

ALPHA Automated Transfer Switch Operating Manual

Rev 1.21

The original of this document is drawn up in English language



Table of Contents

1.	Safety Instructions	2
2.	Product Description	3
3.	Installation and Operating Instructions	4
3.1.	Packaging	4
3.2.	Choose an installation location	4
3.3.	Product Introduction.....	5
3.4.	Product Installation and Operation	10
4.	Troubleshooting	12
5.	System Specifications.....	13
6.	Appendix A. Dry contacts available for configuration	15

Automatic Transfer Switch

User Manual

ATS-16A/20A/30A/32A

1. Safety Instructions

SAVE THESE INSTRUCTIONS. This manual contains important instructions that should be followed during installation and maintenance of the ATS.

1. Do not disassemble this product without a technician from the original manufacturer or authorized distributor. Doing so voids your warranty and is also a shock hazard.
2. Every component of this product is checked for high specification standards. Performance maintenance or parts replacement should only be done by a qualified technician or authorized distributor.
3. Do not install the product at the following locations without a qualified technician:
4. Medical equipment directly related to human life preservation;
5. Equipment on elevators or rapid transit systems related to personal safety;
6. Critical computing hardware for public systems;
7. Other equipment similar to the ones mentioned above.
8. Please discuss with your distributor before installing the product at the locations mentioned above. Special considerations and designs are required for the operation, setup, management, and maintenance of critical equipment and emergency backup power generators related to personal safety and public facilities.
9. Do not place vases or other water containers on top of the main unit. Water spilled into the machine may damage internal components and pose a shock hazard.
10. Using this product in locations with sparks, smoke, or natural gas may result in arcing, personal injury, and fire hazards.
11. The operating environment and storage method affects the product lifespan and malfunctions. Thus, please keep the product away from the following operating environments:
12. Locations specified in the operating manual as high temperature, low temperature, and high humidity (temperatures outside -5 to 40°C and relative humidity outside 30% to 90%);
13. Locations with sparks;
14. Locations with dust, corrosive material, salt content, or flammable gas;
15. Outdoors.
16. Immediately stop using this product in the event of abnormal sounds or odors. Contact your distributor for maintenance.
17. Improper grounding results in electrical leakage. Please make sure your AC input power is properly grounded.
18. Please confirm the input voltage does not exceed the rated capacity of the ATS.

2. Product Description

The ATS (Automatic Transfer Switch) features two independent power supply circuits supplying power to the load (as shown in Figure 1 below). In the event of a power failure in the main circuit, the ATS automatically switches to the other circuit to supply power to the load. The ATS automatically switches back to the main circuit after power is restored. In addition, the ATS also provides user configurable power states (voltage or frequency) for the ATS switching condition.

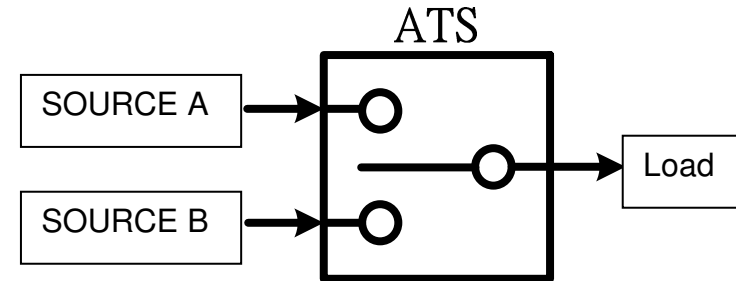


Figure 1. ATS block diagram

3. Installation and Operating Instructions

3.1. Packaging

- 3.1.1. Remove the PE foam.
- 3.1.2. Inspect accessories
 - ,1 RS-232 cable x1 pcs
 - ,2 USB cable x1 pcs
 - ,3 CD (monitoring software, Setting tool and user manual) x1 pcs
 - ,4 Backplate and screws x1 set
 - ,5 Power cable x2 pcs (Available only for ATS-216 models)

