Keyword: Double complex contact,Zero arc(No Arc Chute),distinct on and off position indecator,padlock function etc

SQ5 Series Automatic Change-over switch

Type & Meaning

S Q5 □-□/□·□

- Control mode(Not marked:Basic type Ⅰ、Ⅱ、Ⅲ)
- Pole no.:(3、4)
- Appointed calorific electric current
- Design number
- Automatic change-over switch
- Code of company

Example for model selection

SQ5 -100/4.Ⅲ~400V In50A

Automatic change-over switch, Conventional thermal current is 100A, AC rate voltage 400V,rate current 50A,4poles(3 poles+on and off neutral pole),Suitable for automatic change and automatic recovery of municipal power oil generator power supply system.

Conform Standard

SQ5 Series Automatic Change-Over Switch Complies With The Following Standards:
IEC60947-1(1998)《Low-voltage switchgear and controlgear, part one: General Rules》.
IEC6094-3(1999)《Low-voltage switchgear and controlgear, switches, disconnetors, switch-disconnectors and fuse-conbination units》.
IEC60947-6(1999)《Low voltage switch equipment and control equipment multi-function-switch automatic change-Over switch electical device》.

National Standard:

GB/T14048.1-2002《Low-voltage switchgear and controlgear,part one: General Rules》.
GB14048.3-2002《Low-voltage switchgear and controlgear,switches,disconneetors,switch-disconnectors and fuse-conbination units》.
GB014048.11-2002《Low voltage switch equipment and control equipment multi-function-switch automatic change-over switch electrical device》.

Main Technical Parameters

• SQ5-100~1600A
SQ5-100-1600A series automatic change-over switch electrical properties and mechanical properties

Conventional thermal current Ith A			100ASQ51								
Rated current In(A)			16A	20A	25A	32A	40A	50A	63A	80A	100A
Rated impulse withstand voltage Ui(V)			500	500	500	500	500	500	500	500	500
Dielectric strength(V)			3000	3000	3000	3000	3000	3000	3000	3000	3000
Rated surge-resistant voltage Uimp KV (installed category IV)			6	6	6	6	6	6	6	6	6
Rated Working current Ie(A)	400V	AC-31	16	20	25	32	40	50	63	80	100
		AC-33	16	20	20	25	32	40	40	63	80
		AC-35	16	20	25	32	40	50	63	80	100
	220V	DC-31	16	20	25	32	40	50	63	80	100
		DC-33	16	20	20	25	32	40	40	63	80
		DC-35	16	20	25	32	40	50	63	80	100
Motor power P(400V)KW			8	10	15	15	20	25	30	30	32
Rated short-time withstand current(kA Rms)0.1S/1S			9/5	9/5	9/5	9/5	9/5	9/5	9/5	9/5	9/5
Rated Breaking capability(A rins)AC33 380V			125	160	200	250	320	400	500	640	800
Rated making capability (ARms)AC33 380V			160	200	250	320	400	500	630	800	1000
Rated short-current making capability Icm (KA peak value)			8	8	8	8	8	8	10	10	10
Mechanical durability(number of cyclic operation)			10000	10000	10000	10000	10000	10000	10000	10000	10000
Electric durability	Cosφ=0.65Ac33		2000	2000	2000	2000	2000	2000	2000	2000	2000
Change-over time	I-0-II or II-0-I(S)		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	I-0 or II-0(S)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Power consumption of electrical control	24V(DC)(W)		25	25	25	25	25	25	25	25	25
	220V(AC)(W)		25	25	25	25	25	25	25	25	25
Moment of operation(Nm)			1	1	1	1	1	1	1	1	1
Weight(kg)	3Poles		5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
	4Poles		5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8

SQ5 SERIES AUTOMATIC CHANGE-OVER SWITCH

Main Technical Parameters

1.SQ5-100-1600A series automatic change-over switch electrical properties and mechanical properties

