AiSIKAI®
POWER THE FUTURE

ATS

AUTOMATIC TRANSFER SWITCH
SKT SERIES



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SKT SERIES ATS
POWER DISTRIBUTION



SKT1-Type



SKT2-Type

OVERVIEW

- SKT series dual power automatic transfer switch is the most advanced third generation product. It is PC class and AC-33A use category can be frequently operated electric transfer switch. Switches are suitable for the reliable conversion of two power sources in 50/60Hz 10A-3200A low-voltage AC power distribution system. There are four working modes: automatic, electric, emergency manual and lock.

CLASSIFICATION

- Classified by volume

  Standard type: Type 1, 20A-3200A, 5 kinds volume specification

  Ultra-thin type: Type 2, 10A-100A, 1 kind volume specification

  Note: Ultra-thin type is 50% smaller than the standard type.

- Classified by functions

  X: Three-position type (fire-fighting 0 position)

  NAX: Intelligent Three-position type (Three-position,MCU type main control board)

- Classified by poles

  2P: 2 poles, 1 phase and 2 lines

  3P: 3 poles, 3 phases

  4P: 4 poles, 3 phases and 4 lines

STANDARDS

GB/T14048.11 IEC60947-6-1

CERTIFICATES



MODEL DESCRIPTION

SK	T	1	–	160A	/	4P	/	X	/	AC220V
Company Name	Drive type of ATS	Design code		Rated working current (A)		Poles code		Function code		Control Voltage
AISIKAI ELECTRIC	AUTOMATIC TRANSFER SWITCH	1:Standard Shell Type 2:Ultra-thin Shell Type		100A, 125A, 160A, 250A, 400A, 630A, 800A, 1000A, 1250A, 1600A, 2000A, 2500A, 3200A		2P:2Poles 3P:3Poles 4P:4Poles		X: Three-position type NAX: Intelligent Three-position type		Default: AC 220V Optional AC: 110V, 208V, 280V, 180–280V Optional DC: 12V / 48V (≤250A); 24V (all ratings)

MAIN TECHNICAL PARAMETERS

	SKT2 SERIES	SKT1 SERIES											
Frame rating current **(Inm)**	100A	160A		250A	630A		1600A				3200A		
Rated current **(In)**	100	125	160	250	400	630	800	1000	1250	1600	2000	2500	3200
Thermal current rating **(Ith)**	10,16,20,25, 32,40,50,63, 80,100A	63,80,100, 125,140, 150,160A		160,180, 200, 225,250A	315, 350,400, 500, 630A		800,1000,1250, 1600A				2000,2500,3200A		
Rated insulation voltage of copper bar **(Ui)**	1000V												
Rated impulse withstand voltage **(Uimp)**	12KV												
Rated operating voltage of copper bar **(Ue)**	AC400V / AC 690V												
Mechanical durability	≥ 12,000 times	≥ 8,000 operating cycles without current											
Electrical durability	≥ 7,500 times	≥ 1,500 operating cycles with current											
Use category	AC–33A												
Rated making capacity **(Icm)**	17KA			40KA	67.2KA						105KA		
Rated limit short-circuit current **(Iq)** Fuses for protection	100KA	100KA		100KA	120KA		120KA				120KA		
Rated limit short-circuit current **(Iq)** Circuit breaker for protection	50KA	50KA		50KA	65KA		65KA				65KA		
Transferring time I - II or II - I	1.2S				0.6S		1.2S				2.4S		
Rated operating voltage of the control power **(Us)**	Default: AC 220V; Optional AC: 110V, 208V, 280V, 180–280V; Optional DC: 12V / 48V (≤250A), 24V (all ratings)												
Start	40W				325W		355W		400W	440W	600W		
Normal	18W				62W		74W		90W	98W	120W		
Net weight (kg) 4 poles	3.5	5.3	5.5	7	17	17.5	37			44	98		

Note: The parameters of SKT1 series 20A-100A is exactly same as the SKT1 125A product.

FUNCTION CODE TABLE

Application type	Three-position type	Intelligent Three-position type
Function Code	X	NAX
Structure		
Electrical two-section type		
Electrical Three-position type	Y	Y
Manual Three-position type	Y	Y
Control mode		
Remote electric control (external control)	Y	
Emergency manual	Y	Y
Fully automatic switching		Y(with fault detection)
Locking mode	Optional	Optional
Fire-fighting signal (forced to zero)	Passive closed signal	Passive closed signal
Main/standby power monitoring and protection		
Overvoltage protection		Single phase (optional)
Undervoltage protection		Single phase (optional)

Note: Y means having this function.

