Automatic Transfer Switch

User Manual

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

Table of Contents

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:
   - Medical equipment directly related to human life preservation;
   - Equipment on elevators or rapid transit systems related to personal safety;
   - Critical computing hardware for public systems;
   - Other equipment similar to the ones mentioned above.
4. 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.
5. 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.
6. Using this product in locations with sparks, smoke, or natural gas may result in arcing, personal injury, and fire hazards.
7. The operating environment and storage method affects the product lifespan and malfunctions. Thus, please keep the product away from the following operating environments:
   - Locations specified in the operating manual as high temperature, low temperature, and high humidity (temperatures outside -5 to 40℃ and relative humidity outside 0% to 90%);
   - Locations with sparks;
   - Locations with dust, corrosive material, salt content, or flammable gas;
   - Outdoors.
8. Immediately stop using this product in the event of abnormal sounds or odors. Contact your distributor for maintenance.
9. Improper grounding results in electrical leakage. Please make sure your AC input power is properly grounded.
10. Please confirm the input voltage does not exceed the rated capacity of the ATS.

2. Product Description

■ ATS Feature:

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.

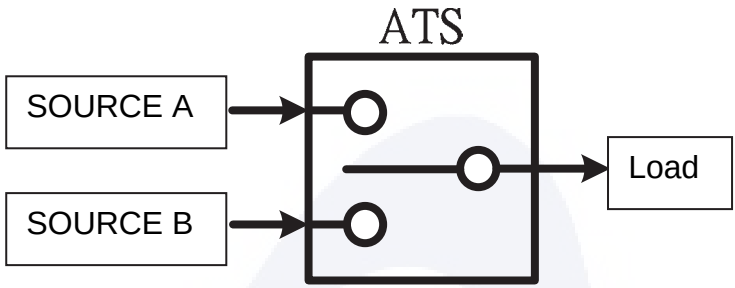


Figure 1. ATS block diagram

■ ITS Feature:

ITA is a ATS module plus maintenance function. It can continue to power its output load during maintain or replace the ATS module.

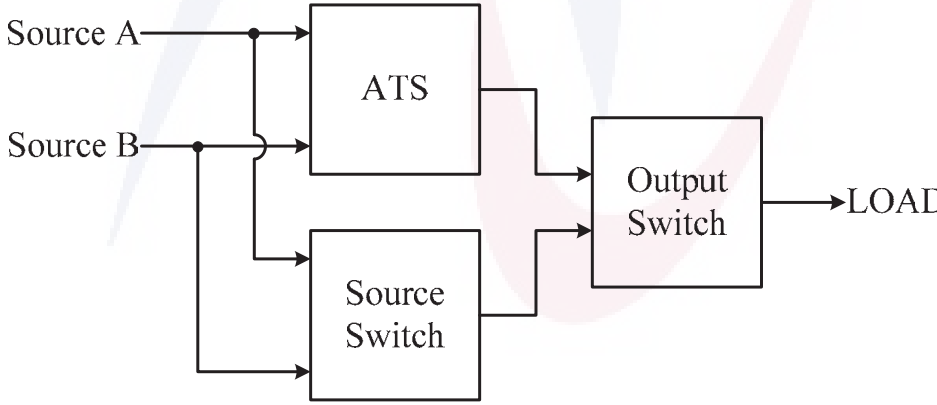
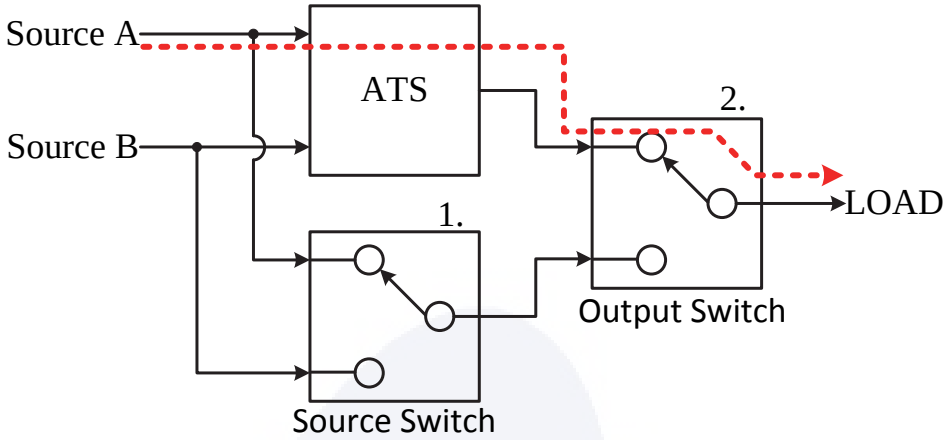


