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MAKING CONTROL SMARTER

ATS560NBC SERIES ATS CONTROL CABINET USER MANUAL



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CONTENTS

1 OVERVIEW	4
2 PERFORMANCE AND CHARACTERISTICS	4
3 SPECIFICATIONS.....	6
4 MAIN FUNCTIONS AND PARAMETER SETTING	7
4.1 OPERATION FUNCTION	7
4.2 DISPLAY	7
4.3 PARAMETER SETTING.....	7
5 HAT560NBC KEY OPERATION DESCRIPTION	8
6 MANUAL/AUTO TRANSFER OPERATION.....	9
6.1 WIRING CONNECTION	9
6.2 MANUALLY TEST ATS TRANSFER.....	9
6.3 AUTOMATICLY TEST ATS TRANSFER.....	9
6.4 ALARM	9
7 SCHEMATIC DIAGRAM AND WIRING DIAGRAM.....	10
8 NOTES.....	11
9 TROUBLE SHOOTING.....	12
10 CASE DIMENSIONS AND PANEL CUTOUT.....	13

SmartGen – make your generator *smart*

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Table 1 Software Version

Date	Version	Note
2022-09-17	1.0	Original release.

1 OVERVIEW

ATS560NBC Series Dual Power Automatic Transfer Control Cabinet (i.e. ATS Control Cabinet) is mainly composed of cabinet, HAT560NBC ATS controller, SGQ ATS and fuse.

ATSC560NBC Series ATS Control Cabinet is used for manual/auto transfer of two power supplies, which can accurately detect the 3-phase voltage of the two power supplies, make accurate judgement on the abnormal voltage (over/under voltage, loss of phase, over/under frequency) and control the automatic switch of the two power supplies, realizing the uninterrupted power supply for loads by combination with diesel genset.


2 PERFORMANCE AND CHARACTERISTICS

HAT560NBC ATS controller is an intelligent dual power transfer module with configurable function, automatic measurement, LCD display and digital communication. It integrates digitalization, intelligence and networking together, automating measurement and control process, reducing artificial operation mistakes and it is an ideal product for dual power transfer.

HAT560NBC ATS controller is made by the microprocessor in the core, which can precisely measure 2-channel 3 phase/single phase voltage, make accurate judgment for any abnormal voltage (over/under volt, loss of phase, over/under frequency) and output volt free discrete control signal. Real-time clock display, event log function can record 50 items circularly. After full consideration of its applications on various ATS (load automatic transfer system), it can be directly used for specialized ATS, contactor ATS, air break ATS etc. It has compact structure, advanced circuits, simple wiring and high reliability, which can be widely used in electrical devices, automatic control and testing system of electric power, telecommunications, petroleum, coal, metallurgy, railways, municipal administration, intelligent building, etc.

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. 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; it applies double coils; 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.

Table 2 Shapes and Classifications

Classification	ATSC560 NBC/63S G	ATSC560 NBC/125 SG	ATSC560 NBC/250 SG	ATSL560 NBC /250SG	ATSL560NBC /400SG 、 ATSL560NBC /630SG	ATSL560NBC /800SG 、 ATSL560NBC /1000SG 、 ATSL560NBC /1250SG
Capacity	63A	125A	250A	250A	400A、630A	800A、1000A、 1250A
Shape						
Installation	Wall-mounted		Wall-mounted	Vertical Type	Vertical Type	Vertical Type
Case Dimensions(mm)	500x400x220		650x480x250	1200x500x400	1600x600x500	1800x800x600
Mounting Dimensions(mm)	566x260		784x360	430x305	490x394	640x490
Wiring Position	Bottom Wiring		Bottom Wiring	Bottom Wiring	Bottom Wiring & Side Wiring	Bottom Wiring & Side Wiring
Weight (kg)	23	26	40	104	148	224
Protection Level	IP42				IP30	

