RDW8DC series DC intelligent universal circuit breaker

Product overview

RDW8DC series universal circuit breaker (hereinafter referred to as circuit breaker), suitable for DC, rated current 800A~4000A, rated insulation voltage DC1500V, rated working voltage DC500V/750V, DC1000V/1500V/ distribution network. Used to distribute power and protect lines and power equipment from overload, undervoltage, short circuit and other faults; It also has reliable isolation function. Circuit breakers have a variety of protection functions, While achieving highly accurate selective protection, it can also avoid unnecessary power outage and improve the reliability and safety of the power supply system. The circuit breaker has the selective protection function to realize the inter-circuit breaker Hierarchical coordination protection and backup protection to reduce the accident scope of the power grid. Therefore, it is especially suitable for the protection system of large capacity DC current power supply.

Products comply with: GB/T 14048.2 standard.

Selection guide

RDW8	DC	25	16	3	H	Drawer level	AC230V	No undervoltage	A1
Product code	Breaking grade	Frame current	Rated current	poles	Controller	Installation mode	Control voltage	Attachments	Connection mode
DC intelligent type Universal circuit breaker	DC	25:2500(08-25) 40:4000(16-40)	08:800A 10:1000A 12:1250A 16:1600A 20:2000A 25:2500A 29:2900A 32:3200A 36:3600A 40:4000A	2:2P 3:3p 4:4P	R: Enhanced type (Liquid crystal Display) H: Advanced type (LCD with communication)	Drawer level Drawer vertical Fixed level Fixed vertical	AC230V AC400V DC220V DC110V	Interphase partition Quadruple transformation Door frame No undervoltage Mechanical interlocking Mechanical interlocking One lock, one key Two locks and one key Three locks, two keys It's 50-50 Six on, six off	2500:2 pole string, 3-pole string, 4-pole string (see figure) 4000:3 pole string, 4-pole string (see figure)

RDW8DC default standard configuration: shunt, closing, electric operation, 4 group conversion, door frame, interphase partition

For example: need to order a RDW8DC-2500, three pole drawer, rated current 1250A, intelligent controller for R type, control voltage AC230V, wiring mode A1,

Expressed as: RDW8DC-25 12/3R drawer level AC230V without undervoltage A1.

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Normal working conditions and installation conditions

Normal working condition

☐ The ambient air temperature is -5°C ~ +40°C, and the average value of 24h does not exceed +35°C;
Note: If the upper limit exceeds +40 ℃ or the lower limit is lower than -5 ℃, the user needs to negotiate with the manufacturer.
☐ The elevation of the installation site does not exceed 2000m;
Note: Consult with the manufacturer for the circuit breaker used in the working environment with an altitude of more than 2000m.
☐ The relative humidity of the atmosphere does not exceed 50% when the ambient air temperature is +40°C;
It can have higher relative humidity at lower temperatures;
For example, the wettest month has an average maximum relative humidity of 90%, while the The average minimum temperature of the month is +20 ℃, and treatment measures should be taken for the occasional condensation due to temperature changes.
☐ The pollution level is 3;
☐ When the rated working voltage of the main circuit is DC750V ~ DC1500V, the control circuit and auxiliary circuit need to be isolated from the main circuit by transformer, and the maximum working voltage of the control circuit and auxiliary circuit is AC400V, control circuit and auxiliary circuit installation category is III;
☐ The circuit breaker is suitable for electromagnetic environment A;
☐ Use category B.

Normal installation condition

☐ Installation of fixed circuit breaker: The circuit breaker is placed in the distribution cabinet and secured with M10 (more than 2500A shell frame) bolts and washers. The circuit breaker is installed smoothly without additional mechanical stress Avoid circuit breaker damage or poor contact of main busbar;
☐ Installation of drawer type breaker: Remove the circuit breaker body from the drawer seat, install the drawer seat in the distribution cabinet first, and tighten with M10(more than 2500A shell frame) bolts and washers. Circuit breaker mounting level Stable, there should be no additional mechanical stress, so as to avoid circuit breaker damage or poor contact between the main bus and the secondary circuit,' after the completion of the circuit breaker body into the drawer seat connection position;
☐ The circuit breaker should be installed in a place without explosion risk and conductive dust, without enough to corrode metal and destroy insulation;
☐ The protection level is IP20. When the circuit breaker is installed in the cabinet and the door frame is installed, the protection level can reach IP40.
Normal storage and transport conditions
☐ The lower limit of temperature is not less than -25°C, the upper limit is not more than +55°C; Relative humidity (+25°C) does not exceed 95%;
☐ The product should be handled gently during transportation, and should not be inverted to avoid violent collision.

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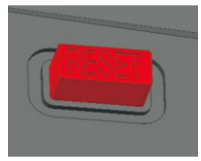
Circuit breaker operating condition

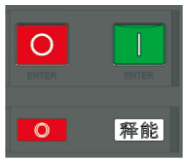
□ Operating status of the intelligent controller

Intelligent controller working status



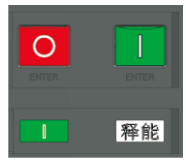
When the intelligent controller is in the protected state,
the circuit breaker is disconnected and the circuit is cleared
After the fault, press this button, the circuit breaker can be closed normally.

Operating mechanism working status



The circuit breaker is off
and has no energy storage

The circuit breaker is off and
the energy storage is complete



Circuit breaker closed
and no energy storage state

Circuit breaker closed and energy
storage completed state

Drawer seat working condition

In "separate", "test", "connect"
In three positions,
the position lock is locked,
and the crank cannot
Operation (locked state)

After the position lock is locked,
you need to continue operating the shake
Handle, press the position lock button to release the lock
(Unlocked state)

In the "separate" position,
both the main circuit and the
secondary circuit are disconnected

In the "test" position,
the main circuit is disconnected,
Secondary loop on

In the "Connect" position,
the main circuit and
All secondary circuits are connected

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Technical parameters and performance

CIRCUIT BREAKER		RDW8DC-2500			RDW8DC-4000
Series poles (P)		2、3、4			3、4
Rated current In(A)		800、1000、1250、1600、2000、2500			1600、2000、2500、3200、3600、4000
Rated operating voltage Ue(V)		DC500V/750V(2P、3P) DC1000V/1500V(4P)			DC500V/750V(3P)、DC1000V/1500V(4P)
Rated insulation voltage Ui(V)		1500			1500
Rated impulse withstand voltage Uimp(kV)		12			12
Rated limit short circuit Breaking capacity Icu(kA)		DC500V	2P	50	/
			3P	65	120
		DC750V	2P	40	/
			3P	55	80
		DC1000V	4P	50	75
		DC1500V	4P	40	60
Rated operating short-circuit breaking capacity Ics(kA)		100% Icu			100%Icu
Rated short-circuit closing capacity Icm(kA)		100% Icu			100%Icu
Rated short-time withstand current Icw(kA)/1s		100% Icu			100%Icu
Installation method	Stationary	●			●
	Drawer type	●			●
Full segment time time (no additional delay)		25~30ms			
Closing time		≤70ms			
Mechanical life (with maintenance)		20000			20000
Mechanical life (no maintenance)		10000			10000
Electrical life		7000			6000
Connection mode (horizontal)		●			
Connection mode (vertical)		●			
Connection mode (top horizontal and bottom vertical) Connection mode (vertical up and horizontal down)		●			

Note: The mechanical life of drawer seat is 100 times, from "separation" to "connection" to "separation" is once, and the operation cycle is 1 time /2min.

RDW8DC series DC intelligent universal circuit breaker

Power loss

Product model	Frame current (A)	Power loss (W)	
		Drawer /4P	Fixed /4P
RDW8DC-2500	2500	625	320
RDW8DC-4000	4000	960	510

Note: Circuit breaker power consumption is the total power consumption measured by the rated shell current, this data can only be used as a general selection guide, can not be used as a power loss in actual use.

It is recommended that the cross-sectional area of the external conductor correspond to the rated current of the circuit breaker to ensure the normal operation of the circuit breaker.

