



**HYT3-63 Series
CB-level Automatic Transfer
Switching Equipment**

**Installation and Operation
Instruction**

Please read the instruction carefully before installing and using the product, and keep it for future reference.

Product Certificate

This product has passed the inspection and meets the requirements of GB/T 14048.11, and therefore is allowed to leave the factory.



Inspector:

Date of inspection:

See the product or packaging.

HUANYU HIGH-TECH CO., LTD.

Considerations in Use

Dear users:

To use this product correctly and reasonably and avoid unnecessary losses, please read this instruction carefully before installation, use, circuit connection, operation and maintenance inspection. This manual introduces the structure, working principle, use conditions, installation, commissioning, etc. of the dual-power automatic switching device (hereinafter referred to as the "switching device"), which is conducive to your correct and reasonable use of this product. If you have any questions, please consult our company. The user shall be responsible for the adverse consequences caused by not operating according to the instruction.

[Attention]

1. Please read this installation and operation instruction carefully before use, and operate in strict accordance with the specifications.
2. Non-professionals are prohibited from maintenance operation, otherwise it will lead to electric shock or product damage.
3. Before powering on or configuring the product, check whether the specification of the switching device meets the use requirements, and use appropriate voltage measuring equipment to determine the voltage condition.
4. Measure the insulation resistance of the main circuit with a 500 V megger before use (the controller must be removed during measurement, otherwise the intelligent controller will be damaged), and it shall be not less than 50 M Ω at the ambient temperature of 20°C \pm 5°C and the relative humidity of 50%~70%. Otherwise, the switching device shall be dried until the insulation resistance meets the specified requirements.
5. This product has been tested for the dielectric performance according to the standard before leaving the factory. If the retest is carried out, the controller must be removed to avoid damage to the product.
6. Wiring must be carried out according to the phase sequence identification of the incoming terminal of the switching device body, and the phase sequence of the incoming terminals of the two power supplies must be consistent, and the phase wire must not be mistakenly connected to the neutral wire.
7. Four-pole and two-pole switching devices connect the neutral wires of two power supplies to the corresponding incoming terminals of "common power supply" and "standby power supply" respectively.

Three-pole switching devices must have the neutral wires of two power supplies connected to the corresponding secondary terminals. Do not share the neutral wires, and the wiring shall be reliable, otherwise the switching device will not work normally.

8. The shell of the switching device must be reliably grounded to ensure the safety of operators.
9. Do not install the switching device in places such as outdoors, or with damp, direct sunlight, high temperature, large vibration impact or conductive dust, otherwise the service life of the product will be shortened or the switch will fail.
10. When the switching device is in the automatic transfer state, do not use the handle for the transfer operation, otherwise the control circuit will be partially damaged.
11. In the cases of common power failure and/or standby power failure, it is forbidden to manually switch on the failed power supply.
12. After the protective appliance is disconnected due to the line or load fault, the fault shall be eliminated before powering on the switching device.
13. To ensure the reliability of the switching device, it is required to conduct the switching test regularly (for example, operating once every three months) to confirm that the switch works normally and ensure the continuity of the power supply for important loads.
14. Before the normal maintenance and fault repair of the system circuit, all power supplies must be turned off, the switching device shall be switched to the dual-split position, the "Automatic/Manual" gear shall be set to the "Manual" gear on the switch panel, and the handle padlock buckle shall be pulled out to lock the device. The "No Closing" sign shall be placed in a prominent position for maintenance, so as to avoid unnecessary property loss and personal injury.
15. When the switching device is in maintenance or regular inspection, please commission it in the "Manual" mode.
16. Products that are not used for a long time shall be moisture-proof and dust-proof, and must be commissioned according to the specified contents before use to ensure that the switching device can work normally before being put into operation.

