

HYT3-125~630 Series Automatic Transfer Switching Equipment

Functions and Characteristics

Product Overview

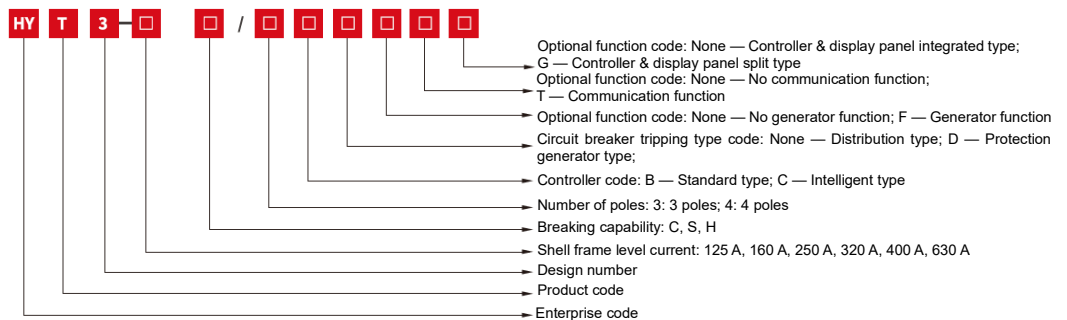


This transfer switch is suitable for the dual power supply system with AC 50 Hz, rated working voltage of 400 V (Level 3, 4) or below and rated current of 10 A to 630 A. It can simultaneously detect the two power supplies of the power supply system: The common power supply (N) and the standby power supply (R), and automatically (or manually) switch from the abnormal power supply to the normal power supply when the power supply is in undervoltage, phase loss, voltage loss, and overvoltage, so as to improve the continuity, safety and reliability of the power supply system in the place of use.

This transfer switch is widely used in power systems, hospitals, posts and telecommunications, fire control, hotels, banks, airports, docks, residential quarters, television stations, military facilities, shopping malls and other important places with high requirements for power supply continuity.

The switching device complies with GB/T 14048.11 *Low-voltage Switchgear and Controlgear — Part 6-1: Multiple Function Equipment—Transfer Switching Equipment*, which is equivalent to IEC 60947-6-1.

Model Description



Normal Working Conditions

1. The ambient air temperature shall be -5°C – $+40^{\circ}\text{C}$; and the average temperature within 24 hours shall not exceed $+35^{\circ}\text{C}$.
2. The altitude of the installation location shall not exceed 2,000 m.
3. The relative atmospheric humidity at the installation site shall not exceed 50% when the ambient air temperature is $+40^{\circ}\text{C}$. A higher relative humidity is allowed at a lower temperature. For example, when the average minimum temperature in the wettest month is $+20^{\circ}\text{C}$, the monthly average maximum relative humidity can be up to 90%. Appropriate measures shall be taken to prevent condensation caused by temperature changes.
4. Contamination grade: Grade 3. There is no explosion danger and no gas or conductive dust that corrodes metals or damages insulation in the surrounding air.
5. The installation category is Grade III.
6. Two power lines are connected to the upper terminal of the switching device, and the load line is connected to the lower terminal, which cannot be reversed.
7. The installation location shall be free of significant vibration and impact.