3 SPECIFICATIONS

Table 3 Technical Parameter

	Items	Contents
Working Property	DC Power Supply	DC(8-35)V
	AC Power Supply	AC (170-277) V
	Rated Voltage (Phase Voltage)	AC230V(3P4W)
	Rated Frequency	50Hz
	Transfer Time	≤80ms
Working Environment	Working Temperature	(-25~+55) °C
	Storage Temperature	(-25~+70)°C
	Working Humidity	20%RH~93%RH (No Condensation)
	Storage Humidity	10%RH~95%RH (No Condensation)
	Installation Altitude	≤4000m
Structure	Appearance Color	RAL7035 Grey
	Material	1.5mm thick cold-roll steel sheets

Table 4 Capacity Reduction Coefficient of ATS Varies with Altitude

Capacity Reduction Coefficient of ATS Varies with Altitude	
Altitude (m)	Capacity Reduction Coefficient (Multiple of Ie)
0-2000	1.0Ie
2000-2500	0.93Ie
2500-3000	0.88Ie
3000-3500	0.83Ie
3500-4000	0.78Ie

4 MAIN FUNCTIONS AND PARAMETER SETTING

4.1 OPERATION FUNCTION

This control cabinet has manual/auto mode transfer button, 1# close button, 2# close button, parameter set button and other functions.

4.2 DISPLAY

With voltage and frequency display of 2 power supplies, ATS position display and LED indicator.

4.3 PARAMETER SETTING

Table 5 Main Parameter Setting

Name	Parameter Set Value
Rated Voltage	AC230V
High Limit Threshold	AC276V
Low Limit Threshold	AC184V
#1 Voltage Normal Delay	10s
#1 Voltage Normal Delay	5s
#2 Voltage Normal Delay	10s
#2 Voltage Normal Delay	5s
Under Frequency	<42Hz

5 HAT560NBC KEY OPERATION DESCRIPTION

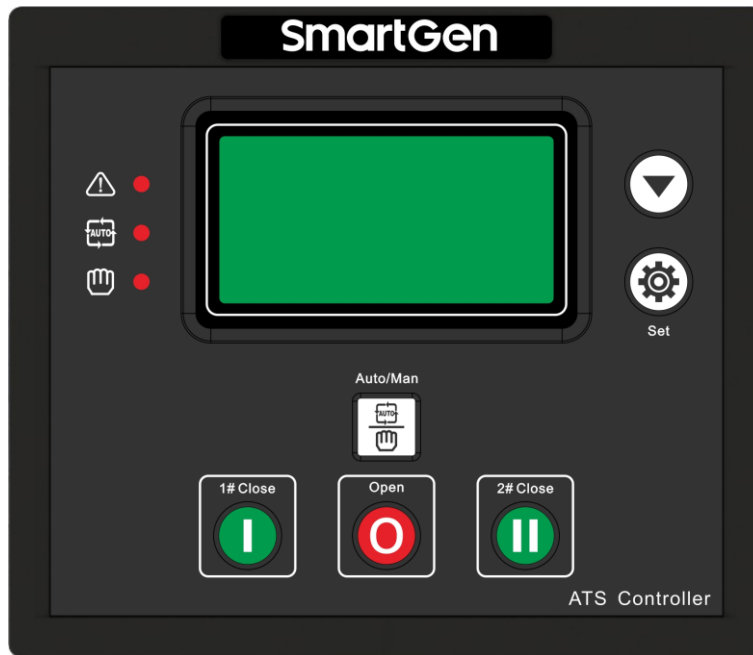


Fig.1 – Front Panel

Table 6 Key Function Description

Keys	Function	Description
	I# Manual Close	In manual mode, press and I# connects to load;
	Open	In manual mode, press and disconnect I#/II# load;
	II# Manual Close	In manual mode, press and II# connects to load;
	Manual/Auto Set	Press and it can set controller to Manual/Auto mode;
	Menu/Confirm	Press and enter menu interface; press for longer and exit from current operation and return to main screen; For controller fault alarms, press for 3s, and alarms can be cleared.
	Scroll Screen /Decrease	Transfer display interface; Value decrease key for adjusting parameters in parameter setting page; Press for 3s, LCD backlight shall flash for once and enter backlight always on mode; and press again for 3s, LCD backlight is off and recovers to normal display mode.