1 Scope of Application

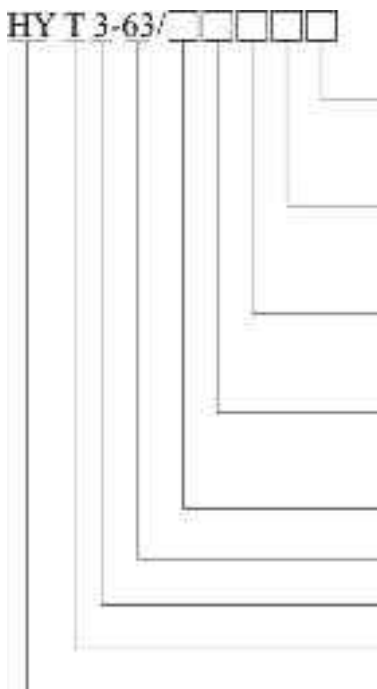
The switching device is suitable for the dual power supply system with AC 50 Hz, rated working voltage of 400 V or below and rated current of 10 A to 63 A. It can simultaneously detect the two power supplies of the power supply system: the common power supply (N) and the standby power supply (R), and automatically (or manually) switch from the abnormal power supply to the normal power supply when the power supply is in undervoltage or phase loss, so as to improve the continuity, safety and reliability of the power supply system in the place of use.

The switching devices are 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.

2 Standards Followed

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.

3 Model Description



Optional function code: F: Power grid — Generator; T: RS485 communication function

Circuit breaker tripping type code: None-Type C; Type D-D

Control mode: R — Automatic charge and automatic recovery, S — Automatic charge without automatic recovery, I — Mutual standby

Controller code: A: Basic type; B: Standard type; C: Intelligent type

Number of poles: 2: two poles; 3: three poles; 4: four poles

Shell frame level current: 63 (A)

Design number

Product code

Enterprise code

4 Normal Working Conditions

- 4.1 The ambient temperature shall be -5°C – $+40^{\circ}\text{C}$; and the average temperature within 24 hours shall not exceed $+35^{\circ}\text{C}$.
- 4.2 The altitude of the installation location shall not exceed 2,000 m.
- 4.3 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.
- 4.4 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.
- 4.5 The installation category is Grade III.
- 4.6 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.
- 4.7 The installation location shall be free of significant vibration and impact.