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Main Technical Parameters

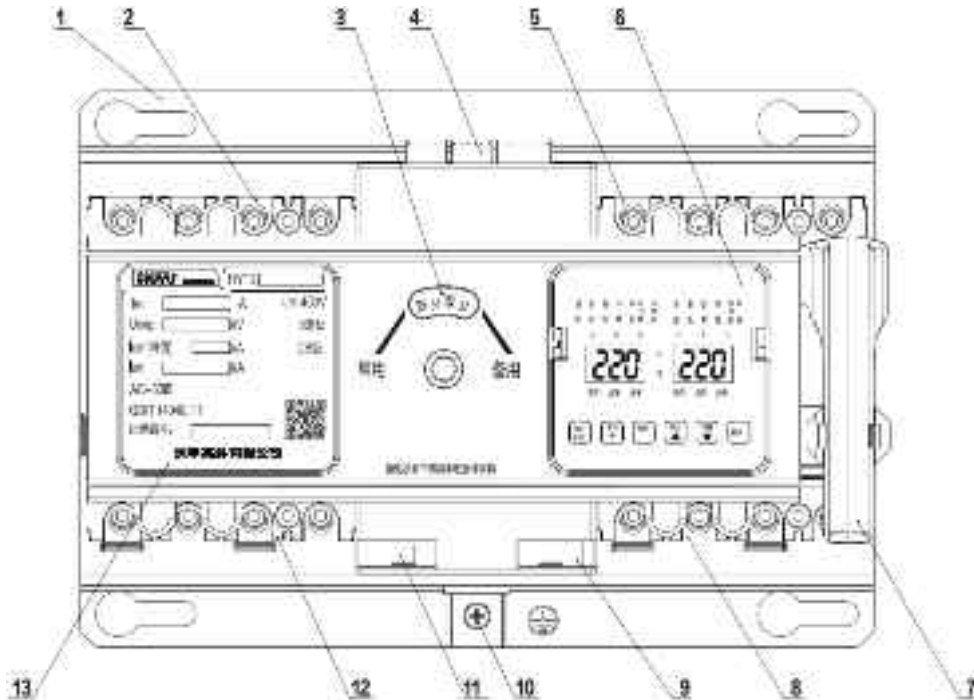
Model & Specification Technical parameter	HYT3-125			HYT3-160			HYT3-320 HYT3-250			HYT3-400 HYT3-630		
							250/320	320	400/630		630	
Rated working current I_e (A)	10, 16, 20, 25A, 30, 32, 40, 50A, 60, 63, 70, 75, 80, 100, 125			16, 20, 25, 30, 32, 40, 50, 60, 63, 65, 70, 75, 80, 90, 100, 110, 125, 140, 150, 160			100, 125, 140, 150, 160, 170, 175, 180, 200, 225, 250	270, 280, 300, 315, 320	250, 280, 300, 315, 320, 350, 380, 400,		450, 500, 550, 600, 630	
Rated working voltage U_e	AC 400 V/50 Hz (Level 3, 4)											
Rated insulation voltage U_i (V)	800V						1000V					
Rated impulse withstand voltage U_{imp} (kV)	8									12		
Breaking capacity	C	S	H	C	S	H	C	S	H	C	S	H
Rated short-circuit making capacity I_{cw} (kA)	42	52.5	105	42	73.5	105	42	73.5	105	84	105	143
Rated short-circuit breaking capacity I_{cn} (kA)	20	25	50	20	35	50	20	35	50	40	50	65
Mechanical life	10,000			8,000			6,000			4,000		
Electrical life	3,000			2,000			2,000			1,500		
Use category	AC-33iB											
Electrical appliance level	CB											
Contact transfer time	2.0s±15%			2.0s±15%			2.0s±15%			2.0s±15%		
Transfer action time	3.5s±10%			3.5s±10%			3.8s±10%			3.5s±10%		
Return transfer time	3.5s±10%			3.5s±10%			3.8s±10%			4.0s±10%		
Power off time	2.0s±15%			2.0s±15%			2.0s±15%			2s±15%		
Electromagnetic compatibility environment	Environment A											
Contamination grade	3											
Number of poles	3P, 4P											
IP level	IP20											
Installation mode	Vertical fixed installation											
Wiring method	Screw wiring											
Operation mode	Automatic/Manual											
Switch position	Common position (I), standby position (II) and disconnection position (0)											
Rated control power supply voltage U_s	AC 230V/50Hz											
Control characteristics	Voltage loss, undervoltage, phase loss and overvoltage transfer											

