SGQ_ATS

AUTOMATIC TRANSFER SWITCH

USER MANUAL

SMARTGEN (ZHENGZHOU) TECHNOLOGY CO., LTD.

Chinese trademark

SmartGen English trademark

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Table 1 Software Version

Date	Version	Note
2006-03-18	1.0	Original release.
2010-10-19	2.0	Revision.
2011-06-08	2.1	Modify the wiring diagram of N type, T type and M type.
2011-11-22	2.2	Modify the technical data of N type, T type and M type.
2012-06-29	2.3	Lines of wiring diagram are bold.
2012-11-08	2.4	Format Modification.
2014-05-30	2.5	Add terminal number in wiring connection diagram.
2015-03-30	2.6	Modify some details.
2019-06-26	2.7	Modify M type wiring diagram, and add Q type switch.
2019-09-11	2.8	Modify wiring diagram of M type and Q type.
2020-01-07	2.9	Delete Q type switch and related parameters.
2022-01-04	3.0	Modify M type wiring diagram.

CONTENTS

1 SUMMARY

SGQ Automatic Transfer Switch (ATS) is used under conditions of AC660V 50/60Hz or DC250V. It is two-stage PC class type with electromagnetism drive structure, which can make fast load transfer (transfer time ≤80ms) of two power circuits. It can be widely used for national one-class load, for example: high buildings, post, telecommunications, coal mines, ships, industrial assembly lines, health care, military facilities etc. The two power circuits can be grid, auto start genset, storage battery etc.

2 STRUCTURE AND CHARACTERISTICS

SGQ Automatic Transfer Switch (ATS) adopts electromagnetic coil drive, electrical and mechanical interlocking structure, main loop structure of two static contacts and one dynamic contact. Dynamic contact applies V type, which ensures two power circuits shall not be short circuit. N type and T type apply double coils; M type applies single coil. Coils are only energized at the time of transfer and this extends the usage life of switch to a great degree. Coil control power can be supplied by master/slave AC or DC power and it is not needed to add another control power. Switch itself has mechanical or electrical close indication, and at the same time it provides volts free auxiliary contact.

3 APPEARANCE AND CLASSIFICATION

3.1 ILLUSTRATION

SGQ ATS can be classified into 3 types by appearance: N type, T type, M type. Each type has 3P and 4P, and N type still has 2P.

The rated current series are: 63A, 125A, 160A, 200A, 250A, 400A, 630A, 800A, 1000A and 1250A.

Switch appearances are as below.

Table 2 Switch Appearance

<table>
<tr><th>Type</th><th>2P</th><th>3P</th><th>4P</th></tr>
<tr><td rowspan="2">N
Type</td><td>  </td><td>  </td><td>  </td></tr>
<tr><td colspan="3">63A, 125A</td></tr>
<tr><td rowspan="2">T
Type</td><td rowspan="2">Nil</td><td>  </td><td>  </td></tr>
<tr><td colspan="2">160A, 200A, 250A, 400A, 630A</td></tr>
<tr><td rowspan="2">M
Type</td><td rowspan="2">Nil</td><td>  </td><td>  </td></tr>
<tr><td colspan="2">630A, 800A, 1000A, 1250A</td></tr>
</table>

