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# DUAL POWER

## AUTOMATIC TRANSFER SWITCH



# RDSS series

HIGH PERFORMANCE AUTOMATIC TRANSFER SWITCH ELECTRICAL APPLIANCES

high performance automatic conversion switchgear

## Applicable range

DS5 series high-performance automatic conversion switchgear (hereinafter referred to as device) is a PC grade specialized automatic transfer switching electric device, mainly used for the power supply system of AC 50/60Hz, rated working voltage AC220/230V, AC400/415V and a rated working current of 16A to 630A to do switchover between the power supplies in case one of them becomes abnormal so as to ensure its continuity and reliability in power supply.

This device holds such features as a fast transfer speed, an applicable category up to AC-33A and, with circuit breakers and fuses used as SCPD, a high rated limited short-circuit current, two/three two positions with the contact, complete functions and high intelligence. Suitable for various important power supply places such as construction, industry, finance, medical, communication, data centers, airports, rail transit, sports venues, etc.

This device complies with the standard GB/T14048.11 <<Low voltage switchgear and control equipment - Part 6-1: Multi functional electrical conversion switchgear>>



## Conditions at work

The ambient air temperature  $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$ , the average value over 24 hours not exceed by  $+35^{\circ}\text{C}$ ;

The altitude of the installation site not exceeded by 2000m;

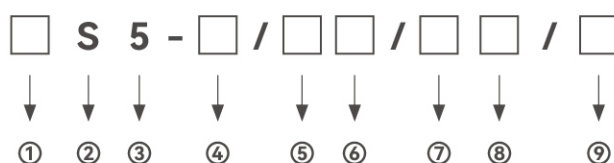
At a maximum temperature of  $+40^{\circ}\text{C}$ , the relative air humidity not exceeded by 50%. At lower temperatures, allowed with a higher relative humidity, such as reaching 90% at  $20^{\circ}\text{C}$ . Special measures should be taken for occasional condensation caused by temperature changes;

The pollution level comes as 3;

Transportation, storage, and installation conditions: the device must not be affected by rain or snow during transportation. The storage environment temperature shall be between  $-25^{\circ}\text{C}$  and  $+80^{\circ}\text{C}$ , when the relative humidity is not be exceeded by 95% (at  $25^{\circ}\text{C}$ ), and can be reached to  $+85^{\circ}\text{C}$  in case of a short period of time (not exceeding 24 hours).



## Definition of model



- ① Code of enterprise
- ② Code of ATSE
- ③ Ordinal number of design
- ④ Level of shell frame:125, 250, 400, 630
- ⑤ Poles of switch:2 2p, 3 3P, 4 4P
- ⑥ Position of contact: two-sectional type, three-sectional type
- ⑦ Code of controller:A standard type, B high grade type
- ⑧ Form of structure:Z integral type, F split type
- ⑨ Rated current

## Main technical parameters

Shell frame current	125A	250A	400A	630A
Poles of switch	2P, 3P, 4P	3P, 4P	3P, 4P	3P, 4P
Rated working current	16A, 20A, 32A, 40A, 50A, 63A 100A, 125A	125A, 160A, 200A, 225A, 250A	250A, 315A, 400A	400A, 500A, 630A
Category at use	AC-33A			AC-33/A
Rated working frequency	50/60Hz			
Rated working voltage	AC220V/230V(2P), AC380V/400V(3P/4P)			
Rated voltage of controlling power supply	AC230V			
Rated insulation voltage	800V			
Rated impulse-resistant voltage	8kV			
Rated limited short-circuit current	120kV			
SPCD fuse parameters	I <sub>p</sub>	12kA	27kA	42kA
	I <sub>2t</sub>	0.068×10 <sup>6</sup> A <sup>2</sup> s	0.3×10 <sup>6</sup> A <sup>2</sup> s	2.0×10 <sup>6</sup> A <sup>2</sup> s
Minimum converting action time	70ms			100ms
Number of contact working positions	II或III			
External dimension (long X wide X deep)	238mm×140mm×115mm	292mm×190mm×132mm	375mm×285mm×195mm	