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Product Structure

1. Schematic diagram of product structure



2. Product structure description

1 — Bottom plate; 2 — Common input terminal; 3 — Transfer location instruction; 4 — Secondary circuit wiring terminal; 5 — Standby input terminal; 6 — Control panel; 7 — Handle; 8 — Standby output terminal; 9 — Common power fuse; 10 — Grounding screw; 11 — Common output terminal; 12 — Common power fuse; 13 — Sign

3. Controller panel and description



Character	Description (when working, the character is normally on)
Automatic	Automatic work mode indication
Manual	Manual work mode indication
Mutual standby	Mutual standby mode indication
Automatic recovery	Automatic charge and automatic recovery mode indication
No automatic recovery	Automatic charge without automatic recovery mode indication
Generator	Power grid — Generator mode indication
Setting	Setting mode indication
Communication	Communication status indication
Fault	Undervoltage, voltage loss, phase loss and overvoltage of power supply and tripping of circuit breaker



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Functions and Characteristics

3. Controller panel and description

Character	Description (when working, the character is normally on)
Fire control	Fire control dual-split mode indication
Generator starting	Generator starting signal indication
A, B, C	Under normal working conditions, cooperate with the digital display tube to circularly display three-phase power supply voltage indications of the common power supply and the standby power supply
220	In the working state, the three-phase voltage value is displayed cyclically; and in the setting mode, the setting code is displayed. See Table 4 for the meanings of codes.
V	Voltage unit symbol
S	Time unit symbol
Common	Common power indication: when the power supply is normal: the indicator is normally on; when the power supply is abnormal, undervoltage, voltage loss, phase loss and overvoltage occurs, and the indicator light goes out.
Standby	Standby power supply indication: when the power supply is normal: the indicator is normally on; when the power supply is abnormal, undervoltage, voltage loss, phase loss and overvoltage occurs, and the indicator light goes out.
Closing	Closing indication
Opening	Opening indication
Button	Description
Automatic/Manual	Switching between automatic work mode and manual work mode
Normally closed/+	In manual mode: common power closing button; in setting mode: code increment button
Standby closed/-	In manual mode: standby power supply closing button; in setting mode: code increment button
	Dual-split mode button; in setting mode: return to the previous set of codes
	Enter the setting mode button; in setting mode, enter the next set of codes
Confirmation	In setting mode, click the button to save the current settings and exit the settings panel.
Code	Description
E 000	Automatic charge and automatic recovery
E 001	Automatic charge without automatic recovery
E 002	Mutual standby
Fd 000	Generator mode closed
Fd 001	Generator mode started
Pd 022	Dual-split time in 001 s~099 s, adjustable
dc 003	Common transfer delay in 001 s~099 s, adjustable
db 003	Standby transfer delay in 001 s~099 s, adjustable
HU 264	Common overvoltage value, voltage value in 230 V~299 V, adjustable
LU 180	Common undervoltage value, voltage value in 150 V~209 V, adjustable
Hu 264	Standby overvoltage value, voltage value in 230 V~299 V, adjustable
Lu 180	Standby undervoltage value, voltage value in 150 V~209 V, adjustable
dJ 005	Generator starting signal delay stop time in 001 s~099 s, adjustable
Rd 032	Mailing address in 0~127, adjustable
b 000	Four frequency bands of Baud rate: 2,400, 4,800, 9,600, 19,200

