

# SmartGen

MAKING CONTROL SMARTER

## SGQ\_ATS AUTOMATIC TRANSFER SWITCH USER MANUAL



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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.
2022-07-29	3.1	Update the Logo of SmartGen.
2023-02-15	3.2	Modify partial switch models and ordering models.
2024-08-02	3.3	Add 2P switch parameters for N type and T type.

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## 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  $\leq 80\text{ms}$ ) 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, T type and N type still have 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**

Type	2P	3P	4P
N Type			
	63A, 125A		
T Type			
	160A, 200A, 250A, 400A, 630A		
M Type	Nil		
	630A, 800A, 1000A, 1250A		

3.2 N TYPE CASE DIMENSIONS AND TECHNICAL DATA

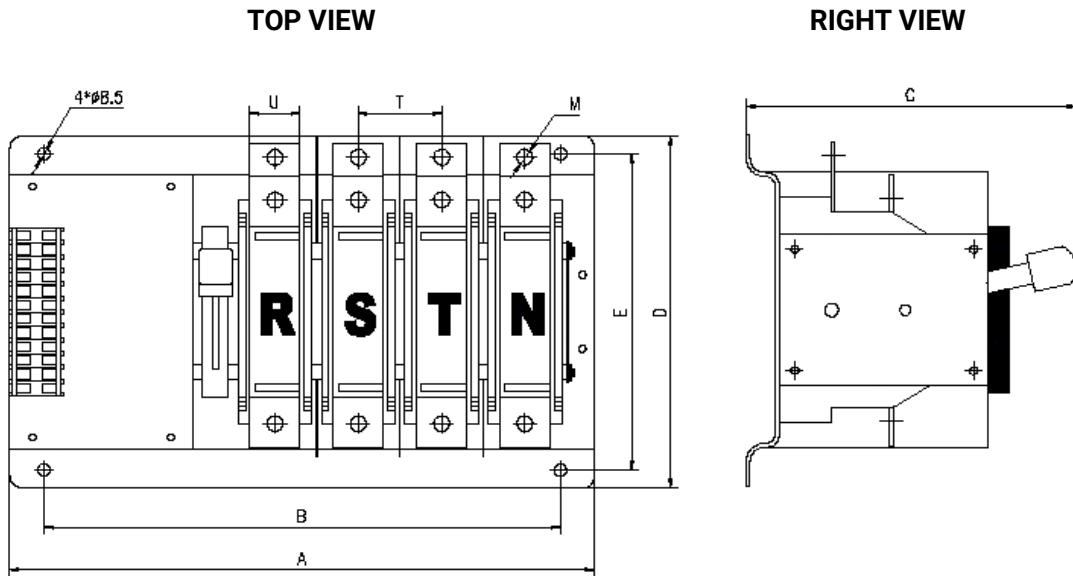


Fig. 1 N Type Diagram

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				
SGQN63	172	200	228	186	155	139	167	195	165	5	12	27
SGQ125	192	228	265	186	155	159	195	232	165	7	20	37