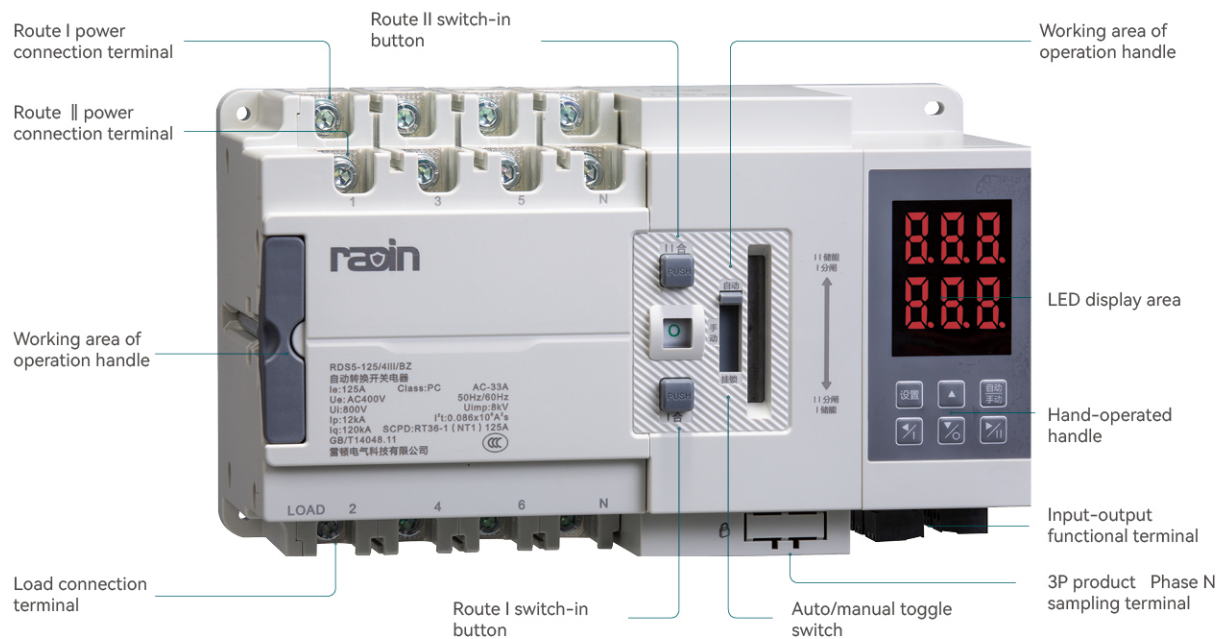
## Functional parameters

Functional items of controller type	Type A (standard type)	Type B (high grade type)
Rated control power supply	AC230V 50/60Hz	
Assistant working power supply voltage	DC24V	
Number of contact working positions	Two-sectional type/three-sectional type	
Operation mode	Auto-operation handle operation	Auto-operation handle operation.Split operation .Communication remote control
Way of conversion	Self throwing self resetting	Self throwing non-self resetting
Way of display	LED digital screen display (integrated type)/LCD screen display (split type)	
Common monitoring power supply	Monitoring of phase failure, under-voltage, overvoltage, and lost-voltage (A, B, C three-phase)	
Backup monitoring power supply	Monitoring of phase failure, under-voltage, overvoltage, and lost-voltage (A, B, C three-phase)	
Generator control	Available (with a set of relay dry contact)	
Fire fighting linkage control	Defaulted: unavailable, functional module can be added	Firefighting avoidance (one set of passive contact inputs, one set of normally open passive signal feedback)
Power supply over/under frequency detection	40Hz~60HzAdjustable	
Timing start function	None	Timing conversion
Conversion delay	Standard allocation: 0.5s,0~180scontinually adjustable	
Return delay	Standard allocation: 0.5s,0~180scontinually adjustable	
Under-voltage setup range	161V~196V adjustable (defaulted 187V, detection accuracy ± 3V), with a hysteresis value of 10V (it is just the recovery value when 10V is deducted from the set value), 1V stepping by clicking press, 10V stepping by long press	
Over-voltage setup range	242V~301V adjustable (defaulted 263V, detection accuracy ± 3V), with a hysteresis value of 10V (it is just the recovery value when 10V is deducted from the set value). 1V stepping by clicking press, 10V stepping by long press	
Main-power selection	Route I priority: b-3 menu 0 means common priority, as the defaulted setting.Route II priority: b-3 menu 1 means standby priority.	
Communication function	None	301-303 are communication ports, as A+, B- and GNDRS485 interfaces, respectively, Modbus protocol
Way of installation	Integrated type	Split type

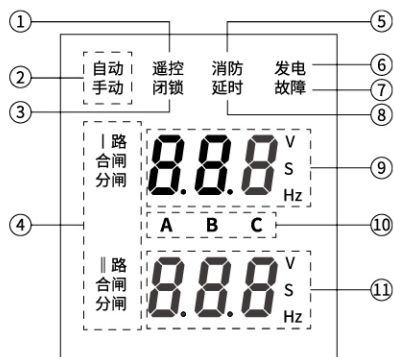
Type B controller fire linkage control port, as a programmable port, the defaulted function comes as fire linkage control; and, if so required, it can be changed into such functions as fault alarm, power grid alarm, load unloading, remote power-off, short circuit locking, etc.



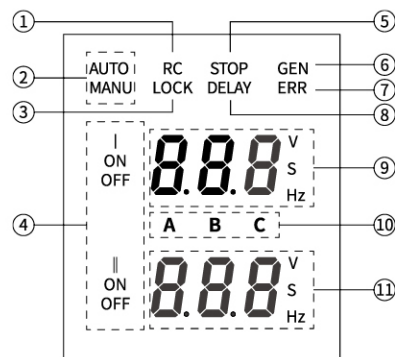
## Introduction of structure



## Introduction of display panel



LED Chinese display screen

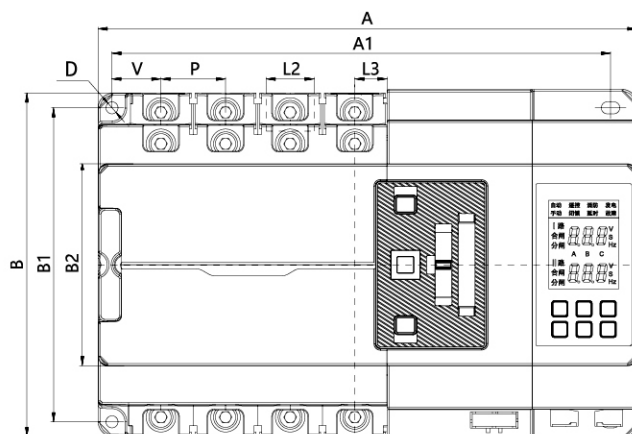


LED English display screen

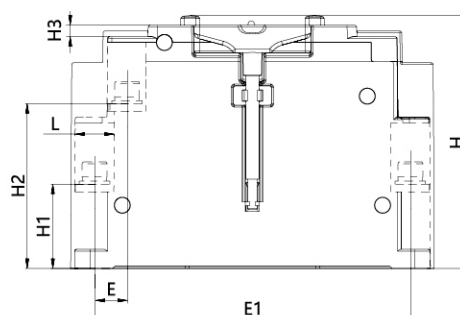
- ① The Auto/Manual mode becomes ineffective when the controller stays at the remote control status.
- ② The Auto-Manual mode in case the operation power source to be the internal driving of the switch.
- ③ When the controller stays at the locked status, it stops controlling the switch and then the switch can be operated only with the manpower handle and the switch button.
- ④ Switch-in/switch-off status display of the switch
- ⑤ Start the firefighting function

- ⑥ The functional terminal outputs the generator starting signal.
- ⑦ The switch becomes abnormal.
- ⑧ The switch stays at conversion delay or frequent operation prohibited conversion protection status.
- ⑨ The phase voltage, conversion delay time, frequency of Route I power supply.
- ⑩ The corresponded phase line when the phase voltage of the power supply is displayed.
- ⑪ The phase voltage, conversion delay time, frequency of Route II power supply.

