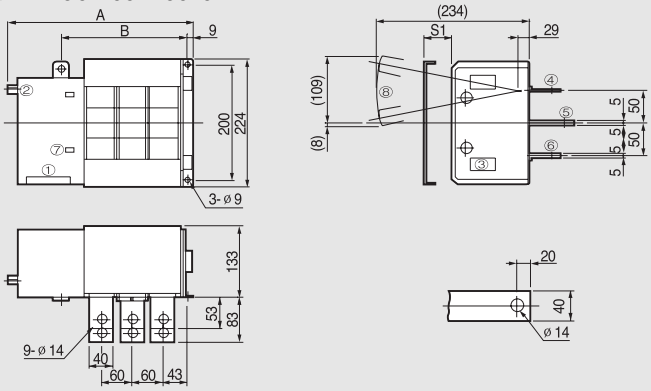


① Operation Main Circuit Terminal
② Manual Operating Shaft
③ Auxiliary Switch
④ A-Power Source Main Circuit Terminal
⑤ Load Part Main Circuit Terminal
⑥ B-Power Source Main Circuit Terminal
⑦ Switch Display
⑧ Manual Handle

Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	290	174
3P	350	234
4P	410	294

64WP Back connection



① Operation Main Circuit Terminal
② Manual Operating Shaft
③ Auxiliary Switch
④ A-Power Source Main Circuit Terminal
⑤ Load Part Main Circuit Terminal
⑥ B-Power Source Main Circuit Terminal
⑦ Switch Display
⑧ Manual Handle

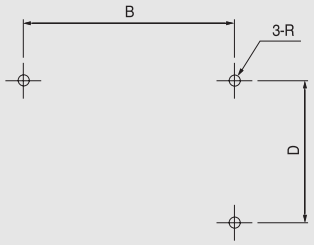
Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	290	174
3P	350	234
4P	410	294

Panel Processing Dimension

WP Type

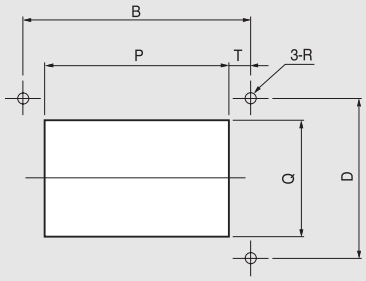
61-64WP Front connection



WP-Type

Type		606-61WP	62WP	64WP
B	2P	113	143	174
	3P	143	188	234
	4P	173	233	294
D		152	152	200
R		M5		M8

61-64WP Back connection



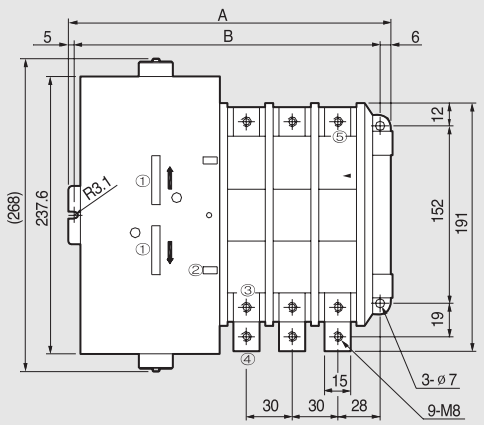
WP-Type

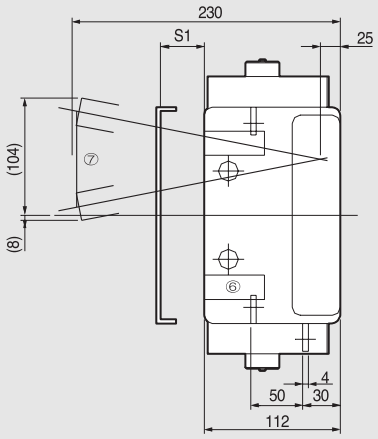
Type		606-61WP	62WP	64WP
B	2P	113	143	174
	3P	143	188	234
	4P	173	233	294
D		152	152	200
P	2P	85	110	135
	3P	115	155	195
	4P	145	200	255
Q		140		180
T		7.5		9
R		M5		M8

