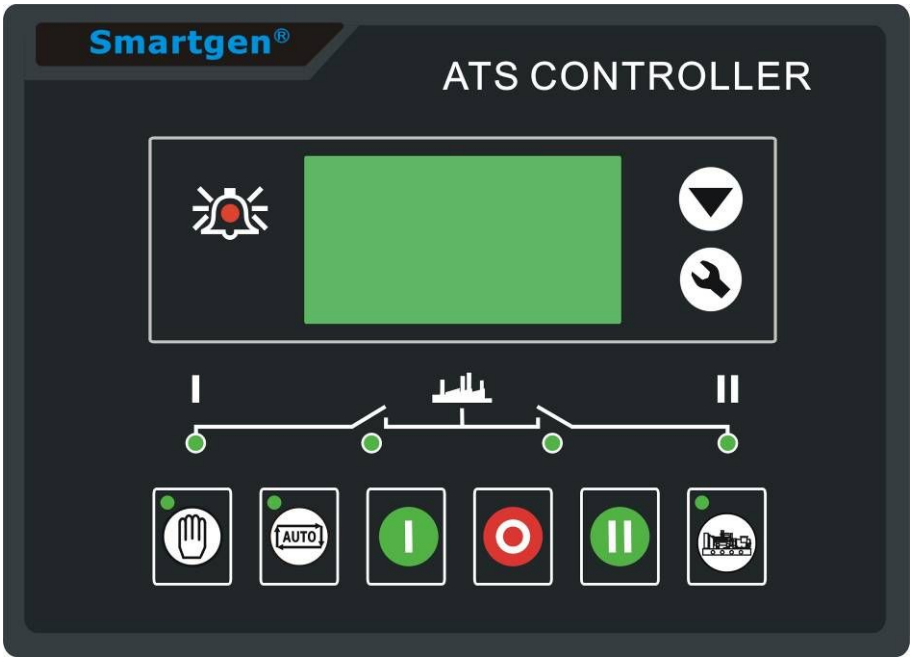
Smartgen®

HAT600 Series

HAT600/HAT600I/HAT600B/HAT600BI

ATS CONTROLLER

OPERATING MANUAL



Smartgen Electronic

CONTENT

1 SUMMARY

HAT600 series ATS controller with a programmable function, automatic measurement, LCD display, digital communications, as one of the intelligent dual-supply switching module. It combines digital, intelligent, networking, measurement and control process automation, disoperation, in order to reduce the faults during operation. It is the best ideal option in ATS.

HAT600 series ATS controller be made of microprocessor as its core, can accurately detect extended-spectrum 2-way-3-phase voltage and also make accurate judgment and output passive control switch under the abnormal voltage (over or under, miss phase and over or miss frequency). This controller has full consideration in various application of ATS (automatic transfer system) can be directly used for Intelligent ATS, Contactor ATS, Circuit Break ATS etc. It have compact structure, advanced circuits, simple wiring and high reliability, be widely used in Electric power, Telecommunications, Petroleum, Coal, Metallurgy, Railways, Municipal, Intelligent building, Electrical devices, Automatic control and Testing system etc.

2 PERFORMANCE AND CHARACTERISTICS

- System type can set for: Mains (1#) & Mains (2#), Mains (1#) & Gens (2#), Gens (1#) & Mains (2#), Gens (1#) & Gens (2#).
- The LCD 128x64, take backlit, two languages (simplified Chinese and English) display, and gentle press key for operation.
- Measure and shows 2-way 3 phase voltage and frequency parameters:

Way#1	Way#2
Line-Line voltage (Uab, Ubc, Uca)	Line-Line voltage (Uab, Ubc, Uca)
Phase-Nature voltage (Ua, Ub, Uc)	Phase-Nature voltage (Ua, Ub, Uc)
Frequency (F1)	Frequency (F2)

- With over voltage, under voltage, loss of phase, reverse phase sequence, over frequency, under frequency functions.
- With the auto/manual operation mode. In manual mode, may enforce switch to close or open.
- All parameters can be set in the field. Apply for two-stage password to ensure authorized staff operation only.
- Can be set as on-load/off-load mode in the field for start genset.
- Can make switch to re-close when switch is opened accidentally or make switch to power off then re-close.
- Closing output can be set as pulse or continuous output.
- Applicable for ATS of one OFF segment, two OFF segments and none OFF

segment.

- With design of two way separate of N circuitries.
- Real-time clock (RTC).
- Can start or stop genset automatic on scheduler. Also be set as single time operation, monthly or weekly, and whether with load or not.
- Can control two gensets to work in cycle, even the genset running time and interval rest time can be set.
- Widely range of DC power supply. Max.80V DC input can be endured in an instant, or be supplied via HWS560 module (input AC 85V~560V, output DC 12V).
- Bigger space between connecting terminals of AC input. Max.625V input voltage.
- With standard insulated RS485 communication interface port. With "remote controlling, remote measuring, remote communication" function by the ModBus communication protocol.
- Can check the status of controller (including of switch auxiliary output, over-voltage, and under-voltage etc.).
- Suitable for various AC systems (3-phase 4-wires, 3-phase 3-wires, single-phase 2-wires, and 2-phase 3-wire).
- Modular configuration design, flame-resisting ABS plastic shell, inserted type connection terminals and built-in installation. Compact structure with easy installation.

HAT600 series controller and its main functions are shown as following,

Function / Type	DC power supply	AC power supply	AC current sample
HAT600	√	×	×
HAT600I	√	×	√
HAT600B	√	√ **(LN220V)**	×
HAT600BI	√	√ **(LN220V)**	√

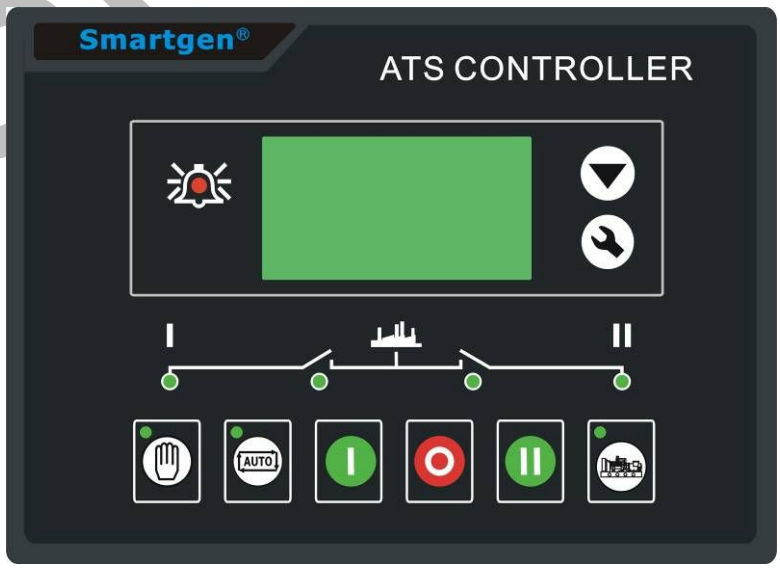
3 SPECIFICATION

Operating voltage	1. DC 8.0V~35.0V, power supply constantly. 2. HWS560 power module (without DC input). 3. AC160V~280V (HAT600B/HAT600BI) during AC power L1N1/L2N2 supply.		
Power consumption	<3W (Standby mode: ≤2W)		
AC voltage Input	AC system	HAT600/HAT600I	HAT600B/HAT600BI
	3-phase 4-wire(L-L)	(80~625)V	(80~480)V
	3-phase 3-wire(L-L)	(80~625)V	Not used
	1-phase 2-wire(L-N)	(50~360)V	(50~280)V

