

ISOLATION-TYPE DUAL POWER AUTOMATIC TRANSFER SWITCH OPERATING INSTRUCTION

PRODUCT CERTIFICATE

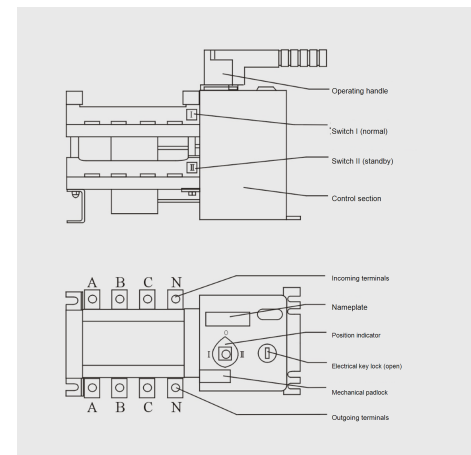
Model: _____

Product name: Dual Power Automatic Transfer
Switch

This product has passed inspection, complies with
standard GB/T 14048.11, and is approved for
despatch.

Inspector: _____

Date of inspection: see product packaging



Read this manual carefully when accepting and installing the product, and keep it for future reference.

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PREFACE

Dear Customer,

Thank you for choosing our product. We are confident that it will bring efficiency and convenience to your work. We welcome your comments and suggestions, and we will continue to provide attentive after-sales service. If you have any questions, please contact our distributor or the manufacturer directly.

This manual is for reference only. Product or version upgrades may be made without further notice; the product as delivered shall prevail. Thank you for your cooperation and support.

Control device:	built-in controller
Construction:	compact size, high current, simple structure, integrated ATS
Features:	fast transfer, low failure rate, easy maintenance, reliable performance
Wiring:	front-of-board wiring
Transfer modes:	mains-to-mains, mains-to-generator, automatic transfer with automatic return
Frame sizes:	100, 160, 250, 400, 630, 1000, 1250, 1600, 2000, 2500, 3200
Rated currents:	20, 32, 40, 63, 80, 100, 125, 160, 200, 225, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3200 A
Classification:	load-switch type
Number of poles:	3, 4
Product standard:	GB/T 14048.11-2008
ATSE class:	PC

1. Product Overview

The dual power automatic transfer switch (ATS) integrates the switching device and the logic control in a single unit. No external controller is required, making it a true mechatronic transfer switch. It provides voltage detection, frequency detection, and electrical and mechanical interlocking, and supports automatic operation, motorised remote operation and emergency manual operation.

Operation is managed by a logic control board, which issues commands governing the motor and gearbox. The motor charges the switch spring, and an instantaneous-release accelerating mechanism rapidly makes, breaks or transfers the circuit. Clearly visible position indication provides safe isolation, substantially improving both electrical and mechanical performance.

The switch is built into a compact, robust metal enclosure. The control section also uses a metal enclosure, while the switch housing components are moulded from glass-fibre-reinforced unsaturated polyester resin, giving high dielectric strength, effective protection and reliable operational safety.

The switch is suitable for automatic transfer between the normal and standby supplies of a power system, and for automatic transfer and safe isolation between two items of load equipment.

Its attractive, modern and compact design, together with comprehensive functionality, makes it an ideal choice for a wide range of applications.

2. Applicable Standards

- IEC 60947-1 (1998) / GB/T 14048.1-2002 — *Low-voltage switchgear and controlgear — General rules*
- IEC 60947-3 (1999) / GB 14048.3-2002 — *Low-voltage switchgear and controlgear — Switches, disconnectors, switch-disconnectors and fuse-combination units*
- IEC 60947-6 (1999) / GB 14048.11-2016 — *Low-voltage switchgear and controlgear — Multiple function equipment — Part 1: Transfer switching equipment*