Table 4 N Type Technical Data

Type		SGQN63			SGQ125		
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

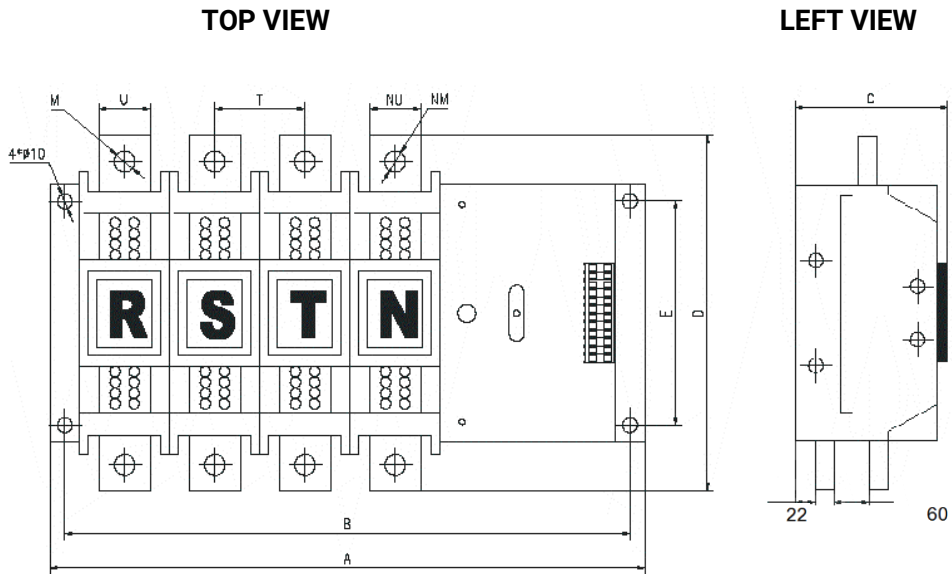


Fig. 2 T Type Diagram

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
	2P	3P	4P			2P	3P	4P						
SGQ160	277	326	375	292	146	258	307	356	200	9	9	20	20	49
SGQ200	277	326	375	292	146	258	307	356	200	9	9	20	20	49
SGQ250	277	326	375	292	146	258	307	356	200	9	9	20	20	49
SGQ400	297	356	405	292	146	278	337	386	200	11	9	30	20	59
SGQT630	305	368	427	310	146	286	349	408	200	14	14	40	30	63

Table 6 T Type Technical Data

Type		SGQ160	SGQ200	SGQ250	SGQ400	SGQT630										
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		2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P
Net weight (kg)		16	18	20	16	18	20	16	18	20	16	18	20	16	18	20

Type	SGQ160	SGQ200	SGQ250	SGQ400	SGQT630
Operation cycle	Operation cycle				

3.4 M TYPE CASE DIMENSIONS AND TECHNICAL DATA

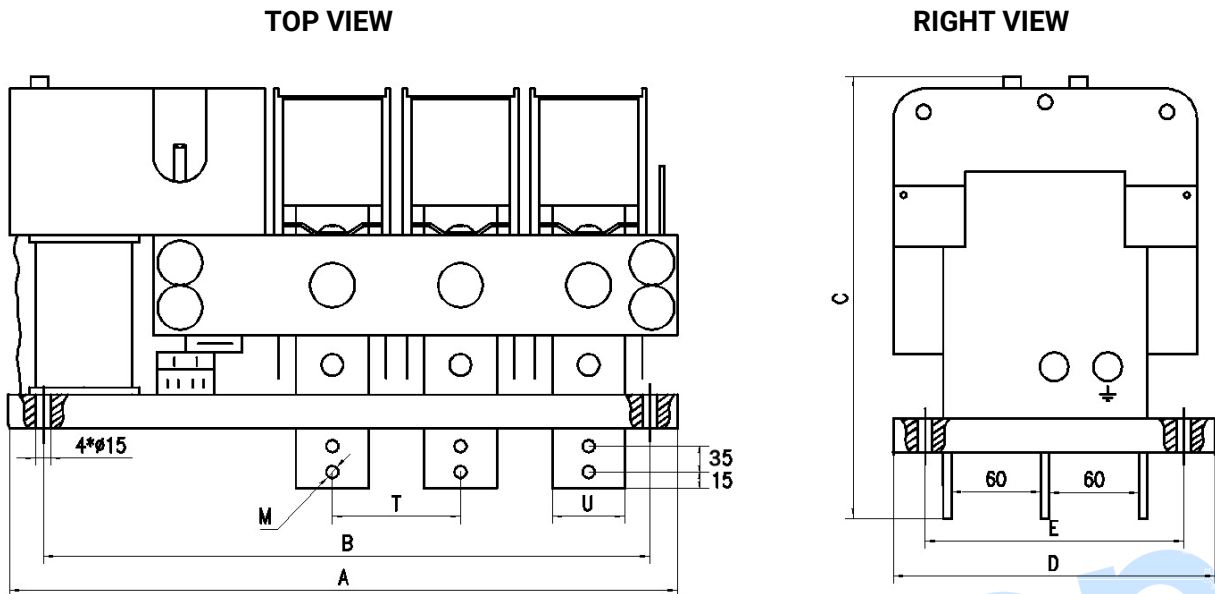


Fig. 3 M Type Diagram

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				
SGQ630	530	600	280	345	490	560	210	12	30	90
SGQ800	530	600	280	345	490	560	210	12	40	90
SGQ1000	530	600	280	345	490	560	210	12	45	90
SGQ1250	530	600	280	345	490	560	210	12	55	90