	2-phase 3-wire(A-B)	(80~625)V	(80~480)V
Rated frequency	50/60Hz		
Close and Open Trip Relay output	16A 250VAC Free voltage relay output		
Programmable relay output capacity	16A/7A 250VAC Free voltage relay output		
Digital Input	Connecting to GND is active		
Communication	RS485, MODBUS Protocol		
Dimensions	209mmx153mmx55mm		
Panel cutout	186mm x 141mm		
Operating Temp. range	Temperature: (-25~+70)°C; Humidity: (20~90)%		
Storage condition	Temperature: (-30~+80)°C		
Protection rank	IP55: Front of module when module is installed into the control panel with the optional sealing gasket. IP42: Front of module when module is installed into the control panel without being sealed to the panel.		
Insulation strength	Object: Between the input/output/ power supply. Quote from standard: IEC688-1992. Test method: AC1.5kV/1min in current 5mA.		
Weight	0.8kg(HAT600,HAT600I)/1.0kg(HAT600B/HAT600BI)		

4 OPERATING

4.1 OPERATION PANEL



4.2 KEY FUNCTION DESCRIPTION

	I# Close key	The key function is used to transfer 1# power to load in manual mode.
	Open key	The key function is used to transfer 1# or 2# power to off-load in manual mode.
	II# Close key	The key function is used to transfer #2 powers to load in manual mode.
	Manual key	The key function is used to initiate manual operation.
	Automatic key	The key function is used to initiate automatic operation.
	Test key	Pressing the key can directly enter commissioning interface.
	Menu key/ confirm key	Pressing the key, enter menu interface; Holding pressing the key go back to the main current operating from that interface. When a fault alarm controller, holding pressing the key can eliminate fault alarm.
	Page down /decrease	Page turn. In the adjustment parameters menu as numerical increases.

5 LCD DISPLAY

5.1 MAIN SCREEN

U1(L-L) 380 380 380V **U2(L-L) 380 380 380V** **F1 50.0Hz F2 50.0Hz** **Present Status: MANUAL**	This screen will show: line-line voltage (L1-L2, L2-L3, and L3-L1), frequency and controller present status is in manual (auto) mode.
U1(L-N) 219 219 219V **U2(L-N) 219 219 219V** **2010-06-10 (4) 20:25:36** **Present Status: MANUAL**	This screen show: 1# and 2# of the three phase voltage (L-N), real-time clock and controller working state.

AMP 500 500 500A **PWR 329kW** **PF 1.00 PS 329kVA** **Present Status: MANUAL**	This screen show: 3 phase load current, active power, apparent power, power factor and work state of controller.
1# Volt normal **2# Volt normal** **Gens start signal output** **Gens starting**	LCD display I# operating state of power supply. LCD display II# operating state of power supply. LCD displays other operating state. Present status is in manual (auto) mode.

Display priority of the #1 status (upper to lower)

Num	Item	Type	Description
1	1# Fail to closed	Fault	When 1# breaker occur closing failure, this will display.
2	1# Fail to break	Fault	When 1# breaker occur opening failure, this will display.
3	1# Over Volt	Indication	When 1# source occur over voltage, this will display.
4	1# Loss of Phase	Indication	When any of 1# three phases is miss, this will display.
5	1# Over Freq	Indication	When 1# source occur over frequency, this will display.
6	1# Under Freq	Indication	When 1# source occur under frequency, this will display.
7	1# Under Volt	Indication	When 1# source occur under voltage, this will display.
8	1# Phase sequence fault	Warning	When 1# phase sequence is error, this will display.
9	1# Volt normal	Indication	When 1# source voltage is normal, this will display.

Display priority of the #2 status (upper to lower)

Num	Item	Type	Description
1	2# Fail to Closed	Fault	When 2# breaker occur closing failure, this will display.
2	2# Fail to Break	Fault	When 2# breaker occur opening failure, this will display.
3	2# Over Volt	Indication	When 2# sources occur over voltage, this will display.

4	2# Loss of Phase	Indication	When any of 2# three phases is miss, this will display.
5	2# Over Freq	Indication	When 2# sources occur over frequency, this will display.
6	2# Under Freq	Indication	When 2# sources occur under frequency, this will display.
7	2# Under Volt	Indication	When 2# sources occur under voltage, this will display.
8	2# Phase sequence fault	Warning	When 2# phase sequence is error, this will display.
9	2# Volt normal	Indication	When 2# sources voltage is normal, this will display.

Display priority of the other status (upper to lower)

No	Item	Type	Description
1	Engine starting	Indication	Display that engine has start.
2	Breaking compulsorily	Warning	Breaking compulsorily input is active.
3	Load over current	Warning	Load current is over than the setting limit and exceed the setting delay.

Note:

Faults: when alarm occurs, alarm lamp will flash and this alarm signal will continue until long pressing key to reset.

Warning: when warning occurs, alarm lamp will flash and will not latch. When a warning is inactive, alarm lamp will latch.

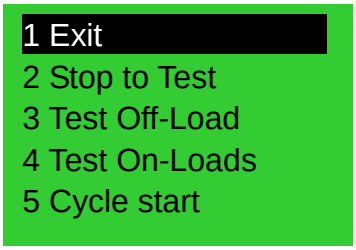
5.2 MAINS MENU INTERFACE

In the screen, press key, can enter the main menu interface.

1. Parameters set **2. Time start** **3. Date & Time Set** **4. Language** **5. Information**	Press key choose different parameters (the current line anti-black) and then press key to confirm, can enter the corresponding display screen.

6 TEST GENERATOR OPERATION

On the main screen press key and directly into the test generator operation interface, the screen will show as following:



Press key to select corresponding function, and press key to confirm.

STOP TO TEST: This will stop a start generator signal immediately.

TEST OFF-LOAD: This will send out a start generator signal immediately. After 2# source is normal, if 1# source is normal, the ATS will not act. The ATS will transfer the load to 2# only when 1# source is abnormal. After 1# source return normal, the ATS will transfer the load to 1#. Here the start generator signal output will keep.

TEST ON-LOAD: This will send out a start generator signal immediately. After 2# source is normal, the ATS will transfer the load to 2# source immediately regardless of 1# source normal whether or not.

CYCLE START: When choosing this mode, generator start-signal will cyclic output according to mains status, user can set the cyclic time. If generator fault of input-signal, no longer send start-signal. If in manual mode, will keep the current status and cancel cycle start.