Related Functions

1. Controller function table

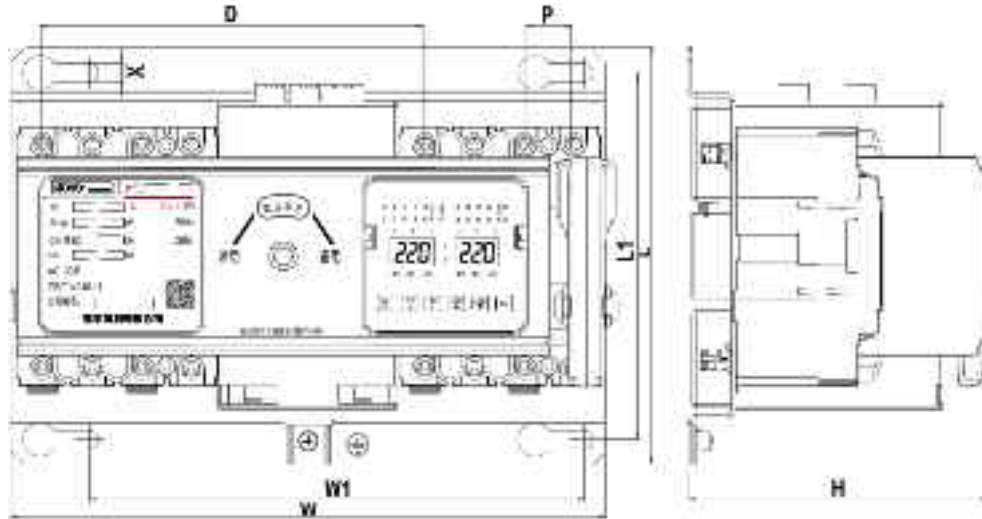
Controller type	Type B (standard type)	Type C (intelligent type)
Controller function		
Automatic/Manual transfer mode	■	■
Dual-split	■	■
Power grid — Power grid	■	■
Power grid — Generator	□	□
Automatic charge and automatic recovery	■	■
Automatic charge without automatic recovery	■	■
Mutual standby	■	■
Monitoring common power supply and fault conversion	■ Phase loss/voltage loss, undervoltage and overvoltage	■ Phase loss/voltage loss, undervoltage and overvoltage
Monitoring standby power supply and fault conversion	■ Phase loss/voltage loss, undervoltage and overvoltage	■ Phase loss/voltage loss, undervoltage and overvoltage
Fire control input	■	■
Fire control feedback output	-	■
Delay adjustable	■	■
Transfer delay	0 s–99 s, adjustable	0 s–99 s, adjustable
Return delay	0 s–99 s, adjustable	0 s–99 s, adjustable
Indication		
Common and standby closing indication	■	■
Common and standby power supply indication	■	■
Fault tripping indication	■	■
Transfer function		
Overvoltage transfer (on and off can be set)	■(230 V~299 V)	■(230 V~299 V)
Undervoltage transfer	■(150 V~209 V)	■(150 V~209 V)
Voltage loss transfer	■	■
Phase loss transfer	■	■
Other functions		
Communication function (T)	□	□
Controller & display panel split type (G)	□	□

Note: "■" indicates that this function is available; "-" indicates that this function is not available; "□" indicates that this function is optional; "▽" indicates that this function is adjusted before leaving the factory according to customer's requirements.

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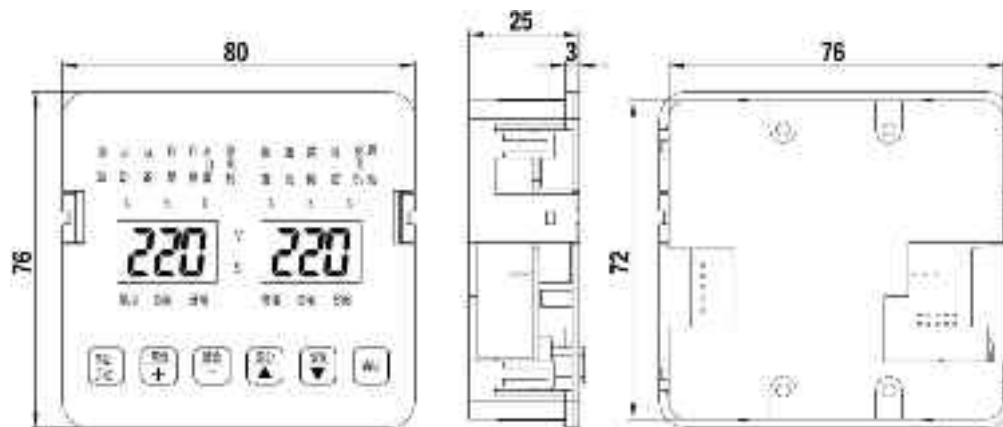
Functions and Characteristics