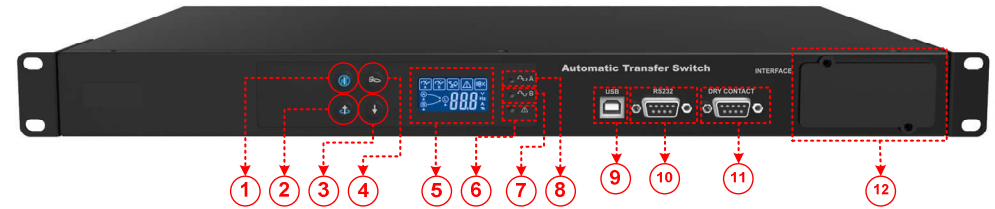
3.2. Choose an installation location

An appropriate installation location will optimize system performance, reduce the chances of malfunctions, and prolong product lifespan. Please follow the guidelines below for an appropriate location:

- 3.2.1. Avoid excessive high temperature or high humidity;
- 3.2.2. Keep away from dust, volatile gases, excessive salt content, or corrosive gases;
- 3.2.3. Do not use outdoors.

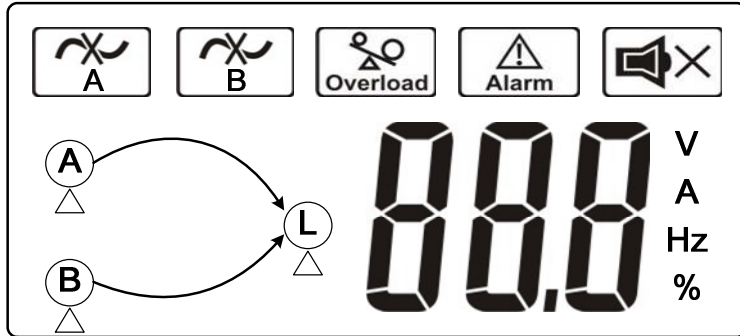
3.3. Product Introduction

3.3.1. Front Panel



No.	Item	Description/function
○,1	Mute button	Turns off alarm
○,2	Source selection button	Select source to view info: Input A, Input B, or Load
○,3	Info selection button	Select source info to view: Voltage, current, frequency, load capacity
○,4	Input selection button	Switch input source: Input A ↔ Input B
○,5	LCD	System status display
○,6	Input indicator A	Lit: Normal input voltage and frequency Dim: Abnormal input voltage and frequency Flashing: Indicates higher priority
○,7	Input indicator B	Lit: Normal input voltage and frequency Dim: Abnormal input voltage and frequency Flashing: Indicates higher priority
○,8	Error indicator	Lit: System malfunction or abnormal Dim: System normal
○,9	USB port	Connection for software setup or monitoring software
○,10	RS-232 port	Connection for software setup or monitoring software
○,11	Dry contact port	Dry Contact
○,12	External communication slot	For external communication cards, e.g. RS-485, SNMP

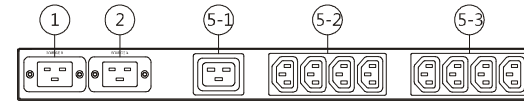
3.3.2. LCD



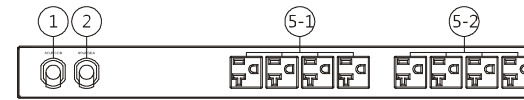
Symbol	Description/function
	Input A error or power failure
	Input B error or power failure
	Overload
	System malfunction or abnormal
	Alarm on
	Alarm off
	Digital display showing input/output power connected to load
	ATS numeric display

3.3.3. Rear Panel

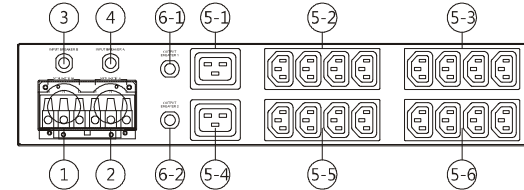
ATS-216(230V-16A)