3.2 N TYPE CASE DIMENSIONS AND TECHNICAL DATA

TOP VIEW **RIGHT VIEW**

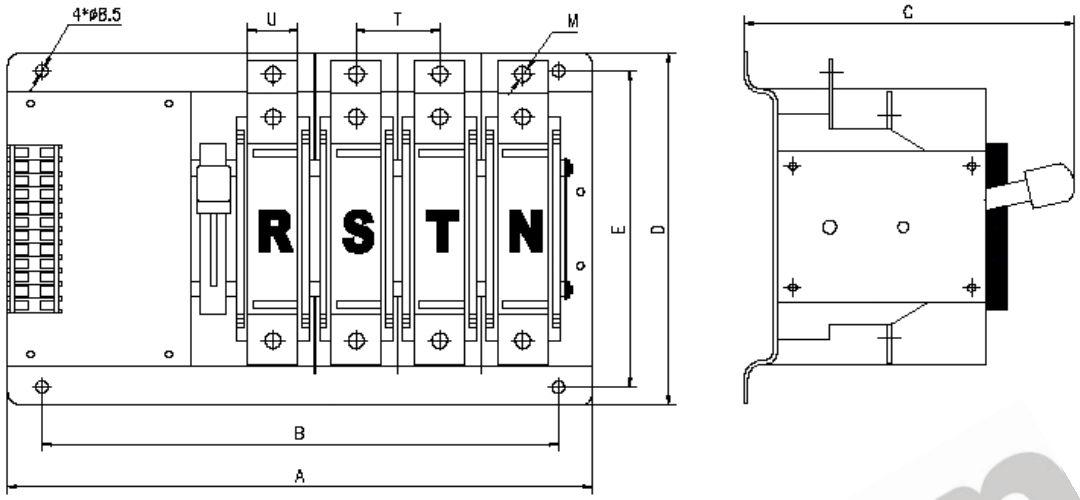

Fig. 1 N Type Diagram

Table 3 N Type Case Dimensions

Model	Overall size (mm)					Installation size (mm)				Copper bar and location hole (mm)		
	A			D	C	B			E	M	U	T
	2P	3P	4P			2P	3P	4P				
SGQ63N	172	200	228	186	155	139	167	195	165	5	12	27
SGQ125N	192	228	265	186	155	159	195	232	165	7	20	37

Table 4 N Type Technical Data

Type		SGQ63N			SGQ125N		
Rated current		63A			125A		
Rated limited short-circuit current		35kA					
Coil operating voltage		AC220V (176~265)V					
Coil operating current		3.5A					
Auxiliary contact		1A 250VAC, N/O, Free Voltage, Each side has 2.					
Operation time	Mechanical	10000 times					
	Electrical	4000 times					
Number of poles		2P	3P	4P	2P	3P	4P
Net weight (kg)		3.5	4	4.5	4	4.5	5. 5
Operation cycle		15 seconds /time					

3.3 T TYPE CASE DIMENSIONS AND TECHNICAL DATA

TOP VIEW **LEFT VIEW**

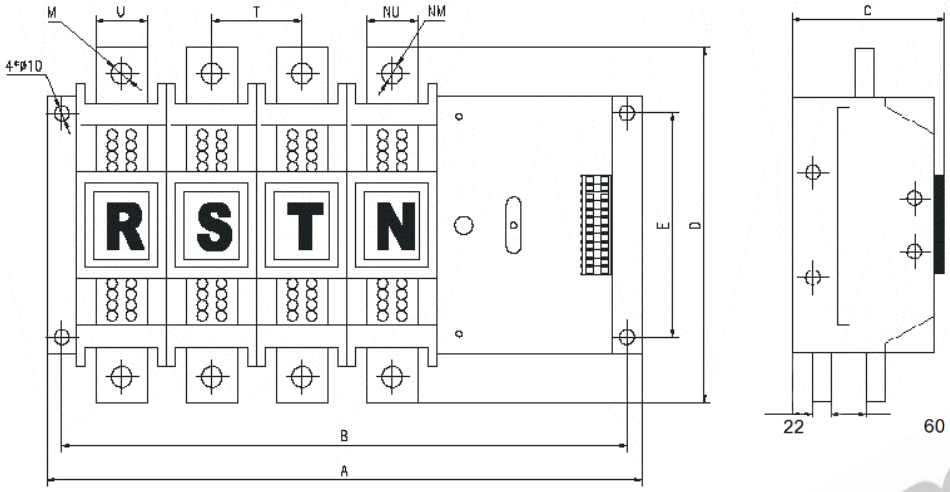

Fig. 2 T Type Diagram

Table 5 T Type Case Dimensions

Model	Overall size(mm)				Installation size (mm)			Copper bar and location hole (mm)				
	A		D	C	B		E	M	NM	U	NU	T
	3P	4P			3P	4P						
SGQ160T	326	375	292	146	307	356	200	9	9	20	20	49
SGQ200T	326	375	292	146	307	356	200	9	9	20	20	49
SGQ250T	326	375	292	146	307	356	200	9	9	20	20	49
SGQ400T	356	405	292	146	337	386	200	11	9	30	20	59
SGQ630T	368	427	310	146	349	408	200	14	14	40	30	63

Table 6 T Type Technical Data

Type		SGQ160T		SGQ200T		SGQ250T		SGQ400T		SGQ630T	
Rated current		160A		200A		250A		400A		630A	
Rated limited short-circuit current		35kA									
Coil operating voltage		AC220V (176~265)V									
Coil operating current		7A									
Auxiliary contact		1A 250VAC, N/O, Free Voltage, Each side has 2.									
Operation time	Mechanical	8000 times									
	Electrical	3000 times									
Number of poles		3P	4P	3P	4P	3P	4P	3P	4P	3P	4P
Net weight (kg)		18	20	18	20	18	20	19	21	20	22
Operation cycle		10 seconds/time									