3. Model Designation

JUQ1 – □ / □P □A

Rated operational current: 20–3200 A

3: three-pole 4: four-pole

Frame size rated current

Isolation-type dual power supply

4. Applications

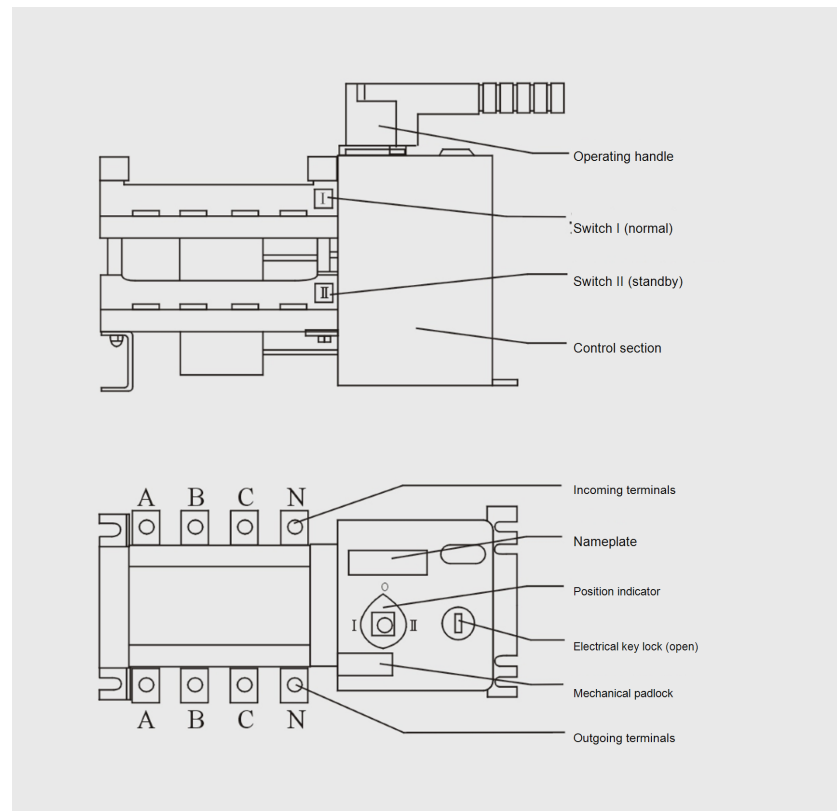
The dual power automatic transfer switch is intended for AC 50 Hz distribution or generator networks with a rated voltage of AC 400 V, an operating voltage of 220 V, and rated currents from 16 A to 3200 A. It is used in normal/standby or mutually-standby supply transfer systems, and for load transfer between the utility supply and a generator set. It may also be used for infrequent making and breaking of circuits and for line isolation.

The product is widely used in the transmission, distribution and automation systems of critical installations where supply interruption is not permitted — including fire-protection systems, hospitals, banks and high-rise buildings.

5. Performance and Features

- Double-row composite contacts, a transverse-pull mechanism, micro-motor pre-charged energy storage and microelectronic control technology together achieve essentially zero arc spill without arc chutes.
- Reliable mechanical and electrical interlocking. The actuating elements are independent load isolating switches, giving safe and dependable operation.
- Zero-position technology allows a forced “0” position in an emergency, disconnecting both supplies simultaneously to meet fire-protection interlock requirements.
- The load isolating switches are driven by a single motor, giving reliable, smooth and rapid transfer.
- The operator drive motor draws current only during the instant of transfer. No current is required in steady-state operation, giving significant energy savings.
- The load isolating switches incorporate a mechanical interlock, ensuring the normal and standby supplies operate reliably without interfering with each other.
- Clear ON/OFF position indication and padlocking facilities reliably achieve isolation between supply and load.
- Good safety performance, a high degree of automation, high reliability, and a service life of more than 8,000 operations.
- Mechatronic design gives accurate, flexible and smooth transfer. Advanced logic control technology provides strong immunity to interference and produces no interference externally.
- Three stable operating positions (I-O-II): normal supply closed with standby open; normal supply open with standby closed; and both supplies open.
- Easy installation — the control circuit uses plug-in terminal connections.
- Four operating functions: emergency manual operation, motorised remote control operation, emergency opening while in automatic control mode, and automatic control operation.