100A					160A		250A		630A		1600A			
20A	40A	63A	80A	100A	125A	160A	200A	250A	400A	630A	800A	1000A	1250A	1600A
500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
5000	5000	5000	5000	5000	5000	5000	5000	5000	8000	8000	10000	10000	10000	10000
8	8	8	8	8	8	8	8	8	12	12	12	12	12	12
20	40	63	80	100	125	160	200	250	400	630	800	1000	1250	1600
20	32	40	63	80	125	160	200	250	340	536				
20	40	63	80	100	125	160	200	250	400	630	800	1000	1250	1600
20	40	63	80	100	125	160	200	250	400	630	800	1000	1250	1600
20	32	40	63	80	100	125	160	200	315	500				
20	40	63	80	100	125	160	200	250	400	500	800	1000	1250	1600
10	20	25	30	32	63	80	100	132	220	280				
9/5	9/5	9/5	9/5	9/5	20/10	20/10	25/12	25/12	40/20	50/25	90/50	90/50	90/50	90/50
160	320	500	640	800	1000	1000	1600	1600	3200	3200				
200	400	630	800	1000	1250	1250	2000	2000	4000	4000				
8	8	10	10	10	12	12	17	17	30	30				
1000	10000	10000	10000	10000	10000	10000	10000	10000	5500	5500	4000	4000	4000	3000
1500	1500	1500	1500	1500	1000	1000	1000	1000	500	500	500	500	500	500
0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2
0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8
50	50	50	50	50	75	75	75	75	90	90	90	90	90	90
50	50	50	50	50	75	75	75	75	90	90	90	90	90	90
15	15	15	15	15	22	22	30	30	45	45	55	55	55	60
					8.2	8.2	10.4	10.4	17.8	19	28	31	31	34
4.2	4.3	4.4	4.5	4.5	8.7	8.7	11.3	11.3	20.2	22	32	36	36	40

2.SQ5-800~3200A basic type series automatic change-over switch electrical properties and mechanical properties

Conventional thermal current Ith A			800A	1000A	1250A	1600A	2000A	2500A	3200A
Rated impulse withstand voltage Ui(V)						1000V			
Rated surge- resistant voltage Uimp KV						12KV			
Rated Working voltage Ui(V)						AC440V			
Rated Working current Ie(A)		AC-31	800	1000	1250	1600	2000	2500	3200
		AC-33	800	1000	1000	1000	1250	1250	1250
		AC-35	800	1000	1000	1250	2000	2000	2500
Rated making capability						10Ie			
Rated breaking capability						8Ie			
Rated restrict short circuit current KA				100		120		80	
Rated short-time withstand current Is			26KA			50KA			55KA
Change-over time I-0-II or II-0I(s)					1.2S			2.4S	
Power supply voltage control						DC24V, 48V, 110V AC220V			
The energy consumption of the motor	Rated control voltage	Sartup	400W		400W			600W	
		In gear	90W		98W			120W	
Weight (kg)		4poles	32	36	40	49	95	98	135

Performance and characteristic

- It adopted double complex contact, horizontal and vertical type frame basically, it have come to 'Zero' arc(No Arc Chute);
- It adopt reliable machine interlock and electric interlock, the execu-tive union parts adopt independency overload disconnect switch,it makes more reliable and safety;
- Adopt 'zero' technique, it can force to set 'zero' under emergency situation(break off two way power supply at the same time),meet the requirement of fire protection linkage;
- Operate overload disconnect switch change over adopt singleness electromotor drive, switch over smooth and reliable, no noise, little wallop;
- Operate macnine drive motor use only under the executive overload disconnect switch change over instanecus current across,outstanding energy saying;
- Perform overload disconnect switch with mechanism interlock device, it ensure the common use,standby power working reliable and not interference;
- Distinct On and Off position indicator padlock function ect.,safe realize the isolator between electric power and overload;
- High security, high automatization, high retiability, use life more than 8000 times;

SQ5 Series Automatic Change-over switch

- Machine & Electricity perfect design,On-Off change-over nicety agility smooth, adopt international advanced logical control technique, high anti-interference and no interference outside;
- It include main power close,standby power separate;main power separate; standby power close; main standby power all breek off and steady working(I-0-II)
- Easy installation,control loop adopt terminal connection and insert.
- Four king of operation function: emergency manual operation electromotion remote control operation automatic control stage emergency off operation automatic control operation.