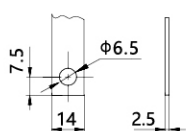
## External and installation dimensions



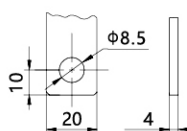
Front view of the integrated type



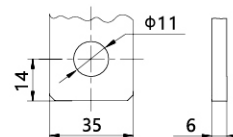
Side view of the integrated type



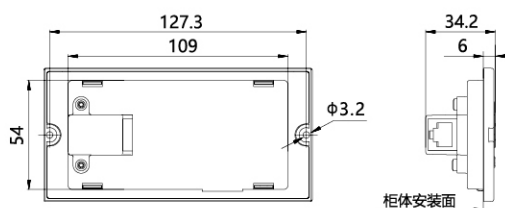
125shell frame



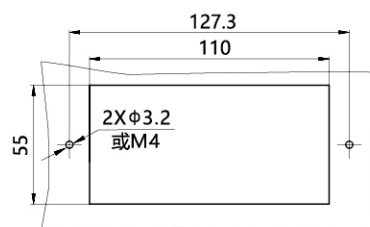
250shell frame



400/630shell frame



Split liquid crystal screen control module size



The opening size drawing of split liquid crystal screen control module cabinet

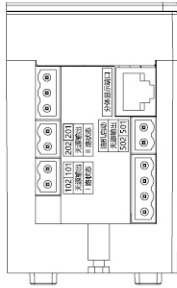
Specification		External dimension (mm)					Installation dimension (mm)											
Ith	Number of pole	A	B	H	B2	H3	A1	B2	H1	H2	E1	E	D	V	P	L	L2	L3
125A	4P	238					220											
	3P	213	140	115	75	5	195	115	34	68.5	124	15.5	4.5	20.5	25	17.5	18	12.5
	2P	188					170											
250A	4P	292					270											
	3P	257	190	132	109	6	235	170	44	86	165	17	6.5	26.5	35	20	36	17.5
400A 630A	4P	375					345											
	3P	330	285	195	140	12	300	252	56	106	250	27	11	40	45	33	37	21.5

Note:1. The unit of dimension is mm.

2. Please refer to the dimensions A1, B1, and D for the installation openings of the product.

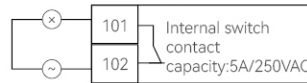
3. Please refer to the rated current Ie, L2, L and the product copper bar size for the size of the wiring copper nose or copper bar.

## Definition of the terminals

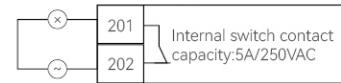


101~102: the passive signal port for external indicator when Route I power supply stays at the switch-in status, 201~202: the passive signal port for external indicator when Route II power supply stays at the switch-in status.

Route I power supply switch-in indicator



Route II power supply switch-in indicator



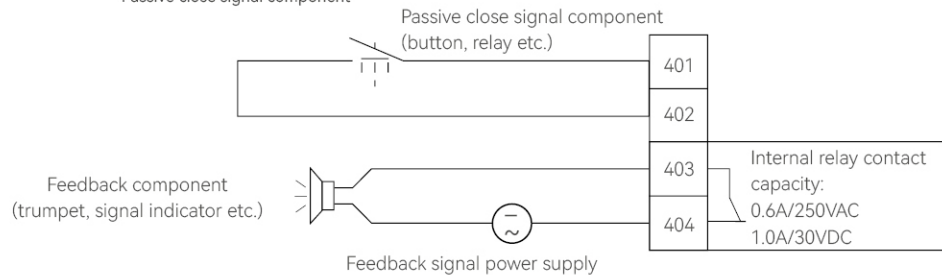
301~303: can achieve remote control of ATSE actions, read out the switch status and the fault codes.



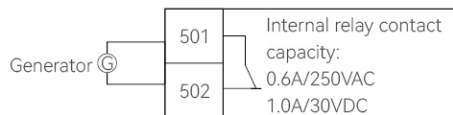
401~402 are the programmable passive closed input ports, can be defined as fire linkage or prohibition of remote control conversion and any one of the three can be selected, the default is fire linkage; 403~404 are the programmable passive closed output ports, can be defined as fault alarm, power grid alarm, load unloading, fire feedback, separate output of route I and II power supplies, choose one of the five; When the selected function is triggered, the internal contacts of the controller close and output a signal. The default is fire feedback.

- Note: 1. Only the three-sectional products have fire linkage, remote control, and fire feedback functions;  
 2. There are two types of passive closed input signals with the fire linkage function:  
 ① Pulse signal (the jog input signal forces the product to switch off and, after canceling the signal, it can not work according to the originally set mode until by manually pressing the "Auto/Manual" button twice and waiting for the "Fire" indicator to go out.  
 ② Continuous signal (the continuous input signal forces the product to open and then works according to the original set mode after the signal is cancelled).

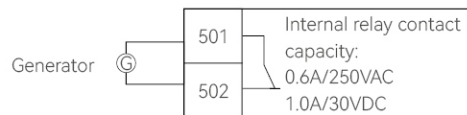
Passive close signal component



501~502: Defaulted as the passive signal output port for generator to start and stop. When Route I power supply becomes abnormal and Route II one is powerless, the internal contacts close and a passive closing generator start signal is sent out; when ATSE detects that Route I power supply has returned to normal, the internal contacts are disconnected and a generator stop signal is sent out. When the function for both power supplies to output separately is started, this terminal is defined as abnormal output of Route II power supply. When Route II power supply is abnormal, the internal contacts close and send out a Route II abnormal signal.