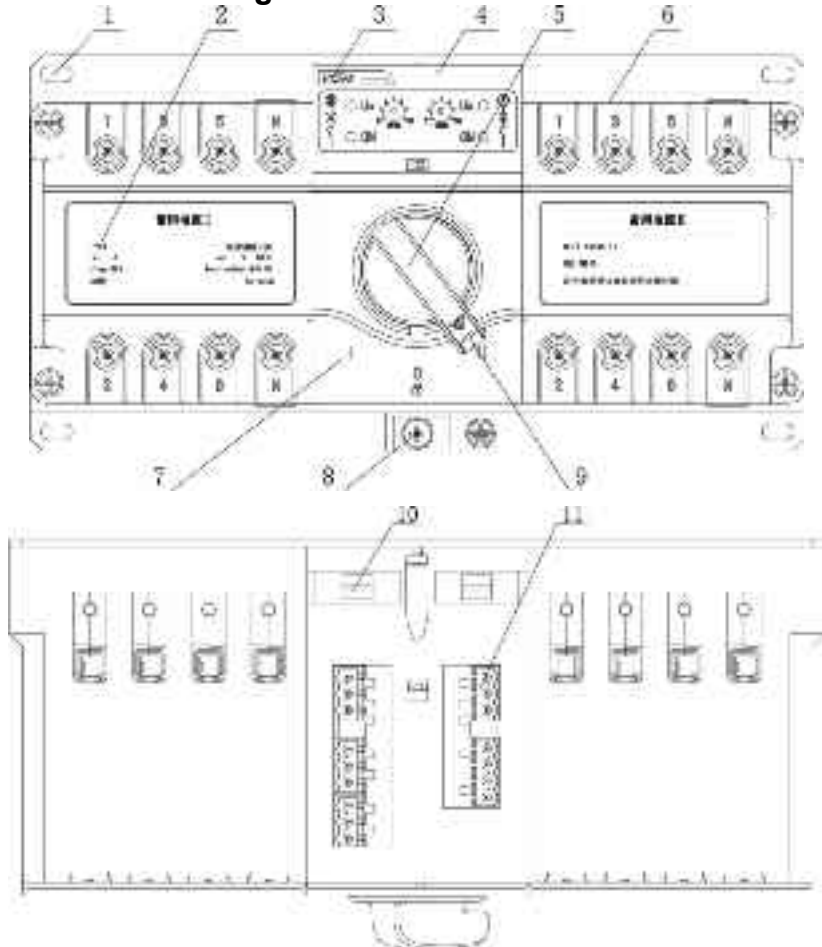
5 Main Technical Parameters

Table 1

| Model & specification | HYT3-63 |
|--|---|
| Technical parameter | |
| Rated working current I_e | 10 A, 16 A, 20 A, 25 A, 32 A, 40 A, 63 A |
| Rated working voltage U_e | AC 230 V/50 Hz (2P), AC 400 V/50 Hz (3P, 4P) |
| Rated insulation voltage U_i | 500 V |
| Rated impulse withstand voltage U_{imp} | 4 kV |
| Rated short-circuit making capability I_{cw} | 9.18 kA |
| Rated short-circuit breaking capacity I_{cm} | 6 kA |
| Mechanical life | 10,000 times |
| Electrical life | 3,000 times |
| Use category | AC-33iB |
| Standard | GB/T 14048.11 |
| Electrical appliance level | CB |
| Number of poles | 2P, 3P, 4P |
| Delay time | Type E and Type M: Fixed 3 s; Type C: 0 s~30 s, adjustable |
| Electromagnetic compatibility environment | B environment |
| Contamination grade | 3 |
| IP level | IP30 |
| Installation mode | Vertical fixed installation |
| Operation mode | Automatic/Manual |
| Switch position | Common position (I), standby position (II) and disconnection position (0) |
| Controller type | Type E (terminal type), Type M (standard type), Type C (intelligent type) |

| | |
|---|--|
| Model & specification | HYT3-63 |
| Technical parameter | |
| Rated control power supply voltage | AC 230 V/50 Hz |
| Voltage deviation range of power supply | Undervoltage transfer: 165 V \pm 10% |
| Control characteristics | Voltage loss/phase loss, undervoltage and overvoltage transfer |

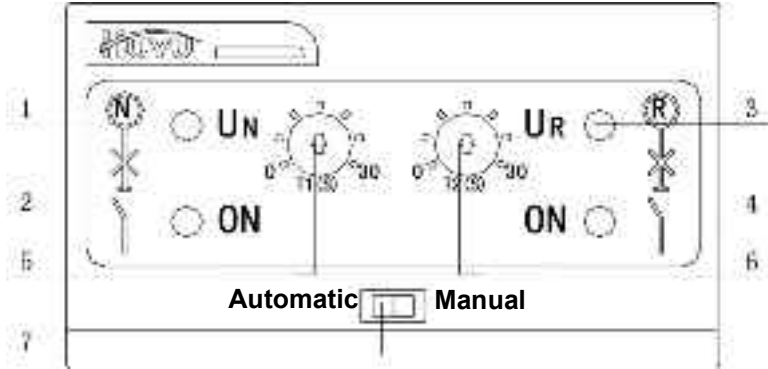
6 Schematic Diagram of Product Structure



6.1 Product structure description

- 1 — Mounting hole; 2 — Product model; 3 — Company trademark; 4 — Controller;
- 5 — Operating handle; 6 — Wiring terminal; 7 — Transfer location instruction;
- 8 — Grounding screw; 9 — Handle padlock; 10 — Fuse tube;
- 11 — Secondary wiring terminal

