Tosun LUX®

More reliable
solution to electric

TSW8

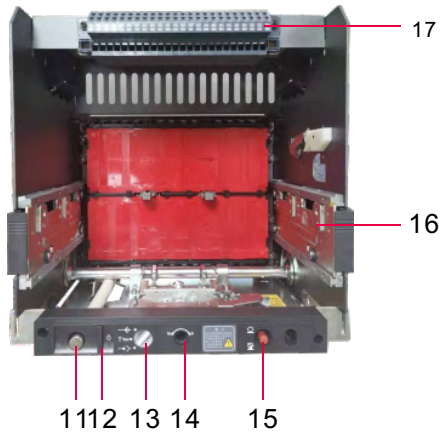
Intelligent Circuit Breaker

Warning

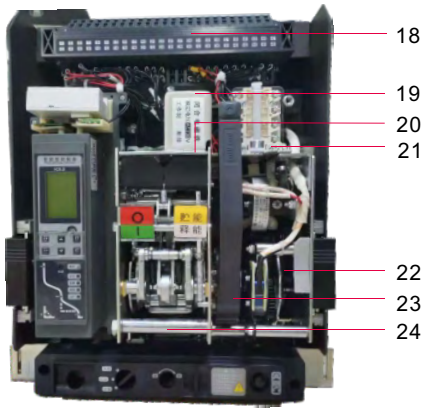
This product must be installed, connected, used and maintained by qualified personnel in accordance with the manual.

TSW8 intelligent circuit breaker

1. Trip reset button
2. Opening position lock
3. Closing button (I)
4. Switch buttons (0)
5. Intelligent control unit
6. Indicates the position of the main contact of the circuit breaker
7. Indicates that the circuit breaker can be closed
8. Circuit breaker energy storage/release indicator
9. Manual energy storage handle
10. Circuit breaker technical specifications



11. Handle and storage hole (drawer type only)
12. Drawer type "detach" position security padlock
13. Circuit breaker "disconnect" "Experiment" "Connect" position indicator
14. Crank working hole
15. Three-position lock reset button
16. Slider (Drawer type only)
17. Control loop terminal (static)



18. Control loop terminal (moving)
19. Shunt release
20. Closing electromagnet
21. Auxiliary switches
22. Motor Energy storage motor
23. Manual energy storage hande
24. Operating mechanism

Application

TSW8 series intelligent circuit breaker is mainly suitable for a power distribution network with AC 50/60Hz, rated operating voltages of 400V, 690V, and rated current of 200A to 6300A, to distribute power, protect circuit and power devices against overload, under voltage, short circuit, and ground faults. The core part of the circuit breaker adopts intelligent controller with precise selective protection, which can avoid unnecessary power failure so as to improve the reliability, continuity and safety of the power supply system.

The circuit breaker can be widely used in the power distribution system of power stations, factories, mines and modern commercial buildings, especially in intelligent buildings. It is also often used in wind power generation, solar power generation and other green energy field. The circuit breaker meets the IEC60947-2.

Type

- Installation mode: stationary type, drawer type
- Operation mode: electric operation, manual operation
- Category of use: type B
- Pole number: 3, 4
- Intelligent type controller function

  a. Overload delay, short delay, short circuit instantaneous protection;

  b. test function; c. Fault memory function; d. Thermal memory function;

  e. Self-diagnostic function; g. Current measurement; h. MCR function;

  I. Fault status indication and numerical display; j. Ground fault protection;

Normal Working Conditions and Installation Conditions

- The ambient air temperature is -5℃ ~ + 50℃, and the average value of 24h does not exceed + 50℃ (except for special orders).
- The altitude of the installation site shall not exceed 2,000 m.
- The relative humidity of the air at the installation site shall not exceed 50% when the maximum temperature is +50℃; It can have higher relative humidity at lower temperature. The mean minimum temperature of the wettest month shall not exceed +25℃, and the mean maximum relative humidity of the month shall not exceed 90%, taking into account the condensation occurring on the surface of the product due to temperature changes.
- The pollution grade is Grade 3.
- The main circuit of circuit breaker, the under voltage tripping coil and the primary coil of power transformer are installed as IV, while the other auxiliary circuit and control circuit are installed as Ⅲ.

- The installation position shall be vertical, and the inclination in each direction shall not exceed 5°.
- Normal storage and transportation conditions.

  a. The minimum temperature shall not be lower than-25℃, and the maximum temperature shall not exceed + 55℃;

  b. The relative temperature (+ 25℃) shall not exceed 95%;

  c. Products in the process of transportation, should be handled with special care, should not be inverted, should be tried to avoid violent collision.