The derating of circuit breaker at different altitude

When the altitude is higher than 2000m, the insulation characteristic, cooling characteristic, pressure etc. in atmosphere change. Revise the performance according to the form below:

a.Voltage

Altitude(m)	Power frequency withstand voltage(V)	Insulation voltage(V)	Rated operational voltage(V)
2000	2200	1000	690
3000	1955	800	580
4000	1760	700	500
5000	1600	600	400

b.Current

Altitude(m)	2000	2500	3000	3500	4000	4500	5000
Rated operational current(Ie)	Ie	0.95Ie	0.9Ie	0.85Ie	0.8Ie	0.75Ie	Must contact the manufacturer

STRUCTURE INTRODUCTION

① Switch body:the standard type is top inlet and bottom outlet type.

② Main power input copper bars:Used for fixing the main power cables or busbars.

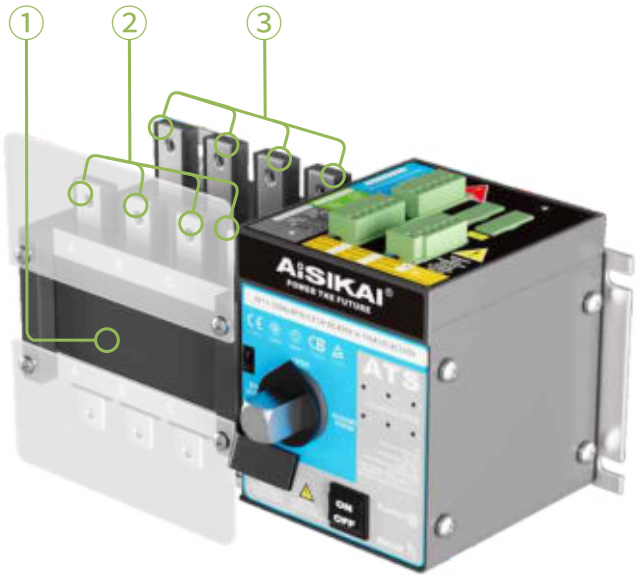
③ Standby power input copper bar:Used for fixing the standby power cables or busbars.

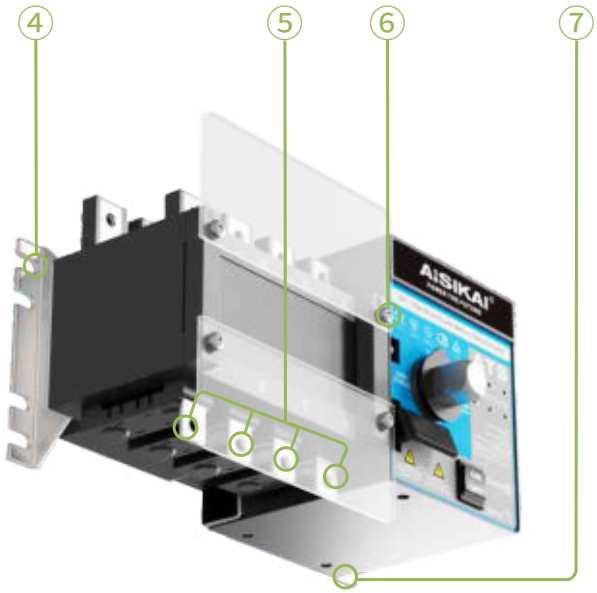
④ Left installation bracket:Matched with the right installation bracket for fixing the switch.

⑤ Load power output one-piece copper bars, for fixing the load cables or busbars Patent .

⑥ Protective plate installation hole, for fixing the protective plate.

⑦ Right installation bracket:Matched with the left installation bracket for fixing the switch.





① Manual emergency handle interface: you can manually turn the switch for power supply switching in case of emergency.

② Switch position status indicator.

③ LED indicators, see ATS-14 for details.

④ Electric/emergency manual mode selection button.

⑤ Terminal No.1: Electronic control unit power supply input.

⑥ Terminal No.2: Transferring control signal input (passive control).

⑦ Terminal No.3: Position feedback signal output 1 (M type has active output, other types have passive output) (400-3200A).

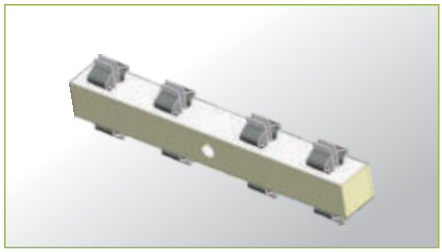




●No.1-4 wiring terminals are configured according to the switch model. See the Terminal Functions Introduction for details.

APPLICATION ADVANTAGES

STRUCTURAL DESIGN



Double-row composite contacts

- Double-row composite contacts

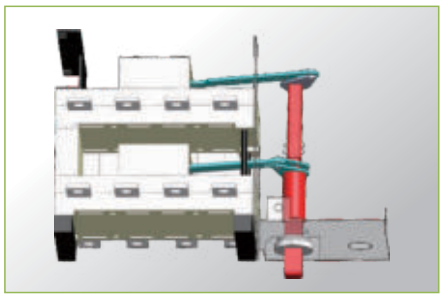
  The moving contacts are double-row composite contacts, having the twice conductive area of the single-sided contact switches.
- Transverse-pull moving mechanism

  The moving contacts move transversely and reciprocally, which has the advantages of zero arc and a high safety factor compared with the longitudinal separation type switches.
- Double interlocking mechanically and electrically

  The precise mechanical design ensures complete isolation between the two power supplies and the logic management of the main control board achieves the electrical interlocking.
- Safety ZERO position

  The whole series of products are equipped with safety ZERO position, which can cut off two power supplies at the same time. Therefore, their safety performance is superior to that of the 2-section switches.