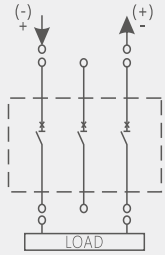
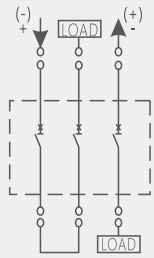
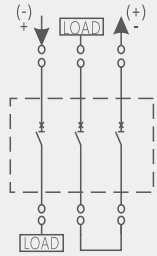
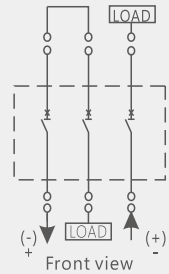
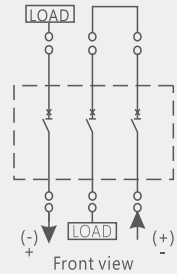
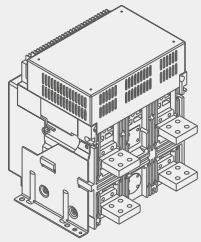
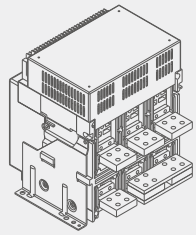
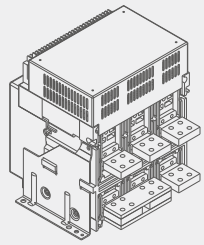
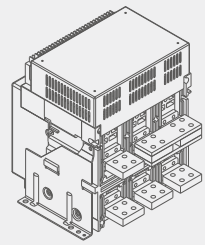
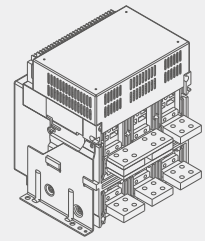
Rated current (A)	External copper bar Width x thickness (mm)	Number of roots per terminal	Cross-sectional area per terminal (mm^2)
800	50×5	2	500
1000	60×5	2	600
1250	80×5	2	800
1600	100×5	2	1000
2000	100×5	3	1500
2500	100×5	4	2000
2900	100×10	3	3000
3200	100×10	4	4000
3600	100×10	5	5000
4000	100×10	5	5000

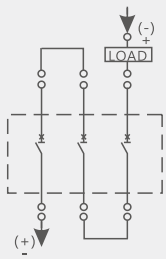
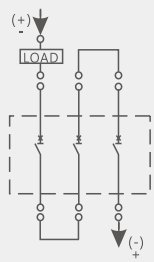
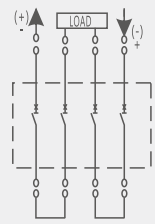
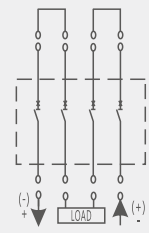
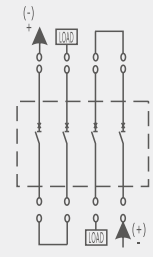
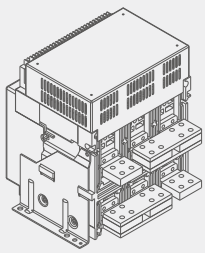
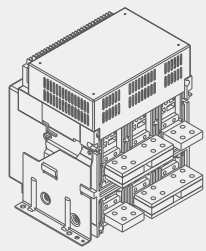
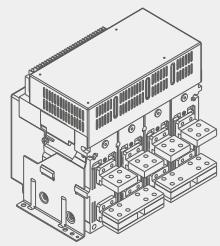
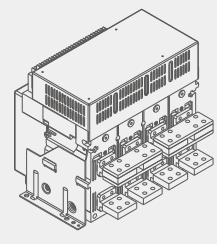
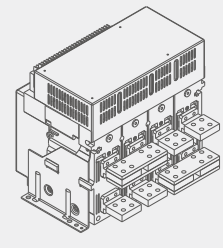
Coefficient of capacity reduction at altitude

Altitude (m)	2000	3000	4000	5000
Working current reduction coefficient	1	0.93	0.88	0.82
Short-circuit breakingcapacity reduction factor	1	0.83	0.71	0.63
Power frequency withstand voltage (V)	3500	3150	2500	2000

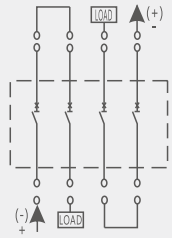
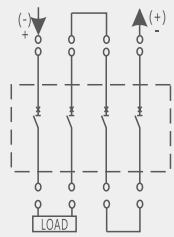
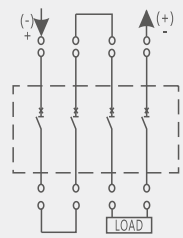
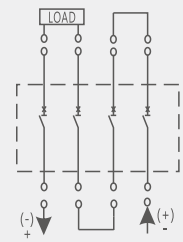
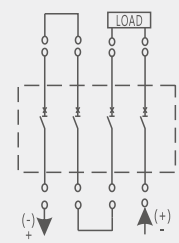
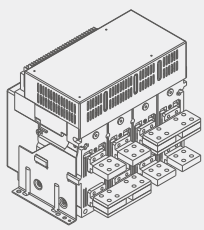
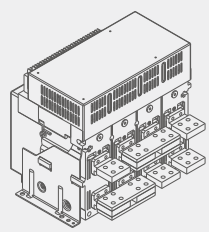
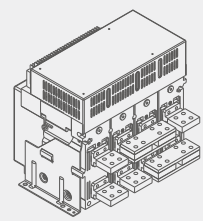
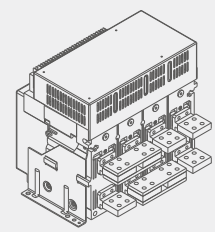
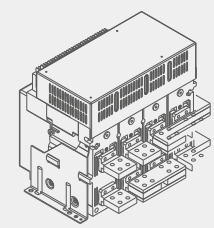
RDW8DC series DC intelligent universal circuit breaker

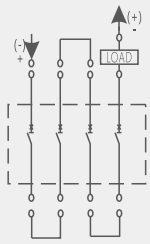
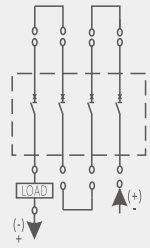
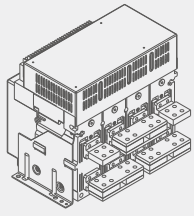
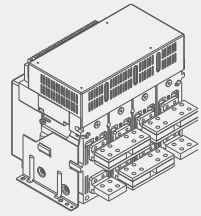
Dc series system

Series poles	2 p series	3Pseries(A1)	3Pseries(A2)	3Pseries(A3)	3Pseries(A4)
Connection mode	 Front view	 Front view	 Front view	 Front view	 Front view
	 3D rear view	 3D rear view	 3D rear view	 3D rear view	 3D rear view

Series poles	3P series (B1)	3Pseries (B2)	4Pseries(C1)	4Pseries (C2)	4Pseries (C3)
Connection mode	 Front view	 Front view	 Front view	 Front view	 Front view
	 3D rear view	 3D rear view	 3D rear view	 3D rear view	 3D rear view

RDW8DC series DC intelligent universal circuit breaker

Series poles	4 p series (C4)	4 p series (C5)	4 p series (C6)	4 p series (C7)	4 p series (C8)
Connection mode	 Front view	 Front view	 Front view	 Front view	 Front view
	 3D rear view	 3D rear view	 3D rear view	 3D rear view	 3D rear view

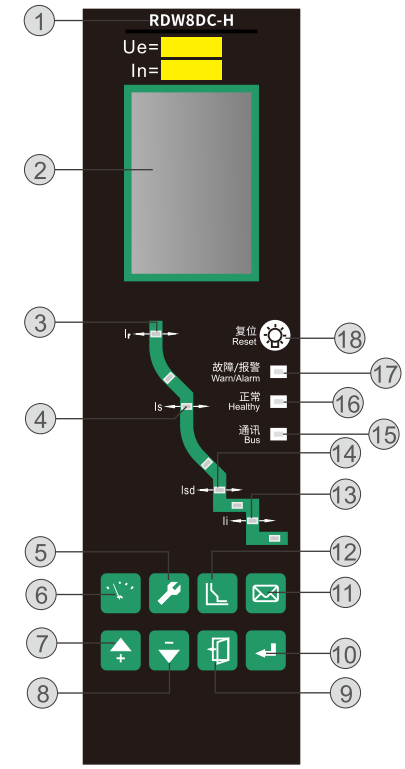
Series poles	4 p series (D1)	4 p series (D2)			
Connection mode	 Front view	 Front view			
	 3D rear view	 3D rear view			

Note: All the above installation methods can meet the requirements of up and down wire and non-polarity.

RDW8DC series DC intelligent universal circuit breaker

Intelligent controller protection features (liquid crystal type)

Intelligent control page description



RDW8DC Intelligent controller interface

1. Intelligent controller model (corresponding product model);
2. LCD liquid crystal display window: can display each phase current Value, voltage value, setting parameter, fault current Flow, trip time and information query parameters;
3. Overload long delay fault indication;
4. Short circuit short delay inverse time fault indication;
5. Setting key: Quickly switch to the parameter setting main menu, (in the password input interface is "To right" key);
6. Measurement key: Quickly switch to the measurement default main menu, (under the password input interface is"Left" key);
7. Up key: Move the menu content up at the current level, or change the selection up Parameters;
8. Down key: Move menu contents down at the current level, or change the selection down Parameters;
9. Back key: Exit the current level to enter the upper-level menu, or cancel the current parameter The selection of;
10. Ok key: Enter the next level menu that the current item points to, or proceed to the current parameter Select, store the changes made;
11. Query key: Switch to the history and maintenance theme menu;
12. Protection parameter setting key: Switch to the protection parameter setting theme menu;
13. Short circuit instantaneous fault indication;
14. Short-circuit short-delay fixed time fault indication;
15. Communication instruction :Profibus: no communication when off, communication constant light;
16. Modbus: turns off when no communication is available and blinks when communication is available. Normal indication: in the power state, the working state is normal, the LED is always green flashing;
17. Fault/alarm indicator: the "fault/alarm" LED does not light up during normal operation; breakdown When tripping, the "Fault/alarm" LED is red and flashes rapidly; In case of alarm When the LED red constant bright;
18. Reset button: When the intelligent controller is in the fault/alarm state, it needs to restore to normal work State, press this key to clear the intelligent controller fault/alarm indication.