Table 8 M Type Technical Data

Type	SGQ630	SGQ800	SGQ1000	SGQ1250				
Rated current	630A	800A	1000A	1250A				
Rated limited short-circuit current	32 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

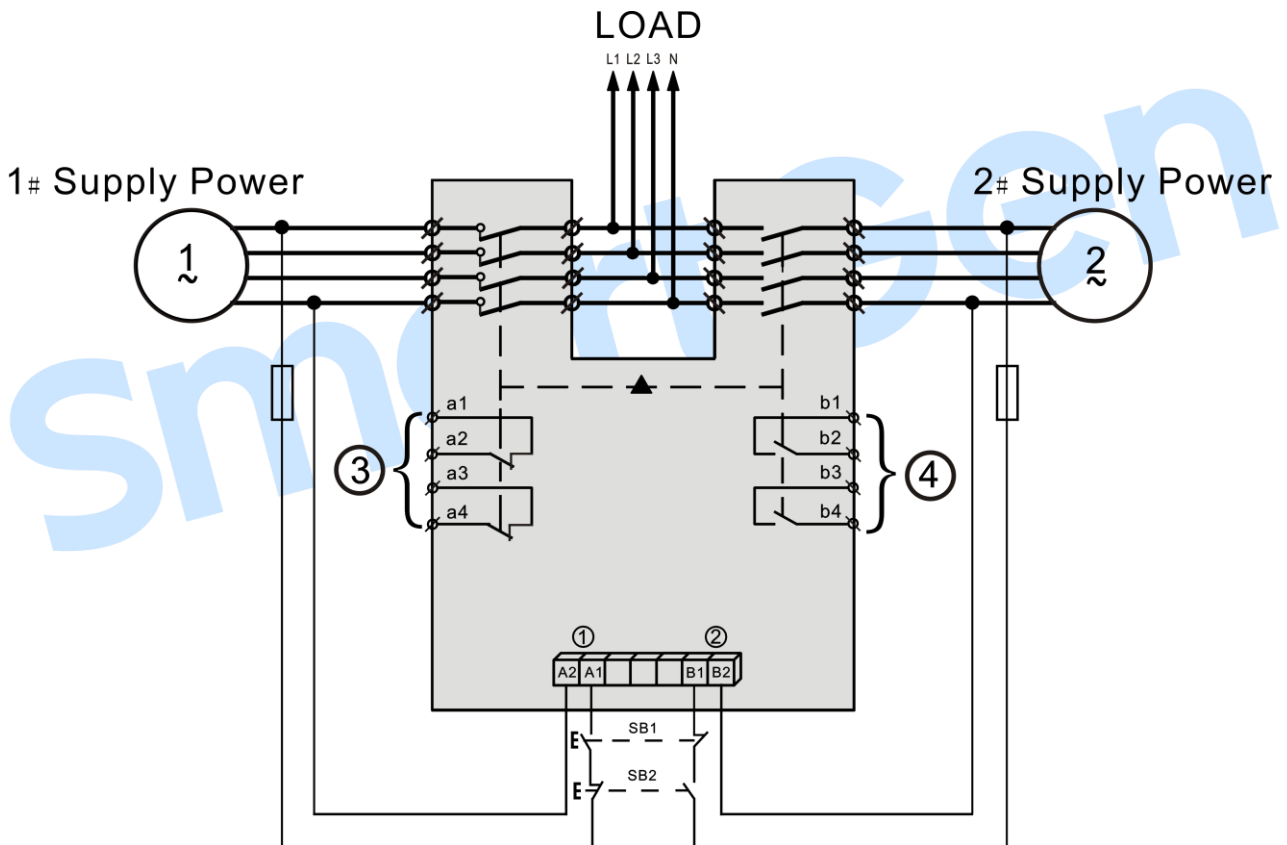


Fig. 4 N Type and T Type

- 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