Technical Data

- Technical parameter of circuit breaker (see Table 1)

Table 1 Technical Parameters

Model		TSW8-1000	TSW8-1600	TSW8-2000	TSW8-3200	TSW8-4000/6300
Rated current In (A)		200,400,630 800,1000	200,400,630 800,1000,1250,1600	630,800,1000, 1250,1600,2000	2000,2500 2900,3200	4000, 5000,6300
Neutral pole current rating In (A)		100%In	100%In	100%In	100%In	50%In
Rated operating voltage Ue (V)		AC400/690				
Pole number		3P, 4P				
Rated impact withstand voltage Uimp (kV)		AC12				
Nominal insulation voltage Ui (V)		AC1000				
Power frequency withstand voltage (V)		AC3500				
Rated limit short circuit breaking capacity Icu(kA)	AC400V	42	50	65	85	120
	AC690V	35	35	50	65	85
Rated short circuit breaking capacity Ics (kA)	AC400V	35	42	50	65	100
	AC690V	25	35	40	65	85
Rated short time withstand current Icw/ 1s (kA)	AC400V	35	42	50	65	100
	AC690V	25	35	40	65	85
Rated short-circuit ability Icm (kA)	AC400V	88.2	105	143	187	264
	AC690V	73.5	73.5	105	143	187
Category of use		B				
Full break time (no additional delay)		≤30ms				
Closing time		≤60ms				
Electrical life (times) ≤3200 1h/20 >3200 1h/10	AC400V	10000	10000	10000	6000	2000
	AC690V	6000	6000	6000	3500	1000

Mechanical life (times) ≤2500 1h/20 >2500 1h/10	Maintenance -free	15000	15000	15000	12500	5000
	Have maintenance	30000	30000	30000	25000	10000
Mechanical life of the drawer holder (1h/20times)		1000	1000	1000	600	300
Into the line way		Up or down line				
Arc distance (mm)		0				
Installation mode		Fixed or Drawer type				
Mode of connection		Horizontal Connection		Connect cables horizontally or vertically		Horizontal connection

Note: One time of mechanical life of the drawer base refers to when the circuit breaker body is shaken from ⊸○⊸ "separated" to ⊸●⊸ "connected" and then to the ⊸○⊸ "separated" position in the drawer base.

- Maximum power loss of circuit breaker incoming and outgoing line (ambient temperature + 50℃)

Table 2 Power loss of incoming and outgoing lines of circuit breaker

Frame current (A)	Frame current Inm (A)	Power loss (W)			
		3P Drawer type	4P Drawer type	3P Stationary type	4P Stationary type
1000	200	8	11	4	6
	400	34	45	17	22
	630	83	111	42	56
	800	96	128	48	64
	1000	150	200	75	100
2000	630	42	56	24	32
	800	67	90	38	51
	1000	75	100	45	60
	1250	117	156	70	94
	1600	192	256	115	154
	2000	276	368	156	208
3200 4000	2000	375	500	188	250
	2500	454	606	252	336
	3200	553	737	307	410
	4000	864	1152	480	640
6300	4000	576	768	290	390
	5000	900	1200	462	680
	6300	1429	1905	750	980

Note: Power consumption of the circuit breaker refers to the power consumption of the main circuit measured by the circuit breaker with the rated current at room temperature, excluding the power of other power loss accessories of the circuit breaker. This table data is only for reference and cannot be used as power consumption in actual use of the circuit breaker.

- Ambient temperature change Operating current drop capacity query

Table 3 Ambient temperature change Operating current drop capacity query

Frame grade(A)	Rated Current (A)	Working current after capacity reduction (A)			
		40℃	50℃	60℃	70℃
1000	200	200	200	200	200
	400	400	400	400	400
	630	630	630	630	630
	800	800	800	800	800
	1000	1000	1000	850	800
2000	630	630	630	630	630
	800	800	800	800	800
	1000	1000	1000	1000	1000
	1250	1250	1250	1250	1250
	1600	1600	1600	1600	1600
	2000	2000	2000	1700	1600
3200	2000	2000	2000	2000	2000
	2500	2500	2500	2300	2000
	2900	2900	2900	2900	2900
	3200	3200	3200	3000	2900
4000	2500	2500	2500	2500	2500
	2900	2900	2900	2900	2900
	3200	3200	3200	3200	3200
	4000	4000	4000	3600	3600
6300	4000	4000	4000	4000	4000
	5000	5000	5000	4500	4500
	6300	6300	6300	5500	5000

- Altitude capacity reduction coefficient

  When the altitude exceeds 2000 meters, the insulation performance, cooling performance and pressure in the atmosphere will change, and its performance can be corrected by referring to Table 4

Table4 Coefficient of capacity reduction at altitude

Altitude(m)	2000	3000	4000	5000
Working current Ie	1	0.93	0.88	0.82
Short circuit breaking capacity Icu, Ics	1	0.83	0.71	0.63
Short circuit tolerance Icw	1	0.83	0.71	0.63
Rated impact withstand voltage Uimp	1	0.9	0.71	0.63
Power frequency withstand voltage	1	0.9	0.71	0.63
Rated insulation voltage Ui	1	0.83	0.71	0.63

When the ambient temperature is lower than 50℃, Ie = In. If the ambient temperature is higher than 50℃, the capacity of the circuit breaker must be reduced in strict accordance with the instructions during application. In this case, Ie = In should be settled according to the current and temperature.