FUNCTIONAL ADVANTAGES



Mechanical interlocks

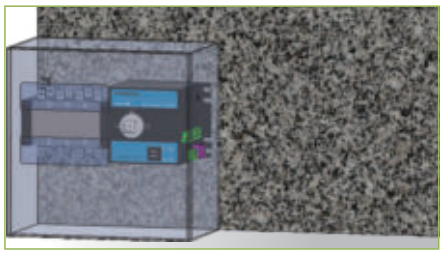
- Prevent early failures and damage to equipment

  Each moving contact is reliably fixed in the base by a high-strength spring plate made of silicon manganese steel. The pressure between the moving and fixed contacts is constant during the transferring process and after closing. It effectively prevent the equipment failure due to high voltage pulses caused by contact popping or chattering (common in contactor type switches). Our switcher can be installed on frequently vibrating equipment such as diesel generators.
- Load isolation function

  The precise safe distance can effectively isolate power supply and load, meeting the creepage requirements. Switch has a clear indication of the on/off position and can be operated with load.
- Neutral line overlapping switching

  This patented feature prevents equipment damage caused by neutral line potential drift when switching (optional feature)

PERFORMANCE ADVANTAGES



Ultra-thin design

- Service life(10A-100A)

  Mechanical life: ≥12000 times Electrical life: ≥7500 times
- High breaking and making capacity

  10 times rated current breaking capacity, 10 times rated current making capacity, 12kV rated withstand impulse voltage,100kA rated limit short-circuit current.
- High use category

  AC-33A use category, which can be used for frequent operation, has a wider range of applications than AC-33B infrequent use category.
- Meeting the requirements of Ⅰ and Ⅱ power distribution

  Good electrical performance can meet the technical requirements of Ⅰ and Ⅱ power distribution systems, and has higher shock resistance than circuit breaker type ATS to avoid tripping of the main switch due to short-circuit of a single load.
- Ultra-thin volume (10A-100A)

  The precise mechanical design achieves an ultra-thin volume, and the assembled electrical box is only 25% the size of a floor tile (60*60).



Modular control unit

- Integrated Potting Main Control Circuit Board

  The 100/160/250 frame size ATS adopts an integrated relay-type electronic control unit, which is fully encapsulated with vulcanized silicone rubber.

  With no exposed components on the surface, it offers excellent high-temperature resistance, low-temperature resistance, aging resistance, moisture resistance, mold resistance, salt spray resistance, and vibration resistance. The vulcanized silicone rubber maintains a stable state within a temperature range of -50°C to +250°C, ensuring the stability of the electronic control unit and meeting the ATS switch's operational requirements from -45°C to +70°C.
- Clear Labeling for Easy Wiring

  The integrated relay-type electronic control unit can be disassembled and installed from the top of the product, allowing users to arrange secondary control circuits from the front, making maintenance and servicing more convenient. The operating voltage Us of the control unit is clearly labeled for ease of use.
  The wiring terminals have been moved from the right side of the switch to the top, reducing the overall space required for the ATS cabinet by 5%-10%.

CHARACTERISTICS OF X TYPE



The X Three-position ATS switch with built-in relay main control circuit board is fully encapsulated in vulcanized silicone rubber. The surface has no exposed components, providing excellent high and low temperature resistance, anti-aging, moisture-proof, mildew-proof, salt spray resistant, and shockproof performance. The vulcanized silicone rubber maintains stable condition over a wide range from -50℃ to +250℃, ensuring the stability of the main control circuit board.