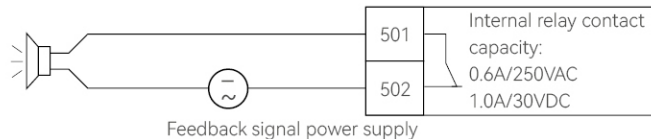


Wiring schematic drawing at the start of the generator



Wiring schematic drawing at the start of the generator

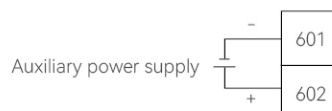
Feedback component (trumpet, signal indicator etc.)



Feedback signal power supply

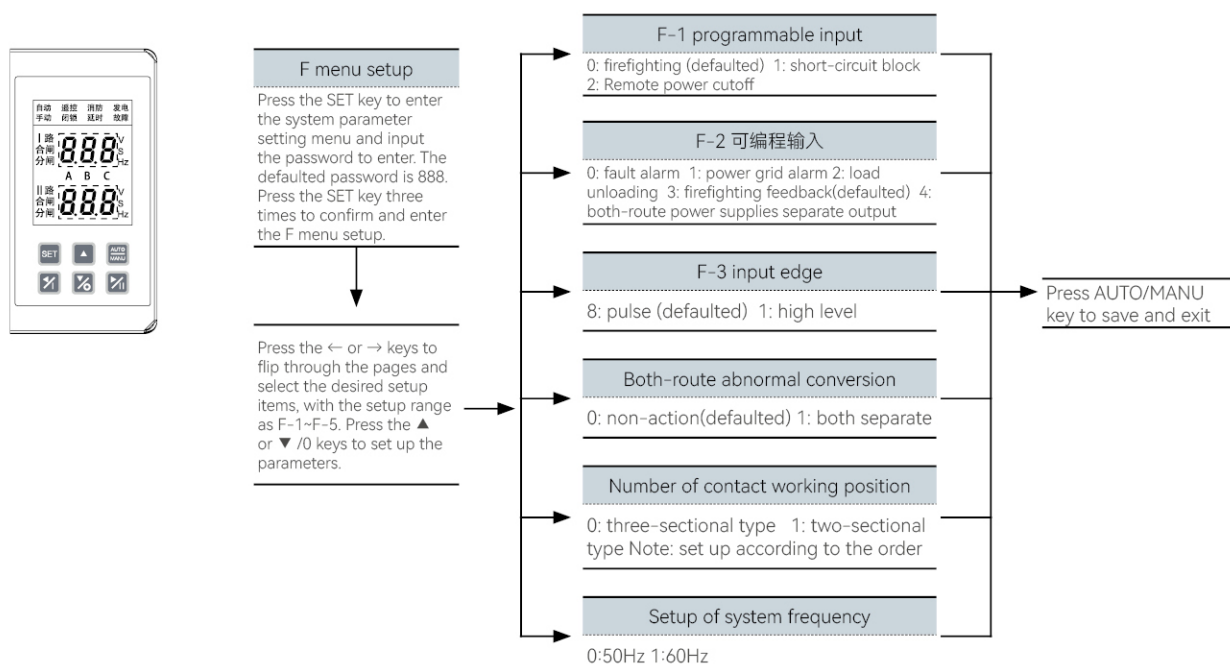
Schematic diagram of abnormal wiring of Route II when setting abnormal output of both-route power supplies

601~602: Auxiliary power supply input port; when the product needs to delay the start of the generator or when the two route power supplies of the product are powerless and remote monitoring on the product is required, the connection of a DC24V auxiliary power supply is needed.