- The recommendation for installing of busbar

Table 5 Recommendation for installing of busbar

Rated current (A)	External copper busbar (width*thickness) mm	Required busbar qty per pole	Cross-sectional area (mm²)
200	20×5	1	100
400	40×5	1	200
630	40×5	2	400
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
5000	100×10	6	6000
6300	100×10	8	8000

Note: The specification in the table is that the circuit breaker used in ambient environment of 50℃ and installed open. The material of busbar is T2 bare copper. The specification of the external copper busbar can be changed according to the actual use situation, but it should meet the cross-sectional area requirements corresponding to different currents in the table.

- Protection performance of the intelligent controller

a. 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. The long delay action current is continuously adjustable, and the trip time is inverse time characteristic. The short time key adjustment step is 1A (2A above 2000A).

Table6 Long delay action setting value

Distribution protection current set value Ir	(0.4~1.0) In+OFF	Current tolerance	±10%
Generator protection current set value Ir	(0.4~1.25) In+OFF		
Applied current I		> 2h non-trip	
1.05Ir		< 1h trip	
1.3Ir		Set a trip time	

Protection characteristic type	Fault current	Set time Tr (s)															
SI Standard inverse time	1.5Ir	0.61	0. 98	1.47	2.46	3.68	4.91	6.14	9.21	11.05	17.19	24.56	36.84	49.13	61.41	73.69	85.97
	2Ir	0.36	0. 57	0.86	1.43	2.15	2.87	3.58	5.37	6.45	10.03	14.33	21.49	28.65	35.82	42.98	50.15
	6Ir	0.14	0. 22	0.33	0.55	0.82	1.1	1.37	2.06	2.47	3.84	5.48	8.22	10.96	13.7	16.45	19.19
	7.2Ir	0.12	0. 2	0.3	0.5	0.74	0.99	1.24	1.86	2.23	3.48	4.97	7.45	9.93	12.42	14.9	17.38
VI Fast inverse time	1.5Ir	2	3. 2	4.8	8	12	16	20	27	36.6	56	80	120	160	200	240	280
	2Ir	1	1. 6	2.4	4	6	8	10	13.5	18	28	40	60	80	100	120	140
	6Ir	0.2	0. 32	0.48	0.8	1.2	1.6	2	2.7	3.6	5.6	8	12	16	20	24	28
	7.2Ir	0.16	0. 26	0.39	0.65	0.97	1.29	1.61	2.18	2.9	4.52	6.45	9.68	12.9	16.13	19.35	22.58
EI(G) Express inverse time limit	1.5Ir	8	12. 8	19.2	32	48	64	80	108	144	224	320	480	640	800	960	1000
	2Ir	3.33	5. 33	8	13.33	20	26.67	33.33	45	60	93.33	133.33	200	266.67	333.33	400	433.33
	6Ir	0.29	0. 46	0.69	1.14	1.71	2.29	2.86	3.86	5.14	8	11.43	17.14	22.86	28.57	34.29	37.14
	7.2Ir	0.2	0. 31	0.47	0.79	1.18	1.57	1.97	2.66	3.58	5.51	7.87	11.8	15.74	19.67	23.6	25.57
EI(M) Express inverse time limit	1.5Ir	6.22	9. 96	14.93	24.89	37.34	49.78	62.23	84.01	112.01	174.24	248.91	373.37	497.82	622.28	746.73	208.96
	2Ir	2.95	4. 72	7.07	11.79	17.69	23.58	29.48	39.79	53.06	82.53	117.9	176.86	235.81	294.76	353.71	383.19
	6Ir	0.28	0. 45	0.68	1.13	1.69	2.26	2.82	3.81	5.08	7.9	11.29	16.94	22.58	28.23	33.88	36.7
	7.2Ir	0.2	0. 31	0.47	0.78	1.17	1.56	1.95	2.63	3.51	5.46	7.8	11.7	15.61	19.51	23.41	25.36
HV High pressure fuse compatible	1.5Ir	2.46	3. 94	5.91	9.85	14.77	19.69	24.62	33.23	44.31	68.92	98.46	147.69	196.92	246.15	295.38	320
	2Ir	0.67	1. 07	1.6	2.67	4	5.33	6.67	9	12	18.67	26.67	40	53.33	66.67	80	86.67
	6Ir	0.01	0. 01	0.02	0.03	0.05	0.06	0.08	0.1	0.14	0.22	0.31	0.46	0.62	0.77	0.93	1
	7.2Ir	0	0. 01	0.01	0.01	0.02	0.03	0.04	0.05	0.07	0.1	0.15	0.22	0.3	0.37	0.45	0.48
I^2T Universal inverse time protection	1.5Ir	15	30	60	120	240	360	480	600	720	840	960					
	2Ir	8.44	16. 88	33.75	67.5	135	202.5	270	337.5	405	472.5	540					
	6Ir	0.94	1. 88	3.75	7.5	15	22.5	30	37.5	45	52.5	60					
	7.2Ir	0.65	1. 3	2.6	5.21	10.42	15.63	20.83	26.04	31.25	36.46	41.67					

b. Short circuit 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.