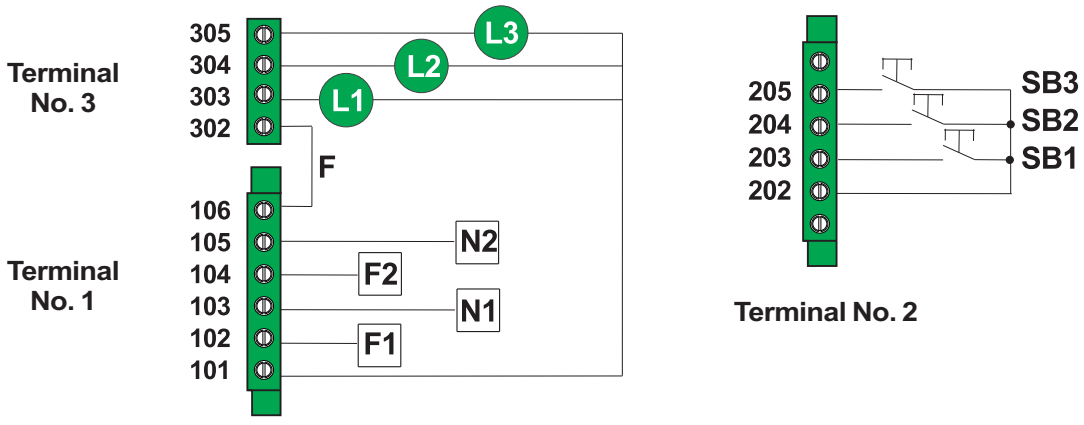


1. When the light comes on, it indicates that there is power in the circuit I control supply (between terminal 102 and access point 103, there is AC 220V).
2. When the light comes on, it indicates that the circuit Ⅰ control power fuse is normal.
3. circuit I control relay normal (relay installed on internal circuit board)
4. When the light is on, it means that there is power in the circuit Ⅱ power supply (AC 220V between access point No. 104,105).
5. When the light is on, it indicates that there is power in the control circuit of Route Ⅱ (there is AC 220V between access points No. 104 and No. 105).
6. The circuit Ⅱ control relay is functioning normally (the relay is installed on the internal circuit board).

SECONDARY WIRING SCHEMATIC DIAGRAM

X-Three-position type ATS switch, also known as external control ATS switch, features a three-stage electrical control method.

SKT2:10A-100A Same control as SKT1:125A-3200A



F1 / N1 : Power Ⅰ fire line/zero line
F2 / N2 : Power Ⅱ fire line/zero line

L1: Power Ⅰ indicator, Circuit Ⅰ closed
L2: Circuit ZERO close indicator light
L3: Power Ⅱ indicator, Circuit Ⅱ closed

SB3: Standby power switch on button (Line Ⅱ close)
SB2: Double off button (Line 0 close)
SB1: Main power switch on button (Line Ⅰ close)

Description:
SKT2-X and SKT1-X switches require users to connect secondary circuits according to the drawing.
The feedback signal at terminal 3 is a passive dry contact output.

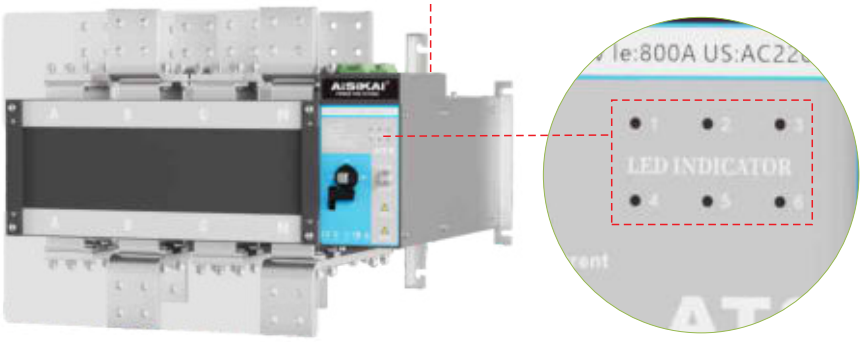
Note:
The X Three-position type ATS is suitable for places with technical requirements for conversion delay, and is applicable to the application environment of diesel generator sets.

CHARACTERISTICS OF NAX TYPE



NAX fire-fighting ATS switch with built-in MCU main control circuit board, featuring voltage judgment function. When the detected voltage is out of range, the switch will not switch, and it indicates high or low voltage through LED lights. It can achieve intelligent switching without an external controller, suitable for applications that require technical requirements for conversion delay. It can send a self-start signal to the generator set to cooperate with the full automatic operation of the unit.

The MCU main control circuit board is fully encapsulated with vulcanized silicone rubber, with no exposed components on the surface. It has excellent high temperature resistance, low temperature resistance, anti-aging, moisture-proof, mildew-proof, salt spray-proof, and shock resistance performance. The vulcanized silicone rubber can maintain a stable state in the range of -50℃ to +250℃ for a long time, ensuring the stable performance of the main control circuit board.



1
When the circuit Ⅰ power control indicator light is constantly on, it indicates that the voltage is normal. If the light continues to flash, it means the voltage is abnormal (between terminal 102 and access point 103 of No. 1 there is AC 220V).

2
When the manual/automatic status indicator is on, it indicates that it is in automatic mode (the key switch or button is in the AUTO position).