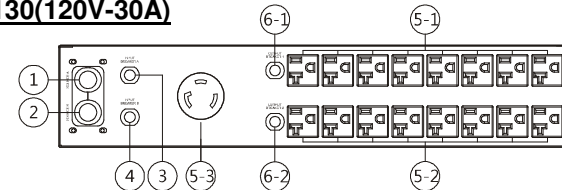
ATS-120(120V-20A)



ATS-232(230V-32A)



ATS-130(120V-30A)



- ,1 Power input (B)
- ,2 Power input (A)
- ,3,○,4 Input breaker (optional, sold separately)
- ,5 Output socket
- ,6 Output breaker

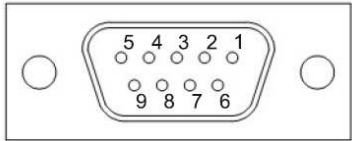
3.3.4. Interface

The ATS provides three communication ports and one external communication slot (optional) for the user.

Standard communication ports: RS-232, USB, and 5 dry contacts

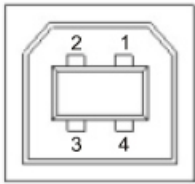
External communication slot: SNMP, RS-485

3.3.4.1. RS-232



Pin	Definition	Type	Signal
1	N/A	N/A	N/A
2	TX	Output	TX
3	RX	Input	RX
4	N/A	N/A	N/A
5	GND	Power source	N/A
6	+12V	Power source	N/A
7	N/A	N/A	N/A
8	N/A	N/A	N/A
9	N/A	N/A	N/A

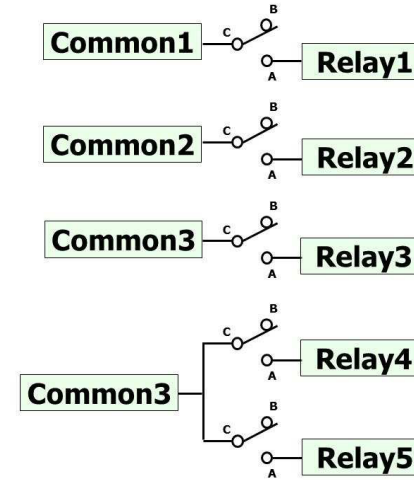
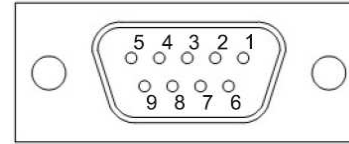
3.3.4.2. USB



Pin	Signal
1	VBUS
2	D-
3	D+
4	GND

3.3.4.3. Dry Contact

The ATS provides five user configurable dry contacts for customized features. The capacity of each contact is 24Vdc/1A, additional information is provided in Appendix A.



Pin	Definition	Signal (default)
1	Common 3	N/A
2	Relay 3	System Alarm
3	Relay 4	Overload
4	Common	N/A
5	Relay 5	Over temperature
6	Common 1	N/A
7	Relay 1	Source A abnormal
8	Common 2	N/A
9	Relay 2	Source B abnormal

3.4. Product Installation and Operation

3.4.1. Installation Procedure:

1. Open package and note the packaging layers. Keep the box and packaging material in case further transportation is required.
2. Check for damage to the ATS from shipping and handling. Please contact your local distributor if the product is damaged.
3. Check the input power cable/socket and output socket of the delivered ATS model with your order.
4. Affix the backplate (Figure 1) onto the ATS (Figure 2). Affix the ATS onto the frame of the chassis (Figure 3).
5. Insert the load plugs into the ATS sockets labeled "OUTPUT" and spreading them as evenly as possible.
6. Check that the total load does not exceed ATS specifications (e.g. voltage, current).
7. Supply power to the ATS. The ATS automatically boots up after 1 second and supplies the capacity power to the connected load.