RDW8DC series DC intelligent universal circuit breaker

Intelligent control protection features

□ Overload long delay protection

The overload long delay protection function is generally used to protect the cable from overload, and the protection is based on the true RMS of the current. Overload long delay inverse time protection, setting current Ir adjustable; The delay time tr is adjustable; peculiarity Multi-curve adjustable, respectively, general type (I^2t), very inverse time (It), high voltage fuse matching type (I4t) to meet the upstream and downstream overload protection selectivity and matching needs.

Table 1 Setting parameters related to overload long delay protection

	Setting range		remark
	Distribution mode	Generator type	
Long delay action current set Ir	(0.4 ~ 1.0)In(step 1A)	(0.4 ~ 1.2)In(step 1A)	
Long delay time set value tr:	I^2t:tr=(15~480)s Universalinverse Timeprotection(I=1.5Ir)	I^2t: tr =(8 ~ 60)s Universal inverse Time protection (I=1.3Ir)	Protection curve Type selection
	It:tr=(10to120)s Fastinversetime(I=1.5Ir)	It:tr=(10to120)s Fastinversetime(I=1.5Ir)	
	I4t: tr =(60 to 1440)s High voltage fuse compatibility (I=1.5Ir)	I4t: tr =(60 to 1440)s High voltage fuse compatibility (I=1.5Ir)	
Programmable DO output	Set a DO to "Long delay Failure" (optional)		
memory	Off, 10 minutes, 20 minutes, 30 minutes, 45 minutes, 1h, 2h, 3h Optional, power off can be cleared		

Type	Peculiarity	Current multiple (I/Ir)	Set time	Actual operating time	Delay tolerance
Power distribution	Inaction characteristic	<1.05	>2h inaction	-- ---	-- ---
	Action characteristic	>1.3	<1h action	-- ---	-- ---
	Action characteristic	1.5	(15～480)s (10~120)s (60~1440)s	(15～480)s (10~120)s (60~1440)s	±10%
	Action delay	>1.5	---	See calculation formula	±10%
Generator of electricity	Inactive characteristic	<1.05	>2h inaction	-- ---	-- ---
	Action characteristic	>1.15	<1h action	-- ---	-- ---
	Action characteristic	1.3	(8～60)s	(8～60)s	±10%
		1.5	(10～120)s (60~1440)s	(10～120)s (60~1440)s	
	Action delay	>1.3	---	See calculation formula	±10%

RDW8DC series DC intelligent universal circuit breaker

☐ Short delay protection

The short delay protection prevents the impedance short circuit of the distribution system, which is generally caused by the local short circuit fault of the line, and the current generally exceeds the range of overload, but the short circuit current is not very large. Short-circuit delay The trip delay is to achieve selective protection, is based ON current true RMS protection, there are two ways (the user can choose one of them when ordering) : I^2t ON, distribution protection, When I≤8Ir, act according to the inverse time limit; When I>8Ir1, the operation is limited according to the time limit. When the generator is protected, when I≤2Ir, act according to the inverse time limit; When I>2Ir1, act according to the specified time limit; tsd indicates short delay Setting time, Ir indicates the long delay setting current, I indicates the current fault current. I^2t OFF, fixed time protection. (The user does not specify, supply in this way).

Table 2 Short delay setting parameters

Type	Parameter name	Setting range	Set the step size
Power distribution	Action current setting Isd	(0.4～15)In+OFF	1A
	Fixed action time tsd	0.1～0.6s	0.1s
	Inverse time delay time T Delay time accuracy (±10%)	tsd x (8 x Ir/I)2(curve I2t)	---
		Long delay 1/10 of the delay time (curve It, I4t)	---
alternator	Action current setting Isd	(0.4～15)In+OFF	1A
	Fixed action time tsd	0.1～0.6s	0.1s
	Inverse time delay time T Delay time accuracy (±10%)	tsd x (8 x Ir/I)2(curve I2t) Later changed to tsd x (2 x Ir/I)2(curve It)	---
		Long delay 1/10 of the delay time (curve It I4t)	---
Programmable DO output	Programmable DO output	Set a DO to Short Delay Failure (optional)	

Table 3 Short delay setting parameters

Peculiarity	Current multiple (I/IS)	Set a trip time	Delay tolerance
Inactive characteristic	<0.9	Inaction	---
Action characteristic	≥1.1	Action	±10%

Note: Late change short delay inverse time time is not lower than the fixed time time.

☐ Instantaneous protection feature

The instantaneous protection function prevents short circuit of the power distribution system, which requires quick disconnection due to high current. This protection is based on the instantaneous value of the current.

Table 4 Setting parameters related to instantaneous protection

Parameter name	Setting range	Set the step size
Action current setting Ii	(1.0～20)In+OFF;Ii≦42kA	1A(Imn = 2500A)；1A(Imn = 4000A)
Programmable DO output	Set a DO to Instantaneous failure (optional)	

RDW8DC series DC intelligent universal circuit breaker

Table 5 Instantaneous protection action characteristics

peculiarity	Current multiple (I/Ii)	Set a trip time	Delay tolerance
Inactive characteristic	<0.85	ination	---
Action characteristic	>1.15	ation	---
Action delay	≥1.15	<30ms	---

☐ Overload warning function

Used for monitoring important loads. An additional function of the intelligent controller, when the circuit breaker current rises and exceeds the setting value of the forecast alarm current, the forecast alarm signal is sent after a delay of a period of time, and the forecast alarm light is forecast at this time Steady on; When more than a certain time (tp), the forecast alarm light shines, and the relay output signal; When the current drops below the set value or the overload trip, the alarm function is reset after a delay of a period of time. Overload preload The alarm can be turned on and off.

Table 6 overload forecasting alarm setting parameters

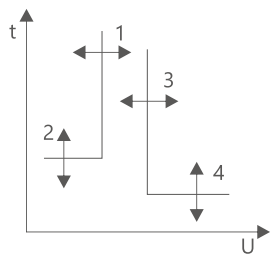
Parameter name	Setting range	Set the step size
Operating current Setting Ip(A)	(0.7~1.2)Ir	1A
Setting time tp(s)	(0.4~0.9)tr	1s
Return alarm current set value: (A)	0.9Ip	1A
Return time setting value: (s)	1~100	1s
Programmable DO output	Set a DO to Overload Alarm (optional)	

Table 7 overload forecasting alarm action characteristics

peculiarity	Current multiple (I/Ii)	Set a trip time	Delay tolerance
Inactive characteristic	<0.9	Inaction	---
Action characteristic	>1.1	Action	---
Action characteristic	≥1.1		±10%(inherent absolute error ±40ms)

Undervoltage protection

☐ Action rules for undervoltage protection



1: indicates the action threshold
2: action delay time
3: Returns the threshold
4: Returns the delay time

Figure 1 Action principle of undervoltage protection

When the voltage is less than the action threshold (1) start the alarm or trip delay, the action delay time (2) send the alarm or trip signal, undervoltage trip or undervoltage fault DO action; When the voltage is greater than the return threshold (3) Start the return delay, when the return delay time (4) to remove the alarm, undervoltage failure DO return.

RDW8DC series DC intelligent universal circuit breaker

Undervoltage protection Setting parameters

Table 8 Parameters related to undervoltage protection Settings

Parameter name	Setting range	Set the step size	remark
Protect startup Settings	80V～UmaxV	1V	Umax is set according to the rated voltage
Protection action delay time set	0.2～60s	0.1s	
Protection Action Returns the delayed setting value	Action Setting Value ~ UmaxV	1V	This setting is available only when the execution mode is alarmValue. The returned value must be greater than or equal to the start value
Protection return delay time	0.2～60s	0.1s	
Protect alarm DO output	Set a DO to "undervoltage fault" (if this is not set, the alarm information can only be read from the controller display, no contact output)		
Execution mode	Alarm/trip/shutdown		

Undervoltage protection action characteristics

Table 9 Operating characteristics of undervoltage protection

Peculiarity	Current multiple (U/ action setting)	Set a trip time	Delay tolerance
Non action characteristic	>1.1	inaction	
Action characteristic	<0.9	Action	
Action characteristic	≤0.9	The fixed time feature is equal to the set delay time	±10%(inherent absolute error ±40ms)

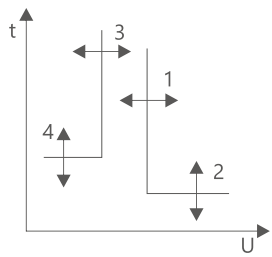
undervoltage protection alarm return value

Table 10 Undervoltage protection alarm return characteristics (only when the execution mode is "alarm")

Peculiarity	Current multiple (U/ action setting)	Set a trip time	Delay tolerance
Nonreturn characteristic	<0.9	not return	
Return characteristic	>1.1	Back	
Return delay	≥1.1	The fixed time feature is equal to the set delay time	±10%(inherent absolute error ±40ms)

Overvoltage protection

☐ Action rules for overvoltage protection



1: indicates the action threshold
2: action delay time
3: Returns the threshold
4: Returns the delay time

Figure 2 Action principle of overvoltage protection

When the voltage is greater than the action threshold (1) start the alarm or trip delay, the action delay time (2) send an alarm or trip signal, over voltage trip or undervoltage fault DO action; When the voltage is less than the return threshold (3) Start the return delay, when the return delay time (4) to remove the alarm, undervoltage failure DO return.