3
circuit Ⅱ power control indicator lamp is normally lit on behalf of the voltage is normal, the lamp continues to blink on behalf of the voltage is not normal (No. 1 terminal 104, 105 access points between the AC 220V, the measurement of the voltage range of AC220 ± 15%)

4
When the light comes on, it indicates that circuit Ⅰ is closed.

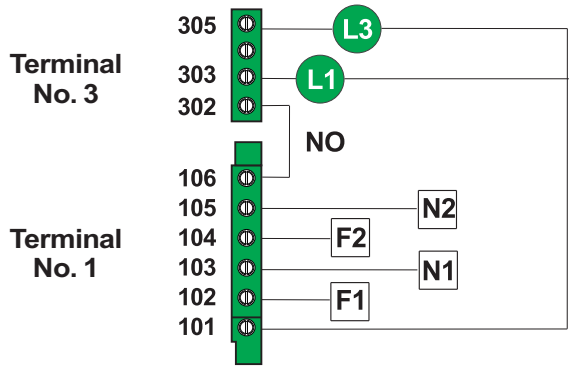
5
When the light comes on, it indicates a double-pointer for circuit Ⅰ and a circuit breaker indicator for circuit Ⅱ.

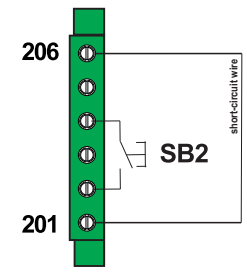
6
When the light comes on, it indicates that circuit Ⅱ is closed.

SECONDARY WIRING SCHEMATIC DIAGRAM

NAX intelligent Three-position type ATS switch, also known as MCU type ATS switch, has three electrical control modes.

SKT1:400A-3200A The control method is as follows:





F1 / N1 : Power Ⅰ fire line/zero line L1: Power Ⅰ indicator, Line Ⅰ closed

F2 / N2 : Power Ⅱ fire line/zero line L3: Power Ⅱ indicator, Line Ⅱ closed

SB2:Double off button (Circuit ZERO close)

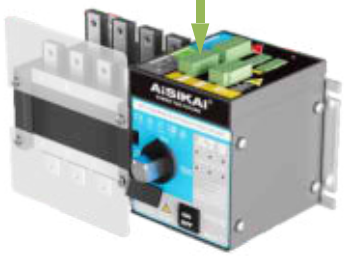
Description:
The SKT1-NAX switch requires the user to connect the secondary circuit according to the diagram, and the feedback signals at terminal 3 are all passive dry contact outputs.

Note:
The NAX Three-position type ATS is suitable for places that have technical requirements for switchover delay, and it's applicable to diesel generator set environments.

ADVANTAGES

Multiple rated control voltage specifications:

Meeting the voltage standards worldwide, suitable for any country or region.



Rated control voltage: Us

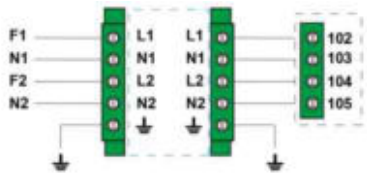
Default voltage: **AC 220V**
Customized voltage: **AC 110V**
AC 208V
AC 280V
AC 180V-280V
DC 24V(optional for the full range)
DC 12V / DC48V (optional for 250A and below)

Anti-surge Protection:

At the moment of lightning discharge, the voltage is excessively high, the current is immense, and the energy release time is short. Relying solely on external lightning protection (such as lightning rods) is insufficient. Lightning surges can directly or indirectly invade power lines and signal lines, and the resulting lightning overvoltage can cause significant harm to electronic and electrical equipment. The ASP surge protection module has lightning protection capabilities, effectively absorbing surge pulses from the power system. This ensures the safe use of ATS switches in harsh environments and lightning-prone areas, reducing the probability of ATS switch damage caused by lightning strikes.



Main power control voltage: **AC 220V**
Standby power control voltage: **AC 220V**



The ASP surge protection module, with its built-in surge protection device, can absorb surges and effectively counteract the damage surges cause to smart appliances. Surges occur frequently and unpredictably, necessitating continuous protection for smart appliances. The surge protection module can uninterruptedly and effectively block high, medium, and low-intensity spike voltages. The instantaneous surge of extremely high current flowing into the intelligent dual power transfer switch control circuit can have fatal consequences. The surge protection module can effectively cut off the extremely high current within nanoseconds, providing more rigorous protection for smart appliances. This module can effectively protect the internal control board of the ATS.

Automatic switch to 0 position in power failure:

In case of a failure in the main power supply, the switch automatically switches to the 0 position to prevent 0 position drift. Once the standby power supply (diesel generator set) voltage is stable, it automatically switches to the standby power supply side, enhancing the safety of the entire distribution system. When the main power supply voltage is restored, the switch automatically switches back to the main power supply side. The switch body is rated for a control voltage of DC24V



Main power control voltage: **AC 220V**
Standby power control voltage: **AC 220V**



Rated control voltage: **DC 24V**(optional for the full range)
DC 12V / DC48V
(optional for 250A and below)

APPLICATION ADVANTAGES

Operation temperature from -45℃ to +70℃

Passed the Tel lab tests, meeting global temperature environment requirements, suitable for any country or region.