6.2 Controller panel and description



- 1 — Common power indicator light; 2 — Common closing indicator light;
 3 — Standby power indicator light; 4 — Standby closing indicator light;
 5 — Common-to-standby transfer delay setting (Type C controller);
 6 — Standby-to-common return delay setting (Type C controller);
 7 — Automatic/Manual shift gear

6.3 Controller indicator light description

Table 2

| Product status | 1 | 2 | 3 | 4 |
|----------------------------------|-------------|-------------|-------------|-------------|
| Common power normal | Normally on | | | |
| Common power supply closing | | Normally on | | |
| Standby power supply normal | | | Normally on | |
| Standby power supply closing | | | | Normally on |
| Common circuit breaker tripping | Flash | Flash | | |
| Standby circuit breaker tripping | | | Flash | Flash |
| Common-to-standby transfer delay | | | | Flash |
| Standby-to-common return delay | | Flash | | |
| Product transfer fault | Flash | | Flash | |
| Fire control open | | Flash | | Flash |

7 Controller Function

Table 3

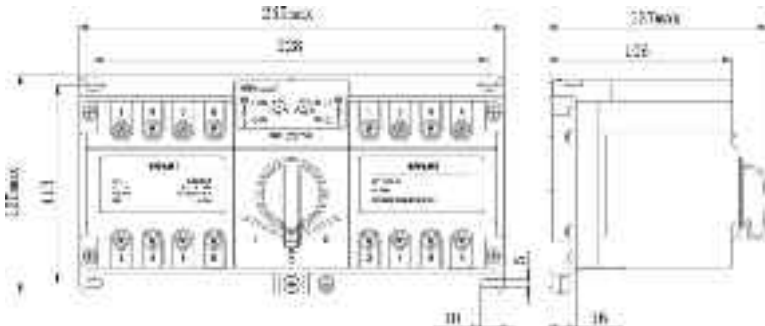
| Controller type | Type A (basic type) | Type B (standard type) | Type C (intelligent type) |
|---|---------------------|------------------------|---------------------------|
| Control function | | | |
| Automatic/Manual transfer mode | ■ | ■ | ■ |
| Dual-split | ■ | ■ | ■ |
| Power grid — Power grid | ■ | ■ | ■ |
| Power grid — Generator | - | □ | □ |
| Automatic charge and automatic recovery | ■ | ■ | ■ |

| Controller type | Type A (basic type) | Type B (standard type) | Type C (intelligent type) |
|--|---|------------------------|---|
| Automatic charge without automatic recovery | - | ▽ | ▽ |
| Mutual standby | - | ▽ | ▽ |
| Monitoring common power supply and fault conversion | ■ Phase loss/voltage loss, undervoltage | | ■ Phase loss/voltage loss, undervoltage and overvoltage |
| Monitoring standby power supply and fault conversion | ■ Phase loss/voltage loss, undervoltage | | ■ Phase loss/voltage loss, undervoltage and overvoltage |
| Fire control input (passive) | ■ | ■ | ■ |
| Fire control feedback output | - | - | ■ |
| Delay adjustable | - | - | ■ |
| Transfer delay | Fixed 3 s | Fixed 3 s | 0 s–30 s, adjustable |
| Return delay | Fixed 3 s | Fixed 3 s | 0 s–30 s, adjustable |
| Indication | | | |
| Common and standby closing indication | ■ | ■ | ■ |
| Common and standby power supply indication | ■ | ■ | ■ |
| Fault alarm | - | ■ | ■ |
| Transfer function | | | |
| Oversvoltage transfer | - | - | ■ |
| Undervoltage transfer | ■ | ■ | ■ |
| Voltage loss transfer | ■ | ■ | ■ |
| Phase loss transfer | ■ | ■ | ■ |
| Other functions | | | |
| Communication function | - | □ | □ |
| Display module | LED | LED | LED |