Outline Installation and Dimensions



Model	W	W1	L	L1	H	X	P	D
HYT3-125	300	250	210	185	153	9	25	193
HYT3-160	336	291	214	189	153	9	30	211
HYT3-320(250)	376	326	229	200	153	9	35	231
HYT3-630(400)	519	460	340	308	192	11	45	320

Outline Dimensions of Controller Panel



Panel opening dimension 73×77

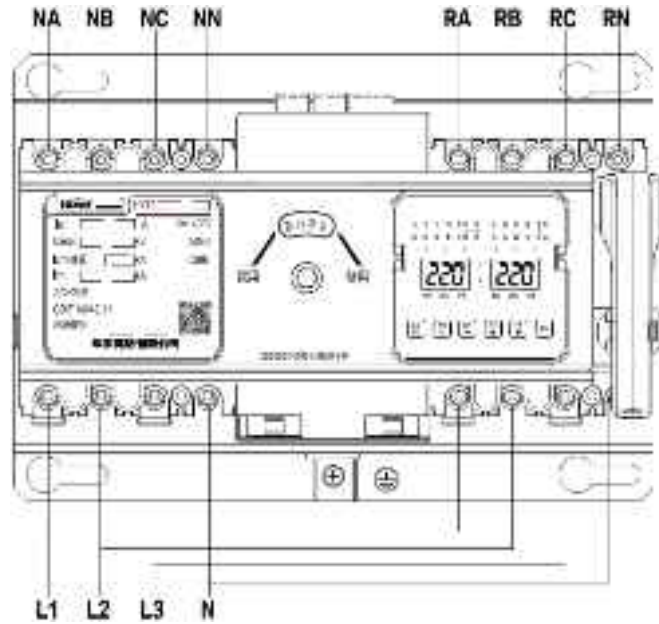
HYT3-125~630 Series Automatic Transfer Switching Equipment