6 MANUAL/AUTO TRANSFER OPERATION


6.1 WIRING CONNECTION


According to the electrical schematic diagram, connect the incoming cables of the two power supplies to the terminals A and B on SGQ switch respectively and connect the load cable to the LOAD terminal on the bottom of SGQ switch. Connect the remote start signal cable with the control cabinet of the genset to ensure that all the connections are correct.

6.2 MANUALLY TEST ATS TRANSFER

After the control panel is power on, the LCD of HAT560NBC is light up

Press , the manual status indicator is light on and the controller is in manual status.

Press , 1# close relay outputs, if 1# closing status input is active, 1# connects to load. (1# power supply must be active)

Press , 2 # close relay outputs, if 2# closing status input is active, 2# connects to load. (2# power supply must be active).

6.3 AUTOMATICLY TEST ATS TRANSFER

Press , manual status indicator is light on and the controller is in auto status.

The mains supply is disconnected manually, and the mains supply is without power. In this case, the remote diesel genset starts automatically (the genset controller is in automatic mode). After the diesel genset runs normally and the generation voltage is normal, the ATS controller automatically switches the ATS switch to #B after a 2# voltage judgment delay for 10s. In this case, a generator can supply power to the load normally.


After the mains power is restored to normal, the ATS controller automatically switches the ATS switch to # A after a voltage judgment delay for 10s. Then the mains power supplies the load normally. Then the genset automatically stops until it stops completely.

If no one is on duty, ATS controller only needs to be switched to the automatic working mode, and the genset controller also needs to be switched to the automatic mode. Then the ATS switch can be automatically transferred.

6.4 ALARM

When there is a fault alarm, the alarm indicator on the controller will flash. The alarm information will be viewed via the LCD of HAT560NBC controller.

Note:

Fault Alarm: when the controller detects the fault signal, the alarm indicator will flash and the fault alarms will keep unit long press  for 3s to eliminate.

Warning Alarm: when the controller detects the warning signal, the warning indicator will flash, when there is no warning signal, the warning indicator will distinguish, the warnings are not latched.