6. Switch Structure



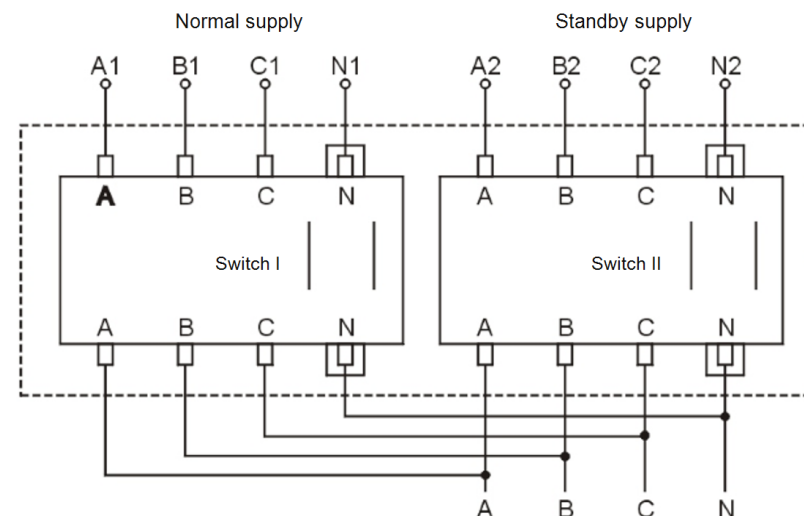
- 1. Electrical key lock:** controls the supply to the switch's internal control circuit. Only when the electrical lock is open can the switch perform fully automatic operation, forced "0" and remote operation. When the electrical lock is closed, the switch can be operated manually only.
- 2. Operating handle:** the electrical lock must be closed before the switch is operated manually with the handle.
- 3. Mechanical padlock:** a padlocking mechanism intended for maintenance. Set the switch to the "0" position, raise the padlock mechanism and fit a padlock. This prevents any unintended operation — raising the mechanism cuts the switch's internal control supply so that automatic operation is inhibited, and it also prevents the handle from being fitted.
- 4. Position indicator:** indicates the three switch positions (I, 0, II).

7. Main Technical Parameters

■ Electrical and mechanical performance

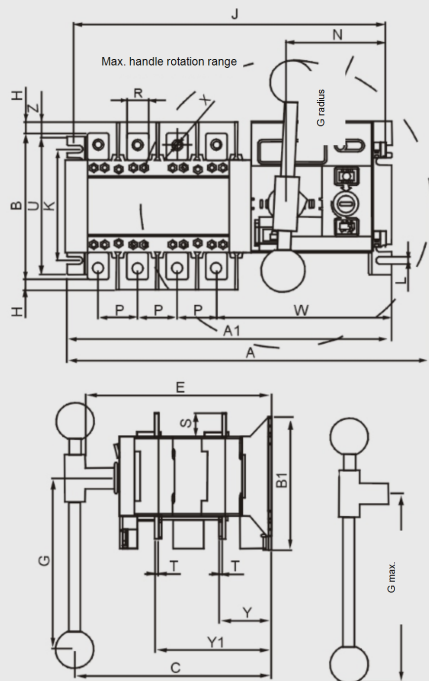
Rated current	20 A	40 A	63 A	80 A	100 A	125 A	160 A	250 A	400 A	630 A	800 A	1000 A	1250 A	1600 A
Rated insulation voltage U_i	750 V								1000 V					
Rated impulse withstand U_{imp}	8 kV								12 kV					
Rated operational voltage U_o	AC 400 V													
Rated operational current I_o — AC-31A	20	40	63	80	100	125	160	250	400	630	800	1000	1250	1600
Rated operational current I_o — AC-35A	20	40	63	80	100	125	160	250	400	630	800	1000	1000	1600
Rated operational current I_o — AC-33A	20	40	63	80	100	125	160	250	400	400	630	800	800	1000
Rated making capacity	$10 I_o$													
Rated breaking capacity	$8 I_o$													
Rated conditional short-circuit current I_s	50 kA								70 kA		100 kA	120 kA		
Rated short-time withstand current	7 kA								9 kA	13 kA	26 kA	50 kA		
Transfer time I-II or II-I	0.45 s								0.6 s		1.2 s			
Control voltage	DC 24 V, 48 V, 110 V AC 220 V													
Rated power — starting	300 W								325 W	335 W	400 W	440 W		
Rated power — normal	55 W								62 W	74 W	90 W	98 W		
Weight (kg)	7.0	7.2	7.2	7.2	7.5	7.5	8.8	9.0	16.5	17	32	36	40	43