Conditions under this mode:

a) In automatic mode.

b) Output port setting: 1# engine start output (Normal Output) and 2 # engine start output (Normal Output).

c) Input port setting: 1# generator fault input and 2# generator fault input.

d) Must set the <Cycle run times> and the <Cycle shutdown times>.

e) The system type set must as 1# Gens & 2# Gens.

f) Set the right <generator start delay>.

Note: In manual mode, after choose commissioning, generator will output start-signal immediately, but the ATS will not transfer to load automatically except for operation manually by pressing key mounted on the front panel.

7 CONFIGURATION PARAMETERS

In the main interface, press key, choose **1.Parameters setting** and then press key, to enter interface of confirming password.

Input password value 0-9 by key, and to shift Right by key. Press the key in the fourth of password to confirm. If password correct and enter into the parameter mains interface. While error, directly exit to return to main interface. **Factory Default Password is: 1234**. Press key to turn over and set

parameters. While setting the current configuration parameters according to press key. Then enter current parameter model, and the current value of the first line screen display against the first black. Press key to change number, press key to shit position, and press key again to confirm in the last number position. If the setting value within limits, the value is stored into the internal controller FLASH. Beyond the limits, parameters will can't be saved. In the parameters setting interface, long time press key will back to the main display screen.

7.1 PARAMETERS TABLE

Parameters item table

Num	Item	Range	Default	Description
01	Normal delay of 1#	(0-9999)s	10	It is the delay of #1 power from voltage abnormal to voltage normal.
02	Abnormal delay of 1#	(0-9999)s	5	It is the delay of #1 power from voltage normal to voltage abnormal.
03	Normal Delay of 2#	(0-9999)s	10	It is the delay of #2 powers from voltage abnormal to voltage normal.
04	Abnormal Delay of 2#	(0-9999)s	5	It is the delay of #2 powers from voltage normal to voltage abnormal.
05	Shut time	(0-20)s	5	Breaker close pulse. If it is set to zero, the output will hold.
06	Break off time	(1-20)s	5	Breaker open pulse.
07	Transfer interval	(0-9999)s	1	It is the delay from #1 power opened to #2 powers starts to close or from #2 power opened to #1 power start to close.
08	Exceed transfer time	(0-20.0)s	0.0	After the module has received a close state input, the breaker close outputs continue to hold until the delay is expended.
09	Again Shut time	(0-20.0)s	1.0	When the breaker fail to close for the first time, the module will open breaker, and then attempt to close for the second time, if the second time closing breaker is still failure, the module will send out closing

Num	Item	Range	Default	Description
				breaker failure signal.
10	Again Break time	(0-20.0)s	1.0	When the breaker fail to open for the first time, the module will close breaker, and then attempt to open for the second time, if the second time opening breaker is still failure, the module will send out opening breaker failure signal.
11	GENS start delay	(0-9999)s	1	It is the delay from #1 power is abnormal to send out start generator signal. In cyclic start, issued after start signal, began to delay, after delay ended, voltage if abnormal, will send gen-set fault alarm, and starting a gen-set, right now the user settings generator start delay value must be over units, the lowest total time start process for 30 seconds.
12	GENS stop delay	(0-9999)s	5	It is the delay from #1 power is normal to send out stop generator signal.
13	Cycle start run time	(1-1440)m	720	Gens cycle start run time.
14	Cycle start stop time	(1-1440)m	720	Gens cycle start stop time.
15	Rated volt	(100-600)V	230	AC system rated voltage.
16	Over voltage	(100-150)%	120	The settings are used to configure the power over voltage point in the event of the voltage rising above the setting value. This value can be adjusted to suit user requirements.
17	Return over volt	(100-150)%	115	Normal return value of over voltage.
18	Under volt	(50-100)%	80	The settings are used to configure the power under voltage point in the event of the

Num	Item	Range	Default	Description
				voltage falling below the setting value.
19	Return under volt	(50-100)%	85	Normal return value of under voltage.
20	Over Frequency	(0.0-75.0)Hz	55.0	When the frequency of power is over than the point, over frequency is active.
21	Return over Freq	(0.0-75.0)Hz	52.0	Normal return value of over frequency.
22	Under Frequency	(0.0-75.0)Hz	45.0	When the frequency of power is low than the point, low frequency is active.
23	Return under Freq	(0.0-75.0)Hz	48.0	Normal return value of over frequency.
24	CT rate	(5-6000)/5	500	Current Transformer rate.
25	Rated load current	(5-5000)A	500	Load rated current.
26	Over Current value	(50-150)%	120	Load over current value.
27	Over current delay	(0-9999)s	1296	Over current alarm delay value.
28	Equipment address	(1-254)	1	RS485 communication address
29	Password		1234	It applies to modify parameters.
30	System type set	(1-4)	1	1.1# Mains 2# Gens 2.1# Gens 2# Mains 3.1# Mains 2# Mains 4.1# Gens 2# Gens
31	Breaking position set	(1-3)	1	1. Two Breaking, two OFF position, such as the ATS composed of two circuit breakers or two contacts. 2. One Breaking, one OFF position (three segments kind), such as SOCOMEC VE switch. 3. NO Breaking, no OFF position (two segments kind), such as SOCOMEC VS switch.
32	Select AC system	(1-4)	1	1. 3-phase 4 wire 2. 3-phase 3 wire 3. Single phase 2 wire 4. 2-phase 3 wire
33	Set Priority	(1-3)	1	1. **1# Priority**, setting #1 power transfer is prior. If #1 and #2 is

Num	Item	Range	Default	Description
				normal at the same time, the switch will transfer load to #1 power source. 2. **2# Priority**, setting #2 power transfers is prior. If #1 and #2 is normal at the same time, the switch will transfer load to #2 power source. 3. **NO Priority**, if #1, 2 sources is normal at the same time and #1, 2 take no load, the switch will first transfer load to #1 power source. Only when #1 power is abnormal, the #2 power will supply for load; if the switch have been taken load, it will not switched to another power until abnormality occurs in the power.
34	Aux. output 1	(1-28)	25	01.Not used 02.Critical failure 03.Fail of transfer 04. Warning output 05. Alarm output (delay) 06.1# normal volt 07.1# abnormal volt 08.2# normal volt 09.2# abnormal volt 10.Over current output 11. Auto state output 12. Manual state output 13. Gens start (N/O) 14. Gens start (N/C) 15.1# shut output 16. 1# break off output 17.2# shut output 18. 2# break off output 19. Common alarm output 20. Timing test Gen start 21.1# shutdown state 22.2# shutdown state 23.1#Gens start (N/O) 24.2#Gens start (N/O) 25.ATS power L1 26.ATS power L2
35	Aux. output 2	(1-28)	28	
36	Aux. output 3	(1-28)	13	
37	Aux. output 4	(1-28)	16	
38	Aux. output 5	(1-28)	18	