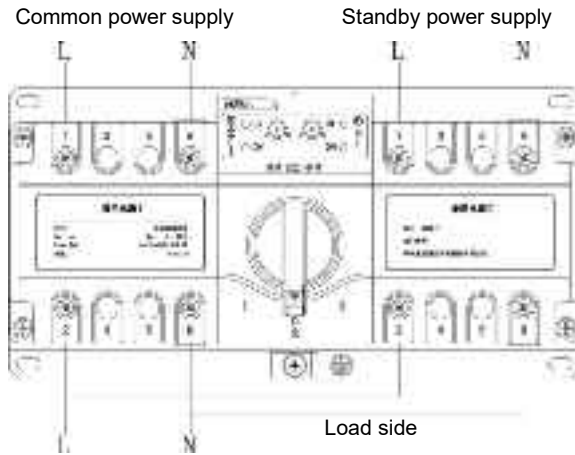
Note: "■" indicates that this function is available; "-" indicates that this function is not available; "□" indicates that this function is optional; and "▽" indicates that this function is adjusted before leaving the factory according to customer requirements.

8 Product Installation

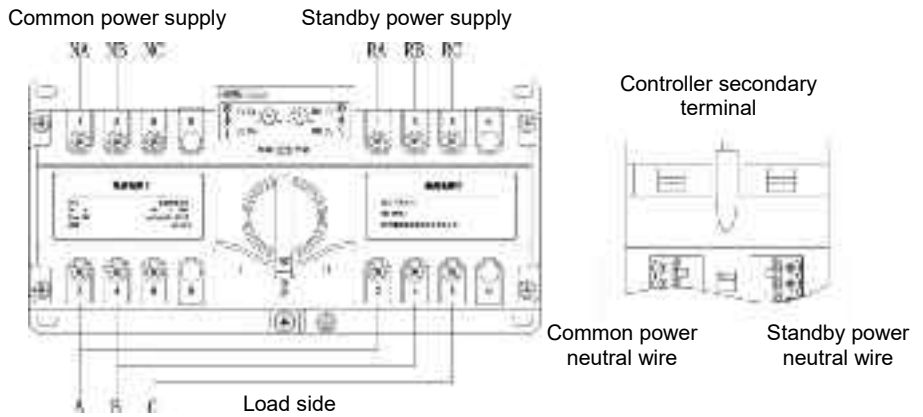
8.1 Outline and installation dimension drawing (the appearance of 2P, 3P and 4P products is consistent with the installation dimension)