7 SCHEMATIC DIAGRAM AND WIRING DIAGRAM

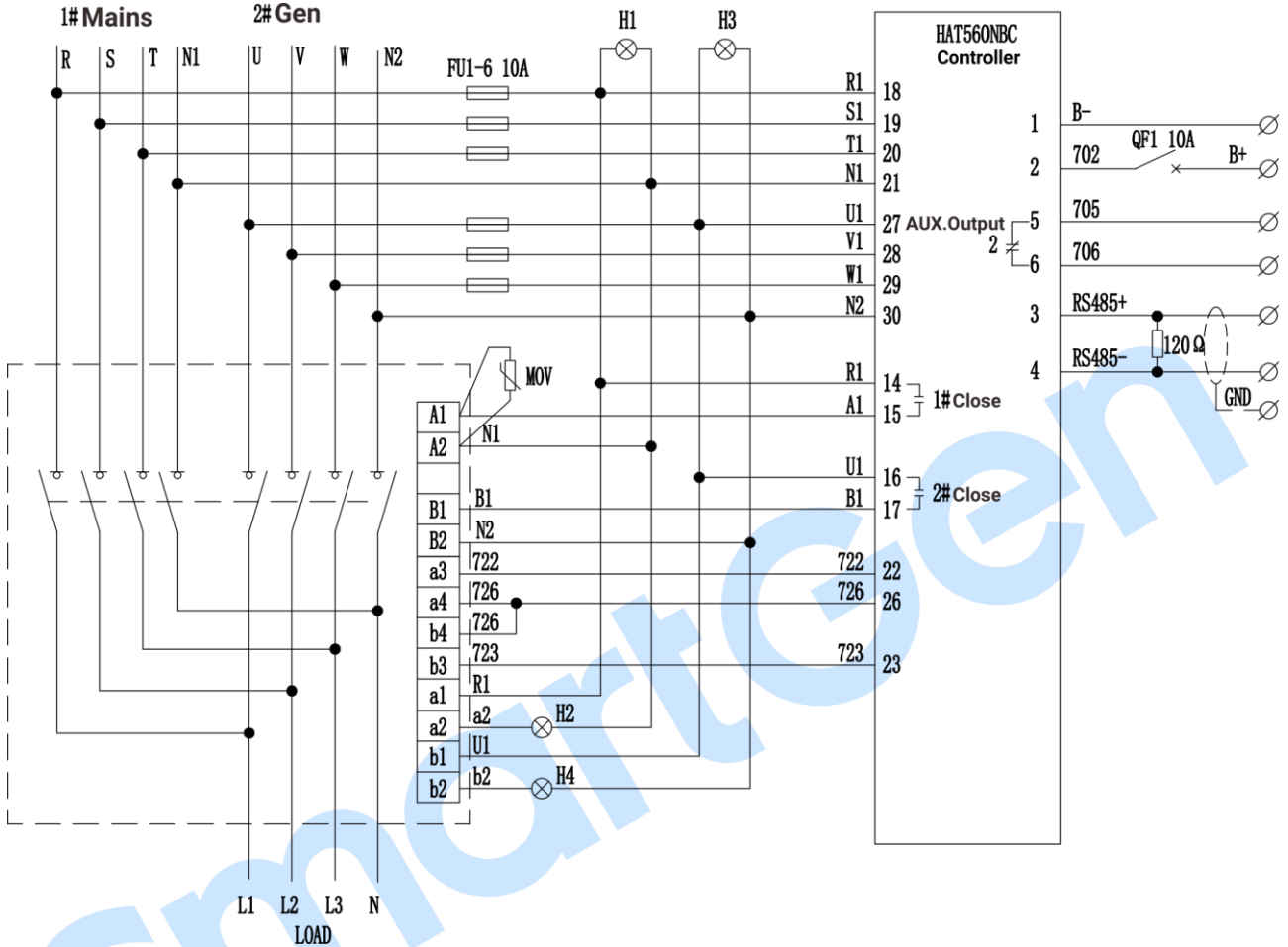


Fig.2 – Schematic Diagram of ATS Control Cabinet (Below 630A)