Product Usage

SQ5 Series automatic change over switch mainly suitable for distribution or electromotor network, which under AC 50Hz,rated voltage 380V,rated voltage DC220V,rated current 16-1600A,main power and standby power and standby power or mutual standby power change over system or city power and generator group overload switch-over. At the same time, it can operated under un-frequency On and Off circuit act as disconnector.

Such products are widely used at the field of important power supply site, which transport, distribution power supply system and automatization System. For Fire proection、Ho-spital、Bank、Buding etc.,Which doesn' t allowed power off.

Control Characteristic

- The switch has 3poles or 4poles(3poles+on or off neutral pole).
- 27 current grades can be divided into 16A 20A 25A 32A 40A 50A 63A 80A 100A 125A 160A 200A 225A 250A 315A 350A 400A 450A 500A 630A 800A 1000A 1250A 1600A 2000A 2500A 3200A.
- Basic Type: Main-standby power, self-cast, self reset.
- Type Ⅰ 100A below, city power-city power self-cast,self reset Tow way power three phase short phase testing; Above 125A, City power-
- City power main and Standby or mutual power can do selection self-cast two way power three phase checking.
- Type Ⅱ : City power-City power main and standby or mutual power supply can do selection(that is self-casting self reset or self-casting without self reset),two way power three phase and lack phase, overload voltge checking.
- Type Ⅲ: City power-Oil machine, self casting self reset,two way power supply three phase and lack phase, overload voltage, oil machine frequency testing.

Basic Type switch control characteristic:

- Suitable for two way main and standby power system, self casting and self reset;
- It can expand function by outer connection.

Type Ⅰ switch control characteristic:

- 100A below;

  A:Suitable for two way main and standby power system;

  B:It will switch on to the standby power supply circuit after switch delay(setting range 1~16S)when the main power supply circuit short circuit and loop(switch off or short phase).

C:When main circuit loop recovery and normal,the switch delay(setting range 1~250S)automatic switch on to the main circuit.

- 125A above

A:It suitable for main power system or mutual standby power system of two way city power.

B:When the switch selected as self casting and self reset(that is main & standby type),When main power circuit loop caused any fault(power off、short phase):switch delay (setling range 1~46S)auto switch on standby power supply circuit loop;when the main loop recovery to normal circuit,the switch didn' t switch on to route I,only when the route II caused faulty; the On-Off delay(setting range 1~120S) automatic switch on to power supply circuit I.

C:When the switch atthe function of self casting and with out selt reset,(mutual power standby type),when loop I have power supply fault (bresk off、short phase);the On-Off detay(setting range 1~16S) automatic switch on to the circuit II;when the circuit I recovery normal, On-Off delay(setting range 1~120S)automatic switch on to circuit loop II.

- Select the best power supply circuit through terminal connection.

Type II switch control characteristic:

- It suitable for two way city main power or mutual standby power supply system.
- When the switch select to be self casting and self reset function, the On-Off delay(setting range 1~16S)automatic switch on to standby power supply circuit when the main power supply loop caused power fault. Once the main power, supply circuit come to normal, switch delay (setting range 1~120S)auto change to the main power supply circuit.
- Under the condition of switch at self casting and without self reset function, when power circuit I cause fault(short phase、 overload voltage): On-Off delay(setting range 1~16S)auto-matic switch on route II power supply; when circuit I, recovery normal, the switch doesn' t change back to circuit I, but only when the circuit II caused fault, On-Off delay(setting range 1~250S)automatic switch on to loop I.
- Select the best power supply circuit through terminal connection (Above 125A)

Type III switch control characteristic:

- It suitable for city power supply system of main power supply、standby power supply of generator group.
- When the city power occur fault,On-Off control primary indicate the signal to start oil machine, after the On-Off delay 3S,the switch to postion " 0", delay again(warm-start time setting range 1~250S) automatic switch on to city power supply, when switch delay a gain (warm-start time setting range 1~250S)automatic switch on to oil-machine circuit power supply.
- when the city power recovery normal, the On-Off delay(setting range 1~250S)automatic switch on to city power supply, when switch delay again(setting range 1~250S), the controller send out the signal of indication to off the oil-machine.
- City power, oil-machine have the function of three phase short phase, three phase overload voltage checking, Oil machine frequency checking etc.