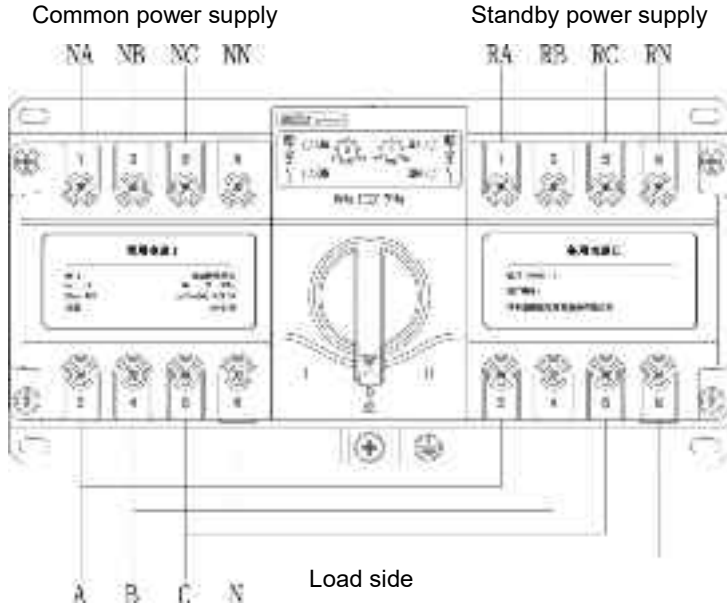
8.2 2P product main circuit wiring



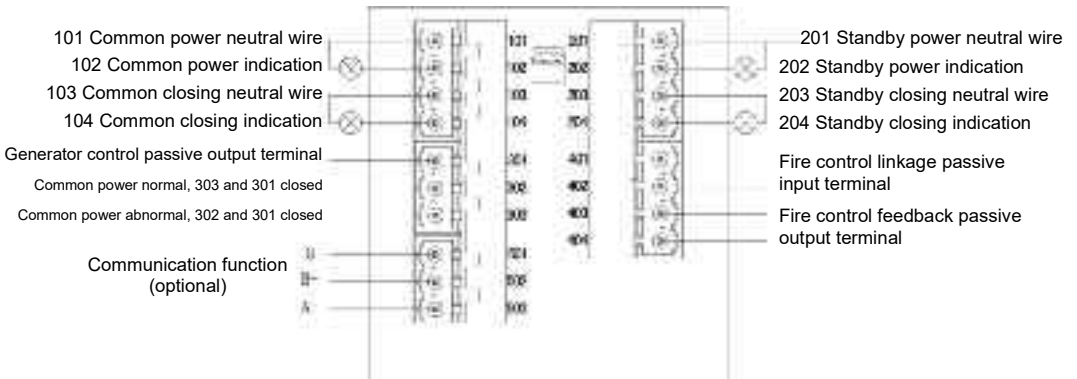
8.3 3P product main circuit wiring



8.4 4P product main circuit wiring



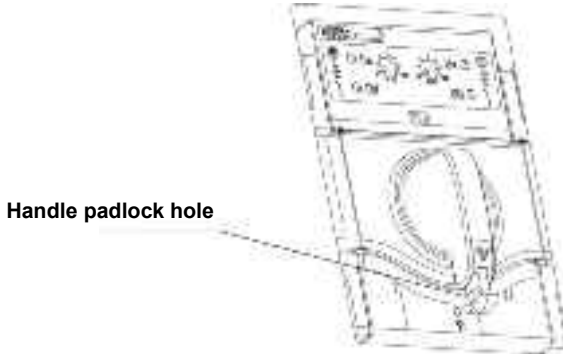
8.5 Controller secondary terminal wiring



8.6 Wiring of the secondary terminal of the controller:

- 1: 101# and 102# common power supplies are externally connected to the indicating signal output terminal (AC 220 V/0.5 A, active), and the common neutral wire of the 3P product is connected to 101# terminal.
- 2: 103# and 104# common closing are externally connected to the indicating signal output terminal (AC 220 V/0.5 A, active).
- 3: 201# and 202# standby power supplies are externally connected to the indicating signal output terminal (AC 220 V/0.5 A, active), and the standby neutral wire of the 3P product is connected to 201# terminal.
- 4: 203# and 204# common closing are externally connected to the indicating signal output terminal (AC 220 V/0.5 A, active).
- 5: 301#, 302# and 303# are the passive output terminals of generator starting control signals, 301# is the common terminal, and 302# is the normally closed terminal. 303# is the normally open terminal. When the common power supply is normal, 303# and 301# are closed, and 302# and 301# are disconnected. When the common power supply is abnormal, 302# and 301# are closed, and 303# and 301# are disconnected.
- 6: 401# and 402# are the passive input terminals of fire control linkage signals, and only one set of passive normally open contacts can be connected to the outside of this port (if the fire control signals are active signals, the relay N.O. contacts must be connected to this port through small relays). When the external contacts are closed, the controller immediately controls the switch to transfer to the opening position to cut off the load power supply.
- 7: 403# and 404# are the passive output terminals of fire control feedback signals. Under normal conditions, this port is normally open. 403# and 404# are closed when a fire control signal is input to the controller to transfer the switch to the opening position.
- 8: 501#, 502# and 503# are the communication function control terminals.