The trip delay of short circuit delay is to achieve selective protection.

Short circuit delay protection is based on true effective value of current, which is divided into two sections: inverse time period, fixed time period; Further strengthen the cooperation with the lower protection device.

The short delay protection can be configured with the regional selective interlocking function.

Operation current set value Isd	(1.5~15)Ir+OFF	Current tolerance	±10%
Inverse time delay action time Tsd	The curve is the same as the overload long delay curve, and the curve speed is 10 times faster than the overload long delay (the time calculated by the overload delay curve formula divided by 10 is the short delay inverse time delay time).		
Time delay set Tsd	0.1s、0.2s、0.3s、0.4s		

c. Short circuit instantaneous protection action characteristics

The instantaneous protection function prevents the load from short circuit in the distribution system. This kind of fault usually happens between phases so the short circuit current is relatively big, which needs to be disconnected quickly. This protection is executed based on the true effective value of the current. When I≤0.85Ii, I>1.15Ii (I is actual short circuit current).

Action current Set 6Point Ig	(0.2~1)In+OFF
Action characteristic	≤0.8Ig failure to actuate
	≥1. 1Ig deferred action
Setting time (s)	(0.2~1)In+OFF(OFF That only the alarm is not removed)

Figure 1 Overload and short circuit protection characteristic curve

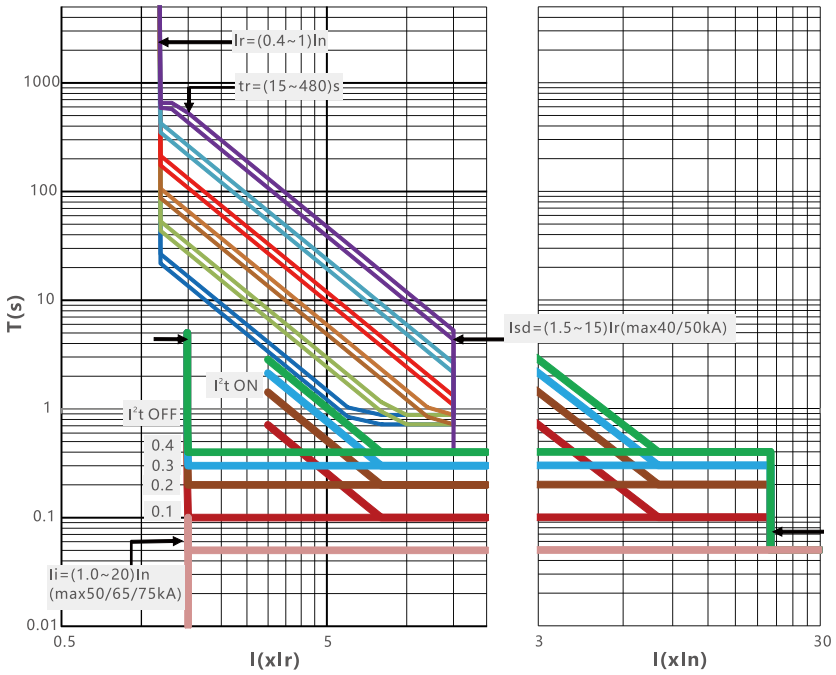
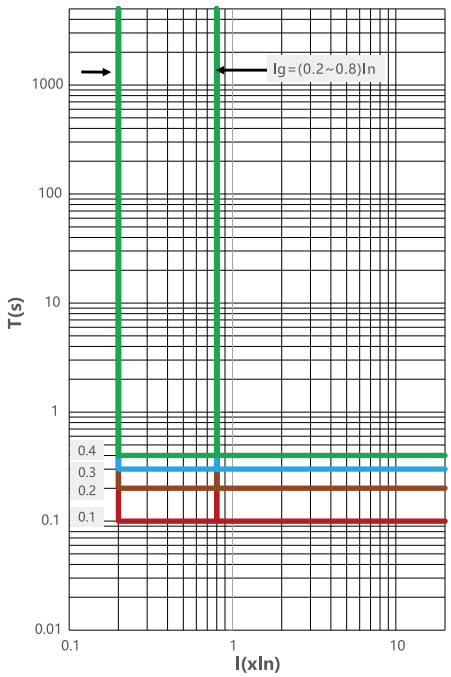