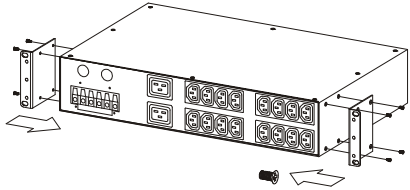


Figure 1 & 2

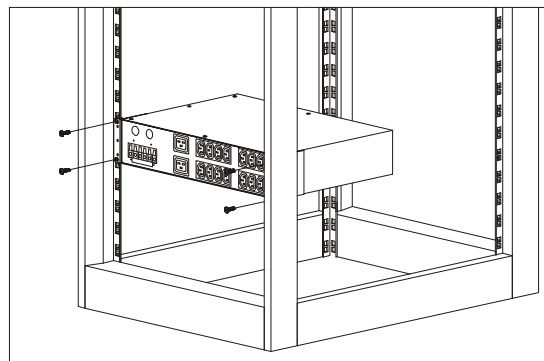
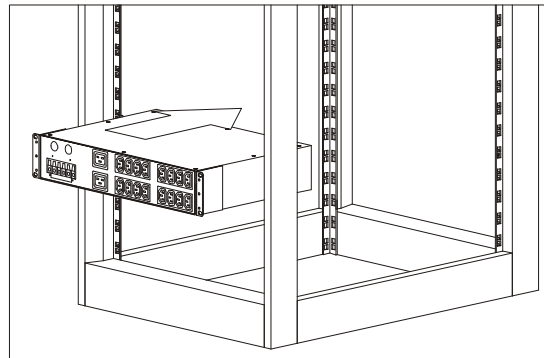


Figure 3

3.4.2. Boot up

Once input power is connected, the ATS automatically boots up. The LCD display during boot is as shown in Figure 4 and all LEDs (A, B, L) are lit. LCD display is as shown in Figure 5 after boot up, only the LEDs for Power A (A) and Power B (B) are lit.

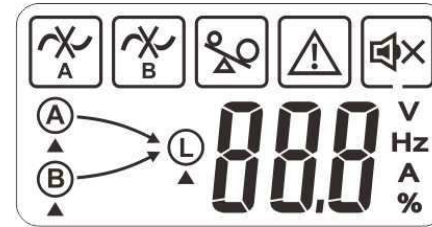


Figure 4

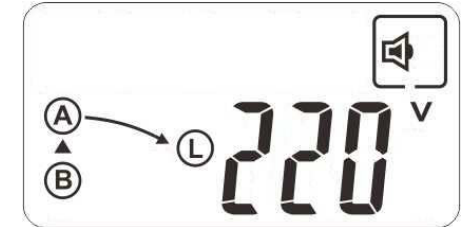


Figure 5

3.4.3. Switch input source

This product supports manual switching between power supplies as instructed below:



Push and hold the  button for 2 seconds until you hear two short beeps. The system then needs to reconfirm the power transfer (LCD display as shown in

Figure 6), so push and hold the  button for 2 seconds to confirm. The system will switch to the other input (LCD display as shown in Figure 7) if the power supply is normal, otherwise the transfer is not made and a warning is shown (LCD display as shown in Figure 8).

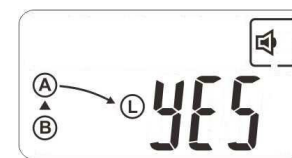


Figure 6

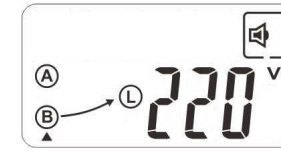


Figure 7

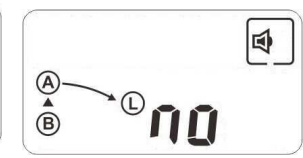


Figure 8

4. Troubleshooting

If your ATS is not working normally, use the following status and troubleshooting table to make the appropriate adjustments. Please contact your distributor as soon as possible if the issue cannot be resolved.