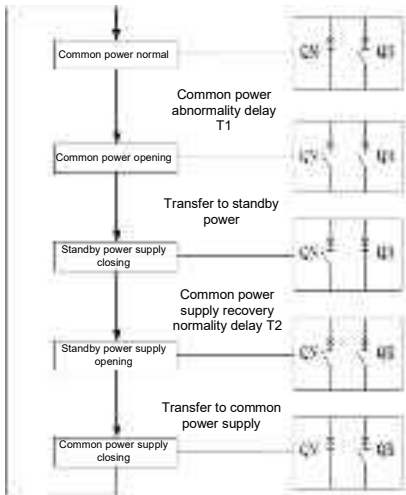
8.7 Function description of the handle padlock:



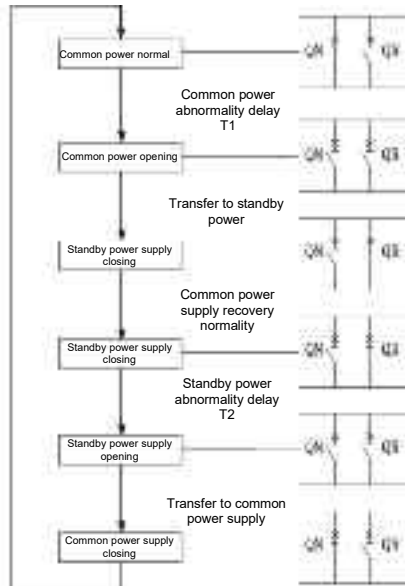
During line maintenance and fault maintenance, first set the automatic/manual switch gear of the switching device to the manual mode, and then transfer the switching device to the dual-split position. Pull out the handle padlock and lock it to prevent accidents. The padlock hole diameter is $\text{Ø}5.5$.

8.8 Description of automatic transfer action flow of the product:

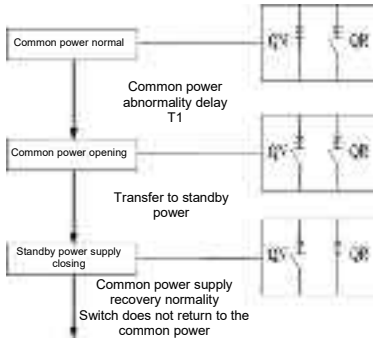
Power grid — Power grid Automatic charge and automatic recovery working flow



Power grid — Power grid Mutual standby working flow



Power grid — Power grid Automatic charge without automatic recovery working flow



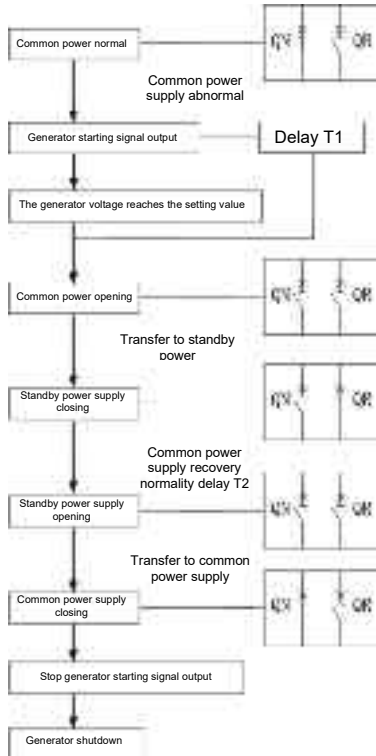
T1: Transfer delay, basic type and standard type are fixed for 3 s, and the intelligent type is adjustable in 0~30 s. Duration from common power abnormality to QN opening.

T2: Return delay, basic 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.