The above-mentioned 4 models having:

- The functions of automation, electric control and hand control.
- Delay-time 0.5s,detection signal, to prevent error action.
- Remote control "0" position.
- The key switch to select control modes.
- The switch can all be provided with RS-485 communication interface. This can be provided according to the requirements of the user.

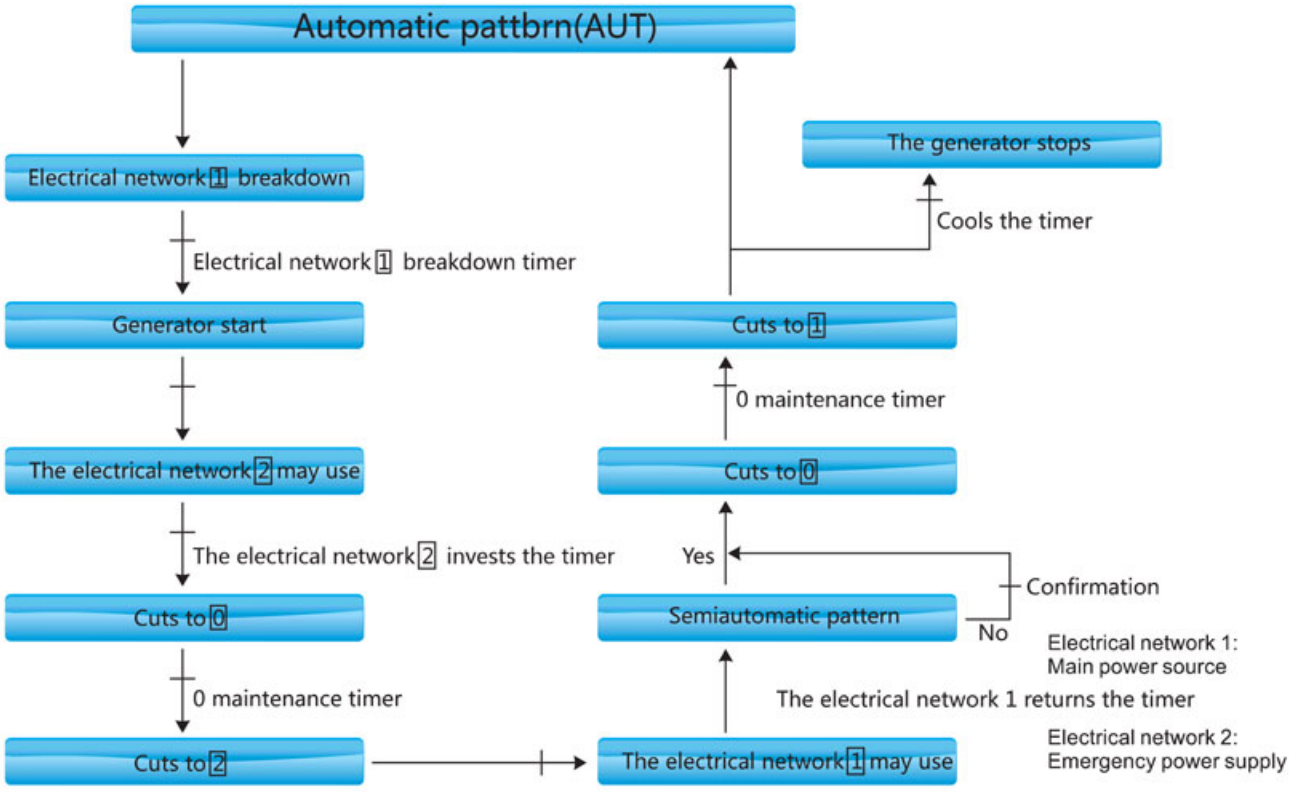
Operation Environment

Sq5 automatic changing-over isolation switch can work reliably under the following conditions:

- Height above sea level does not exceed 2,000m;
- Ambient temperature is not higher than 40℃and not lower than-5℃;
- Relative humidity is not larger than 95%;
- No explosion dangerous medium environment;
- No rain and snow attack environment;

Note;if the load isolation switch is expected to be used in the condition that the ambient temperature is higher than+40℃ or is lower than-5℃-45℃,customers should intorm to the manufactory.