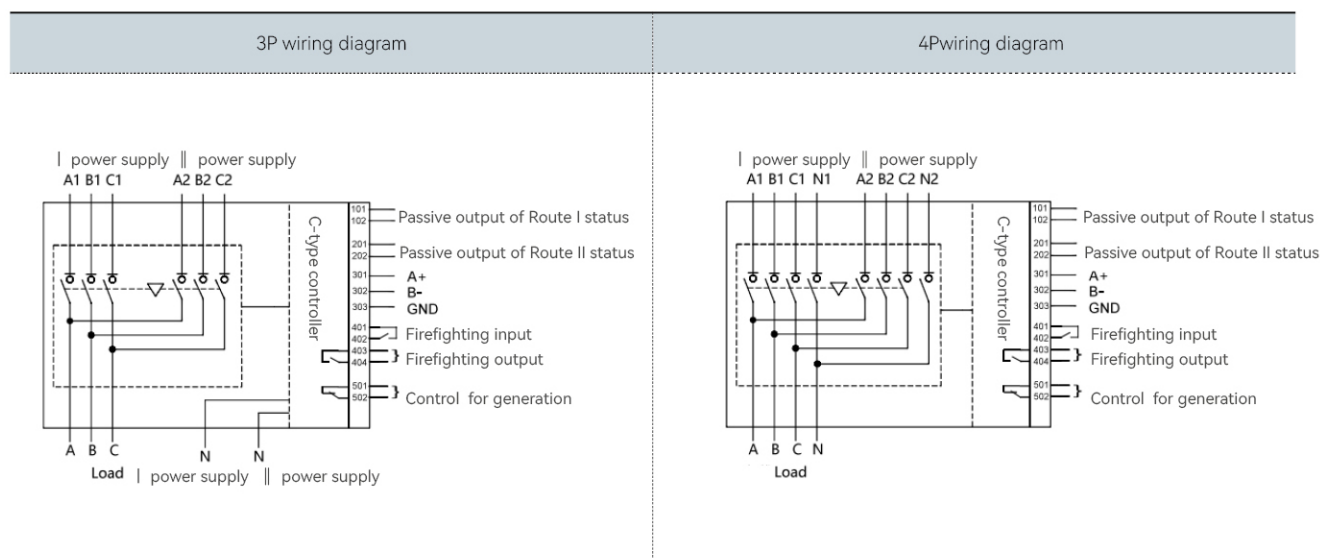




## F menu (a menu of optional functions) setting operation

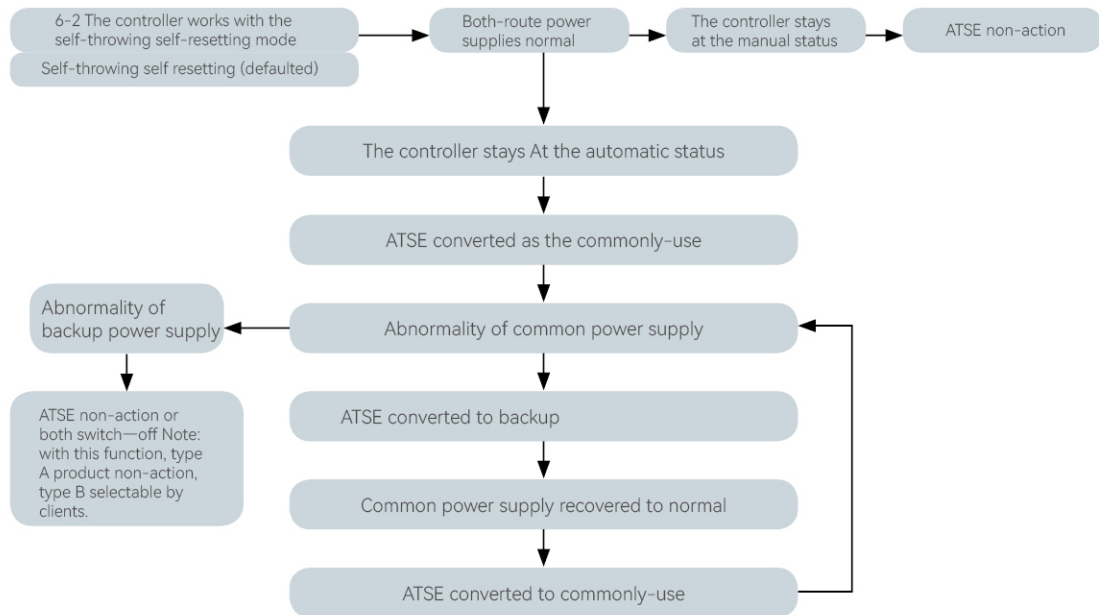


## Twice terminal wiring diagram

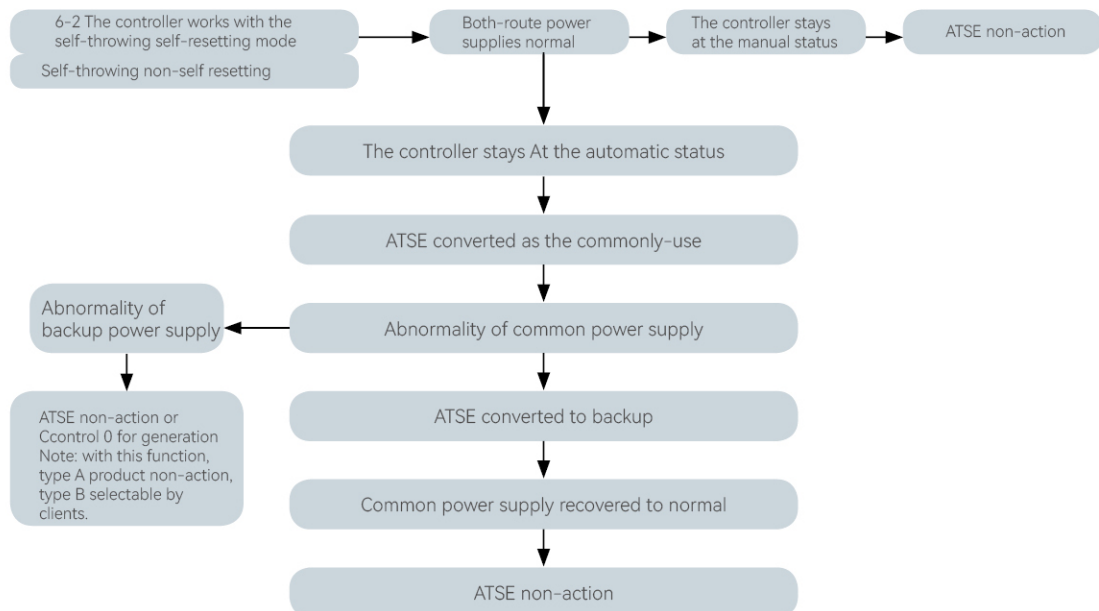


Note: the twice wiring of type A controller is the same as that of type B, only unavailable with part of the functional terminal of type B controller.