Figure 2 Grounding protection characteristic curve

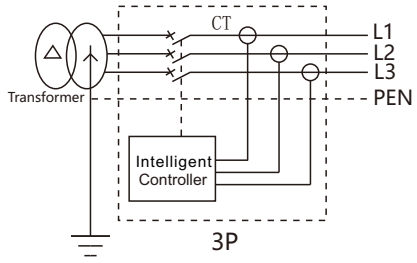


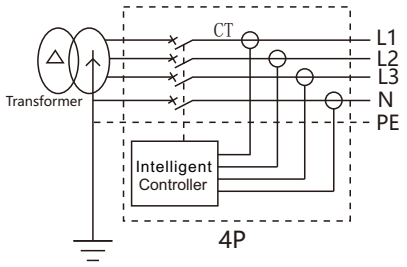
e. Earth fault protection

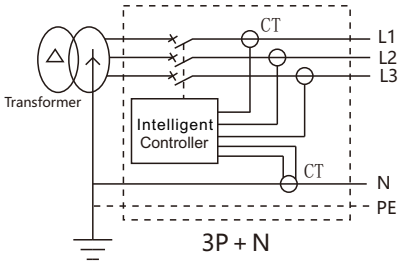
There are two types of protection for ground faults caused by equipment insulation damage: residual current (difference) type (T) and ground current type (W). T-type detection of zero sequence current, that is, take four phase (3 phase 4 wire system) or three phase(3 phase 3 wire system) current vector and protection. The ground current is directly detected on the grounding cable by a special external transformer, which can protect the upper and lower grounding faults of the circuit breaker.

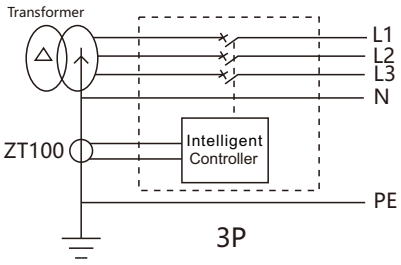
Working current set value Ig		(0.2~1.0)In+OFF	Current tolerance	±10%
Action characteristic		< 0.8Ig inaction		
		≥1.1Ig movement		
Action time Tg Time tolerance ±10%	Set a time limit	0.1~1s+OFF		
	Inverse time shear coefficient Cr	1.5~6+OFF		
	Inverse time limit formula	t=Tg×Cr×Ig/I t=Delay time Tg=Set delay time Cr=Shear coefficient Ig=Set operating current I=Ground fault current		

Ground fault protection method and electrical schematic diagram









Method 1 (difference type)

In TN-C, TNC-S, and TN-S power distribution systems employing three-pole circuit breakers without neutral current transformers, ground fault protection is achieved by vectorially summing the three-phase currents, triggering a fixed-time or inverse-time protection response.

Method 2 (difference type)

The TN-S distribution system utilizes a four-pole circuit breaker with an integrated neutral current transformer. Ground fault protection is achieved by vectorially summing the four-phase currents, resulting in fixed-time or inverse-time protection characteristics.

Method 3 (Difference type)

In TN-S power distribution systems employing three-pole circuit breakers and external neutral current transformers, ground fault protection is achieved by calculating the vector sum of the three-phase currents and the neutral current. The resulting protection characteristic is fixed-time or inverse-time. The conductor connecting the neutral current transformer must be no longer than 2 meters

Mode 4 (ground current mode)

Ground fault protection distribution systems utilize three-pole circuit breakers and external ground current transformers. These systems require an additional, specialized current transformer. The distance between the ground current transformer and the circuit breaker must not exceed 10 meters.

f. Thermal memory function

Due to overload or short delay tripping, there will be thermal effect which is similar to bimetal in the controller. Heat capacity cooling setting time: instantaneous, 10min, 20min, 30min, 1h, 2h, 3h, OFF.

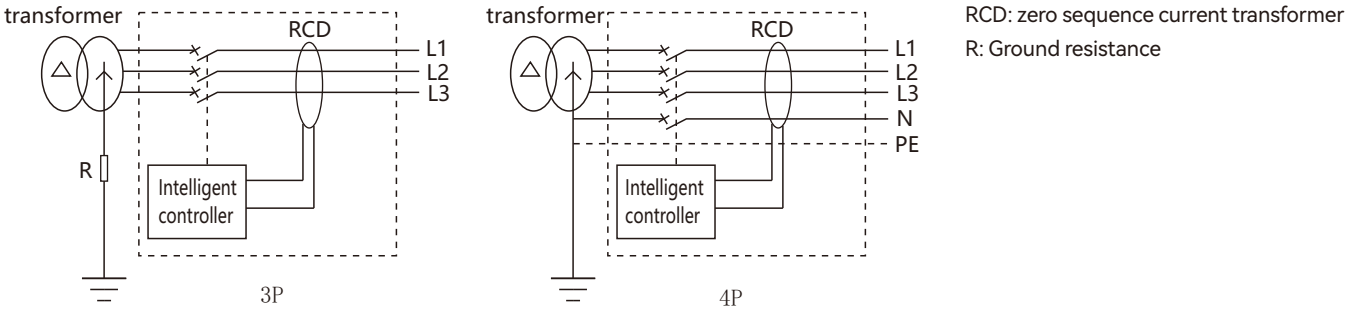
The controller loses power and eliminates the energy automatically.

g. Residual current (leakage) protection

This device is suitable for detecting leakage failures caused by equipment insulation damage or accidental human contact with exposed conductive parts. The residual current setting (I△n) is independent of the circuit breaker's rated current. It utilizes zero-sequence sampling for signal acquisition, requiring a rectangular transformer. This method provides high sampling accuracy and sensitivity, making it well-suited for small current protection.