Functions and Characteristics

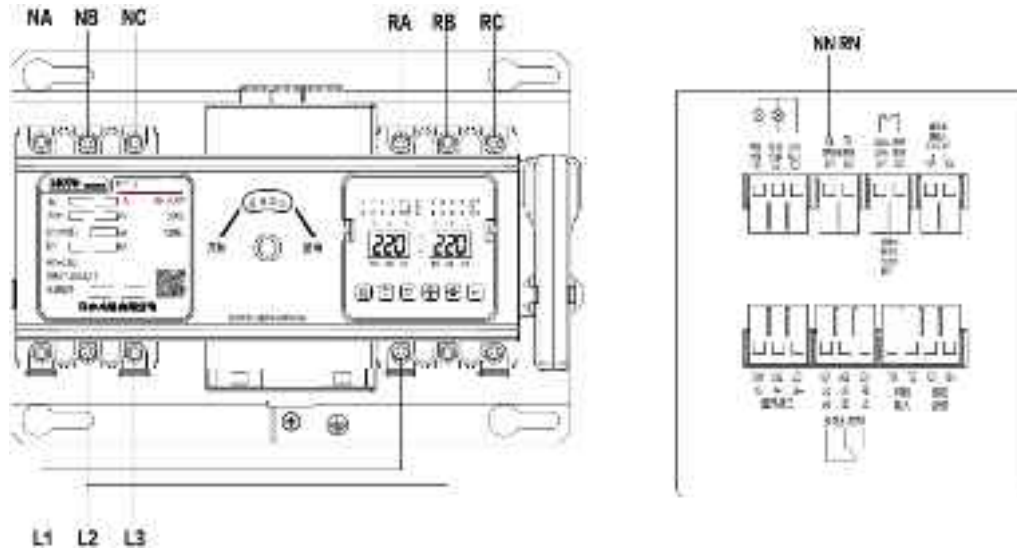
4P Product Main Circuit Wiring

Wiring instruction

1. NA, NB, NC and NN are common inputs A, B, C and N.
2. RA, RB, RC and RN are standby inputs A, B, C and N.
3. L1, L2, L3, N are outputs A, B, C, N.



3P Product Main Circuit Wiring



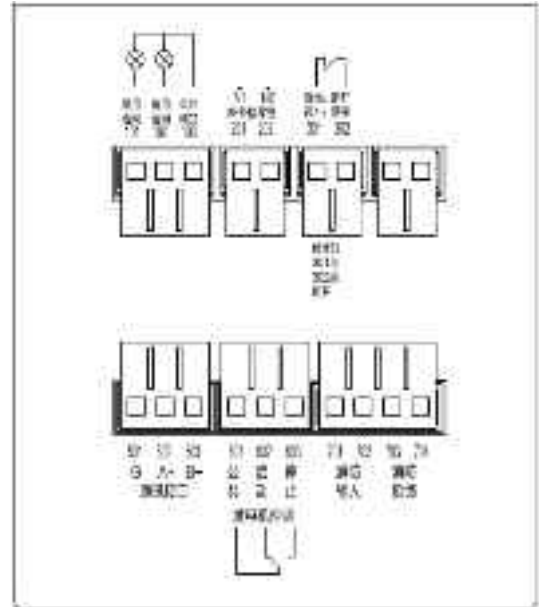
Wiring instruction

1. NA, NB and NC are common inputs A, B and C.
2. RA, RB and RC are standby inputs A, B and C.
3. L1, L2 and L3 are output terminals A, B and C.
4. 201 is the common power neutral wire.
5. 202 is the standby power neutral wire.

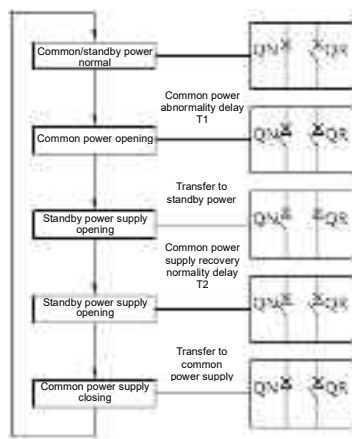
Controller Secondary Terminal Wiring

Wiring of the secondary terminal of the controller

- 101# and 103#: Common power closing external indicating signal output terminal (AC 220 V/0.5 A, active).
- 201#: 3P product common power neutral wire.
- 202#: 3P product standby power neutral wire.
- 301#, 302#: RS485 remote control/local control switching point; disconnect for local control and short circuit for remote controller.
- 501#, 502#, 503#: RS485 communication interfaces.
- 601#, 602# and 603#: The passive output terminals of generator starting control signals; 601# is the common terminal and 602# is the normally closed terminal. 603# is the normally open terminal. When the common power supply is normal, 601# and 603# are closed, and 601# and 602# are disconnected. When the common power supply is abnormal, 601# and 602# are closed, and 601# and 603# are disconnected.
- 701#, 702#: Passive input terminal of fire control linkage signals. When this port is externally connected to the passive signals, the controller immediately controls the switch to transfer to the opening position to cut off the load power supply, and the controller enters the manual state.
- 703#, 704#: The passive output terminal of fire control feedback signals. Under normal conditions, this port is normally open, and 703# and 704# are closed when a fire control signal is input to the controller to transfer the switch to the opening position.