Num	Item	Range	Default	Description
				27.ATS power L3 28.ATS power N
39	Aux. input 1	(1-9)	02	01.Not used 02.Breaking compulsorily 03.Test off-load 04.Test on-load 05. Test Lamp 06. 1# Gens Alarm 07. 2# Gens Alarm 08. Remote start 09. Reserved
40	Aux. input 2	(1-9)	01	
41	Aux. input 3	(1-9)	01	
42	Aux. input 4	(1-9)	01	

7.2 INPUT/OUTPUT FUNCTION DESCRIPTION

The input port function describes:

Item	Description
1 Not used	Invalid.
2 Breaking compulsorily	When active, this will force the breaker to transfer the ATS to OFF position. It isn't suit for none OFF position ATS.
3 Test off-load	When active, this will send out a start generator signal immediately. After 2# source is normal, if 1# source is normal, the breaker will not act. The breaker will transfer the load to 2# only when 1# source is abnormal. After 1# source restore normal, the breaker will transfer the load to 1#. Here the start generator signal output will keep.
4 Test On-Load	When active, this will send out a start generator signal immediately. After 2# source is normal, the breaker will transfer the load to 2# immediately regardless of 1# source normal whether or not.
5 Test lamp	When active, all Led lamps mounted on the front panel will illuminate, LCD will fill black block.
6 1# Gens Alarm	In Cycle start, if the input is active, 1 # Gens will not start
7 2# Gens Alarm	In Cycle start, if the input is active, 2 # Gens will not start
8 Remote start input	This input is necessary for cycle start generator.
9 Reserved	

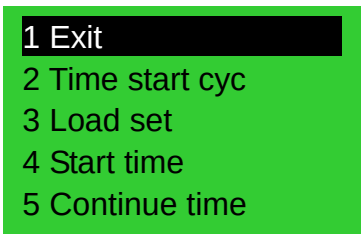
The output function describes:

Item	Description
1 Not used	
2 Critical failure	Critical fault alarm including switch transform

	failure.
3 Fail of transfer	Switch failed including 1# closed failure,1# open failure, 2# closed failure, 2# open failure.
4 Warning output	General warning includes 1# reverse phase sequence; 2# reverse phase sequence, and load over current and compulsory breaks.
5 Alarm output (delay)	Serious fault alarm output, continuous output 60 seconds.
6 1# normal volt	It will output when #1 voltage is normal.
7 1# abnormal volt	It will output when #1 voltage is abnormal.
8 2# normal volt	It will output when #2 voltages is normal.
9 2# abnormal volt	It will output when #2 voltages is abnormal.
10 Over current output	Set limits on more load current and exceeds delay.
11 Auto state output	In auto state output.
12 Manual state output	In manual state output.
13Gens start (N/O)	When generator starts output (Relay closed).
14Gens start (N/C)	When generator starts output (Relay released).
15 1# shut output	#1 Switch shut output.
16 1# break off output	#1 Switch break off output, for one breaking position breaks off output.
17 2# shut output	#2 Switch shut output.
18 2# break off output	#2 Switch break off output.
19 Common alarm output	It is include serious fault alarm and common alarm.
20 Timing test Gen start	Schedulers start generator function.
21 1# shutdown state	#1 Switch auxiliary shutdown output.
22 2# shutdown state	#2 Switch auxiliary shutdown output.
23 1#Gens start (N/O)	1# Gens start output.
24 2#Gens start (N/O)	2# Gens start output.
25 ATS power L1	ATS power supply.
26 ATS power L2	
27 ATS power L3	
28 ATS power N	

8 TIMING START GENERATOR

On the main screen press key and select **2 Time start**, and then pressing key, the screen will show the time start interface as follow:



Time start cycle: Include inhibit start; single time, weekly or monthly.

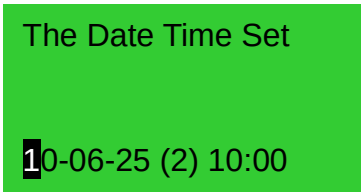
Load set: Starting generator with load or without load.

Start time: Generator start date and time.

Continue time: Generator continuously run time can be set on the duration of maximum time for 99 hours 59 minutes.

9 DATE AND TIME SETTING

On the main screen press key and select **3 Date & Time set**, and then pressing key, the screen will show the Date & Time Set interface as follow:



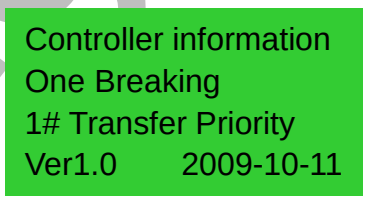
Press key according to the corresponding bit input values 0-9, pressing key to carry through the right of bit shift, right shift to the end of pressing key, according to the key on the date and time can be updated controller.

Date and time format set: year-month-date (week) and hour: minute.

10 CONTROLLER INFORMATION

On the main screen press key and select **5 Controller information**, and then pressing key, the screen will show the controller information interface as follow:

Display content includes off positions setting and switching priority choice and controller version, date.



Pressing key will exit and return to main screen.

11 ATS OPERATION

11.1 MANUAL OPERATION

Press key and manual operation indicator light, the controller in manual mode.

- Press key, 1# close relay outputs immediately, begin to monitor 1# closing input, if active, the 1# source LED light, the 1# source connect to load.
- Press key, 2# close relay outputs immediately, begin to monitor 2# closing input, if active, the 2# source LED light, the 2# source connect to load.

- Press key and 1# or 2# open relay outputs immediately, begin to monitor 1# or 2# closing input, if inactive, the 1# and 2# source LED extinguish, and 1# and 2# source disconnect with load.

***1:** For the ATS of no OFF position, press key is invalid.

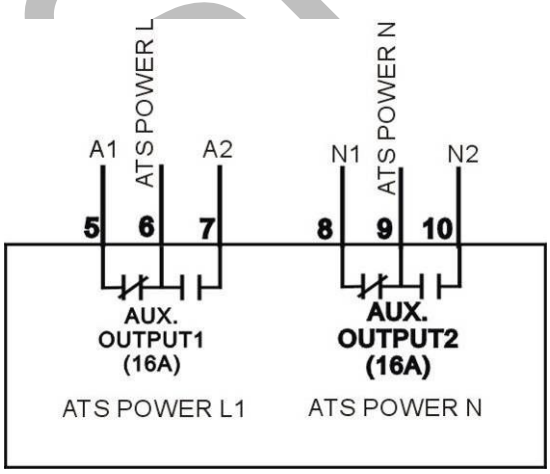
11.2 AUTOMATIC OPERATION

Press the key and the automatic LED light, enter AUTO mode and controller can automatically switch load to 1# or 2#.