Power grid — Generator Working flow



9 Use and Maintenance

9.1 Product commissioning

After installation, the product shall be commissioned. Manual commissioning: First, adjust the automatic/manual switching gear of the switching device 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 switching device to the automatic gear first, and then energize the two power supplies. Commission the product according to the product transfer process in Article 8.8, and observe whether the product transfer and panel indicator light are normal, and whether the output state of the secondary terminal is correct.

9.2 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 | |
| | Product fuse blown | Replace the fuse |
| | Phase loss of power supply | Check whether the power supply voltage is normal |
| The indicator light of the controller indicates the tripping signal | 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 |
| All four indicators are flashing | Circuit fault leads to controller self-protection | Power on again after 10 minutes of power failure |
| | Controller fault | Replace the controller |

10 Ordering Information

10.1 When ordering, please fill in according to Table 5.

Table 5 Model Selection

| Order unit | Order quantity | | Order date | | | | |
|------------|---|--|---|--|--|--|-------|
| Model | Number of poles | Controller code | Work mode | Circuit breaker tripping type code | Rated working current | Optional function code | Notes |
| HYT3 - 63 | <input type="checkbox"/> 2P <input type="checkbox"/> 3P <input type="checkbox"/> 4P | <input type="checkbox"/> A (Basic type) <input type="checkbox"/> B (Standard type) <input type="checkbox"/> C (Intelligent type) | <input type="checkbox"/> R (Automatic charge and automatic recovery) <input type="checkbox"/> S (Automatic charge without automatic recovery) <input type="checkbox"/> I (Mutual standby) | <input type="checkbox"/> C (Type C) <input type="checkbox"/> D (Type D) | <input type="checkbox"/> 10 A <input type="checkbox"/> 16 A <input type="checkbox"/> 20 A <input type="checkbox"/> 25 A <input type="checkbox"/> 32 A <input type="checkbox"/> 40 A <input type="checkbox"/> 50 A <input type="checkbox"/> 63 A | <input type="checkbox"/> F (Power grid — Generator) <input type="checkbox"/> T (Communication function) | |
| Example: | HYT3-63/4 C R C 32 A represents a dual-power automatic switching device with 4-pole intelligent power grid and the automatic charge and automatic recovery of power grid, with Type C circuit breaker tripping and rated working current of 32 A. | | | | | | |
| Note: | 1. The Type A (basic type) controller does not have the functions of automatic charge without automatic recovery and mutual standby. 2. The Type B (standard type) and type C (intelligent type) power grid-generator product transfer delay and return delay time are fixed for 15 s, which cannot be adjusted. 3. By default, the power grid-generator products only have the automatic charge and automatic recovery working mode, and do not have the automatic charge without automatic recovery and mutual standby working modes. Under normal working conditions, it is not recommended to choose the automatic charge without automatic recovery and mutual standby working modes, which can only be customized after consultation with the manufacturer when there are special requirements. | | | | | | |

11 Company Commitment

On the premise that users abide by the use and storage conditions and the product seals are intact, if the product is damaged or cannot be used normally due to manufacturing quality problems within 18 months from the production date of the product, the company will be responsible for the repairing or replacement free of charge. If the warranty period expires, the users shall pay for the repair. However, if the damage is caused by the following circumstances, the fees for repair shall still be charged even within the warranty period:

- (1) Misuse, self-modification, improper maintenance, etc.
- (2) Use in excess of the standard specification requirements.
- (3) Falling, damage during transportation, etc. after purchase.
- (4) Earthquake, fire, lightning stroke, abnormal voltage, other natural disasters and secondary disasters, etc.

In case of any questions, please contact the dealer or our customer service department.

Dear customers:

To protect our environment, please conduct well in the recovery of the product or its components when the product is scrapped. For materials that cannot be recycled, please handle them properly. Thank you very much for your cooperation and support.

**Address: Wenzhou Bridge Industrial
Zone, Yueqing City, Zhejiang Province
Service hotline: 400-887-5757
Switchboard: 0577-62889999
Fax: 0577-62885588
Website: www.huyu.com.cn**