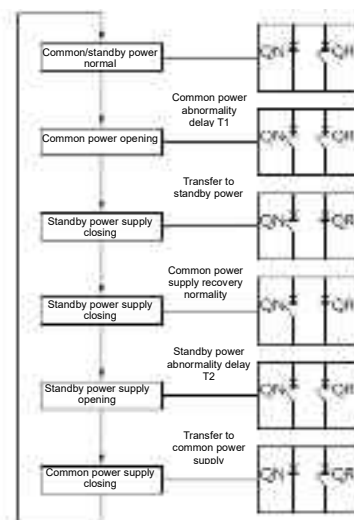


Description of automatic transfer action flow



QN: Common side circuit breaker.
 QR: Standby side circuit breaker.

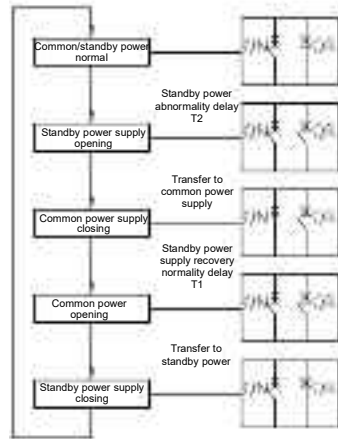
Power grid — Power grid, Automatic charge and automatic recovery mode



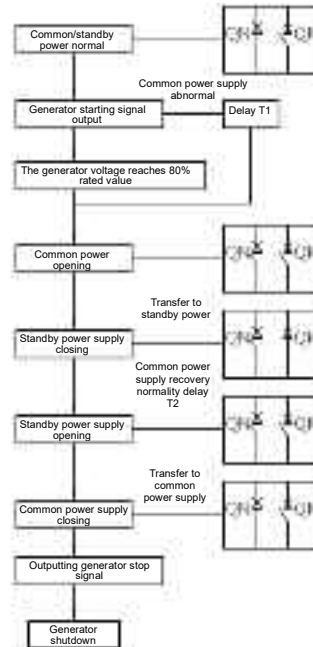
Automatic charge without automatic recovery mode

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Mutual standby mode



Power grid — Generator mode

T1: Transfer delay, terminal type and standard type are fixed for 3 s, and the intelligent type is adjustable in 0~30 s. Duration from common power abnormality to QN opening.

T2: Return delay, terminal type and standard type are fixed for 3 s, and the intelligent type is adjustable in 0~30 s. Duration from "common power supply returns to normal" to QR opening.

QN: Common side circuit breaker.

QR: Standby side circuit breaker.

Use and Maintenance

1. Product commissioning

After installation, the product shall be commissioned.

Manual commissioning: First, adjust the automatic/manual switching gear of the transfer switch to the manual gear, and pull the handle to make the product in the state of common closing, dual-split, and standby closing, and check whether the product is reliably closed.

Power-on commissioning: Adjust the automatic/manual switching gear of the transfer switch to the automatic gear first, and then energize the two power supplies. Commission the product according to the product transfer process in Article 9, and observe whether the product transfer and panel indicator light are normal and whether the output state of the secondary terminal is correct.

2. Product fault analysis and maintenance

Fault	Cause analysis	Troubleshooting method
The indicator light on the controller panel is not on after power-on	Loose, falling off or poor contact of power supply sampling wire	Check and connect the wires
	The 3P product neutral wire is not connected to the terminal	
	Phase loss of power supply	Check whether the power supply voltage is normal
	Product fuse blown	Replace the fuse
Controller indicator light indicating the trip signal	Phase loss of power supply	Check whether the power supply voltage is normal
	Circuit breaker tripping due to main circuit fault	Check and eliminate the main circuit fault
	Phase loss (Phase A, Phase N) of circuit breaker	Replace the controller or product
	The load side of the product is not correctly wired as required, mainly for Phase A and Phase N	Connect correctly according to the wiring diagram and check whether the product sampling wire falls off