City power-oil machine automatic cut over schematic drawing

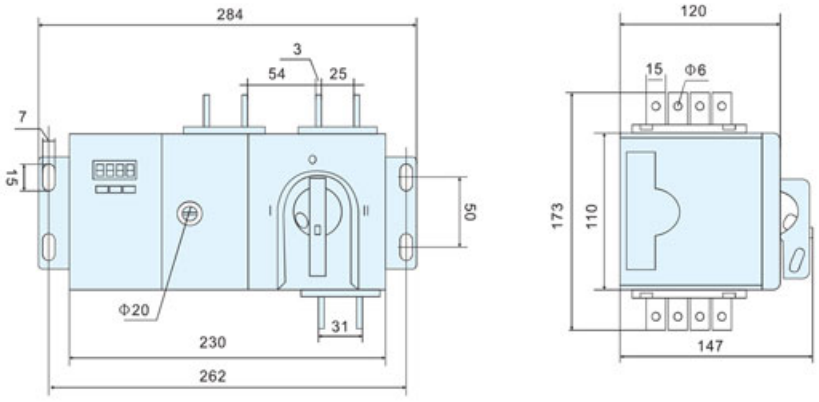


Terminal Diagram,Outline and Installation Dimension of SQ51-100A and SQ5-63A

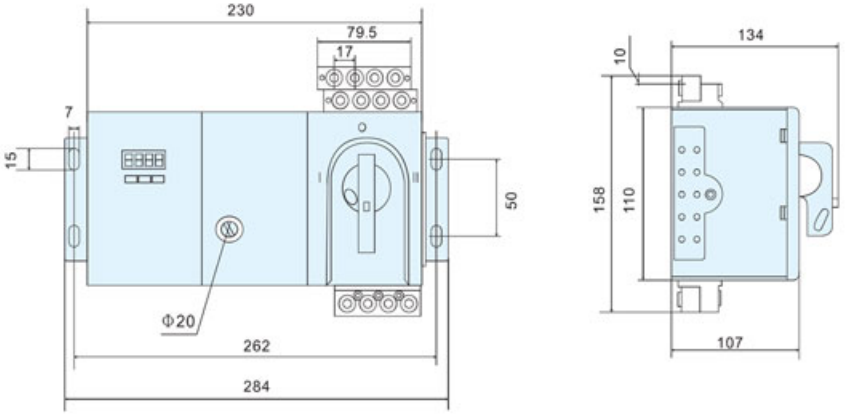
Terminal diagram

output connection	Zero line suitable for 3 pole		Set display passive contact	Start the diesel generator	Swith body button Open to autoatically Closure for electric	Electric/autoatic select Open to autoatically Closure for electric	Electric control
	N2 or N (G)	N1	Ⅱ 0 Ⅰ common point	G	K	K	Ⅱ 0 Ⅰ common point
Inside of the unit	62	61	54 53 52 51	42 41	11 31	11 21	14 13 12 11