RDW8DC series DC intelligent universal circuit breaker

Set overvoltage protection parameters

Table 11 Settings of overvoltage protection parameters (the undervoltage setting must be smaller than the overvoltage setting)

Parameter name	Setting range	Set the step size	Remark
Protect startup Settings	80V～UmaxV	1V	Umax is set according to the rated voltage
Protection action delay time set	0.2～60s	0.1s	
Protection Action Returns the delayed setting value	80V ~ Action setting value	1V	This setting is available only when the execution mode is alarmValue. The returned value must be greater than or equal to the start value
Protection return delay time	0.2～60s	0.1s	
Protect alarm DO output	Set a DO to "Overvoltage fault" (if this is not set, the alarm information can only be read from the controller display, no contact output)		
Execution mode	Alarm/trip/shutdown		

Overvoltage protection action characteristics

Table 12 Operating characteristics of overvoltage protection

Peculiarity	Current multiple (U/ action setting)	Set a trip time	Delay tolerance
Inactive characteristic	<0.9	Inaction	
Action characteristic	>1.1	Action	
Action characteristic	≥1.1	The fixed time feature is equal to the set delay time	±10%(inherent absolute error ±40ms)

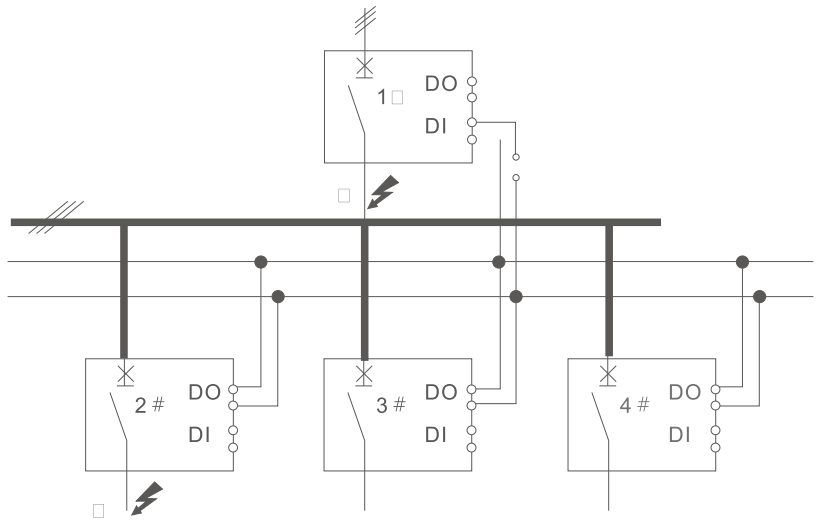
Overvoltage protection alarm return feature

Table 13 Overvoltage protection alarm return characteristics (this feature is available only when the execution mode is "alarm")

Peculiarity	Current multiple (U/ action setting)	Set a trip time	Delay tolerance
Nonreturn characteristic	>1.1	No Return	
Return characteristic	<0.9	Return	
Return delay	≤0.9	The fixed time feature is equal to the set delay time	±10%(inherent absolute error ±40ms)

RDW8DC series DC intelligent universal circuit breaker

Regional Chain (Zsl)



Regional linkage diagram

Regionally selective linkage includes short-circuit linkage. In the same power circuit with two or more connected circuit breakers:
When the short-circuit fault occurs at the outlet side of the lower circuit breaker (2# ~ 4# circuit breaker) (such as position ②), the lower circuit breaker instantaneously trips, and sends a regional interlocking trip signal to the upper circuit breaker; Upper cutThe breaker (1# circuit breaker) receives the zone interlocking trip signal and delays according to the short-circuit protection setting. If the fault current is eliminated during the delay of the upper circuit breaker, the protection returns and the upper circuit breaker does not operate. Jauxia If the fault current is not eliminated after the circuit breaker trips, the upper circuit breaker acts according to the short-circuit protection setting and cuts out the fault line.
When the short-circuit fault occurs between the upper circuit breaker (1# circuit breaker) and the lower circuit breaker (2# ~ 4# circuit breaker) (such as position ①), the upper circuit breaker does not receive the regional chain signal, and therefore instantaneous tripping. Fast removal of faulty lines.
Parameter setting: At least one DI of the upper circuit breaker is set to regional chain detection. At least one DO of the lower circuit breaker is set as a regional chain signal output.

Communication function

The controller can realize "four remote" data transmission functions such as telemetry, remote control, remote adjustment and remote communication through the communication port according to the specified protocol requirements. For details, please read the "DC Frame Circuit Breaker Communication Protocol".

Table 14 Communication parameter Settings

Communication protocol	MODBUs
Correspondence address	1~247(take part)
Baud rate (bit/s)	4.8k、9.6k、19.2k、38.4k

RDW8DC series DC intelligent universal circuit breaker

Test function

Test trip: you can use analog current to do no trip test, simulate long delay, short delay, instantaneous protection mode to test;
Action tests can also be performed directly in order to detect the controller and circuit breaker In addition, the programmable output module can also be simulated.

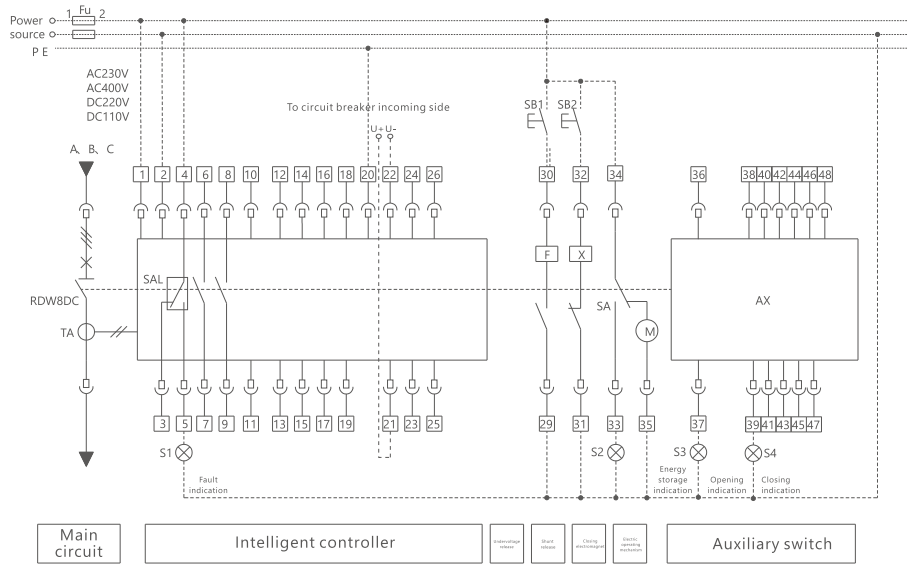
Thermal memory protection

Repeated overload may cause heat of conductors or equipment, the controller simulates the heating condition, and has a thermal effect (simulating bimetal characteristics) after fault delay actions such as overload long delay and short short delay. Over duty The long delay thermal effect energy is released 30 minutes after the fault is removed, and the short delay thermal effect energy is released 15 minutes after the fault is removed. During this period, if the circuit breaker is closed again, overload long delay and short delay occur If the circuit is short delay, the delay action time becomes shorter, which can make the line or equipment get more appropriate protection. If the controller is powered off once and then powered on, the accumulated heat effect is cleared.

Self-check function

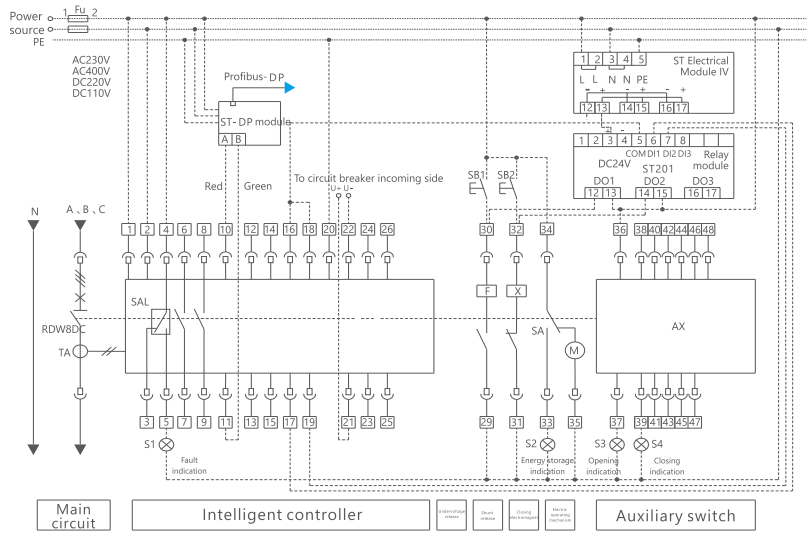
DC intelligent controller with system self-test function, built-in temperature sensor, magnetic flux break monitoring circuit, A/D conversion monitoring circuit. The intelligent controller periodically monitors the operation of the system and displays in case of failure The corresponding error information, at the same time can send an alarm signal.