Low Voltage Automatic Transfer Switch
ATS, CTTS

CTTS Type

61CT Front connection

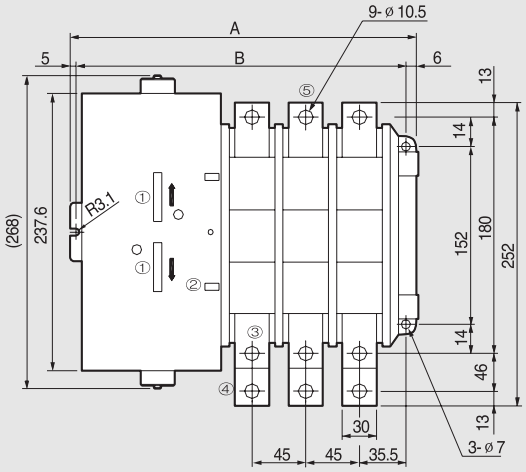


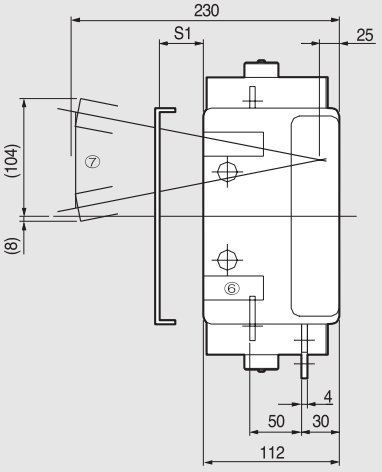


Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	210.8	199.8
3P	240.8	229.8
4P	270.8	259.8

62CT Front connection



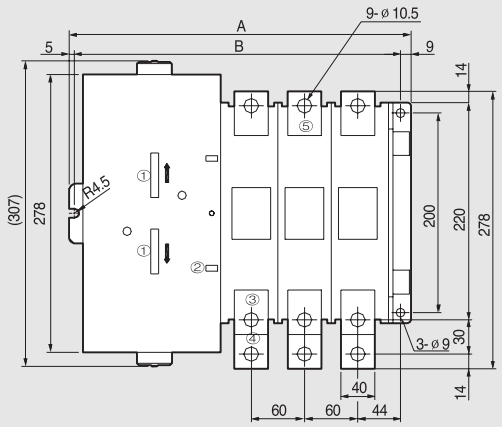


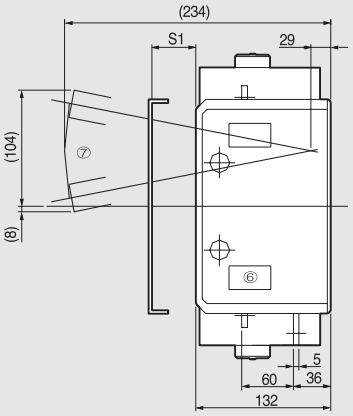
① Manual Operation Hole
② Switch Display
③ B-Power Source Main Circuit Terminal
④ Load Part Main Circuit Terminal
⑤ A-Power Source Main Circuit Terminal
⑥ Auxiliary Switch
⑦ Manual Handle

Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	240.8	229.8
3P	285.8	274.8
4P	330.8	319.8

64CT Front connection



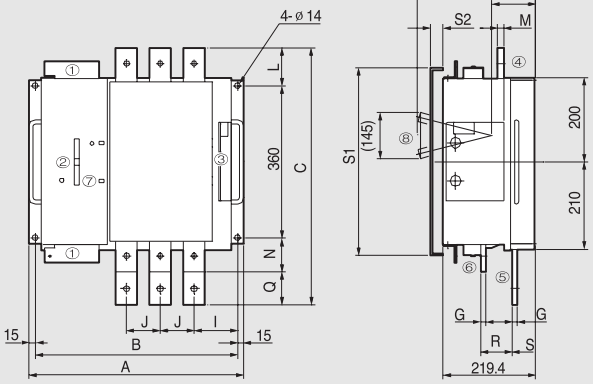


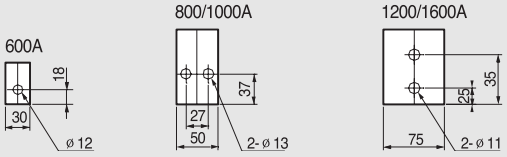
① Manual Operation Hole
② Switch Display
③ B-Power Source Main Circuit Terminal
④ Load Part Main Circuit Terminal
⑤ A-Power Source Main Circuit Terminal
⑥ Auxiliary Switch
⑦ Manual Handle

Arc space size (S1) is 30mm when the main circuit voltage is 220V and 60mm when it is 600V.

Type	A	B
2P	292.5	278.5
3P	352.5	338.5
4P	412.5	398.5

66-616CT Front connection





① Operating Circuit Terminal
② Manual Operation Hole
③ Auxiliary Switch
④ A-Power Source Main Circuit Terminal
⑤ Load Part Main Circuit Terminal
⑥ B-Power Source Main Circuit Terminal
⑦ Switch Display
⑧ Manual Handle