Operation current set valuel△n		(0.2~1.0)In+OFF				Current tolerance				±10%			
Action characteristic		< 0.8I△n inaction											
		≥1.0I△n movement											
Set the delay time T△n(s)		instantaneous	0.06	0.08	0.17	0.25	0.33	0.42	0.5	0.58	0.67	0.75	0.83
Fault current Maximum turn-off time (s)	I△n	0.04	0.36	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
	2I△n	0.04	0.18	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5
	5I△n、10I△n	0.04	0.07	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1

Residual current protection electrical schematic diagram



RCD: zero sequence current transformer

R: Ground resistance

h. Self-diagnostic function

The intelligent controller can diagnose its own fault when failure happens to the computer. Including: high ambient temperature, E2PROM data error, A/D sampling error, circuit breaker rejection action.

I. MCR and HSISC protection

MCR (Mechanism Condition Recognition) and HSISC (High-Speed Instantaneous Short-Circuit) protection provide instantaneous protection for the circuit breaker itself. Upon detection of an over-limit fault current, the intelligent controller issues a trip command within 10 milliseconds (ms). MCR protection safeguards the circuit breaker's switching capability, preventing damage from switching currents exceeding its rated switching capacity. This protection operates during the circuit breaker's opening and closing (within 10 ms). HSISC protection protects the circuit breaker's current-carrying capacity, preventing damage from currents exceeding its rated breaking capacity. HSiSC protection becomes active 100 ms after the circuit breaker closes.

MCR, HSISC operating current Settings(kA)	30~100	
Inactive characteristic	0.80I/Ii	inaction
Action characteristic	>1.0I/Ii	movement
Action delay	20ms	

Note: This setting is typically pre-configured at the factory based on the circuit breaker's breaking capacity and is not user-adjustable.

Factory default MCR:TSW8-1000/1600 20kA; Above TSW8-2000 50kA

HSISC: TSW8-1000/1600 30kA; TSW8-2000 50kA; TSW8-3200 65kA; TSW8-4000 80kA TSW8-6300 100kA

Function and Characteristics of Accessories

- Undervoltage release device

When the undervoltage release is not powered, the circuit breaker cannot close. The pressure release device is divided into two types: self-acting instantaneous undervoltage release(without delay function) and self-acting instantaneous undervoltage release.

Under voltage release
for 1600A circuit breaker

Working voltage (Ue)	AC230V	AC400V
Switching voltage range	(35~70)%Ue	
Reliable closing voltage range	(85~110)%Ue	
Cannot close voltage range	≤35%Ue	
Power consumption	20VA	
Delay time	instantaneous、0.5s、1s、3s、5s	

Under voltage release
for 2000A circuit breaker

Note:

1. If the operating voltage recovers to above 85% of Ue within half the delay trip time, the circuit breaker will still trip.
2. In areas with frequent lightning or unstable power grids, using a delayed undervoltage release is recommended to prevent nuisance tripping due to brief voltage dips.
3. The maximum trip delay can be extended to 10 seconds for undervoltage tripping and 5 seconds for zero voltage tripping (requires prior agreement with the manufacturer).

Closing electromagnet
for 1000A

Closing electromagnet

- After energy is stored in the circuit breaker, the circuit breaker can be switched on by remote mode at the specified supply voltage.

Closing electromagnet
for 2000A

Working voltage Us	AC230V	AC400V	DC220V	DC110V
Working voltage range	(85~110)%Us			
Starting current	1.3A	0.7A	1.3A	2.5A
Circuit breaker response time	≤60ms			

- Shunt release

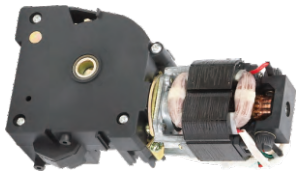
Shunt release of 1000A

Shunt release of 2000A

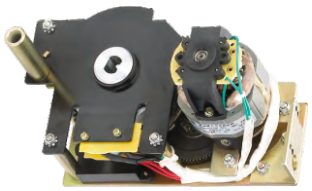
Using shunt release, the circuit breaker can be disconnected by remote mode at the specified supply voltage after the circuit breaker is switched on.