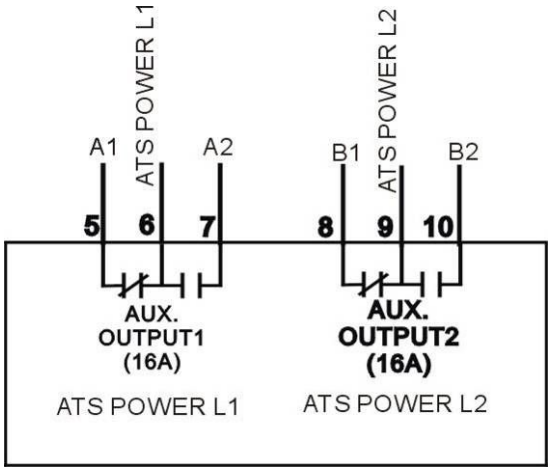
11.3 ATS POWER SUPPLY

The power of ATS is supplied by controller, so long as one power is normal, this can guarantee ATS voltage power supply normally and can be transferred normally.

Users should select power supply voltage (phase voltage or line voltage) based on ATS type. If power supplied by phase voltage, connect the phase A1 to Pin5 in AUX. output1 and A2 to Pin7, and connect the phase N1 to Pin8 in AUX. output2 and N2 to Pin10, then connect the common output of AUX. output1&2 to ATS power supplies. Then controller power on, enter parameters setting menu, and set the AUX output1 as "ATS power L1". If the ATS power supplied by Line voltage, set as same as above, and only need to change phase N to phase B. Wiring diagrams are shown as following:



ATS L-N voltage power supply



ATS L-L voltage power supply

Note: Normal Closed input voltage must come from the same one circuit voltage.

12 COMMUNICATION CONFIGURATION

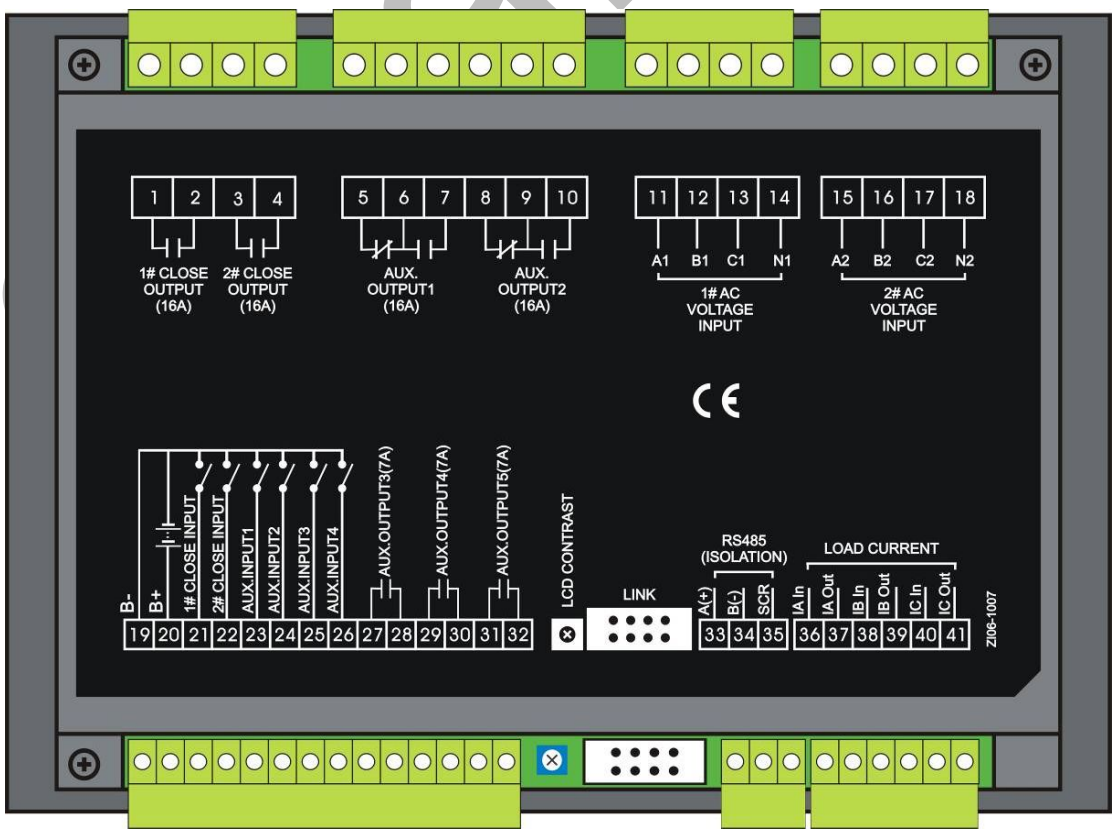
HAT600 series has RS485 serial port, be allowed to connect the local area network with open structure. Its apply protocols of ModBus communication with PC or data acquisition system running on software. Also can provide a simple and practical to factories, telecom, industrial and civil buildings dual power switching management plan, achieve dual power monitor and “remote controlling, remote measuring, remote communication” functions.

More information of Communication Protocol, see the “HAT600 communication protocol”.

Communication parameters,

Module address	1 (range: 1-254, User can set it)
Baud rate	9600 bps
Data bit	8bit
Parity bit	None
Stop bit	1 bit or 2-bits(set via PC)