3.4 M TYPE CASE DIMENSIONS AND TECHNICAL DATA

TOP VIEW **RIGHT VIEW**

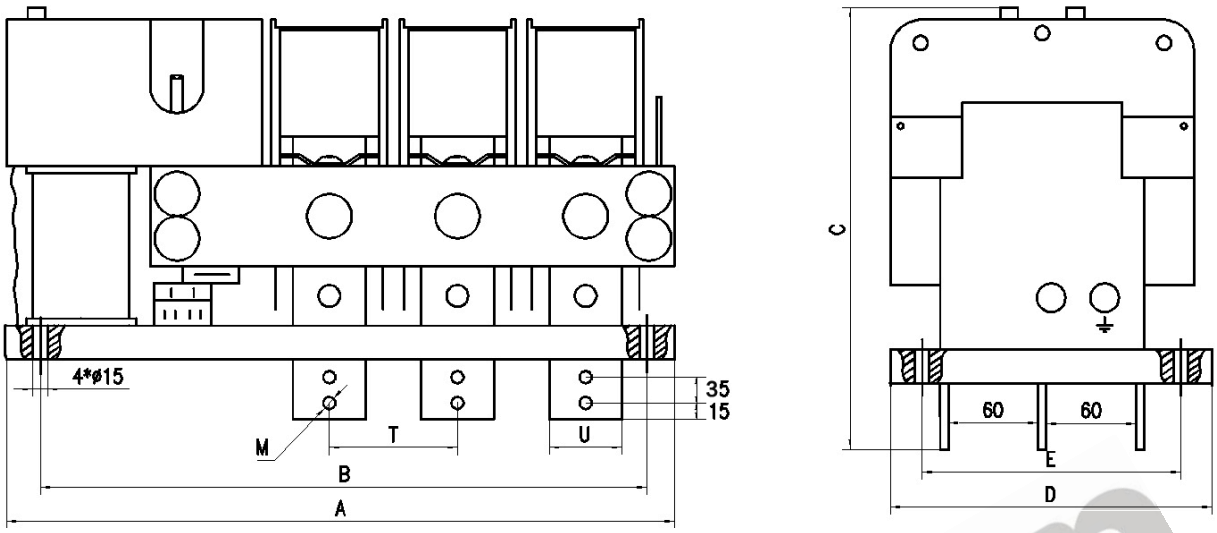

Fig. 3 M Type Diagram

Table 7 M Type Case Dimensions

Models	Overall size(mm)				Installation size(mm)			Copper bar and location hole (mm)		
	A		D	C	B		E	M	U	T
	3P	4P			3P	4P				
SGQ630M	530	600	280	345	490	560	210	12	30	90
SGQ800M	530	600	280	345	490	560	210	12	40	90
SGQ1000M	530	600	280	345	490	560	210	12	45	90
SGQ1250M	530	600	280	345	490	560	210	12	55	90

Table 8 M Type Technical Data

Type		SGQ630M		SGQ800M		SGQ1000M		SGQ1250M	
Rated current		630A		800A		1000A		1250A	
Rated limited short-circuit current		50 kA							
Coil operating voltage		AC220V (176~265)V							
Coil operating current		16A							
Secondary contact		1A 250VAC, N/O, Free Voltage, Each side has 1.							
Operation time	Mechanical	6000 times							
	Electrical	3000 times							
Number of poles		3P	4P	3P	4P	3P	4P	3P	4P
Net weight (kg)		37	43.5	39	46	41	48	48	57
Operation cycle		15s/time		20s/time		25s/time		25s/time	

4 WORKING REQUIREMENTS

Table 9 Working Requirements

Item	Requirements
Working temperature	(-40~+70)°C
Working Humidity	(20~90)%RH
Installation elevation	≤5000m
Pollution class	III
Installation type	Ⅳ