8. Main Circuit Wiring Diagram

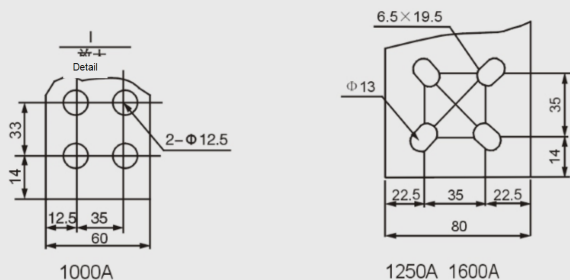


9. Overall and Mounting Dimensions

■ Outline and mounting drawing (100–1600)



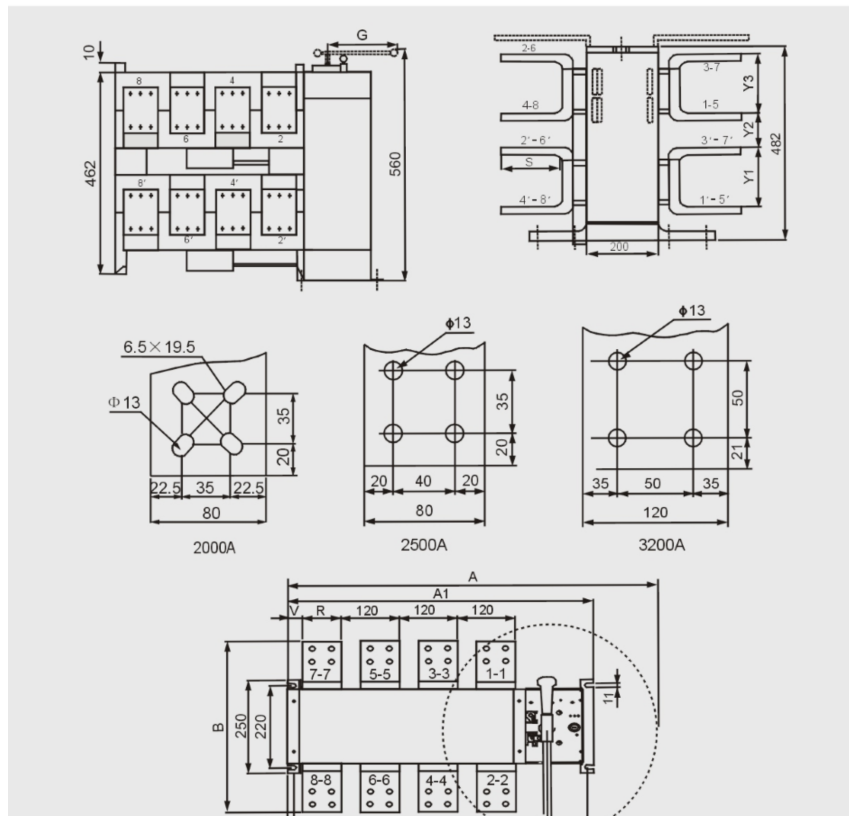
■ Mounting drawing, 1000–1600



■ Mounting dimension table, 100–1600 (mm)