Rdw8dc-250/4000 R type secondary circuit wiring diagram



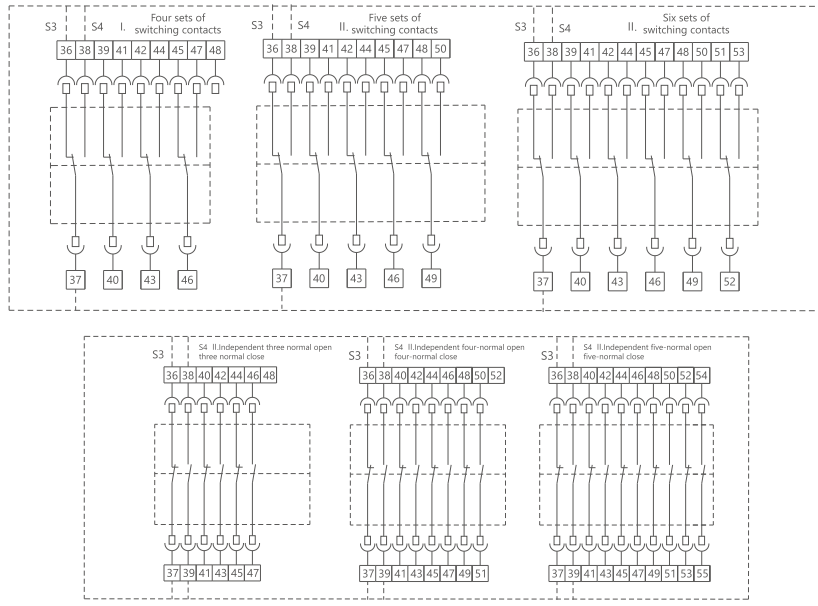
RDW8DC series DC intelligent universal circuit breaker

Rdw8dc-250/4000 H type secondary circuit wiring diagram



Note: The dotted part is connected by the user. If the intelligent controller, shunt trip device, closing electromagnet, electric operating mechanism and other voltages are different, different power supplies should be connected respectively. The rated working voltage of the main circuit is DC500V~DC1500V The control circuit and auxiliary circuit need to be isolated from the main circuit with a transformer, and the maximum operating voltage of the control circuit and auxiliary circuit is AC400V.

RDW8DC-2500/4000 auxiliary switch type (default is four sets of transfer contacts)



RDW8DC series DC intelligent universal circuit breaker

RDW8DC-2500/4000 R type secondary loop wiring diagram terminal function and symbol interpretation

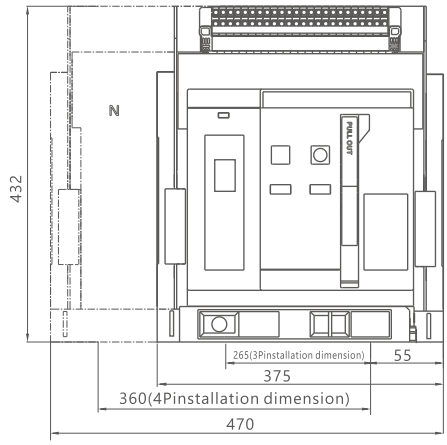
Terminal Number	Function Description	Symbol	Paraphrase	Remark
1、2	Auxiliary power input:AC230V、AC400V、DC220V、DC110V	RDW8DC	RDW8DC universal circuit breaker	
3、4、5	Fault trip auxiliary contact, contact capacity:AC250V、3A	S1~S4	Signal lamp	User provided
20	Ground (PE)	TA	Current transformer	
21、22	Voltage signal measurement: positive and negative power supply	SAL	microswitch	
29、30	Shunt release	SB1	Opening button	User provided
31、32	Closing electromagnet	Sb2	Closing button	User provided
33、34、35	Electric operating mechanism (electric energy storage), 37 connected with green line, 38 connected with black line, 39 connected with red line	X	Closing electromagnet	
36~48	Auxiliary contact terminal	F	Shunt release	
★Since the main circuit voltage of this series is high voltage, the voltage signal measurement of 21 and 22 of the R/H controller needs to be connected to the voltage conversion module。		M	Electric operating mechanism	
		SA	Electric operating mechanism ravel switch	
		Fu	fuse	User provided
		PE	Ground wire	
		AX	Auxiliary contact	

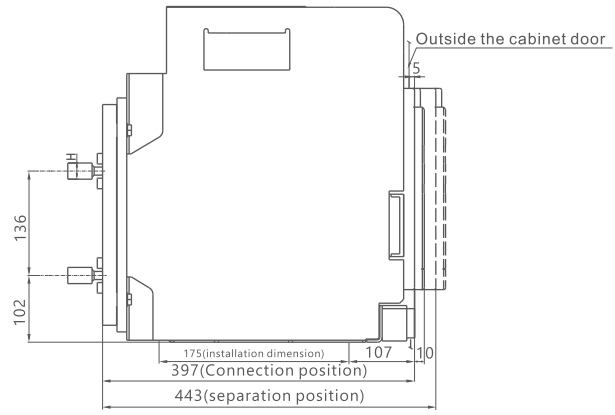
RDW8DC-2500/4000 H type secondary loop wiring diagram terminal function and symbol interpretation

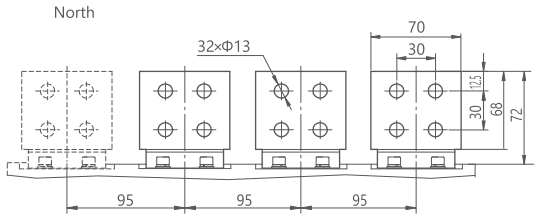
Terminal number	Terminal number	Symbol	Paraphrase	Remark
1、2	Auxiliary power input:AC230V、AC400V、DC220V、DC110V	RDW8DC	RDW8DC universal circuit breaker	
3、4、5	Fault trip auxiliary contact, contact capacity:AC250V、3A	S1～S4	Signal lamp	User provided
10、11	Communication interface output, 10 is (+),11 is (-); (Note: Default Modbus-RTU communication mode)	TA	Current transformer	
12～15	DO1, programmable signal output, contact capacity: AC250V, 3A	SAL	microswitch	
14、15	DO2, programmable signal output, contact capacity: AC250V, 3A	SB1	Opening button	User provided
16、17	DO3, opening signal output, contact capacity: AC250V, 3A	SB2	Closing button	User provided
18、19	DO4, closing signal output, contact capacity: AC250V, 3A	X	Closing electromagnet	
20	Ground (PE)	F	Shunt release	
21、22	Voltage signal measurement, positive and negative power supply	M	Electric operating mechanism	
29、30	Shunt release	SA	Electric operating mechanism travel switch	
31、32	Closing electromagnet	Fu	fuse	User provided
33、34、35	Electric operating mechanism (electric energy storage), 33 connected with green line, 34 connected with black line, 35 connected with red line	PE	Ground wire	
36~48	Auxiliary contact terminal	AX	Auxiliary contact	
★Since the main circuit voltage of this series is high voltage, the voltage signal measurement of 21 and 22 of the R/H controller needs to be connected to the voltage conversion module。		ST-DP module	when the communication mode is Profibus-DP	Selective assembly
		ST Power Module	Communication function when needed	Selective assembly
		St201 relay module	Communication function when needed	Selective assembly

RDW8DC series DC intelligent universal circuit breaker

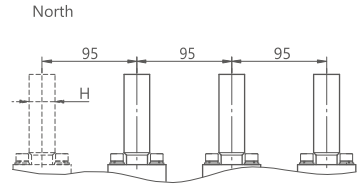
RDW8DC-2500 Intelligent universal Circuit breaker (Drawer type)



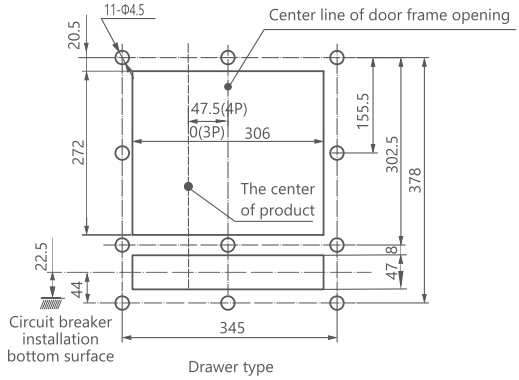




Horizontal connection and phase spacing



Vertical connection and phase spacing

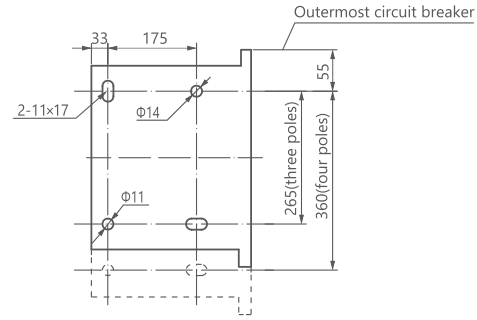


Drawer type

RDW8DC-2500 Drawer type circuit breaker panel opening size

Rated current (A)	Busbar thickness H (mm
800、1000、1250、1600	15
2000、2500	20

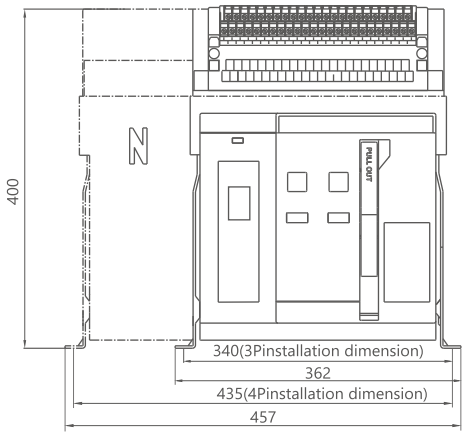
RDW8DC-2500 Mapping between the current and the thickness of the bus