Qutline and Installation Dimension



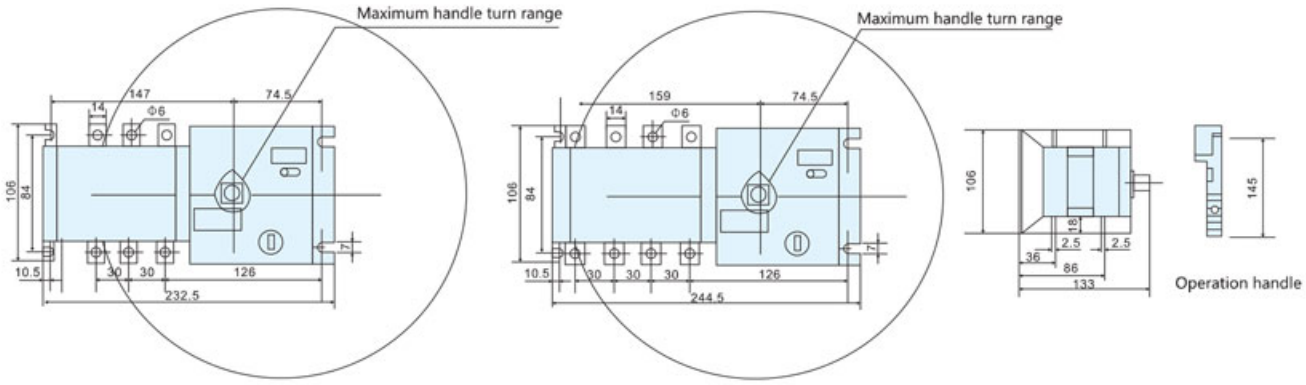
SQ51-100A



SQ52-63

SQ5-100A automatic change-over switch

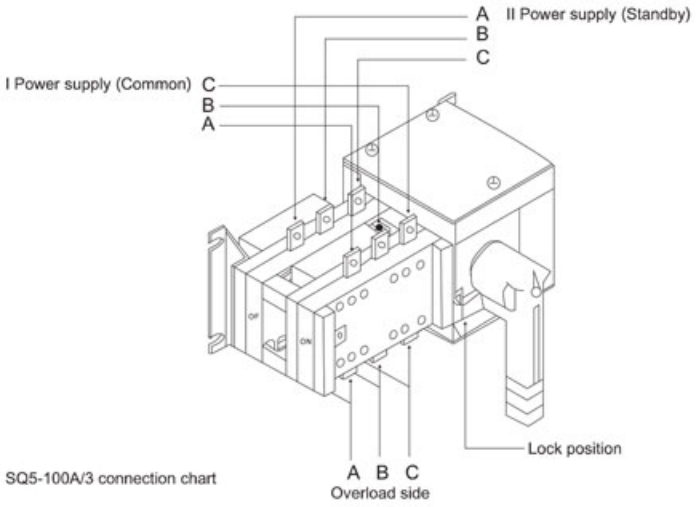
Exernal dimension and installation dimension(20~100A)