Frame / poles	Overall dimensions							Switch mounting									Terminals			
	A	A1	B	B1	C	E	G	J	K	L	N	P	R	S	T	U	W	φX	Y	Y1
100/3	235	232	118	107	141	140	115	221.5	84	7	74.5	30	13	18	2.5	107	126	6	39	92
100/4	247	244	118	107	141	140	115	233.5	84	7	74.5	30	13	18	2.5	107	126	6	39	92
125/3	292	267	146	142	230	193	145	251	102	7	91	36	20	25	3.5	126	158	9	57	127
125/4	322	300	146	142	230	193	145	284	102	7	91	36	20	25	3.5	126	158	9	57	127
160/3	292	267	146	142	230	193	145	251	102	7	91	36	20	25	3.5	126	158	9	57	127
160/4	322	300	146	142	230	193	145	284	102	7	91	36	20	25	3.5	126	158	9	57	127
250/3	356	305	179	142	230	193	145	287	102	7	91	50	25	30	3.5	135	168	11	58	130
250/4	406	360	179	142	230	193	145	343	102	7	91	50	25	30	3.5	135	168	11	58	130
400/3	487	375	245	220	274	263	189	356	180	9	93	65	32	39	5	220	203	11	82	186
400/4	552	433	245	220	274	263	189	416	180	9	93	65	32	39	5	220	203	11	82	186
630/3	487	375	265	220	274	263	189	356	180	9	93	65	40	49	5	220	203	12	82	186
630/4	552	433	265	220	274	263	189	416	180	9	93	65	40	49	5	220	203	12	82	186
800/3	670	515	353	250	321	308	443	495	220	11	87	120	60	54.5	8	250	207	13	107	240
800/4	760	636	353	250	321	308	443	616	220	11	87	120	60	54.5	8	250	207	12.5	107	240
1000/3	670	515	353	250	321	308	443	495	220	11	87	120	60	54.5	8	250	207	13	107	240
1000/4	760	636	353	250	321	308	443	616	220	11	87	120	60	54.5	8	250	207	12.5	107	240
1250/3	670	515	367	250	321	308	443	495	220	11	87	120	80	68	8	250	207	13	108	240
1250/4	760	636	367	250	321	308	443	616	220	11	87	120	80	68	8	250	207	13	108	240
1600/3	670	515	370	250	321	308	443	495	220	11	87	120	80	69	10	250	207	13	108	240
1600/4	760	636	370	250	321	308	443	616	220	11	87	120	80	69	10	250	207	13	108	240

■ Mounting drawing, 2000–3200



■ Mounting dimension table, 2000–3200 (mm)

Frame / poles	Overall dimensions							Switch mounting							Terminals							
	A	A1	B	B1	C	E	G	J	K	L	N	P	R	S	T	U	W	φX	Y	Y1	Y2	Y3
2000/3	680	525	405	254	480	467	447	613	215	12	84.5	120	80	76	10	244	204.5	13	105	87	125	88
2000/4	800	646	405	254	480	467	447	613	215	12	84.5	120	80	76	10	244	204.5	13	105	87	125	88
2500/3	680	525	427	254	480	467	447	613	215	12	84.5	120	80	80	15	244	204.5	13	98	100	116	100
2500/4	800	646	427	254	480	467	447	613	215	12	84.5	120	80	80	15	244	204.5	13	98	100	116	100
3200/3	680	525	458	254	480	467	447	613	215	12	84.5	120	120	95	15	244	204.5	13	98	107	109	106
3200/4	800	646	458	254	480	467	447	613	215	12	84.5	120	120	95	15	244	204.5	13	98	107	109	106

10. Wiring Methods

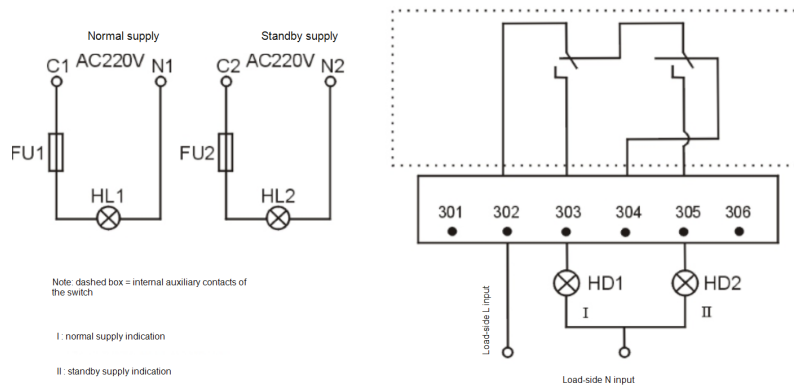
Note: the user may select any one of the following six wiring methods. For the economy type, only the busbar supply needs to be brought in — no secondary wiring is required. Terminals 302–305 provide switch status indication and may be connected by the user if required.