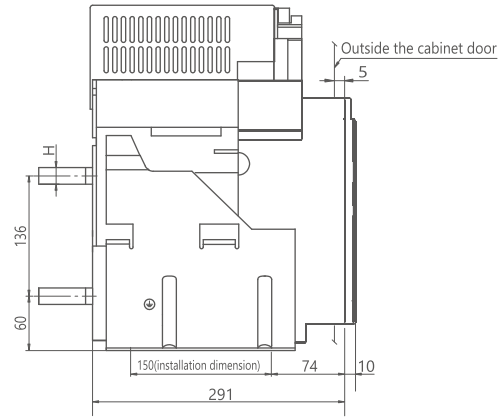


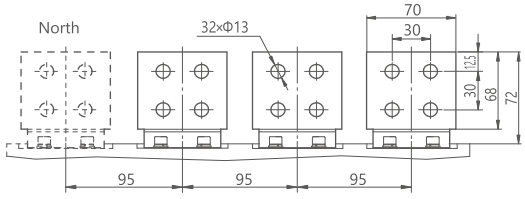
Installation dimension diagram

RDW8DC series DC intelligent universal circuit breaker

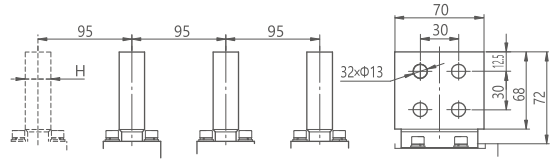
RDW8DC-2500 Intelligent universal Circuit Breaker (fixed type)



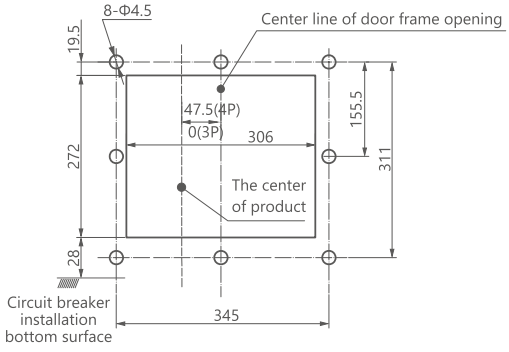




Horizontal connection and phase spacing



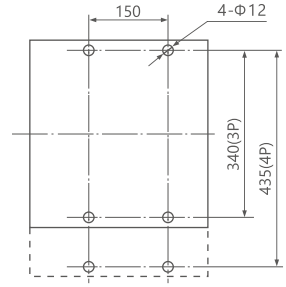
Vertical connection and phase spacing



RDW8DC-2500 fixed circuit breaker panel opening size

Rated current (A)	Busbar thickness H (mm
800、1000、1250、1600	15
2000、2500	20

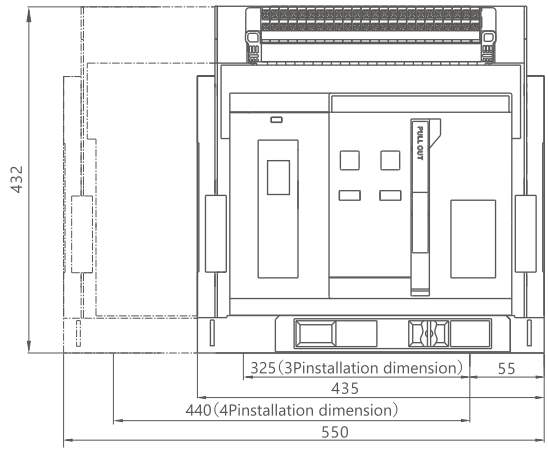
RDW8DC-2500 Mapping between the current and the thickness of the bus

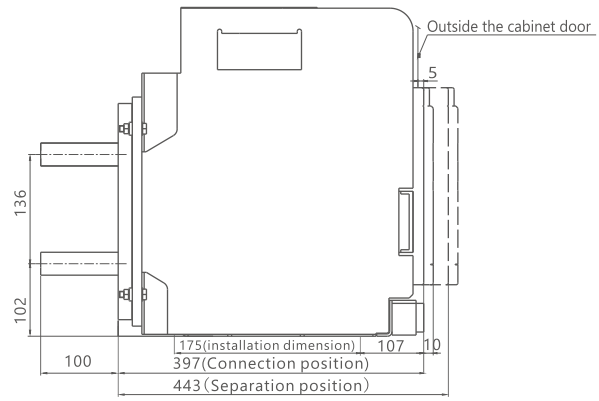


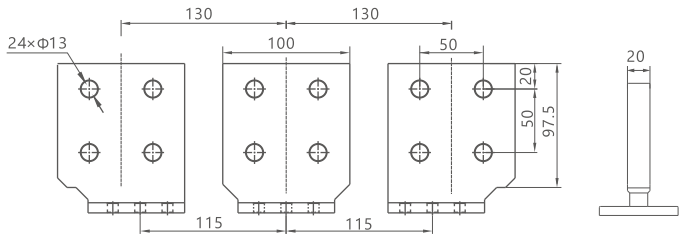
Installation dimension diagram

RDW8DC series DC intelligent universal circuit breaker

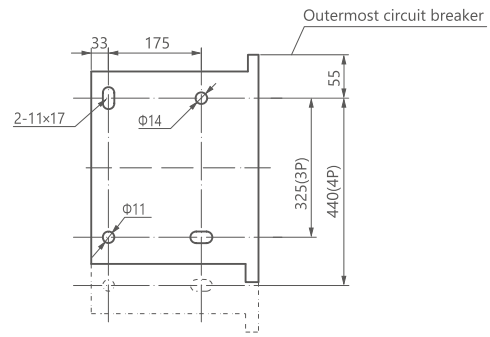
RDW8DC-4000 Intelligent universal Circuit breaker (Drawer type)



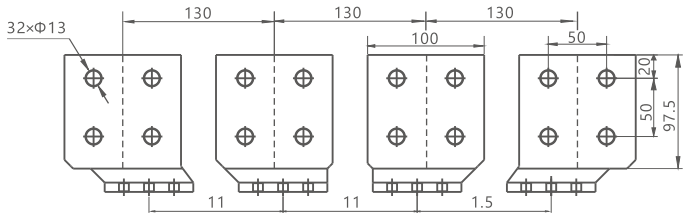




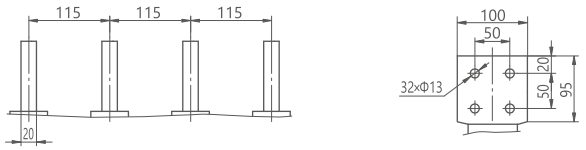
Horizontal connection and phase spacing(3P)



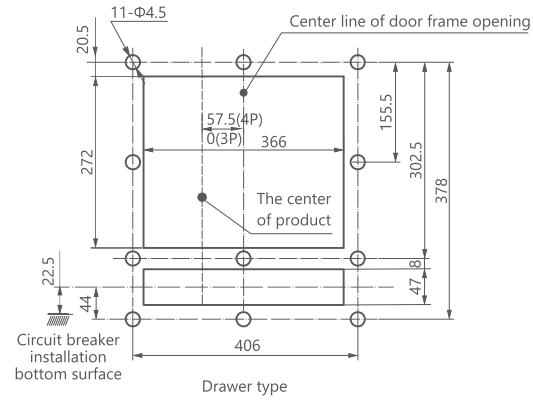
Installation dimension diagram



Horizontal connection and phase spacing (4P)



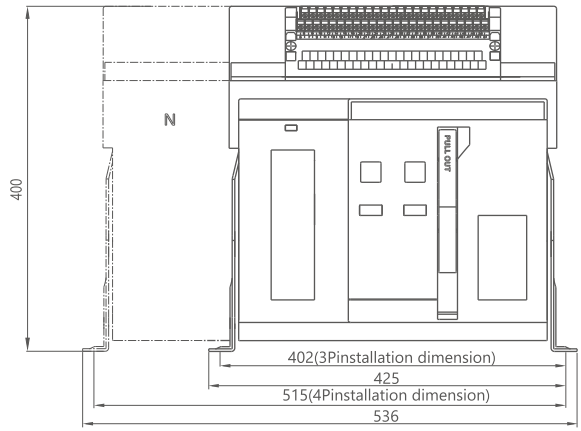
Vertical connection and phase spacing

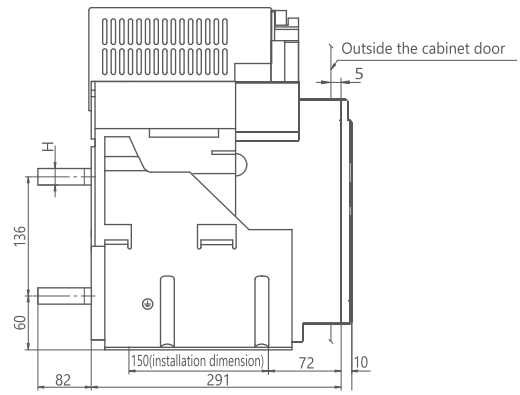


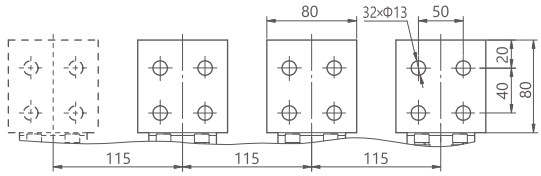
RDW8DC-4000 Drawer type circuit breaker panel opening size