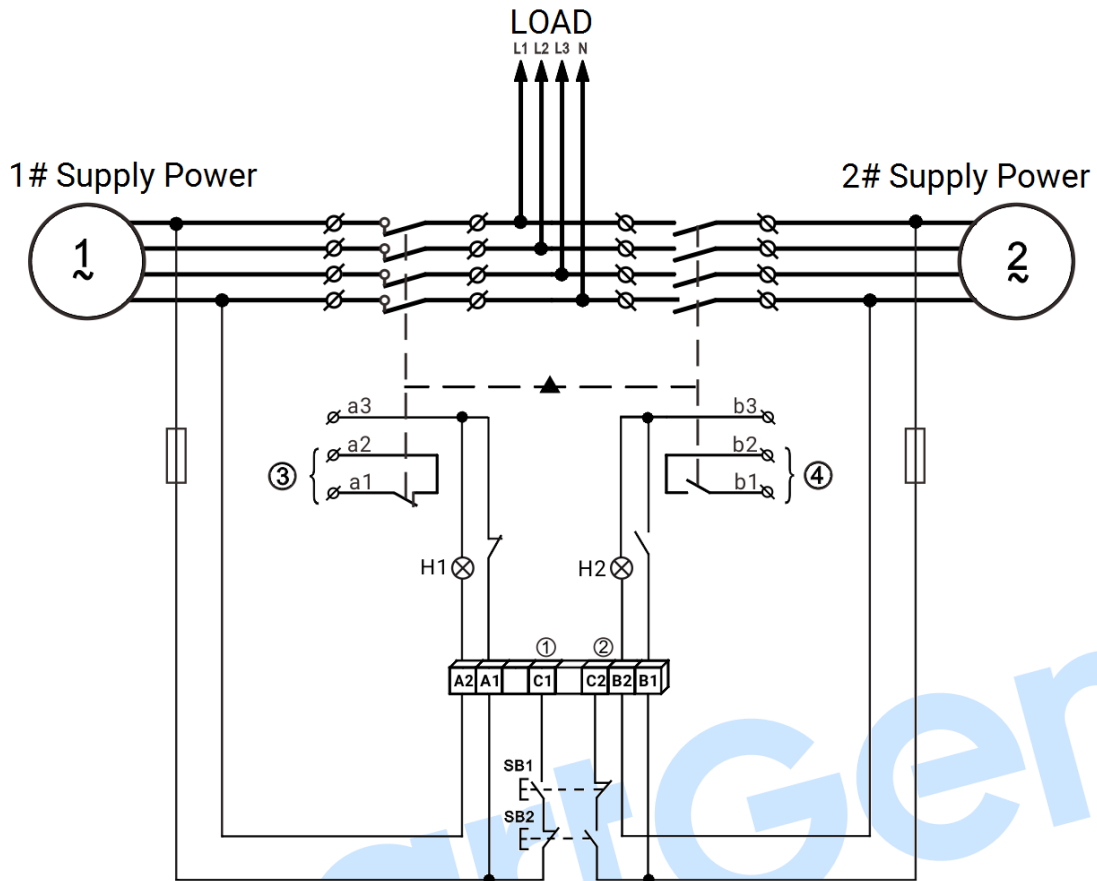


Fig. 5 M Type

- |                               |                                |
|-------------------------------|--------------------------------|
| 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

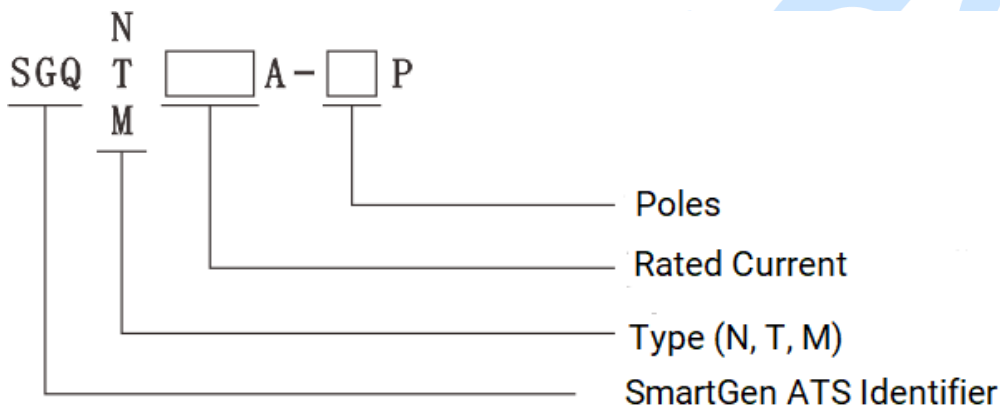


Fig. 6 Model Illustration