■ 1. Economy wiring method (100 A and below only)

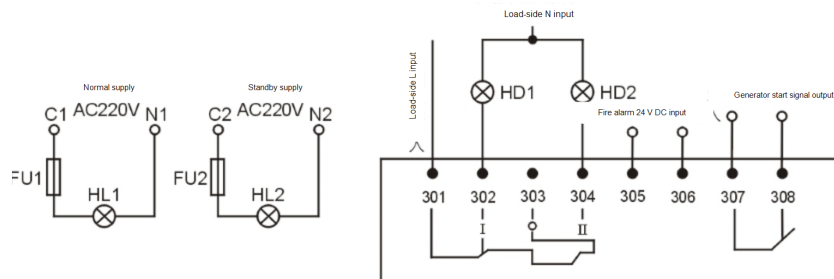
The 100 A economy type is an automatic transfer switch. The user only needs to connect the normal and standby supplies to the terminal block for it to operate. When both supplies are healthy, the switch feeds the load from the normal supply. If the normal supply fails, the switch transfers to the standby supply, provided the standby supply is healthy; when the normal supply is restored, the switch transfers back to it automatically.

For economy types of 100 A and below, the control supply is taken internally from the normal supply at the factory. If normal/standby closing indication is required, wire as shown below.

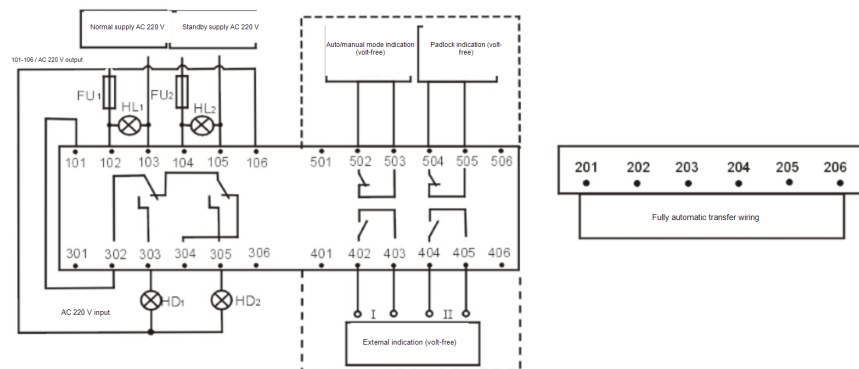
Terminal arrangement: a single group of six terminals.