Arc spaceSize

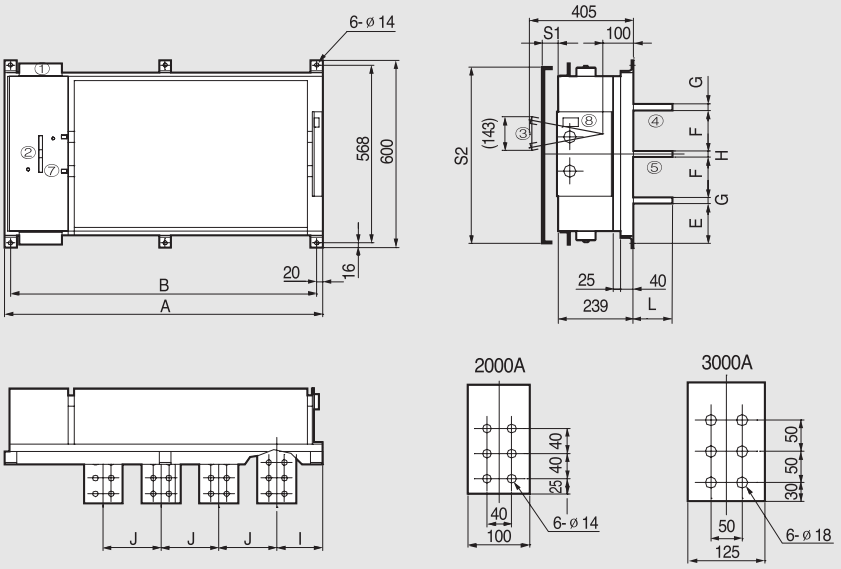
Size	A	B
200V	25mm	430mm
600V	90mm	450mm

Type		600A	800A	1000A	1200A	1600A
A	3P	465	510			570
	4P	530	590			670
B	3P	435	480			540
	4P	500	560			640
C		545	608.5			645
G		10	12			15
I		95.7	101.6			112.4
J		65	80			100
L		73	91			111
M		15	15			15
N		15	79.5			109
Q		44	78			65
R		65	74			76
S		55	55			57

Low Voltage
Automatic
Transfer Switch
ATS, CTTS

CTTS Type

620~630CT Back connection



Arc spaceSize

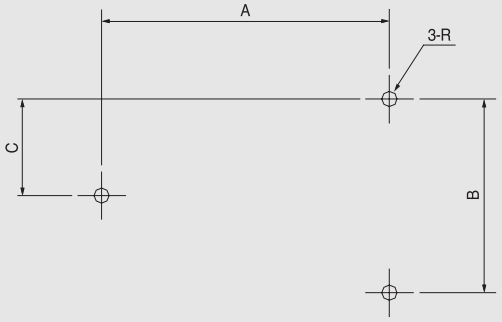
main circuit voltage	S1	S2
200V	50	560
600V	100	600

Type		2000A	3000A
A	3P	683	833
	4P	818	1018
B	3P	645	795
	4P	780	980
E		128.5	126
F		132.5	130
G		15	20
H		15	20
I		123	148
J		135	185
L		90	125

① Operating Circuit Terminal
② Manual Operation Hole
③ Auxiliary Switch
④ A-Power Source Main Circuit Terminal
⑤ Load Part Main Circuit Terminal
⑥ B-Power Source Main Circuit Terminal
⑦ Switch Display
⑧ Manual Handle

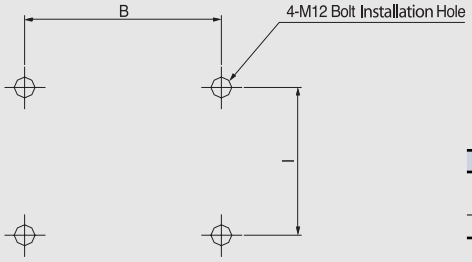
Panel Processing Dimension

61-64CT Front connection



Type		100A	200A	400A
A	2P	199.8	229.5	278.5
	3P	229.8	274.8	338.5
	4P	259.8	319.8	398.5
B		152		200
C		76		100
R		M5		M8

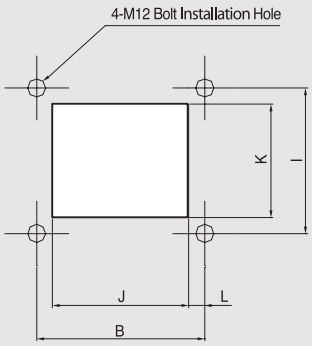
66-616CT Front connection



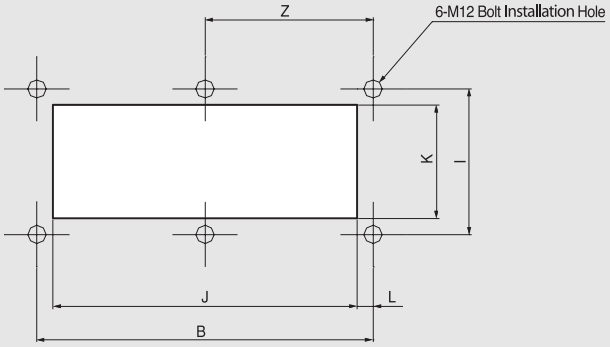
Type		600A	800A	1000A	1200A	1600A
B	2P	435	480		540	
	3P	500	560		640	
I		360	360		360	