Issue	Possible reason	Solution
ATS is OFF	Not connected to the electrical grid	Check the connection from the electrical grid to the ATS input
	Abnormal electrical grid	Request service by professional electrician
	Input breaker has been tripped	Reset breaker
	Internal components have been damaged	Please contact the distributor
Power is supplied to the load but panel remains off	Internal components have been damaged	Please contact the distributor
Error code Er01, Er02	Not connected to the electrical grid	Check the connection from the electrical grid to the ATS input
	Abnormal electrical grid	Request service by professional electrician
Error code Er03 to Er15	Abnormal power system	Request service by professional electrician
Error code Er16	Overload	Check the load capacity
Error code Er17 to Er32	Abnormal internal components	Please contact the distributor

5. System Specifications

Model	ATS-120	ATS-130
Input		
Input voltage	100/110/115/120/127 (+/-5%/10%/15%/20%)	
Input voltage range	75Vac~150Vac	
Input frequency	50/60Hz(+/- 5%/10%/15%/20%)	
Input current	20A	30A
Output		
Output voltage	100/110/115/120/127	
Output current	20A	30A
Connection		
Input	NEMA 5-20 x 2	NEMA L5-30 x 2
output	NEMA 5-20 x 8	NEMA 5-20 x 8, NEMA L5-30 x 1
Protection	Input Breaker(option)	
	Electronic circuit	
Communication	RS-232, USB, Dry contact external slot for option card(SNMP, RS-485)	
Transfer time(ms)	8~12ms (Typical)	
Efficiency	99%(with full linear load)	
Display	LCD+LED	
Physical		
Dimension, D X W X H (mm)	275x440x44	275x440x88
Net Weight (kgs)	4	6
Environment		
Operating temperature	-5~40℃ @ 20~90% RH(non-condensing)	
Standards compliance	Safety	UL 60950-1/CAN/CSA C22.2 No. 60950-1
	EMC	FCC Part 15

Model	ATS-216	ATS-232
Input		
Input voltage	200/208/220/230/240 (+/-5%/10%/15%/20%)	
Input voltage range	150Vac~300Vac	
Input frequency	50/60Hz(+/- 5%/10%/15%/20%)	
Input current	16A	32A
Output		
Output voltage	200/208/220/230/240	
Output current	16A	32A
Connection		
Input	IEC-C20 inlets x2	40A terminal 6P
output	IEC-C13 x 8, IEC-C19 x 1	IEC-C13 x16, IEC-C19 x2
Protection	Input Breaker(option)	
	Electronic circuit	
Communication	RS-232, USB, Dry contact external slot for option card(SNMP, RS-485)	
Transfer time(ms)	8~12ms (Typical)	
Efficiency	99%(with full linear load)	
Display	LCD+LED	
Physical		
Dimension, D X W X H (mm)	275x440x44	275x440x88
Net Weight (kgs)	4	6
Environment		
Operating temperature	-5~40°C @ 20~90% RH(non-condensing)	
Standards compliance	Safety	UL 60950-1/ CAN/CSA C22.2 No. 60950-1 / IEC 60950-1
	EMC	FCC Part 15 / EN62310-2

6. Appendix A. Dry contacts available for configuration

	Event	Code
1	Source A no power	Er01
2	Source B no power	Er02
3	Source A voltage abnormal	Er03
4	Source B voltage abnormal	Er04
5	Source A frequency abnormal	Er05
6	Source B frequency abnormal	Er06
7	Source A voltage and frequency abnormal	Er07
8	Source B voltage and frequency abnormal	Er08
9	ATS no output due to source A and B abnormal	Er09
10	Source A voltage unbalance	Er10
11	Source B voltage unbalance	Er11
12	ATS output voltage unbalance	Er12
13	ATS output voltage abnormal	Er13
14	ATS output frequency abnormal	Er14
15	ATS output voltage and frequency abnormal	Er15
16	ATS output overload and cut output	Er16
17	ATS output short circuit and cut output	Er17
18	Input relay defect on source A	Er18
19	Input relay defect on source B	Er19
20	Source transfer relay defect	Er20
21	ATS output relay defect	Er21
22	Internal working power 12V defect on source A	Er22
23	Internal working power 12V defect on source B	Er23
24	System over temperature	Er24
25	System DC offset error	Er25
26	EEPROM working abnormal	Er26
27	Emergency Power Off	Er27
28	Loss LCD connection	Er28
29	Internal transferring inhibition by some reason	Er29
30	Overload transferring is over 4 times and system lock	Er30
31	Inhibit to transferring due to phase angle over shift	Er31
32	System Alarm	Er32