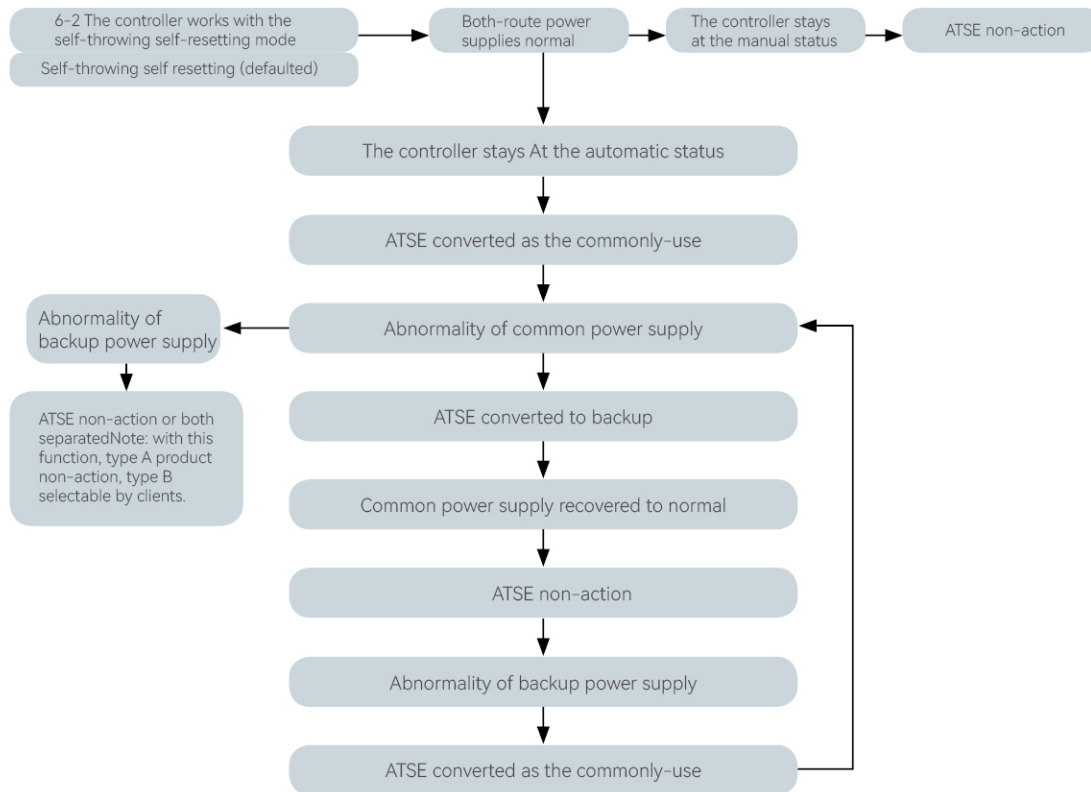
## Self-throwing self-resetting mode



## Self-throwing non-self resetting mode



## Mutually backup mode





# RDS2T series

PC LEVEL (THREE-STAGE) AUTOMATIC TRANSFER SWITCH ELECTRICAL APPLIANCES

PC grade (three-sectional) automatic conversion switchgear

## Applicable range

RDS2T series products belong to PC grade (three-sectional) automatic conversion switchgear (hereinafter referred to as switches), mainly used for the power supply systems with AC 50Hz/60Hz, rated voltage of 400V and rated working current of 16A to 630A to do switchover between the power supplies in case an abnormality happens with one of them so as to ensure the reliability and safety of its power supply.

This switch holds the positions of "common (I) switch-in", "standby (II) switch-in" and "disconnection (0)" and can be used for fire linkage and the power supply system of infrequent on-off. Mainly applicable for such important places as hospitals, shopping malls, banks, chemical, metallurgical, high buildings, military facilities and firefighting where power cutout is not allowed.

The product complies with the GB/T 14048.11 standard <<Low voltage switchgear and control equipment - Part 6-1: Multifunctional electrical switching devices>>.



## Conditions at work

The surrounding air temperature:  $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$  and the average temperature value over 24 hours not exceeded by  $+35^{\circ}\text{C}$ ;

Atmospheric humidity: when the maximum temperature is  $+40^{\circ}\text{C}$ , the relative humidity does not exceed 50% and the maximum monthly relative humidity is 90%. Higher relative humidity is allowed at lower temperatures. Special measures should be taken for occasional condensation caused by temperature changes;

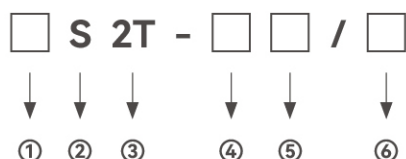
Installation height: The altitude of the installation location shall not exceed 2000 meters;

Pollution level: The environmental pollution level at the installation site is level 3;

Usage category: AC-33iB ;

Electromagnetic environment: Suitable for environment A. Using this product in environment B will cause harmful electromagnetic interference to the product. If used in this environment, users need to take appropriate protective measures.

## Definition of model



- ① Code of enterprise
- ② PC grade automatic conversion switchgear
- ③ Ordinal number of design
- ④ Shell frame current: 125/250/630A
- ⑤ Type of controller: A basic type; B firefighting type; C/D/E intelligence type
- ⑥ Poles of switch: 2、3、4

## Main technical parameters

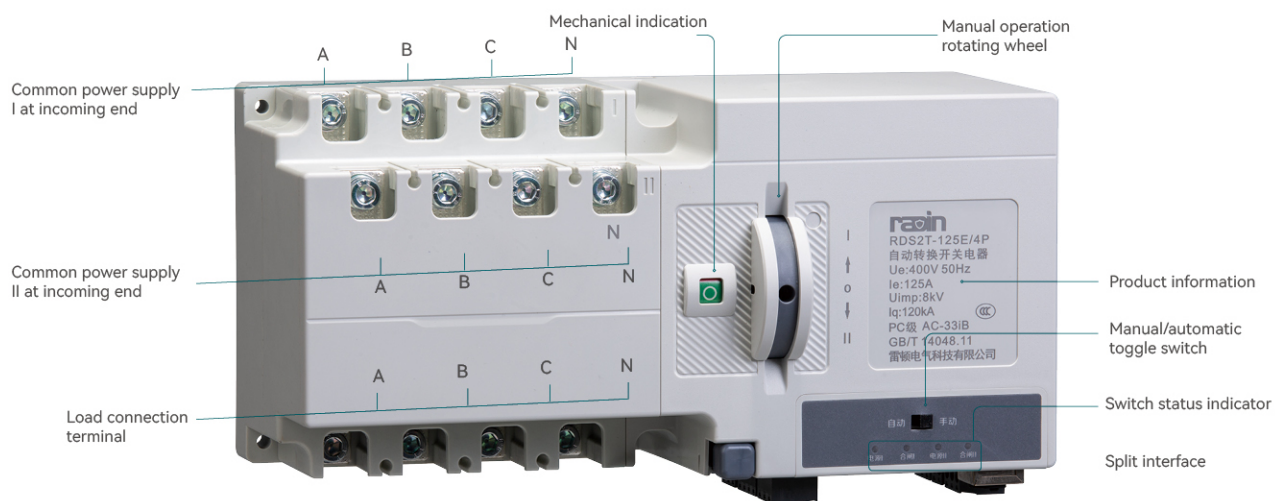
Model specifications	RDS2T-125	RDS2T-250	RDS2T-630
Rated working current $I_e$ (A)	16、20、25、32、40、50、63、80、100、125	125、160、200、225、250	250、315、350、400、500、630
Rated power supply voltage $U_s$ (V)	AC230V		
Rated insulation voltage $U_i$ (V)	800V		
Rated impulse-resistant voltage $U_{imp}$ (kV)	8kV		
Rated short-circuit making capacity (kA peak)	17kA		26kA
Rated limited short-circuit current $I_q$	120kA		
Rated limit short-circuit current Contact conversion time	0.58s	0.56s	0.9s
Conversion action time	1.35s	1.3s	2.0s