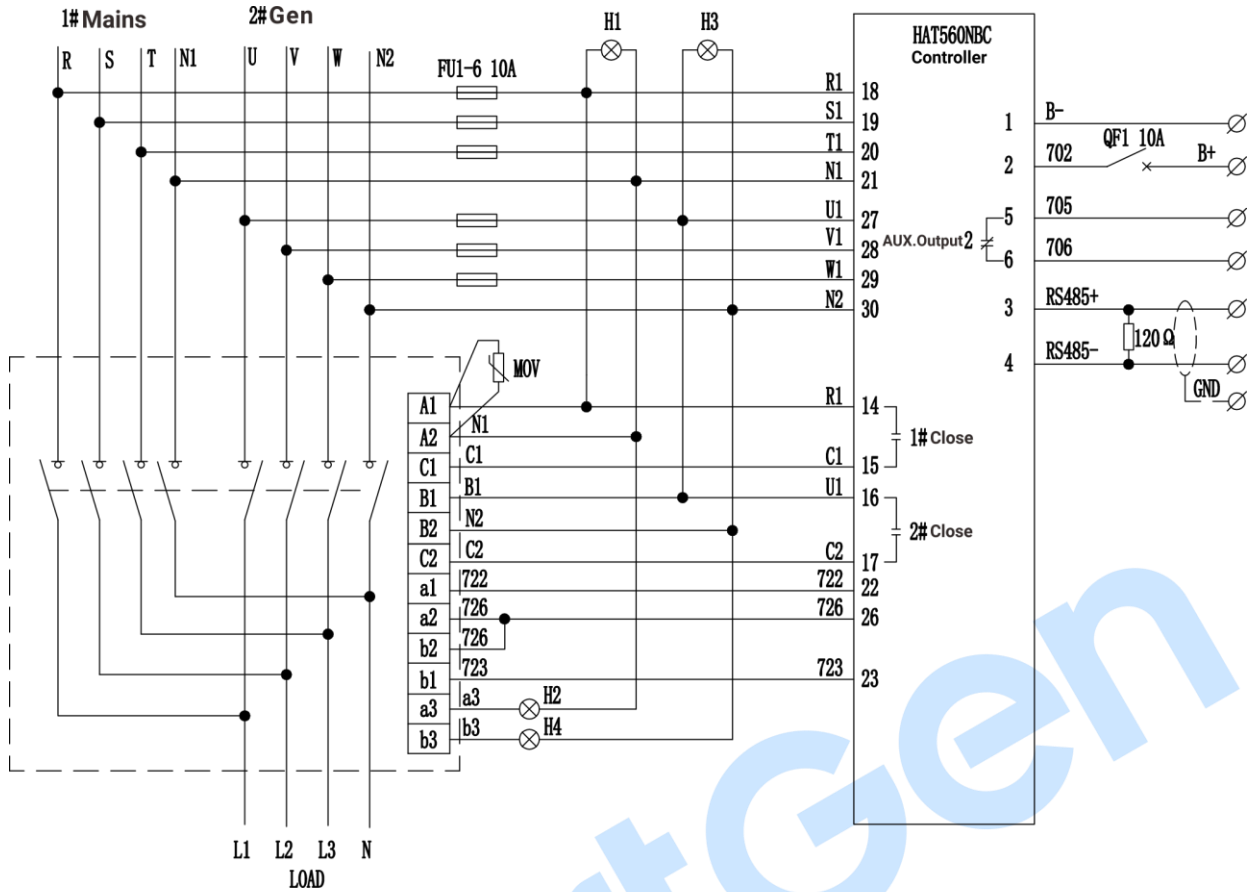


Fig.3 – Schematic Diagram of ATS Control Cabinet (Above 630A)