■ 2. 100–630 A: volt-free signal plus powered fire-protection terminals

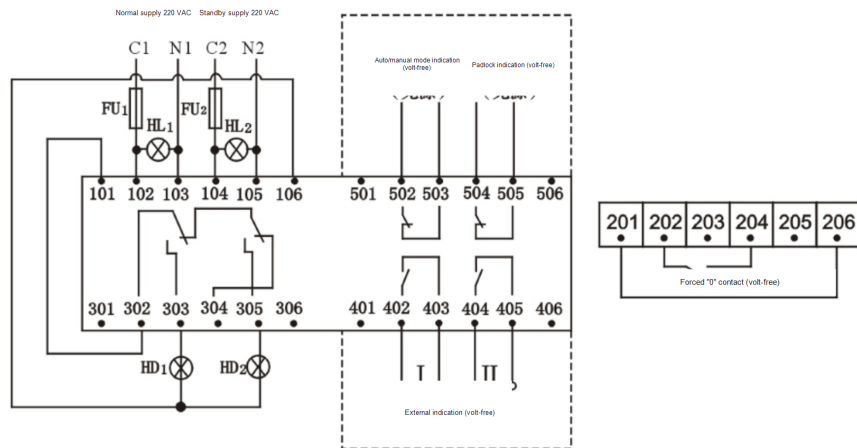


3. Fully automatic wiring method (rated currents 160–3200 A)

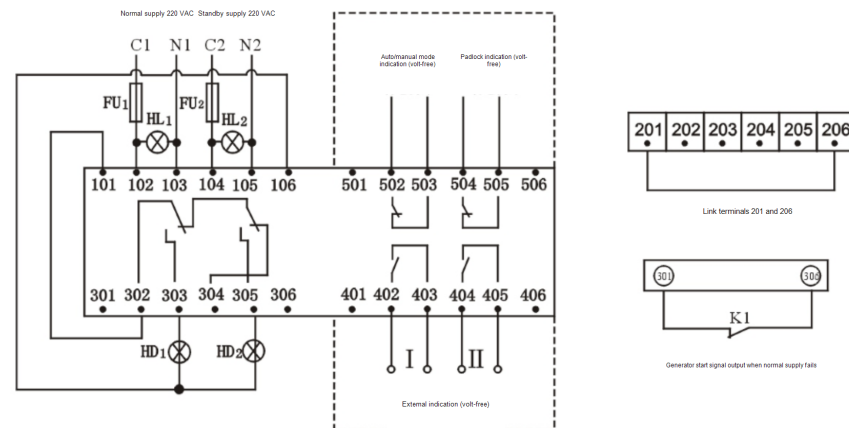


- HL1 — normal supply live indication
- HL2 — standby supply live indication
- HD1 — normal supply closed indication
- HD2 — standby supply closed indication
- FU1 / FU2 are 2 A fuses (new type)
- 101–106, 201–206 and 301–306 are switch terminals
- Terminals 401–406 and 501–506 are optional above 1000 A

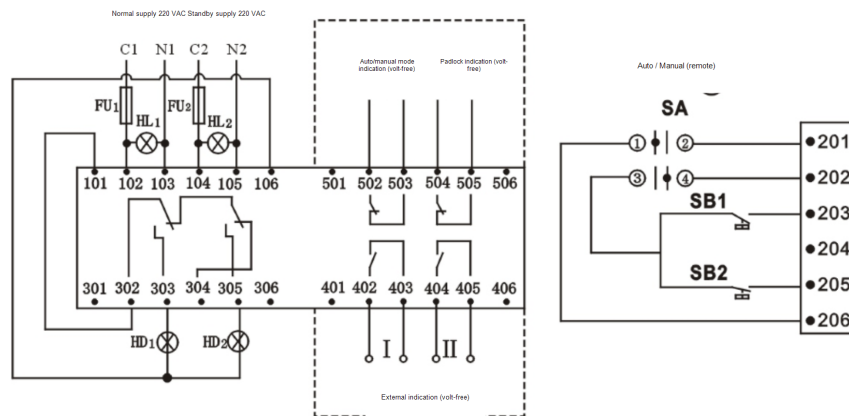
4. 100–3200 A: fully automatic plus forced “0” (both supplies open)



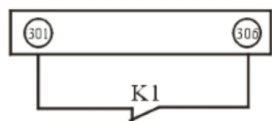
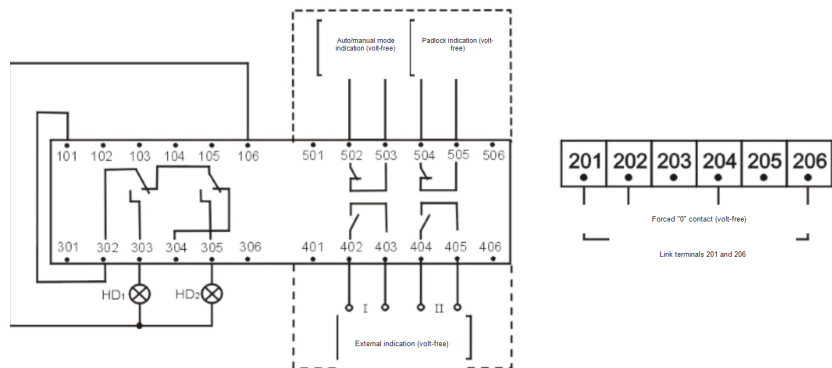
5. 100–3200 A: fully automatic plus generator signal output