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Ordering Information

1. When ordering, please fill in according to Table 6.

Order unit	Order quantity		Order date			Rated working current	Notes
Model	Breaking capacity	Number of poles	Controller code	Circuit breaker tripping type code	Optional function code		
<input type="checkbox"/> HYT3-125	<input type="checkbox"/> C <input type="checkbox"/> S <input type="checkbox"/> H	<input type="checkbox"/> 3P <input type="checkbox"/> 4P	<input type="checkbox"/> B (Standard type) <input type="checkbox"/> C (Intelligent type)	<input type="checkbox"/> Distribution type <input type="checkbox"/> D Protection generator type	<input type="checkbox"/> F Generator start/stop <input type="checkbox"/> T Communication function <input type="checkbox"/> G Controller & display panel split type	<input type="checkbox"/> 10 A <input type="checkbox"/> 16 A <input type="checkbox"/> 20 A <input type="checkbox"/> 25 A <input type="checkbox"/> 30 A <input type="checkbox"/> 32 A <input type="checkbox"/> 40 A <input type="checkbox"/> 50 A <input type="checkbox"/> 60 A <input type="checkbox"/> 63 A <input type="checkbox"/> 70 A <input type="checkbox"/> 75 A <input type="checkbox"/> 80 A <input type="checkbox"/> 100 A <input type="checkbox"/> 125 A	
<input type="checkbox"/> HYT3-160						<input type="checkbox"/> 16 A <input type="checkbox"/> 20 A <input type="checkbox"/> 25 A <input type="checkbox"/> 30 A <input type="checkbox"/> 32 A <input type="checkbox"/> 40 A <input type="checkbox"/> 50 A <input type="checkbox"/> 60 A <input type="checkbox"/> 63 A <input type="checkbox"/> 65 A <input type="checkbox"/> 70 A <input type="checkbox"/> 75 A <input type="checkbox"/> 80 A <input type="checkbox"/> 90 A	
<input type="checkbox"/> HYT3-250 <input type="checkbox"/> HYT3-320						<input type="checkbox"/> 100 A <input type="checkbox"/> 110 A <input type="checkbox"/> 125 A <input type="checkbox"/> 140 A <input type="checkbox"/> 150 A <input type="checkbox"/> 160 A	
<input type="checkbox"/> HYT3-320						<input type="checkbox"/> 100 A <input type="checkbox"/> 125 A <input type="checkbox"/> 140 A <input type="checkbox"/> 150 A <input type="checkbox"/> 160 A <input type="checkbox"/> 170 A <input type="checkbox"/> 175 A <input type="checkbox"/> 180 A <input type="checkbox"/> 200 A <input type="checkbox"/> 225 A <input type="checkbox"/> 250 A	
<input type="checkbox"/> HYT3-400 <input type="checkbox"/> HYT3-630						<input type="checkbox"/> 270 A <input type="checkbox"/> 280 A <input type="checkbox"/> 300 A <input type="checkbox"/> 315 A <input type="checkbox"/> 320 A	
<input type="checkbox"/> HYT3-630						<input type="checkbox"/> 250 A <input type="checkbox"/> 280 A <input type="checkbox"/> 300 A <input type="checkbox"/> 315 A <input type="checkbox"/> 320 A <input type="checkbox"/> 350 A <input type="checkbox"/> 380 A <input type="checkbox"/> 400 A	
<input type="checkbox"/> HYT3-630						<input type="checkbox"/> 450 A <input type="checkbox"/> 500 A <input type="checkbox"/> 550 A <input type="checkbox"/> 600 A <input type="checkbox"/> 630 A	
Example	HYT3-125S/4 C F 32 A represents a 4-pole automatic transfer switching equipment with S-type circuit breaker breaking capacity, distribution type circuit breaker tripping, C-type controller, automatic charge and automatic recovery of power grid and generator, and rated working current of 32 A.						