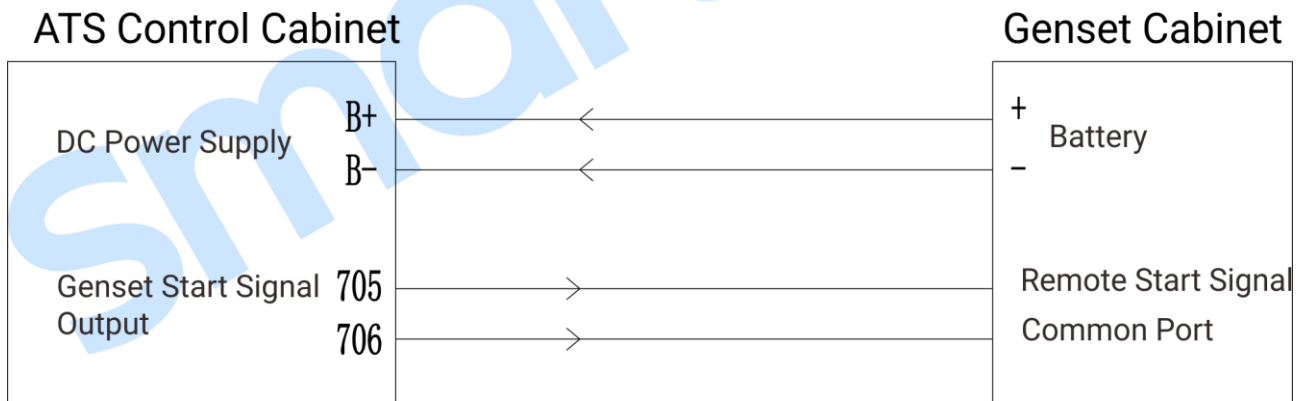


Fig.4 – Wiring Diagram of ATS Control Cabinet and Genset

8 NOTES

1 The control cabinet should be prevented from violent vibration and collision during installation and handling. Storage should be in a dry, clean and non-corrosive gas room. The installation mode is wall-mounted and should be firm.

2 Please keep the controller manual, accessories and electrical schematic diagram properly provided by manufacturer for debugging and maintenance.

3 The repair and daily maintenance of the control cabinet should be operated by skilled electricians with professional training. When the control panel fails, it should be checked against the electrical

schematic diagram. First of all, check whether the connection is correct, whether the wiring is loose and falls off, and then replace the relevant devices.


4 When the control panel fails or needs to buy spare parts, please contact our sales or service personnel, and inform them of the corresponding control panel model and factory serial number, so that the problem can be solved timely and accurately.

9 TROUBLE SHOOTING

When the control panel fails, firstly to check whether the external wiring of the system is correct and the power supply is normal according to the electrical schematic diagram provided by the company. Then check the symptom and troubleshooting methods listed below. If the problem is not solved, please contact the relevant personnel of the manufacturer for consultation.