Standard products:

-25°C to +70°C



Low Temperature Products: LTP Version

-45°C to +70°C



Testing organization:

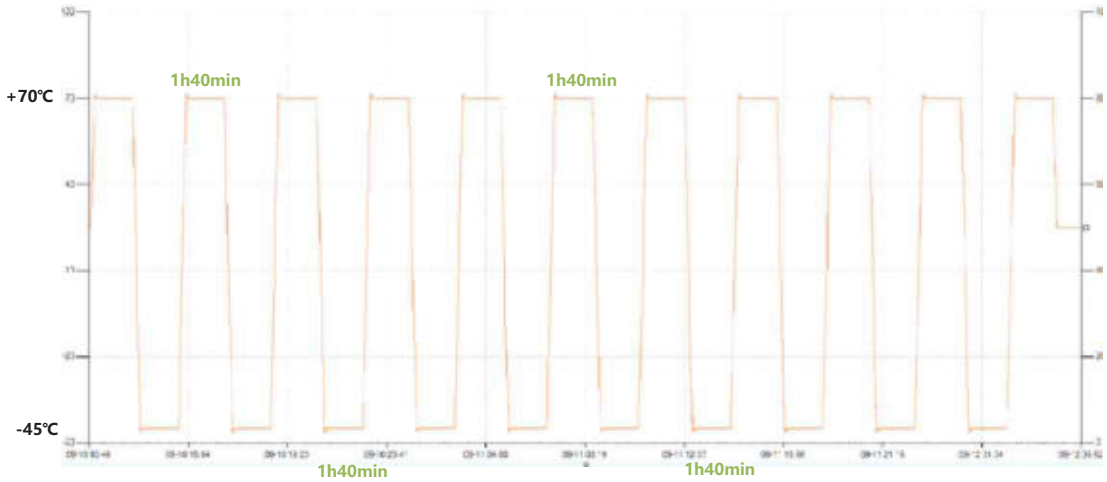
CAICT TTL

Test basis:

GJB 150.3A-2009 "Military Equipment Laboratory Environmental Test Methods Part 3: High Temperature Test"
GJB 150.4A-2009 "Military Equipment Laboratory Environmental Test Methods Part 4: Low Temperature Test"

Product high and low temperature alternating test data chart:

Low Temperature Products: LTP Version



APPLICATION ADVANTAGES

Military vibration standard 2.5 G at 50 Hz

Passed the Tel lab test, meets the military equipment 2.5G @ 50Hz vibration requirements, suitable for harsh usage environments.



Testing organization:

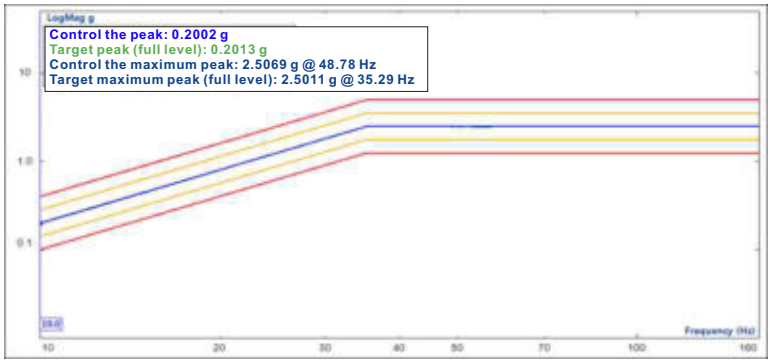
CAICT TTL

Test basis:

GJB 150.16A-2009 "Military Equipment Laboratory Environmental Test Methods Part 16: Vibration Tests"
GB/T 2423.10-2019 "Environmental Testing - Part 2: Test Methods - Test Fc: Vibration (Sinusoidal)"

Test data graph:

X-direction, Y-direction, and Z-direction sine sweep frequency vibration test curves.



Moisture-proof, anti-mold, and salt spray resistant:

The electrical control part adopts triple protection treatment, combined with silicone rubber packaging, effectively ensuring the electrical stability in humid, moldy and high salt spray environment, reaching high-grade standard of 95% RH.