5 ATS WIRING CONNECTION DIAGRAM

5.1 N AND T TYPE WIRING CONNECTION DIAGRAM

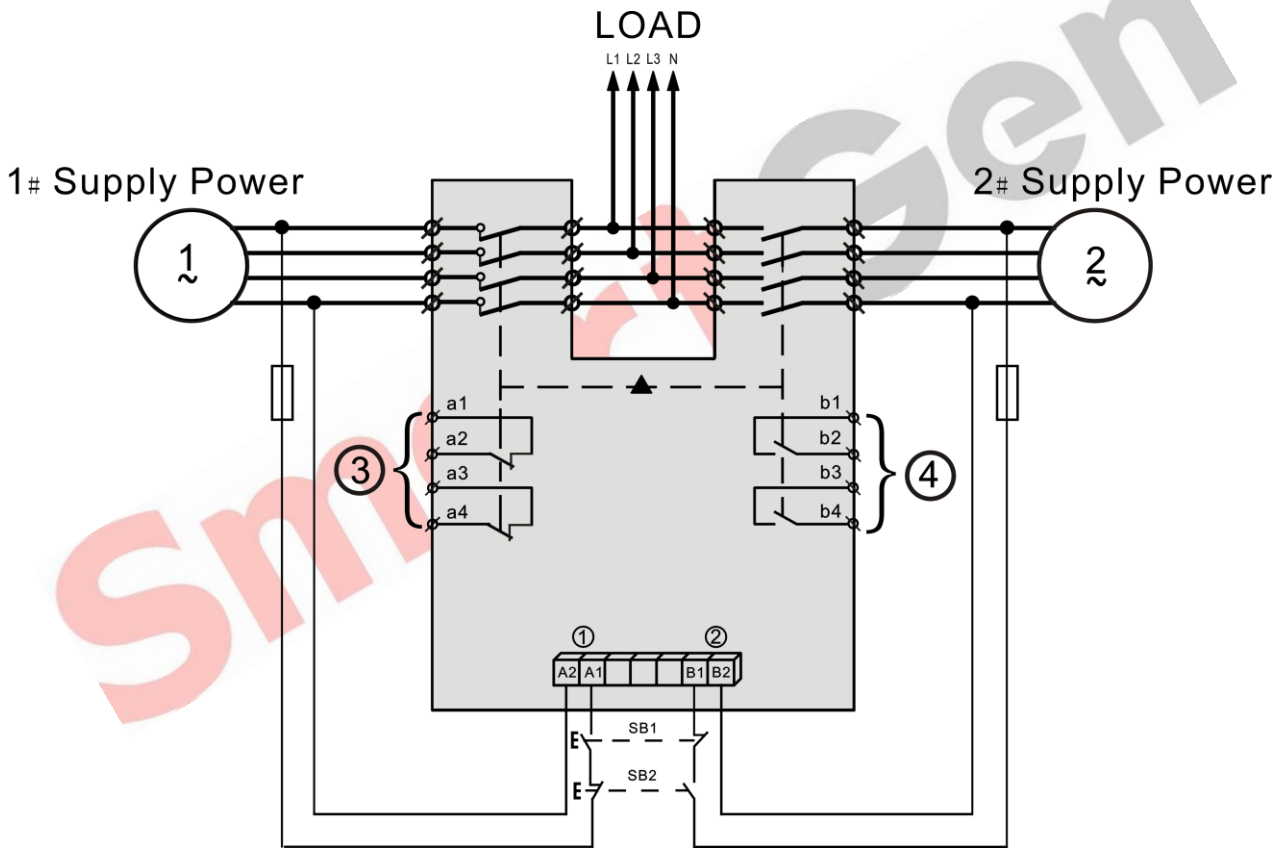

Fig. 4 N Type and T Type

1. Position control I
2. Position control II
3. Aux. contact of position I
4. Aux. contact of position II

SB1 is #1 power close button

SB2 is #2 power close button

5.2 M TYPE WIRING CONNECTION DIAGRAM

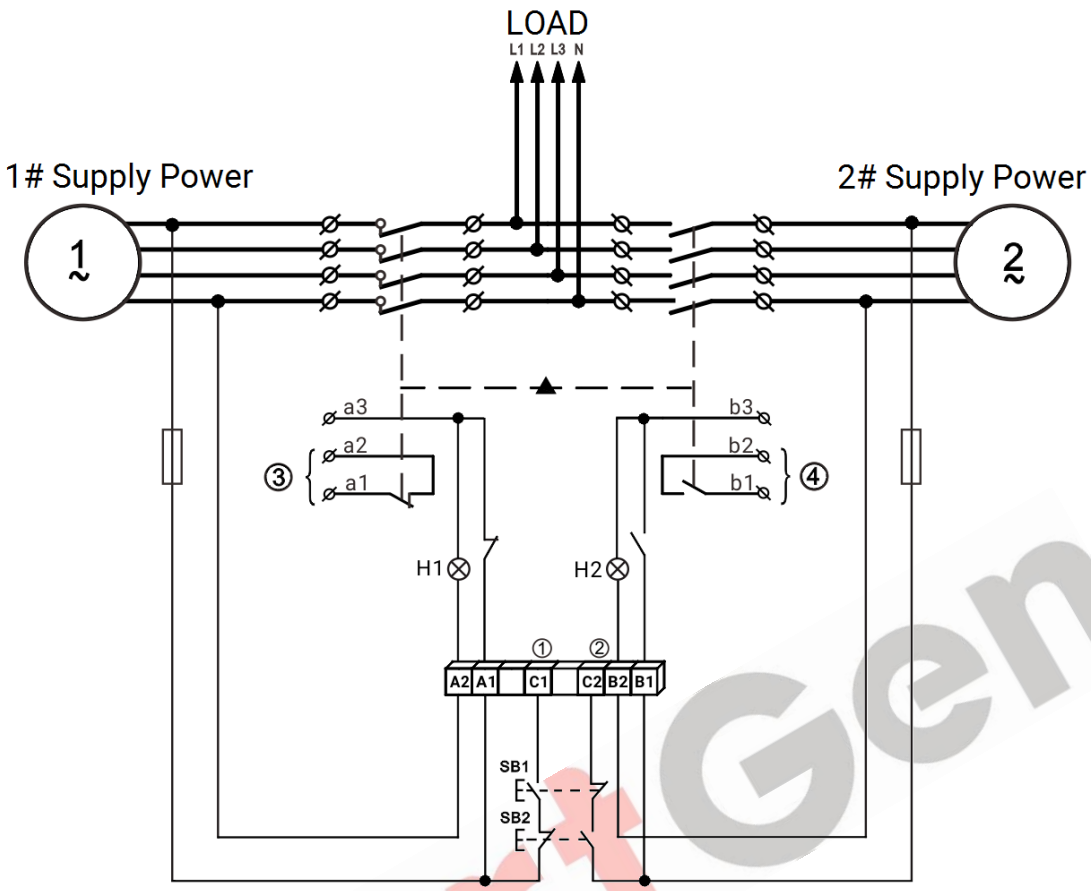

Fig. 5 M Type

1. Position control I
2. Position control II
3. Aux. contact of position I
4. Aux. contact of position II

SB1 is #1 power close button
SB2 is #2 power close button
H1 is #1 close indication
H2 is #2 close indication

6 INSTALLATION AND DEBUGGING

All operations about ATS installation and debugging shall be conducted by professionals or persons knowing the switch device and protection and precaution measures must be considered during the operation. Wiring connection of main loop must make sure leading wire is not taking any pressure or force. Before installation and debugging please check firstly whether switch is damaged or whether