RDW8DC series DC intelligent universal circuit breaker

RDW8DC-4000 Intelligent universal Circuit breaker（fixed type）



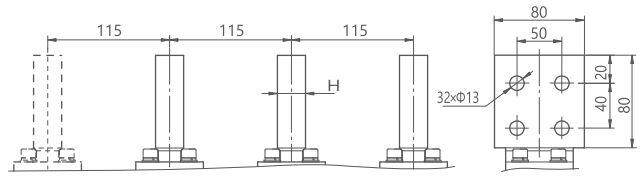




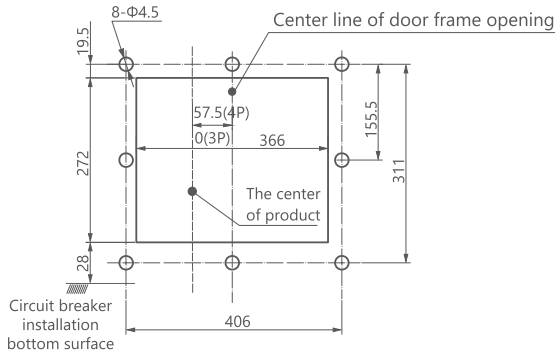
Horizontal connection and phase spacing

Rated current (A)	Busbar thickness H (mm)
1600、2000、2500、2900、3200、3600、4000	20

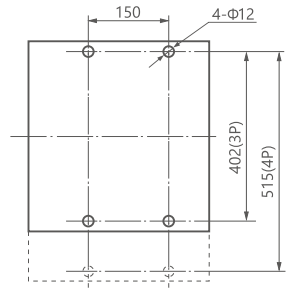
The current corresponds to the thickness of the bus



Vertical connection and phase spacing



RDW8DC-4000 fixed circuit breaker panel opening size



Installation dimension diagram

RDW8DC series DC intelligent universal circuit breaker

Accessory functions and features

RDW8DC-2500 ~ 4000 Close the electromagnet

☐ Close the electromagnet

When the circuit breaker completes the storage operation and is in the normal opening state, the circuit breaker can be controlled remotely by the closing electromagnet to close the circuit breaker quickly.

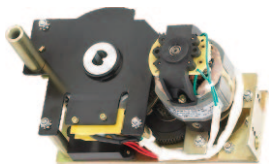
Operating voltage Us	AC230V	AC400V	DC220V	DC110V
Operating voltage range	(85～110)%Us			
Starting current	1.3A	0.7A	1.3A	2.5A
Suction time	≤60ms			

RDW8DC-2500 ~ 4000 shunt trip device

☐ Shunt trip device

When the circuit breaker is in the closing state, the shunt trip device can be used to remotely control the circuit breaker to quickly disconnect.

Operating voltage Us	AC230V	AC400V	DC220V	DC110V
Action voltage range	(70～110)%Us			
Starting current	1.3A	0.7A	1.3A	2.5A
Suction time	≤30ms			



RDW8DC-2500 ~ 4000 energy storage motor

☐ Energy storage motor

To realize electric circuit breaker energy storage and automatic re-energy storage operation after circuit breaker closing, so that the circuit breaker can be re-closed immediately after breaking Operate.

Operating voltage Us	AC230V	AC400V	DC220V	DC110V
Operating voltage range	(85～110)%Us			
Energy storage time	5s			
RDW8DC-2500	110VA		110W	
RDW8DC-4000	150VA		150W	

Note: Manual energy storage can also be performed during circuit breaker maintenance

RDW8DC-2500 ~ 4000 auxiliary switch

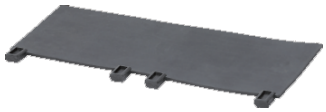
☐ Auxiliary contacts

Default configuration: Four sets of conversion contacts

Other types: four normal open four normal close, six groups of conversion contacts, six normal open six normal close

Operating voltage Us	AC230V	AC400V	DC220V	DC110V
Conventional heating current	6A			
Rated control capacity	300VA		60W	

RDW8DC series DC intelligent universal circuit breaker



Interphase partition

☐ Interphase partition

It is vertically installed between the bus terminals of each phase of the circuit breaker to enhance the insulation between phases of the circuit breaker.

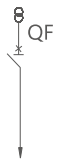
Break locking device

☐ Phase disconnect locking device

The switch button of the circuit breaker is locked in the press position, and the circuit breaker cannot be closed.

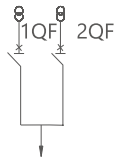
Note 1: When you need to pull out the key, you must first hold down the opening button and then turn the key counterclockwise to pull out the key;
Note 2: The following list in the power supply mode is for reference only.
Interlocks can be installed according to the actual power supply system needs on site, or consult the manufacturer for consultation.

Mode 1: One power supply and one load interlock

Circuit diagram	Possible modes of operation
	QF 0 1

A lock and a key: a circuit breaker with a lock and a key, locked state does not allow the circuit breaker to close.

Mode 2: Two power supplies and one load interlock

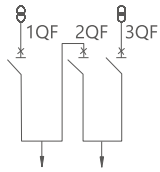
Circuit diagram	Possible modes of operation	
	1QF	2QF
	0	0
	1	0
	0	1

Two locks and one key: two circuit breakers with two identical locks and one key, only one circuit breaker is allowed to close.

RDW8DC series DC intelligent universal circuit breaker

Mode 3: Two power supplies and two loads interlock

Circuit diagram Possible modes of operation

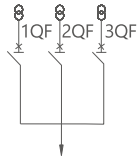


1QF	2QF	3QF
0	0	0
1	0	0
0	0	1
1	1	0
1	0	1
0	1	1

Three locks and two keys: three circuit breakers with three identical locks and two keys, only two circuit breakers are allowed to close.

Mode 4: Three power supplies and one load interlock

Circuit diagram Possible modes of operation



1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1

Three locks and one key: three circuit breakers with three identical locks and one key, only one circuit breaker is allowed to close.

Door frame

☐ Door frame

The door frame is installed on the door where the circuit breaker is installed in the power distribution cabinet, which plays a sealing and beautiful role, and the protection level can reach Ip40.

Drawer operation padlock

☐ Drawer operation padlock

When the body of the drawer circuit breaker is in the "separate" position, pull out the card plate and lock it with the padlock. After locking, the body can not be shaken to the "test" or Connect location. (Padlock user provided).

Relay module

☐ Relay module

Input voltage: DC24V

Contact capacity: AC250V 10A; DC28V10A When the load capacity of the control circuit breaker is large, it needs to be converted by the relay module and then controlled.The installation method is 35mm standard guide rail or direct installation.

RDW8DC series DC intelligent universal circuit breaker

Voltage conversion module

☐ Voltage conversion module

1. The voltage conversion module is designed to extend the voltage measurement range of the intelligent controller. This module can be used for expansion when the bus voltage is high Exhibition. The module must be used together with the controller.

Location Door interlock

☐ The location door is interlocked

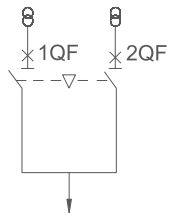
When the drawer type circuit breaker body is in the "test" or "connection" position, the cabinet door is prohibited to open, and when the circuit breaker body is in the "separation" position, Allow the cabinet door to open.

☐ Mechanical interlocking

Inter locking of two flat circuit breakers or interlocking of two stacked circuit breakers.