Working voltage Us	AC230V	AC400V	DC220V	DC110V
Working voltage range	(70~110)%Us			
Starting current	1.3A	0.7A	1.3A	2.5A
Circuit breaker response time	≤30ms			

- Electric motor for energy storage



Type-1000 for energy storage

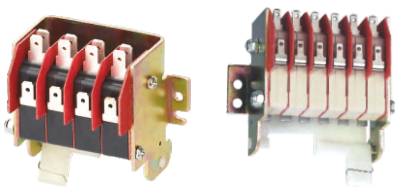


Electric motor for energy storage of circuit breaker not smaller than 2000A

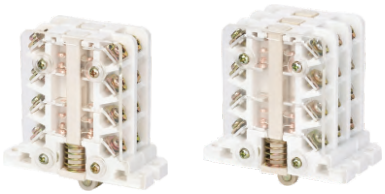
It realizes the electric energy storage of the circuit breaker and re-energy storage operation automatically after the circuit breaker is switched on, so that the circuit breaker can be switched on again immediately once it is disconnected.

Working voltage Us		AC230V	AC400V	DC220V	DC110V
Working voltage range		(85~110)%Us			
Energy storage time		≤7s (Cycle period:≤1time/min)			
Power consumption	TSW8-1000	75VA		75W	
	TSW8-2000	85VA		85W	
	TSW8-3200	110VA		110W	
	TSW8-6000	150VA		150W	

- Auxiliary switch



Auxiliary switch of 1000A



Auxiliary switch not smaller than 2000A

The default configuration involves a conversion between quad-open and quad-closed states. Other available types include independent 4NO/NC, conversion 6NO/NC, and independent 6NO/NC configurations.

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

Door frame

- Door frame

The door frame and sealing ring are installed on the door where the circuit breaker is installed in distribution cabinet to play a sealing role, and the protection level reaches IP40.

Drawer operation padlock

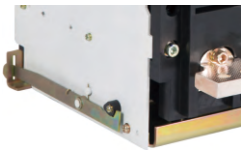
- Drawer operation padlock

When the body of the drawer circuit breaker is in the "separate" position, pull out the card plate and lock it with a padlock to lock the rear part. The body will not be able to roll to the Test or Connect position. (Padlock user provided)

Phase barrier

- Phase barrier

Installed between busbar to increase the insulation performance of the breaker.



Location Door interlock

- Location Door interlock

When the drawer type circuit breaker body is in the "test" or "connection" body is in the "separate" position, the cabinet door is allowed to open.

Power module

- Power module

Input power: AC230V/AC400V/DC110V/DC220V (optional); When ground protection, communication, thermal memory functions are used, or circuit auxiliary power must be equipped.

When a DC intelligent controller is selected, the DC power supply must be converted to DC24V through the DC power module and then provided to the intelligent controller.

Relay module

- Relay module

Input voltage: DC24V

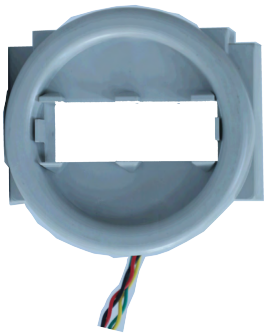
Contact capacity: AC250V 10A; DC28V 10A

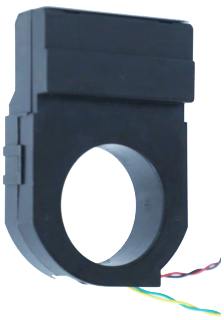
When the load capacity of the control circuit breaker is large, it needs to be converted by the relay module and then controlled.

The installation method is 35mm standard guide rail.

- External neutral Line (N phase) Transformer (T)

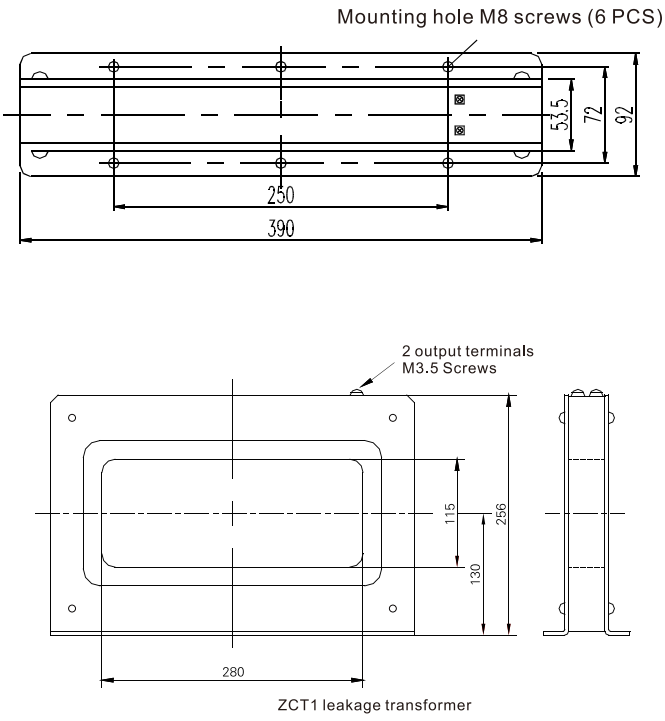
When used in a (3P +N) distribution system with a three-pole circuit breaker, installed on the neutral line N, the installation point distance is up to 2m.If the N-phase busbar is too wide, the existing external N-phase transformer can not meet the requirements, our company can also provide flexible transformers, flexible transformers can be connected to 10omm and more wide busbars.