there is harmful environment effect on it. At the same time please check whether there is loose wire resulting from transportation; clear the smudge, especially the smudge on the surface of insulating parts. The smudge probably is caused by the packing materials in the transportation process or in the storage process. Please make sure the phase sequences are in accordance at connecting the first circuit; please observe the wiring connection diagram of user manual strictly at connecting the second circuit and pay attention to control power voltage class at the same time. Ground must be well connected on switch installation. Considering personal safety and switch changeover rapidity, debugging handle can only be used for debugging and users are prohibited to operate on-load with debugging handle. First use the handle to operate switch, and if nothing unusual occurs, then operate button manually. If nothing unusual happens, then normal running can start.

7 ORDER MODELS

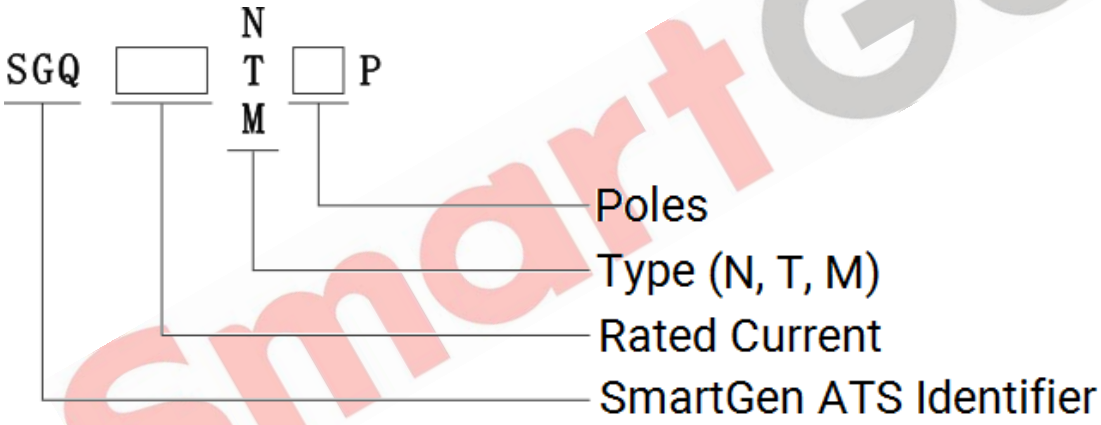

Fig. 6 Model Illustration