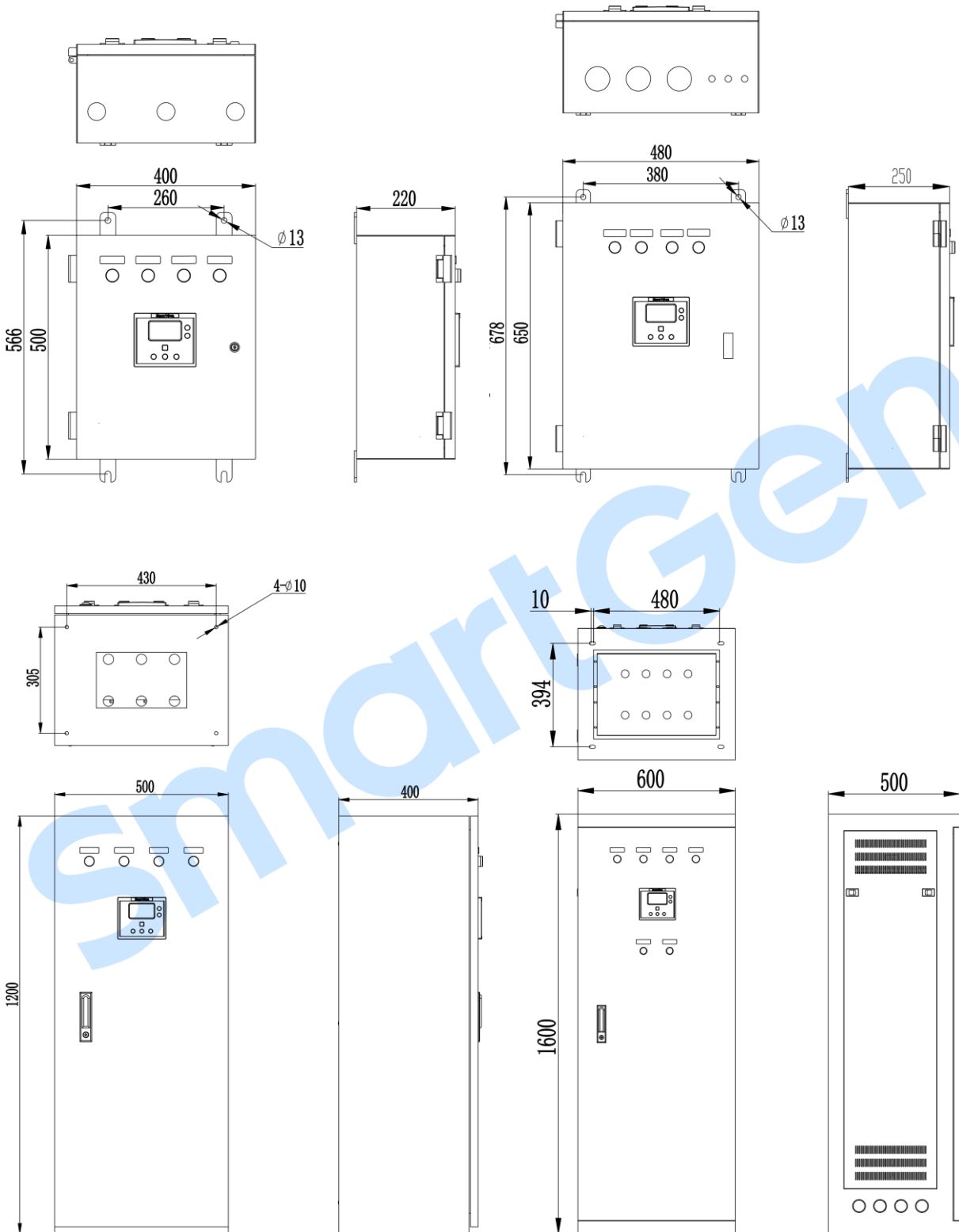
Table 7 Trouble Shooting

Symptom	Possible Solutions
Controller no response with power	Check voltage of DC power supply; Check AC power supply.
ATS can't transfer normally	Check 1#、2# closing feedback signal line; Check 1#、2# closing output control wirings;
Genset running but ATS not transfer	Check ATS. Check the connection wirings between controller and ATS. Check whether ATS breakings are in accordance with the set breakings.
Auxiliary Output Error	Check auxiliary output connections, paying attention to normally open contact and normally close contact. Check the output settings in parameter settings.
RS485 communication failure	Check RS485 positive and negative connections. Check RS485 converter. Check module address in parameter settings.

 Note: Please refer to controller manual for detailed parameters and functions settings. Please contact our sales service of our company if you have any questions.

10 CASE DIMENSIONS AND PANEL CUTOUT

Unit: mm



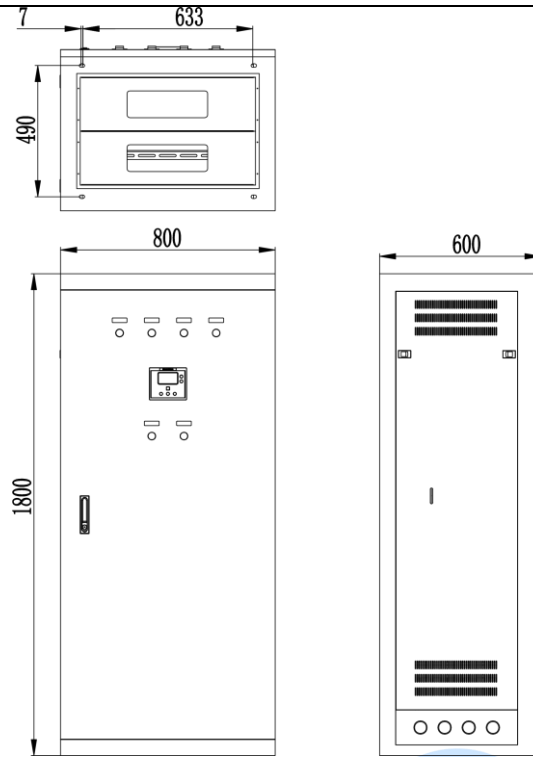


Fig.5 – Case Dimensions