6. Fully automatic plus manual (remote control) wiring



7. 100–3200 A: wiring with controller



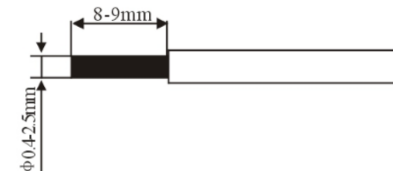
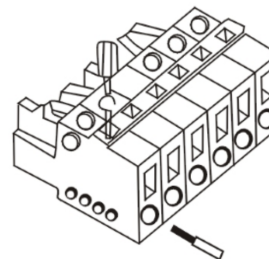
Generator start signal output when normal supply fails

- Note 1: on products supplied with a controller, terminals 102, 103, 104 and 105 do not require an external supply.
- Note 2: terminals 401–406 and 501–506 are optional on frames above 1000 A.

8. Key to Symbols

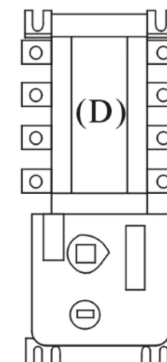
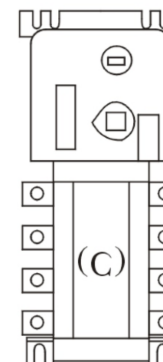
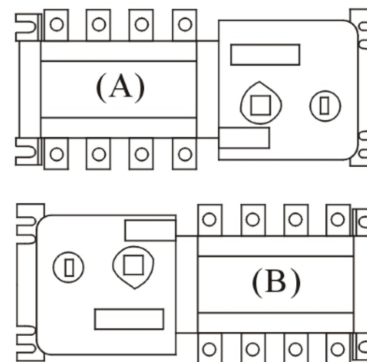
- (1) C1 and N1 are the line and neutral inputs of the normal supply; C2 and N2 are the line and neutral inputs of the standby supply. HL1 and HL2 indicate that the normal and standby supplies are live. HD1 and HD2 indicate that the normal and standby supplies are closed. FU1 and FU2 are 2 A fuses.
- (2) 101–106 and 201–206 are the secondary wiring terminals of the transfer switch.
- (3) 301–306 are the terminals for external indicator lamps.
- (4) 401–406 and 501–506 are optional transfer switch terminals.
- (5) In the fully automatic wiring method, terminals 201 and 206 must be linked.
- (6) The forced "0" contact (volt-free) can alternatively be supplied with DC 24 V.
- (7) K1 is the generator start signal output, active when the normal supply fails.
- (8) SA is the auto/manual function selector switch. SB1 and SB2 are the manual closing pushbuttons for the normal and standby supplies respectively (volt-free contacts).

11. Terminal Operation



Press down with a small flat-blade screwdriver as shown, then insert the conductor

12. Correct Mounting Positions



A, B and C are correct (A is preferred); D is incorrect

13. Operating Instructions

1. Installation must be carried out only by qualified personnel. Do not dismantle the product without the manufacturer's authorisation, as damage may result.
2. Read this manual carefully before installation and use to avoid incorrect operation.
3. The rated voltage of the switch's internal control supply is 220 V, taken from C1/N1 of the normal supply and C2/N2 of the standby supply. The switch operates correctly only within 85 %–110 % of the rated control voltage.
4. Overvoltage protection must be provided on the incoming supply to prevent excessive voltage from damaging the internal circuit board or the control motor.
5. Short-circuit protection must be provided on the outgoing side to prevent excessive fault current from damaging the switch body.
6. During installation, close the electrical key lock and set the switch to the "0" position.
7. When wiring, identify and verify phases A, B, C and N of the incoming supply and connect them to the corresponding poles of the switch.

14. Ordering Information

When ordering, please state the control type, number of poles, current rating and order quantity — for example: *dual power automatic transfer switch, 250 A, 4-pole, fully automatic type*.