620-630CT Back connection

CTTS 2000A-3000A (3P)



CTTS 3000A (4P)



Type		2000A	3000A
B	2P	645	795
	3P	780	980
I		568	568
J	3P	420	545
	4P	555	730
K		460	460
L		28	40
Z		–	490

BUREAU VERITAS
Certification

Certification

Awarded to

VITZROTECH Co., Ltd.

Head office : #233-3, 1-Dong, Sungsu-2Ga, Sungdong-Gu, Seoul, KOREA
Factory : 605-2, Sunggok-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do, KOREA

Bureau Veritas Certification certify that the Management System of the above organization has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

ISO 9001:2000 / KS A 9001:2001

Scope of supply

DESIGN/DEVELOPMENT, PRODUCTION, SALES AND SERVICING OF VACUUM CIRCUIT BREAKER, VACUUM CONTACTOR, VACUUM INTERRUPTER, AIR CIRCUIT BREAKER, LOAD BREAK SWITCH, AUTOMATIC TRANSFER SWITCH, MAIN CIRCUIT BREAKER FOR ELECTRIC RAILWAY, SURGE PROTECTION EQUIPMENT, OUTDOOR VACUUM SWITCH, DISCONNECTING SWITCH, POLYMER LIGHTNING ARRESTER, CABLE TERMINATION KIT, CABLE SPLICE KIT, INSTRUMENT AND CONTROL SYSTEM, SUPERVISOR AND MAINTENANCE CONTROL SYSTEM FOR SUBSTATION FACILITIES, MOTOR CONTROL CENTER AND SEWITCHGEAR

Original Approval Date: **01 August 1998**

Subject to the continued satisfactory operation of the organization's Management System, this certificate is valid until: **22 June 2007**

To check this certificate validity please call (+662 670 4800)

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization

Date: **14 February 2007**

Certificate Number: **158328**

UKAS QUALITY MANAGEMENT
008

Bureau Veritas Certification
Using the accreditation certificate number 008

ISSUING OFFICE: Bureau Veritas Certification (Holding) Ltd. S.A., 2nd Floor, Tower Bridge Court, 224-226 Tower Bridge Road, London SE1 2TX
MANAGING OFFICE: Bureau Veritas Certification Korea Ltd. Rm 1102, Keungil Tower, 677-25, Yeoksam-Dong, Gangnam-Gu, Seoul, Korea

BUREAU VERITAS
Certification

Certification

Awarded to

VITZROTECH Co., Ltd.

605-2, Sunggok-Dong, Danwon-Gu, Ansan-City, Kyunggi-Do, KOREA

Bureau Veritas Certification certify that the Management System of the above organization has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

ISO 14001:2004 / KS A 14001:2004

Scope of supply

DESIGN/DEVELOPMENT, PRODUCTION, SALES AND SERVICING OF VACUUM CIRCUIT BREAKER, VACUUM CONTACTOR, VACUUM INTERRUPTER, AIR CIRCUIT BREAKER, LOAD BREAK SWITCH, AUTOMATIC TRANSFER SWITCH, MAIN CIRCUIT BREAKER FOR ELECTRIC RAILWAY, SURGE PROTECTION EQUIPMENT, OUTDOOR VACUUM SWITCH, DISCONNECTING SWITCH, POLYMER LIGHTNING ARRESTER, CABLE TERMINATION KIT, CABLE SPLICE KIT, INSTRUMENT AND CONTROL SYSTEM, SUPERVISOR AND MAINTENANCE CONTROL SYSTEM FOR SUBSTATION FACILITIES, MOTOR CONTROL CENTER AND SEWITCHGEAR

Original Approval Date: **29 December 2003**

Subject to the continued satisfactory operation of the organization's Management System, this certificate is valid until: **28 November 2009**

To check this certificate validity please call (+662 670 4800)

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization

Date: **11 April 2007**

Certificate Number: **271402**

UKAS ENVIRONMENTAL MANAGEMENT
008

Bureau Veritas Certification
Using the accreditation certificate number 008

ISSUING OFFICE: Bureau Veritas Certification (Holding) Ltd. S.A., 2nd Floor, Tower Bridge Court, 224-226 Tower Bridge Road, London SE1 2TX
MANAGING OFFICE: Bureau Veritas Certification Korea Ltd. Rm 1103, Kwangil Tower, 677-25, Yeoksam-Dong, Gangnam-Gu, Seoul, Korea