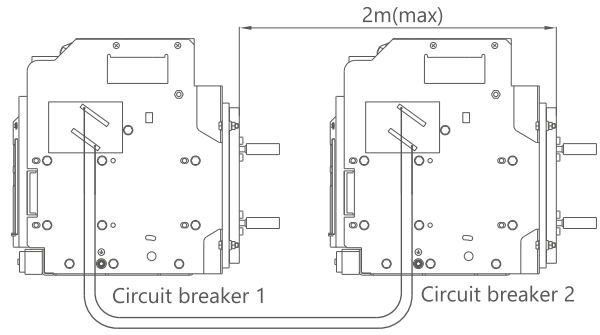
Only one circuit breaker can be used for each load of the two power supplies

Circuit diagram



Possible operation

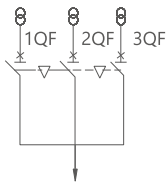
1QF	2QF
0	0
0	1
1	0



RDW8DC series DC intelligent universal circuit breaker

Steel cable interlocking or connecting rod interlocking of three circuit breakers
Three power sources and one load can only connect one circuit breaker

Circuit diagram

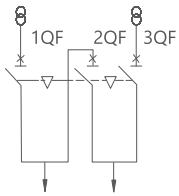


Possible modes of operation

1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1

Two power supplies, two loads, up to two circuit breakers

Circuit diagram

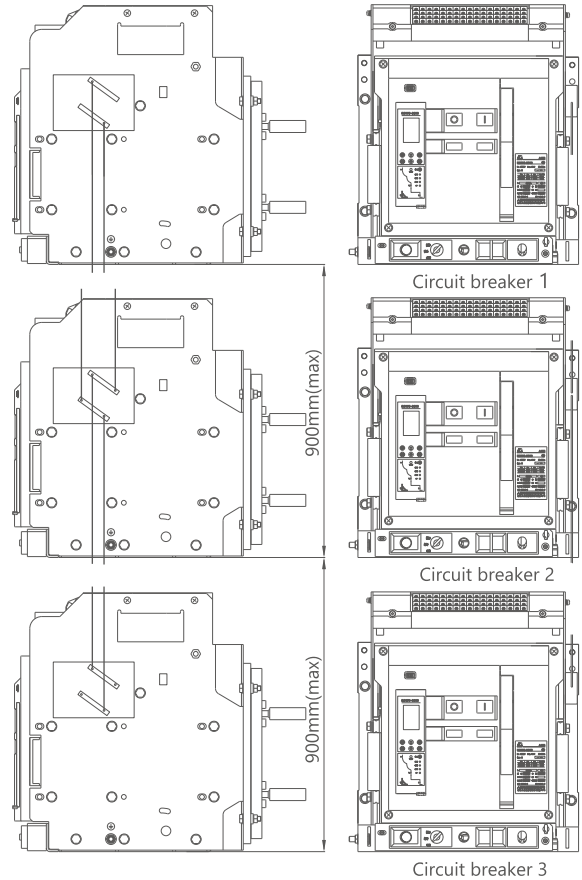


Possible modes of operation

1QF	2QF	3QF
0	0	0
1	0	0
0	0	1
1	1	0
0	1	1
1	0	1

QF: Circuit breaker

Note: The transition arc at the interlocking bend of the steel cable is not less than R120mm



Remote controller

☐ Remote controller

To meet the user's RDW8DC products wireless remote control or remote alarm to the user, remote control, remote alarm to SMS command execution, short The message content can be customized by users.

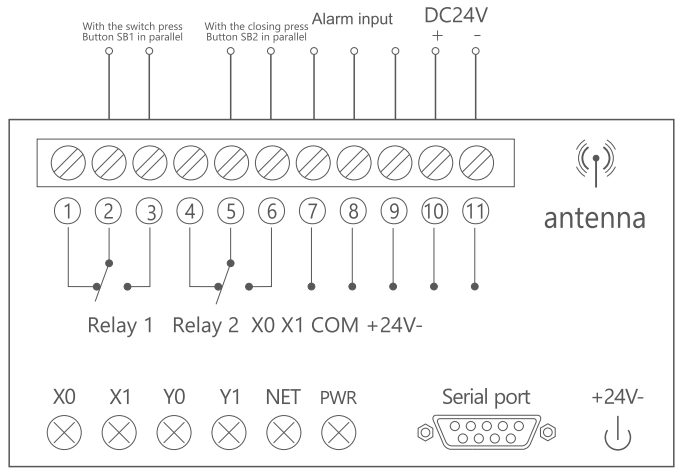
Applications: unattended room monitoring and remote maintenance in power industry, telecommunications industry, etc.

Alarm input signal: can be connected to smoke, infrared, switch detection sensors, to achieve SMS alarm function, when there is an alarm signal, can be more A mobile phone sends a short message to remind, and then the user sends a short message command to the remote controller for control.

Installation method: 35mm standard guide rail stuck in the installation

RDW8DC series DC intelligent universal circuit breaker

Remote controller wiring diagram



☐ Description of remote controller terminals

① and ③ are the output terminals of relay 1, and ② are the input terminals of relay 1, which can be connected to AC230/400V load and the output current is 5A; X0 is the indicator light of relay 1, the light is on (1), (2) disconnect, (2), (3) close.

④, ⑥ is the output terminal of relay 1, ⑤ is the input end of relay 2, which can be connected to AC230/400V load, and the output current is 5A; X1 is the indicator light of relay 2, the light is on ④, ⑤ disconnect, ⑤, ⑥ close.

⑦ ~ ⑨ is the input end of two alarm signals, and ⑨ is the public end, which is connected with smoke, infrared, detection sensors; Y0 is 7, ⑨ alarm light, Y1 is 8, ⑨ alarm light, the light indicates that there is signal input.

⑩ Input power to the remote controller. There is also an input power supply at the lower end, and the remote controller will work normally with a voltage of DC24V.

NET is a network indicator. After the installation is correct and the power is turned on, the NET indicator blinks once every second, indicating that the network is being sought. When the NET indicator blinks from 1 second to 3 seconds, the remote controller is successfully connected to the network Perform remote control.

PWR indicates the power indicator. When the indicator is steady on, it indicates that the power supply is normal and can work properly.

The serial port is the data interface for connecting the computer to the remote controller for various Settings. Drivers and special configuration software need to be installed.

The antenna is configured for the remote controller to have a better reception of network signals, so that it can work normally in the place where the network signal is not good, and the antenna length is 2m.

RDW8DC series DC intelligent universal circuit breaker

Order specification

Company | Contact person | Contact number | Order quantity(unit) | Order date

Product model	RDW8DC-2500☐	RDW8DC-4000☐
Rated current (A)	☐800 ☐1000 ☐1250 ☐1600 ☐2000 ☐2500	☐1600 ☐2000 ☐2500 ☐2900 ☐3200 ☐3600 ☐4000
Number of series poles	☐2P string (Optional only for RDW8DC-2500) ☐3P series ☐4P series	
Installation mode	☐ Fixed ☐ Drawer type	
Connection mode	☐2P series connection; 3P series A cable (☐A1, ☐A2, ☐A3, ☐A4, ☐A5); 3P series B cable (☐B1, ☐B2); Note: The 2P string is a wiring method 4P series C-type cables (☐C1, ☐C2, ☐C3, ☐C4, ☐C5, ☐C6, ☐C7, ☐C8); 4P series D-type cable (☐D1, ☐D2);	
Rated operating voltage	☐DC500V ☐DC750V ☐DC1000V ☐DC1500V Note :DC500V/DC750V is 2P string or 3P string; The DC1000V/DC1500 is 4P	
Intelligent controller Type selection	type	☐R Enhanced (liquid crystal Display) ☐H Advanced type (LCD with communication) Note: The R/H type requires a voltage conversion module
	Control voltage	☐ AC230V ☐ AC400V ☐DC220V ☐DC110V ☐DC24V
	Protection parameter setting	Default factory Settings: Ir=1In, Tr=15s; Fixed duration Isd=5Ir, Tsd=0.4s; Inverse time limit Isd=OFF; Ii=10In;
	Long delay protection Ir	Ir=_____In (Select or OFF from 0.4 to 1.0) Tr(1.5ir)= _____ s (at 15, 30, 60,..... Choose from 480)
	Short-circuit delay Protect Isd	Isd= _____Ir (selected from 1.5 to 15 or OFF) ☐ Set the time limit _____Tsd= s(liquid crystal is selected from 0.1 to 0.4); ☐ Inverse time limit TSD=0.1Tr
	Short circuit nstantaneous Protection Ii	Ii=_____In(Select or OFF from 1.0 to 20, up to 42kA)
	Optional function	☐ Communication function : Modbus Protocol (default), H Type time has been belt) ☐ Profibus
Standard accessory	Closing electromagnet	☐ AC230V ☐ AC400V ☐DC220V ☐DC110V
	Shunt release	☐ AC230V ☐ AC400V ☐DC220V ☐DC110V
	Energy storage motor	☐ AC230V ☐ AC400V ☐DC220V ☐DC110V
	Auxiliary switch	☐ Four groups of conversion contacts ☐ Four normal open four normal close ☐ Six groups of conversion contacts ☐Six normal open six normal close ☐Special form
	Opening lock device	☐ A circuit breaker with a lock and a key ☐ Two circuit breakers with two locks and a key ☐ Three circuit breakers with three locks and two keys ☐ Special form (customized)
Optional accessories	Mechanical interlocking	Two circuit breakers ☐ Link interlock (upper and lower interlock) ☐ Steel cable interlocking
		Three circuit breakers ☐ Link interlock (upper and lower interlock) ☐ Steel cable interlocking
	other	☐ Interphase partition ☐ Power adapter ☐ Relay module ☐ Communication Conversion Module (Profibus-DP) ☐ Drawer seat three-position lock

Note 1: If the user has other special requirements, please consult with the manufacturer before ordering;
Note 2: The optional functions and accessories of the circuit breaker are not included in the standard configuration of the circuit breaker, and the cost is calculated separately.
Note 3: The auxiliary switch of fixed circuit breaker has no six normal open and six normal close.