13 DESCRIPTION OF CONNECTING TERMINAL



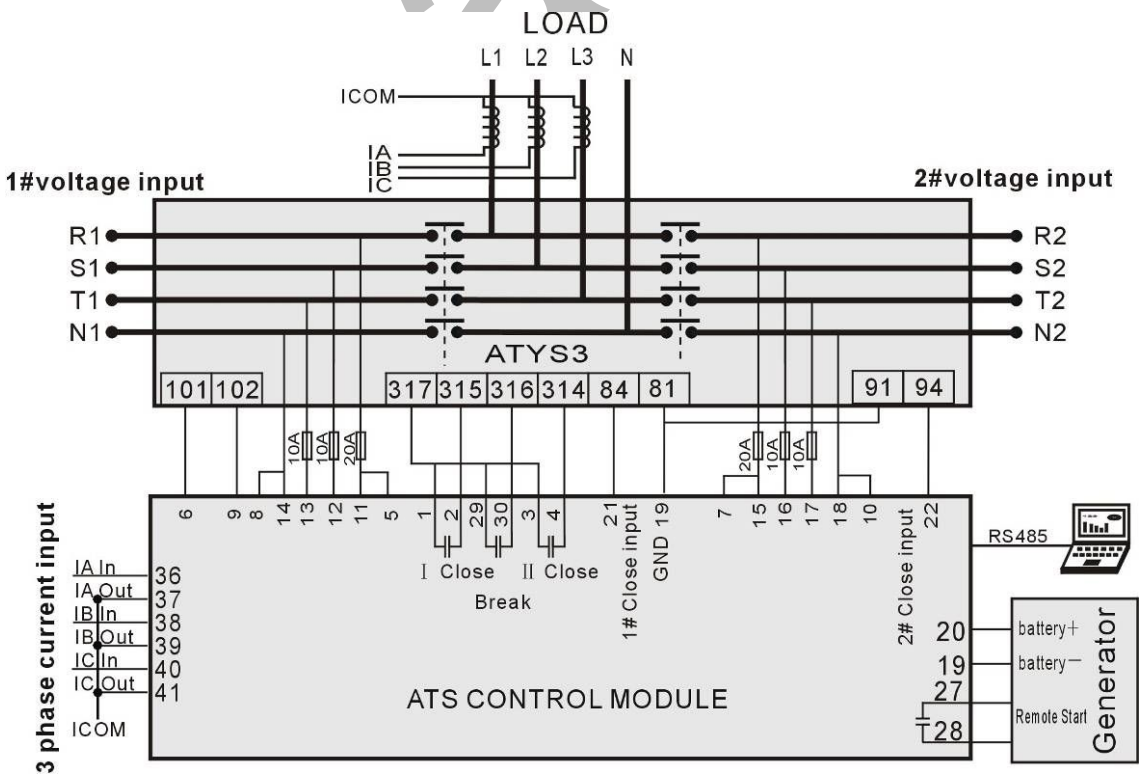
Port functional description

Terminal	Item	Description		Remark
1	1# closed output	Passive relay contact output		Rated 250V16A
2				
3	2# closed output	Passive relay contact output		Rated 250V16A
4				
5	Aux. output 1	NC	The default is ATS power of L1 output.	Free voltage relay contracts Rated 250V16A
6		Common		
7		NO		
8	Aux. output 2	NC	The default is ATS power of L1 output.	Free voltage relay contracts Rated 250V16A
9		Common		
10		NO		
11	A1	1# AC 3-phase 4 wire voltage input		If the input for single-phase, only connect A1, N1
12	B1			
13	C1			
14	N1			
15	A2	2# AC 3-phase 4 wire voltage input		If the input for single-phase, only connect A2, N2
16	B2			
17	C2			
18	N2			
19	GND	Connect the generator battery negative pole		DC negative input
20	DC power input	When you need to start generator, connect the terminal to the generator battery positive pole		DC positive input 8-35V controller power supply
21	1# closed input	Detection of 1 # switch closing state, voltage free contact input		It is active to GND
22	2# closed input	Detection of 2 # switch closing state, voltage free contact input		It is active to GND
23	Aux. input 1	It is active to GND		
24	Aux. input 2			
25	Aux. input 3			
26	Aux. input 4			
27	Aux. output 3	Voltage free relay contacts output		Rated 250V7A
28				
29	Aux. output 4	Voltage free relay contacts output		Rated 250V7A
30				
31	Aux. output 5	Voltage free relay contacts output		Rated 250V7A
32				

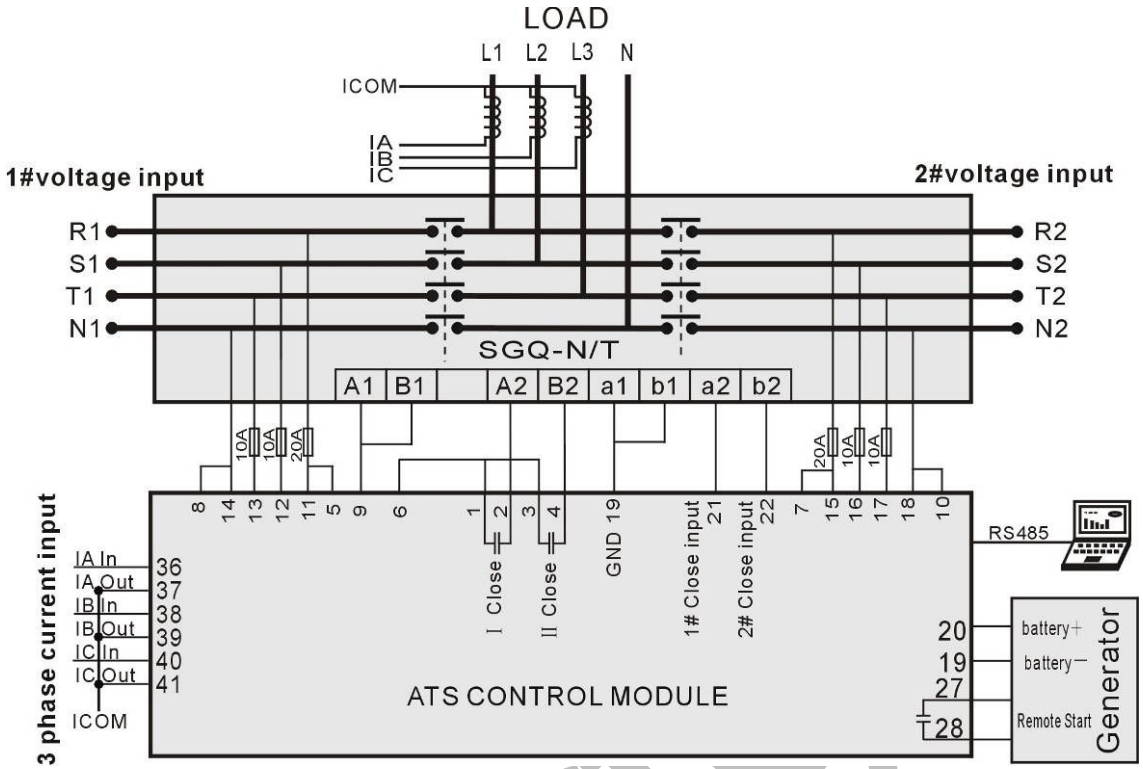
Terminal	Item	Description	Remark
33	RS485 A+	RS485 communications port	
34	RS485 B-		
35	RS485 GND		
36	IA Input	Sensing from Secondary phase A current	
37	IA Output		
38	IB Input	Sensing from Secondary phase B current	
39	IB Output		
40	IC Input	Sensing from Secondary phase C current join	
41	IC Output		
LCD CONTRAST	LCD Display	Adjust the LCD contrast	
LINK	Program port	Factory update	