## Functional parameters

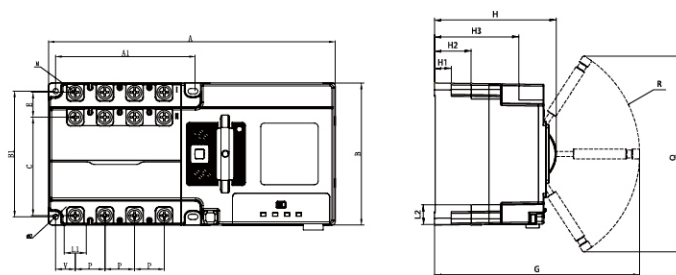
Functional items of controller type	Type A	Type B	Type C	Type D	Type E
Rated working power supply	AC230V 50/60Hz				
Assistant working voltage	None		DC24V		
Voltage measuring range	None		40-300V		
Working position	Three working positions (common switch-in, backup switch-in, both switch-off)				
Way of operation	Manual, Automatic		Manual, Automatic, remote control		
Way of display	LED status display		LED status display/ LCD screen display		
Way of conversion	Self-throwing self-resetting		Self-throwing self-resetting (defaulted)/self-throwing non-self resetting		
Under-voltage conversion value	None		165-217Vadjustable		
Overvoltage conversion value	None		243-298Vadjustable		
Power supply under-frequency/ over-frequency detection	None				40-60 Hzadjustable
Timing start function	None				Timing conversion timing start generator
Conversion delay function	None		0-180scontinually adjustable		
Return delay function	None		0-180scontinually adjustable		
Item-lack detection	Common three phases, backup single phase		Three phases (A, B, C phase)		
Generator control	None	Available (one set of relay dry contact)			
Firefighting linkage control	None	Firefighting forced setting 0 (one set of passive contact input, one set of N.O. passive signal feedback)			
communication function	None			Have	Defaulted none(optional)
Way of installation	Integrated type(without display screen)		Integrated type(without display screen)/split type(with display screen)		



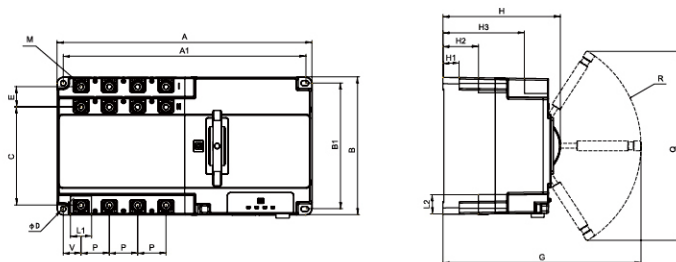
## Introduction of structure



## External and installation dimensions



RDS2T-125 external dimension

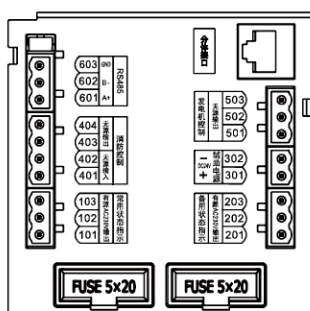
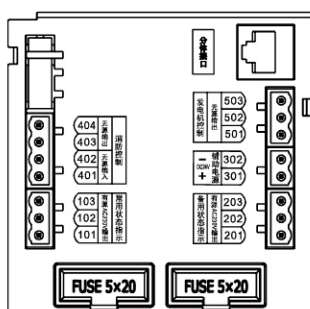
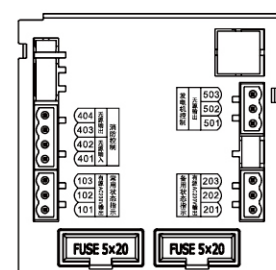
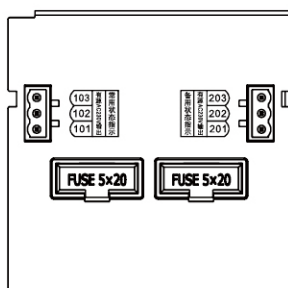


RDS2T-250/630 external dimension

Specification	External dimension (mm)			Installation dimension(mm)													Handle space size(mm)		
	A	B	H	A1	B1	H1	H2	H3	L1	L2	C	E	V	P	D	M	G	R	Q
125	242	120	115	116	106	15.5	33	82.2	18.5	19	83	21	16.6	25	φ4.5	M6	196	106	194
250	315	170	146	298.5	155	20	44	101	26	24	121	25	22	35	φ6.3	M8	246	137	235
630/3P	417	230	202	386.5	203	16.5	62	130	48	32.6	173	27	45.5	58	φ8.5	M10	305	163	240
630/4P	475	230	202	444.5	203	16.5	62	130	48	32.6	173	27	45.5	58	φ8.5	M10	305	163	240



## Definition of terminal



### Basic type/type A controller

101: Common zero-line	201: Backup zero-line
102: Common power supply	202: Backup power supply
103: Common switch-in	203: Backup switch-in

### Type B controller

101: Common zero-line	201: Backup zero-line	401: Firefighting passive input	501: N.O. end of generator
102: Common power supply	202: Backup power supply	402: Firefighting passive input	502: Common end of generator
103: Common switch-in	203: Backup switch-in	403: Firefighting passive output	503: N.C. end of generator
		404: Firefighting passive output	