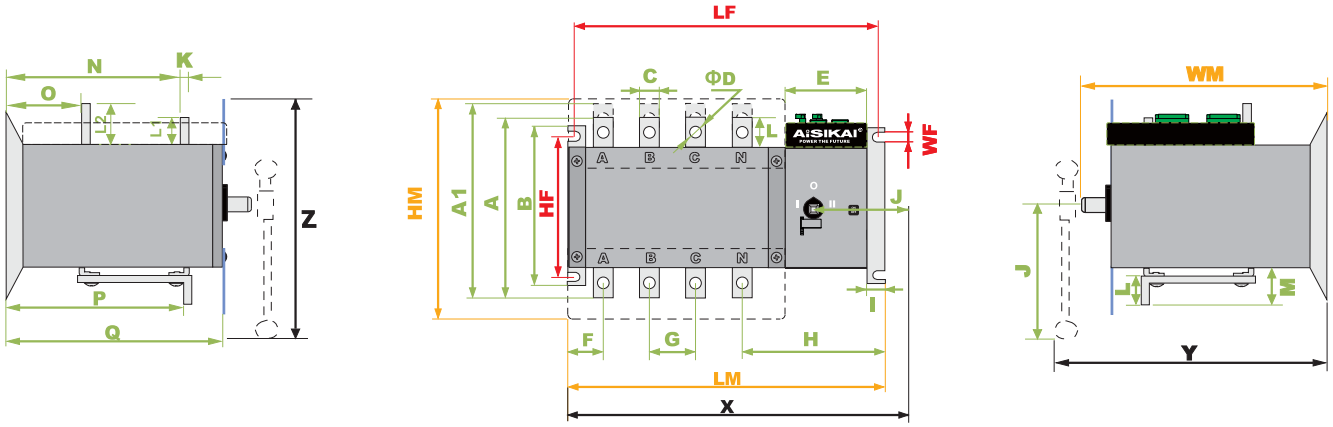




OUTLINE DIMENSIONS DIARAM

Outline Drawing 1

20A-1600A outline dimensions



20A-1600A Outline And Installation Dimensions Table

Series	Current range			Installation dimensions			Other detailed dimensions of switch						
	LF	WF	HF	LM	WM	HM	A	A1	B	C	ΦD	E	F
20–100A	225	6.5	84	242.5	135.5	143	115	127	107.5	14	6	102.5	19.5
125–160A	271	7	110	290	188	163	142	152.5	130	20	9	102.5	33
250A	335	7	110	351	192	200	166	184	130	25	11	103	37.5
400A	416	8	180	436	263	324	270	270	200	40	13	126	45.5
630A	416	8	180	436	263	324	270	270	200	40	13	126	45.5
800A	608	11	220	633	321	451	355	355	252.5	60	11*16	120	77
1000A	608	11	220	633	321	451	355	355	252.5	60	11*16	120	77
1250A	608	11	220	633	321	451	355	355	252.5	60	11*16	120	77
1600A	608	11	220	633	321	451	402	402	252.5	80	13	120	77

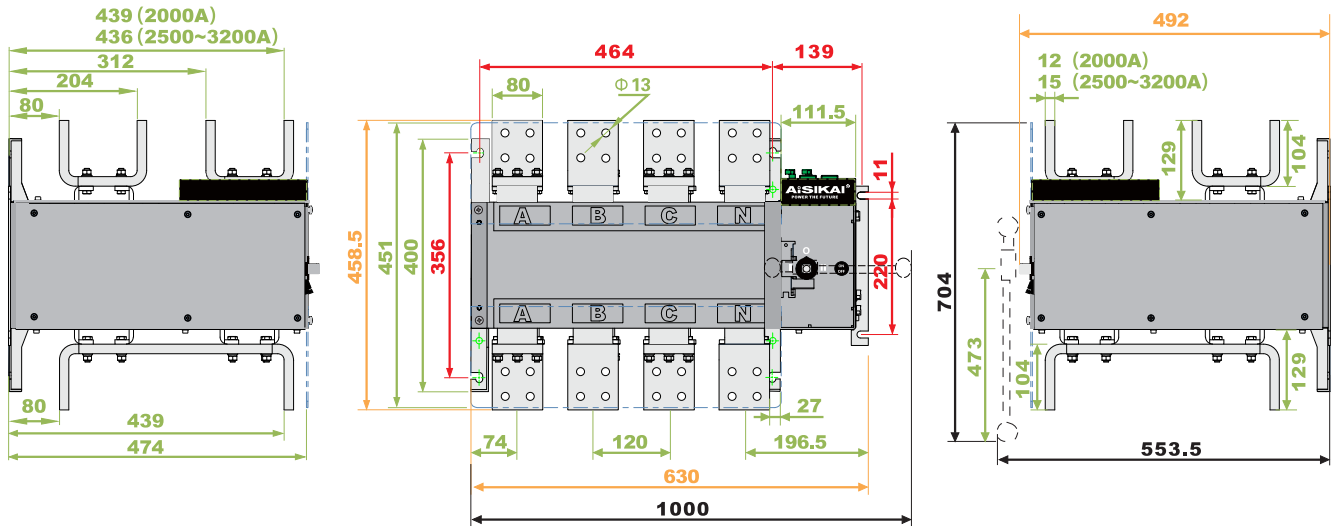
G	H	I	J	K	L	L1	L2	M	N	O	P	Q	X	Y	Z
30	133	14.5	142	2.5	18	18	31	25	87.5	37.5	87.5	114	303.5	171	208
36	150	18	188.5	3.5	25	25	41	31.5	133	55.5	133.5	165.5	393	221	265.5
50	163.5	20	189	3.5	27	30	51	32	136.5	57	139	169.5	452.5	227	289
65	195.5	25	189	5	45	50	50	56.5	186	77	190	239	521.5	296	355
65	195.5	25	189	6	45	50	50	56.5	186	77	190	239	521.5	296	355
120	196	27	473	8	73	65	65	87	248	104	256	298	1008	381	700.5
120	196	27	473	8	73	65	65	87	248	104	256	298	1008	381	700.5
120	196	27	473	8	73	65	65	87	248	104	256	298	1008	381	700.5
120	196	27	473	10	80	80	80	120.5	248	104	260.5	298	1008	381	700.5