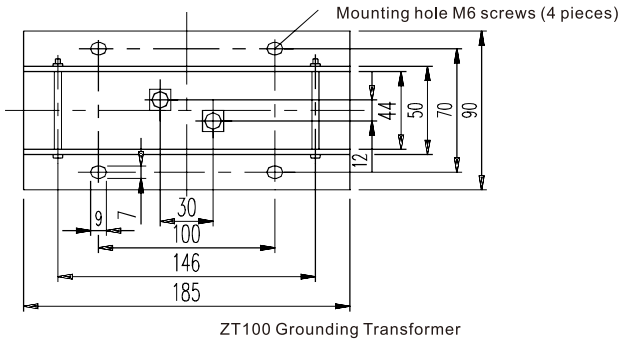
- External zero sequence leakage transformer

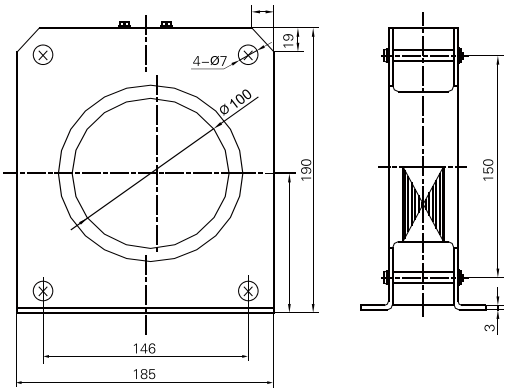
When the ground protection of the controller is leakage protection (E), the external zero sequence leakage transformer is ZCT1 transformer, and the ratio is 30A/20mA.



- External ground current transformer

When the controller is used for ground current protection (W), the external ground current transformer is the ZT1 transformer. The ratio of rated current of the controller is 1A(less than 3200A) and rated current of the controller 5A(3200A or higher).



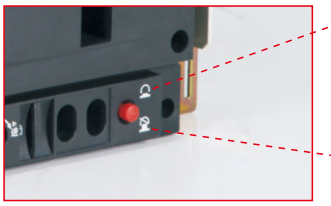


- Drawer seat three-position lock

The circuit breaker body is locked in three positions of "separation", "test" and "connection" in drawer seat.

In the three positions of "Separate", "test" and "Connect", the position lock is locked and the crank cannot be operated (unlocked state).

After the position lock is locked, press the position lock button to release the lock (locked state) when you need to continue operating the handle.



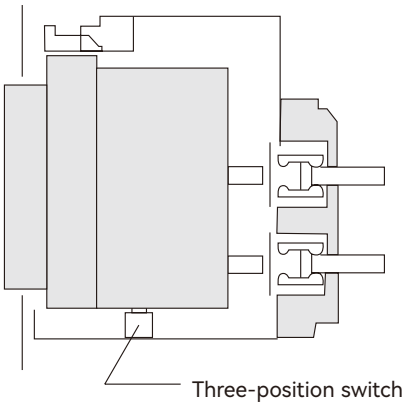
In the "Separate" position, both the main circuit and the secondary circuit are disconnected

In the "Test" position, the main circuit is disconnected and the secondary circuit is connected

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

Three-position electrical indicating device for extraction seat

When the drawer type circuit breaker body is in the three position of "Separation", "Test" and "Connection" respectively in the drawer seat, the electrical indicating device in the three position s can output the electrical status signal corresponding to the three positions respectively, and the device is installed in the drawer seat.

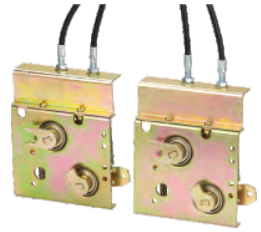


Rated voltage Ue		Rated heating current Ith (A)
AC50Hz	AC250V	3
	AC380V	1
DC	DC220V	0.3
Category of use		AC-15 AC-12
		DC-12

"Three position" wiring diagram

separate	test	join
	T Test	
02 03 01	05 06 04	08 09 07

- Mechanical interlock

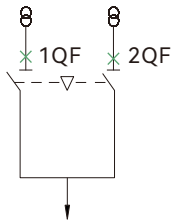


Mechanical interlocking

Interlocking of two flat circuit breakers of interlocking if two stacked circuit breakers.

Cable interlocking or connection rod interlocking of two circuit breakers

Circuit diagram



Possible operation mode

1QF	2QF
0	0
0	1
1	0