14 TYPICAL WIRING DIAGRAM

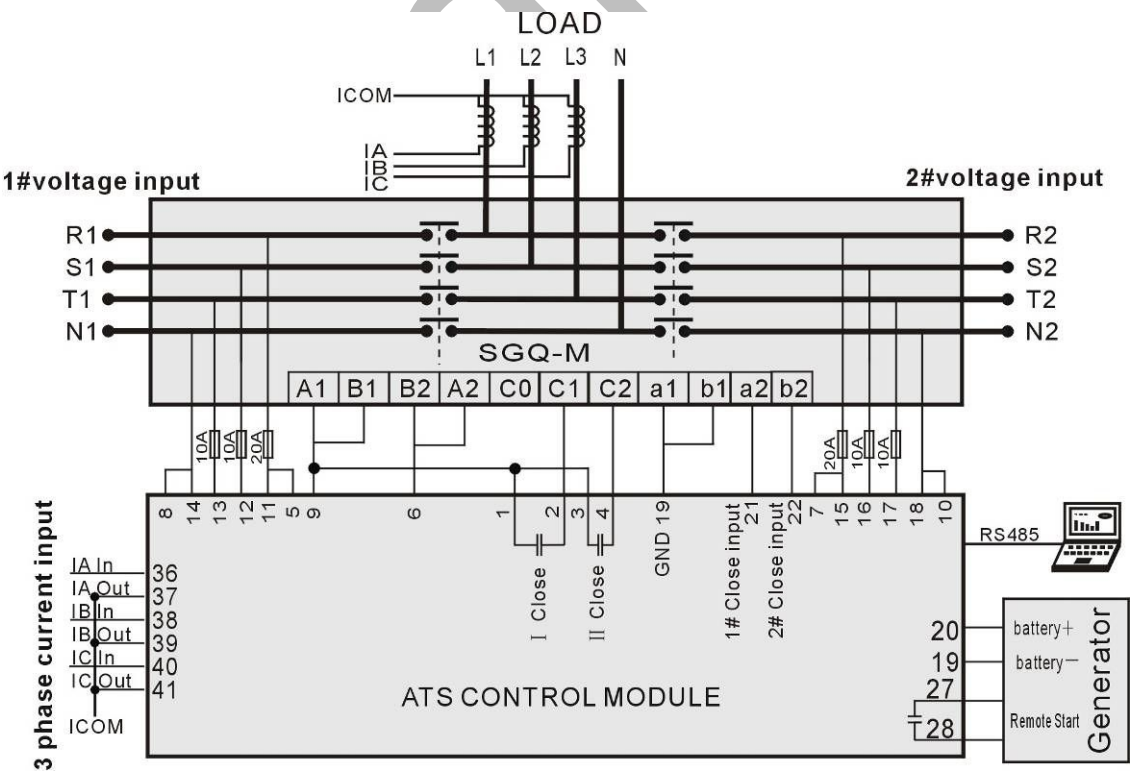
ATYS3 Diagram



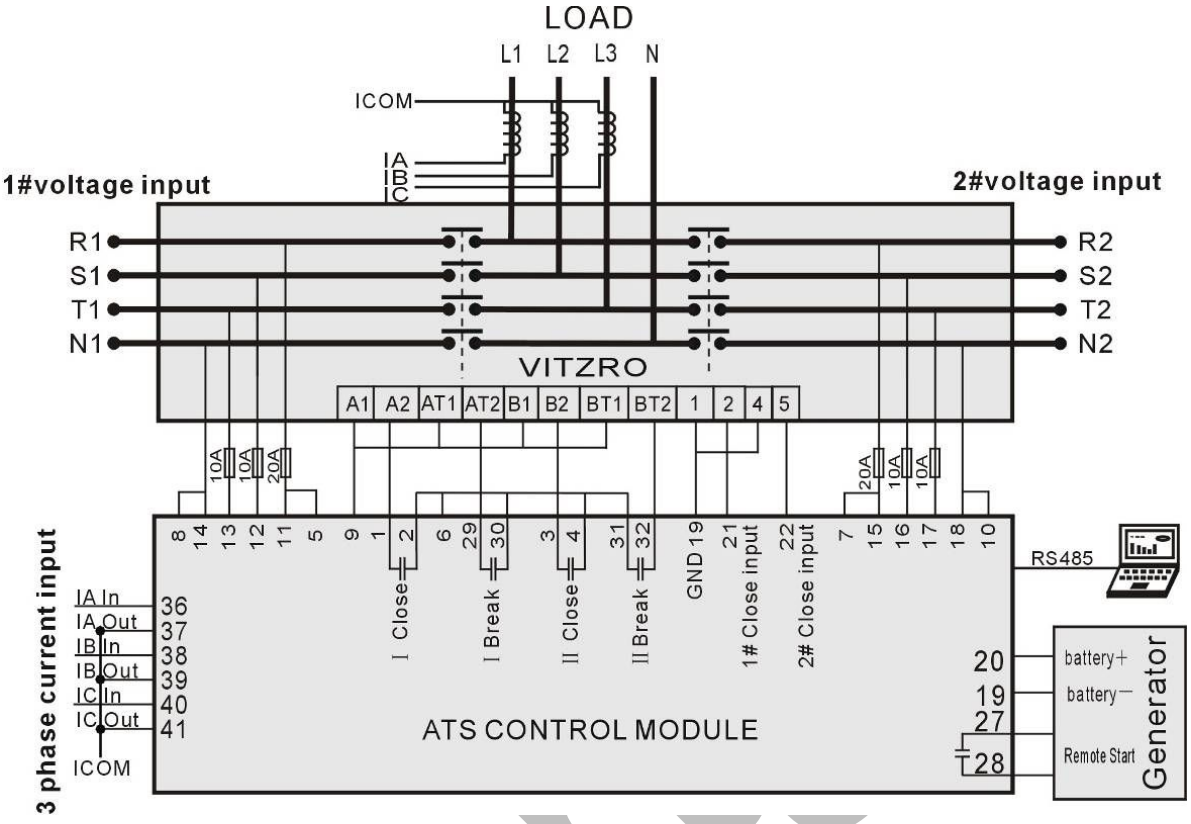
SGQ-N/T Diagram



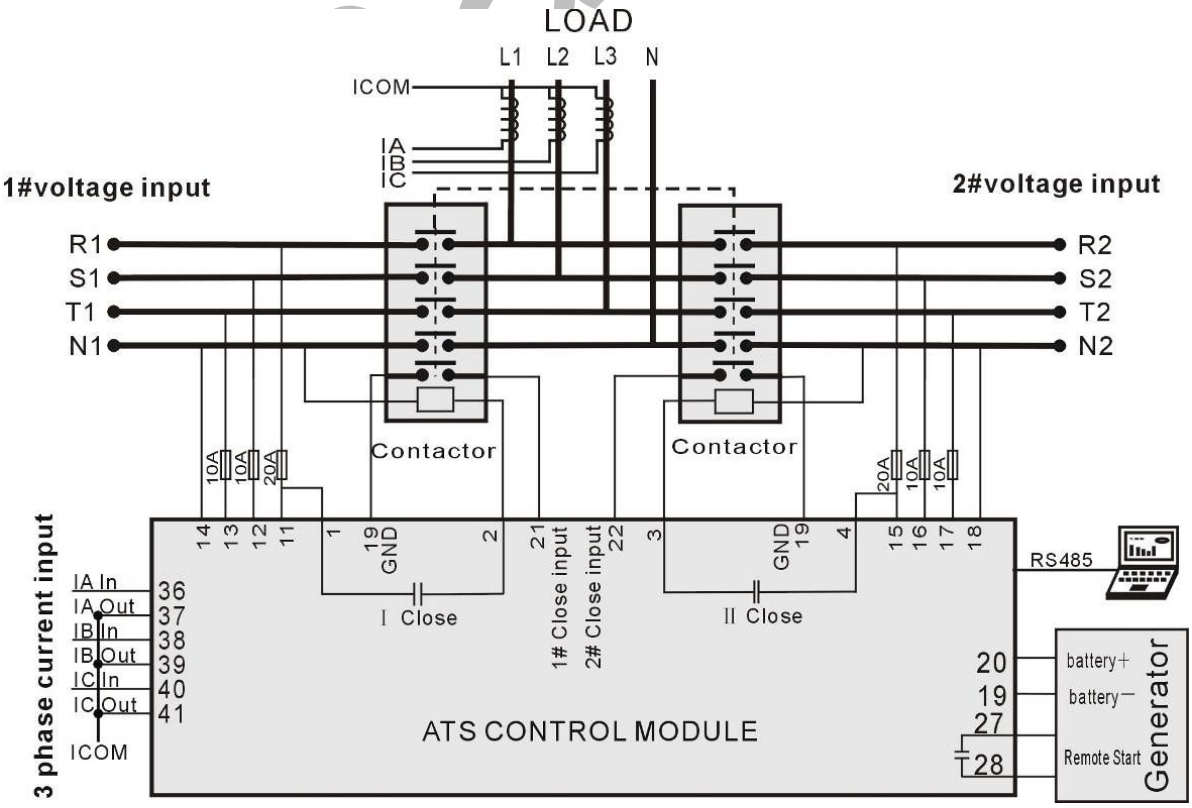
SGQ-M Diagram



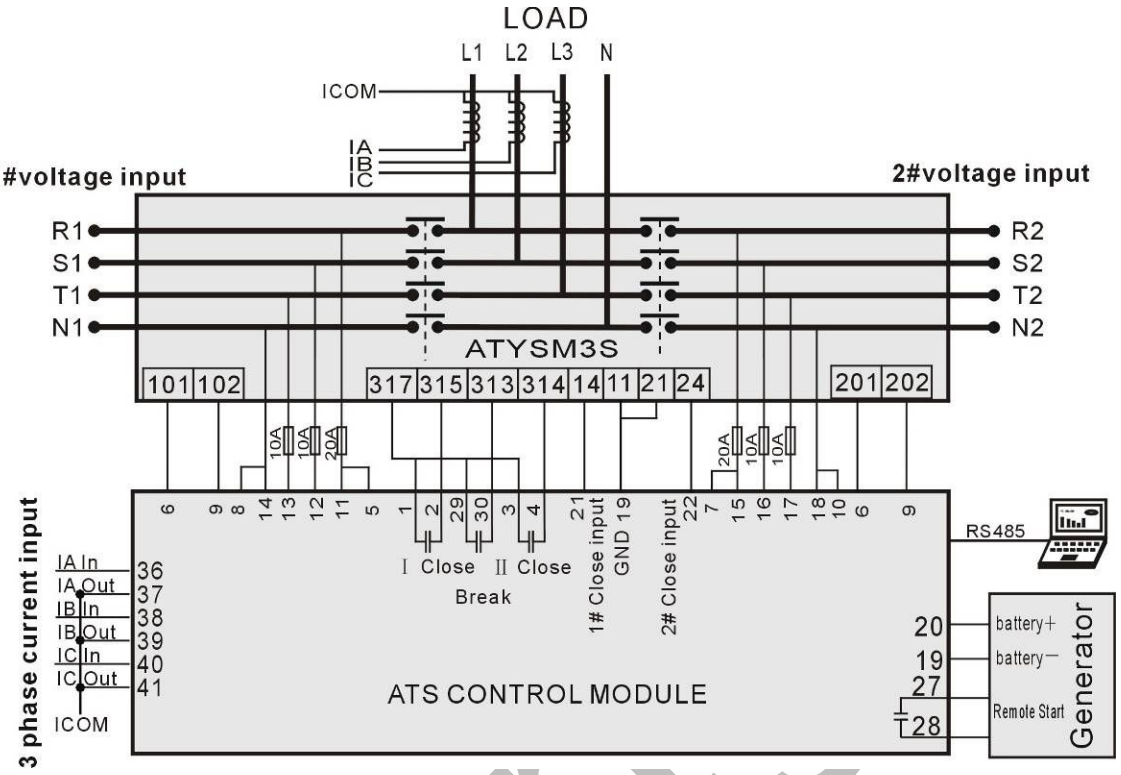
VITZRO Diagram



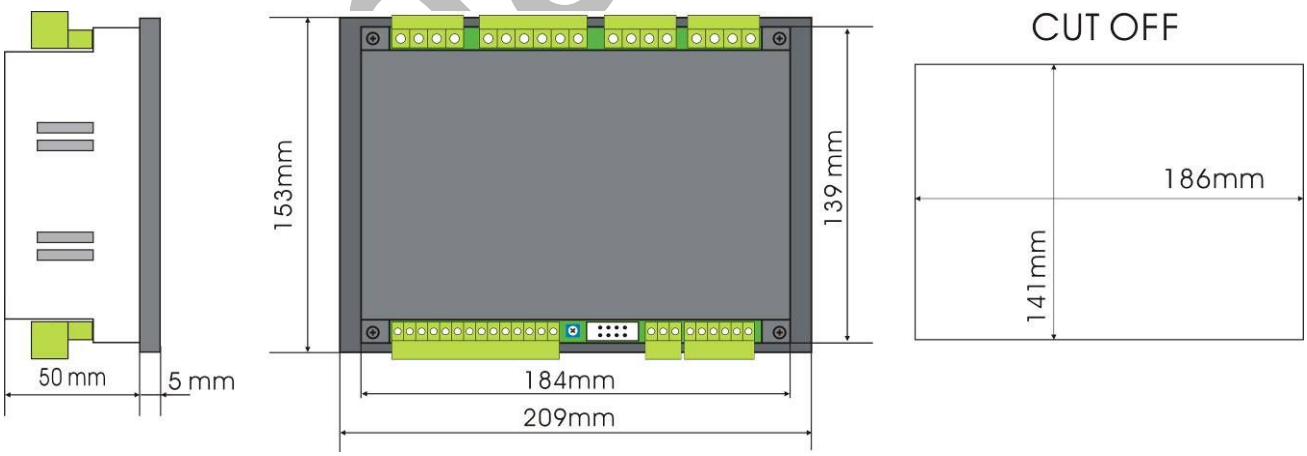
Contactor Diagram



ATYSM3S Diagram



15 INSTALLATION



16 FAULT FINDING

Fault Symptom	Possible Remedy
Controller no operation	Check the Phase A1, N1 or Phase A1, N1 voltage. Check connection wirings from the controller to ATS. Check DC fuse.

Fault Symptom	Possible Remedy
RS485 communication failure	Check whether the RS485 is wrong connection between negative and positive. Check whether the RS485 adapt is abnormal. Check whether the parameter settings in the module addresses are incorrect. If the above methods are no using, you can try to connect the GND of controller with RS485 GND (or PC GND). Recommend that the A and B lines of the 485 network should be terminated at each end with a 120Ω resistor.
Programmable output error	Check programmable output connections, pay attention to Normally opened and closed. Check the output parameters settings.
Programmable input abnormal	Ensure that the programmable input connect to GND reliably when it's active, and hung up when it is inactive. (Note: The input will be possibly destroyed when connected with voltage)
ATS is not work while Generator running	Check ATS. Check the connection wirings between the controller and the ATS. Ensure that the ATS OFF position numbers are same as the setting OFF position numbers.