### Type C controller

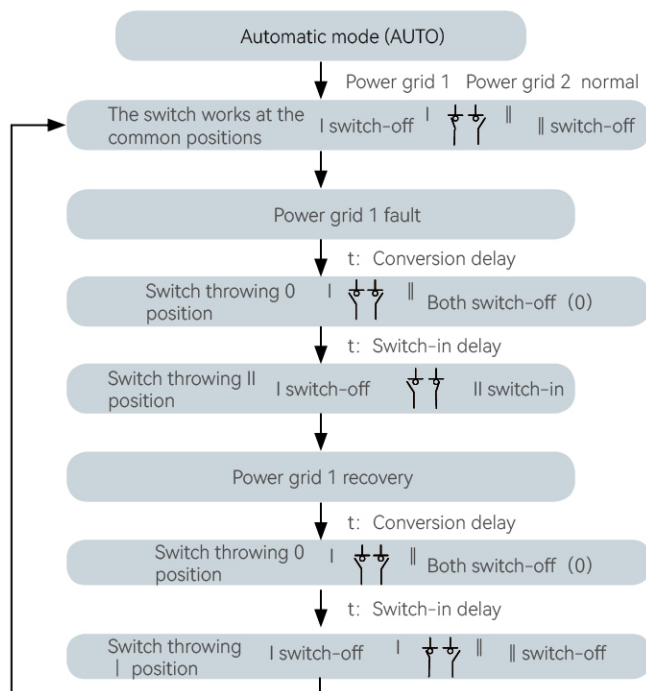
101: Common zero-line	201: Backup zero-line	401: Firefighting passive input	501: N.O. end of generator
102: Common power supply	202: Backup power supply	402: Firefighting passive input	502: Common end of generator
103: Common switch-in	203: Backup switch-in	403: Firefighting passive output	503: N.C. end of generator
		404: Firefighting passive output	
301: DC24V+			
302: DC24V-			

### Type D/Type E controller

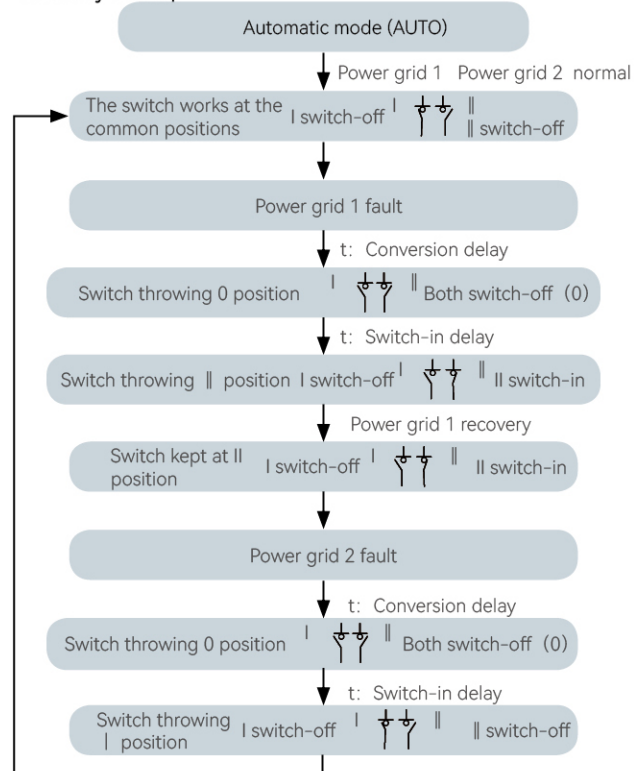
101: Common zero-line	201: Backup zero-line	301: DC24V+	401: Firefighting passive input
102: Common power supply	202: Backup power supply	302: DC24V-	402: Firefighting passive input
103: Common switch-in	203: Backup switch-in		403: Firefighting passive output
			404: Firefighting passive output
501: N.O. end of generator	601: RS485 A+		
502: Common end of generator	602: RS485 B-		
503: N.C. end of generator	603: RS485 GND		

## Process of action

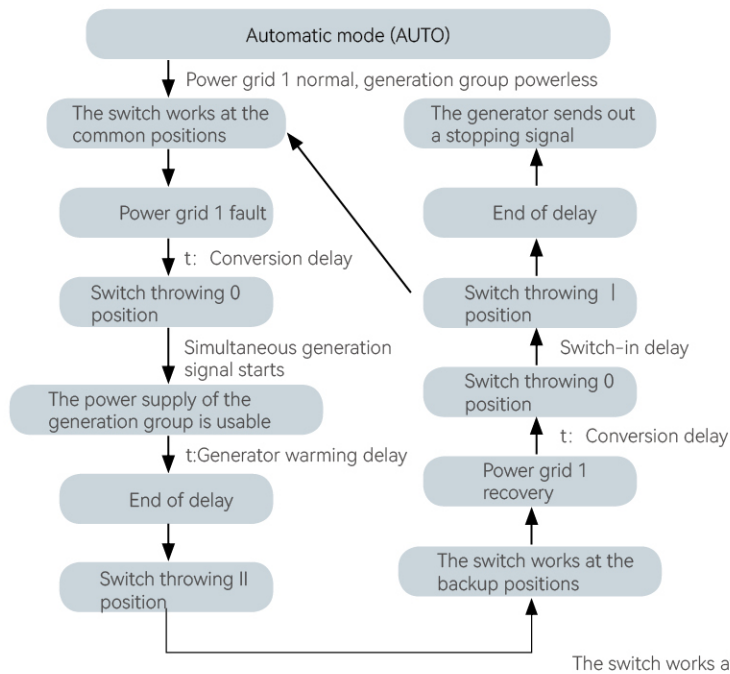
Power grid-Power grid  
Conversion mode: self-throwing A-9-001  
Power supply I priority



Power grid-Power grid  
Conversion mode: Self-throwing non-self resetting A-9-000  
mutually backup



Power grid-generator  
Conversion mode: self-throwing A-9-001 Power supply I priority



Note: (1) at the power grid-power grid status, power grid 1 connected to power supply I, power grid 2 to power supply II.  
(2) at the power grid-generator status, the power grid connected to power supply I, the generator to power supply II.