Note: X, Y and Z are the maximum width, depth and height of the switch after assembling the manual emergency handle. Depending on the angle at which the handle is mounted or the position of the moving slider, the corresponding size will be smaller than the data in the table, for reference only The parameters of SKT1 20A-100A are exactly same as the SKT1 125A product.

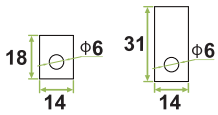
OUTLINE DIMENSIONS DIARAM

Outline Drawing 2

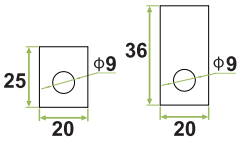
2000A-3200A auxiliary outline dimensions



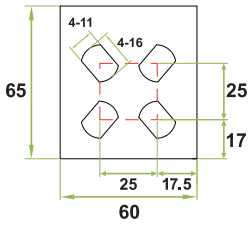
Input And Output Copper Bar Dimensions Chart



20A–100A



125A–160A



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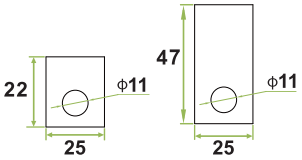

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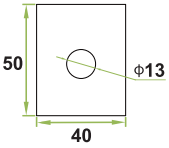

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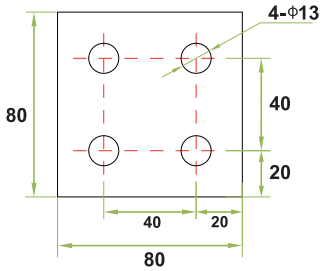

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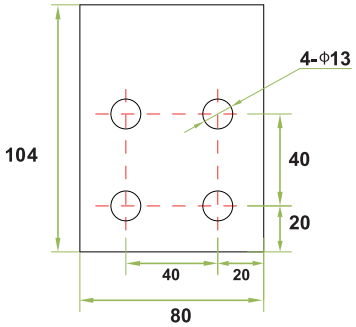

2000A–3200A

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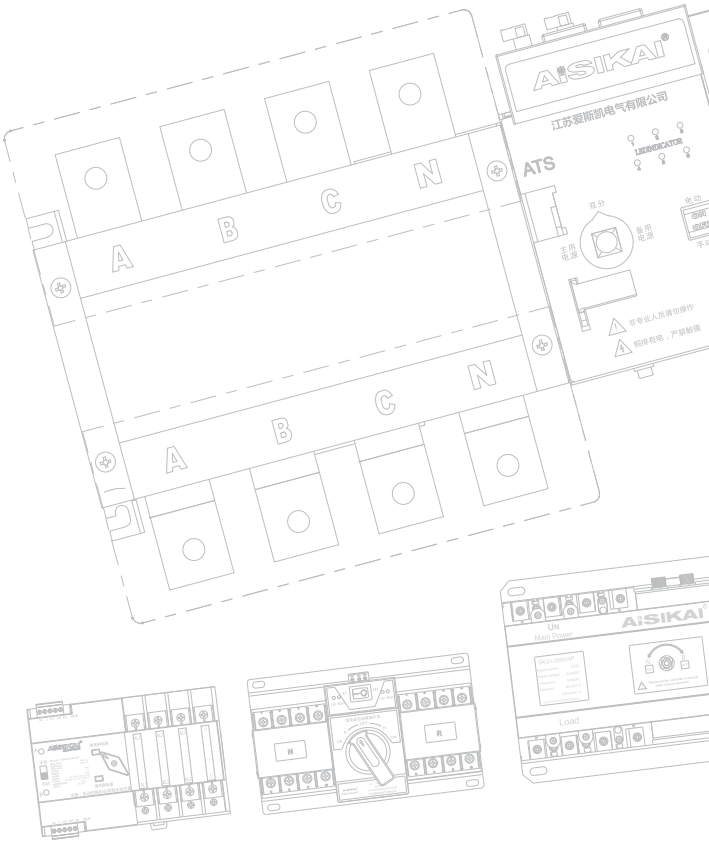



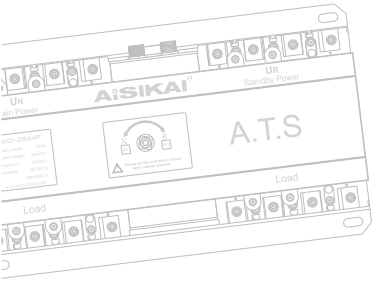

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