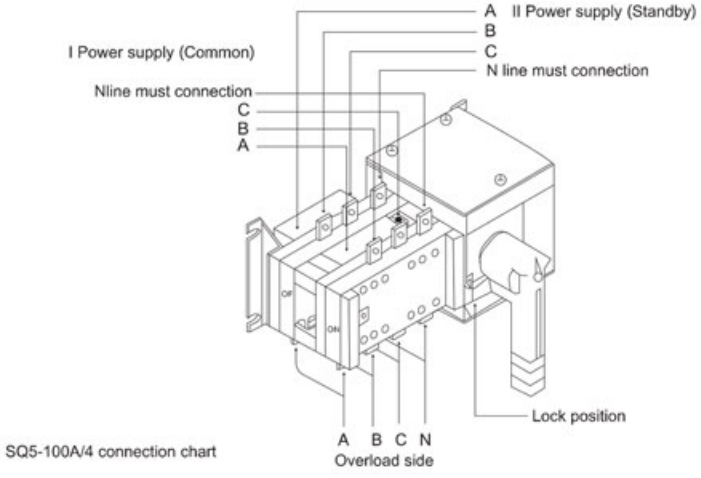
SQ5-100A/3

SQ5-100A/4

Connection chart

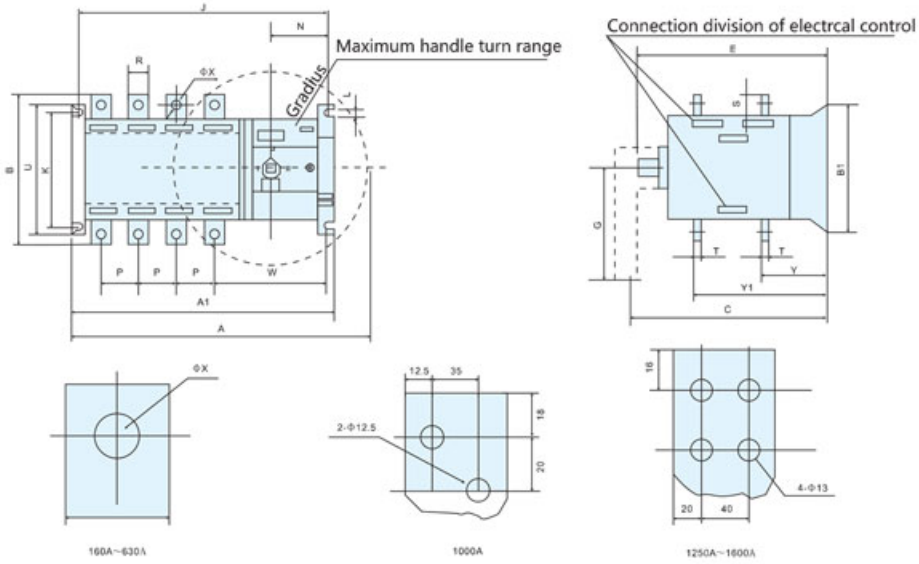


SQ5-100A/3 connection chart



SQ5-100A/4 connection chart

SQ5-160~1600A automatic change-over switch external dimension and installation dimension



Nite:The connection bridge opening and output post hole quantity is consistent.

Specification	External Dimension and Installation Dimension																		
In	A	A1	B	B1	C	E	G	J	K	L	N	P	R	S	T	U	W	ΦX	Y	Y1
125A/3	376	283.5	135	134	261	208	166	262.5	78/108	7	87	36	20	25	3.5	134	155	9	56	141
125A/4	406	316	135	134	261	208	166	295	78/108	7	87	36	20	25	3.5	134	155	9	56	141
160A/3	376	283.5	135	134	261	208	166	262.5	78/108	7	87	36	20	25	3.5	134	155	9	56	141
160A/4	406	316	135	134	261	208	166	295	78/108	7	87	36	20	25	3.5	134	155	9	56	141
200A/3	416	323.5	170	134	261	208	166	302.5	78/108	7	87	50	25	30	3.5	134	164	11	60	145
200A/4	466	373.5	170	134	261	208	166	353	78/108	7	87	50	25	30	3.5	134	164	11	60	145
250A/3	416	323.5	170	134	261	208	166	302.5	78/108	7	87	50	25	30	3.5	134	164	11	60	145
250A/4	466	373.5	170	134	261	208	166	353	78/108	7	87	50	25	30	3.5	134	164	11	60	145
400A/3	455	378.5	240	208	333	270	166	358.5	176	11	103.5	65	30	40	5	208	197	12	83	193
400A/4	515	438.5	240	208	333	270	166	418.5	176	11	103.5	65	30	40	5	208	197	12	83	193
630A/3	455	378.5	260	208	333	270	160	358.5	176	11	103.5	65	40	50	6	208	197	12	83	194
630A/4	515	438.5	260	208	333	270	160	418.5	176	11	103.5	65	40	50	6	208	197	12	84	194
800A/3	871.5	524	340	250	387	319.5	448	499	212	11	88	120	60	69	8	250	198.5	12.5	84	252
800A/4	975.5	637.5	340	250	387	319.5	448	612.5	212	13	88	120	60	69	8	250	207	12.5	107	252
1000A/3	871.5	524	340	250	387	319.5	448	499	212	13	88	120	60	69	8	250	198.5	12.5	107	252
1000A/4	975.5	637.5	340	250	387	319.5	448	612.5	212	13	88	120	60	69	8	250	207	12.5	107	252
1250A/3	871.5	524	369	250	387	319.5	448	499	212	13	88	120	80	69	8	250	198.5	13	107	252
1250A/4	975.5	637.5	369	250	387	319.5	448	612.5	212	13	88	120	80	69	8	250	207	13	107	252
1600A/3	871.5	524	376	250	387	319.5	448	499	212	13	88	120	80	69	10	250	198.5	13	109	253.5
1600A/4	975.5	637.5	376	250	387	319.5	448	612.5	212	13	88	120	80	69	10	250	207	13	109	253.5