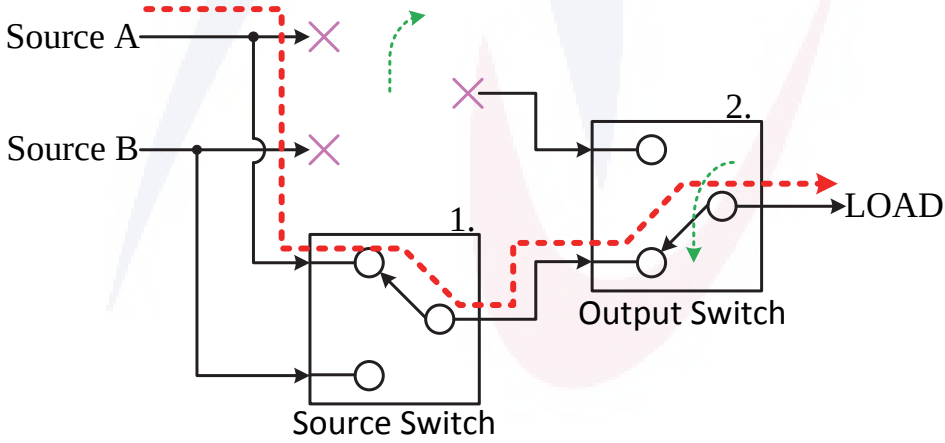
Figure 2. ITS HOT SWAP block diagram

Procedure for replacing or maintaining ATS module in ITS product

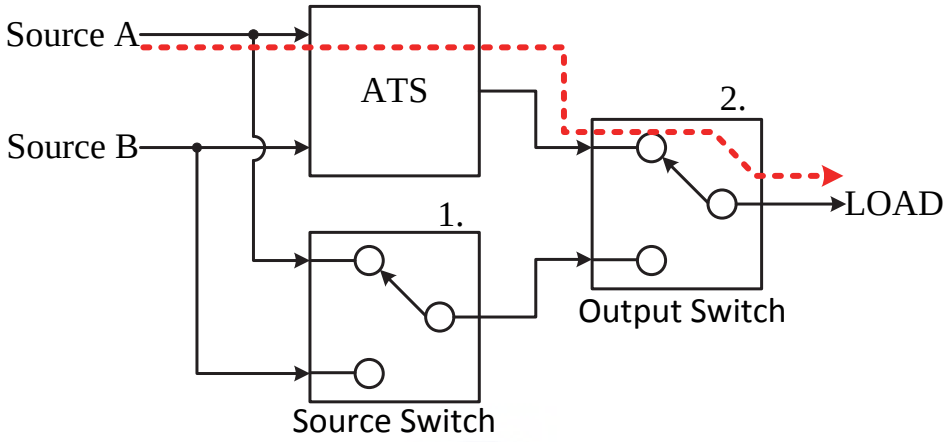
1. To turn “Source Switch” to “Source A” position if ATS module powers load by Source A, otherwise to turn “Source Switch” to “Source B” position.



2. To turn “Output Switch” from “Normal” to “Bypass” position. It will have 4ms maximum breaker time at this step. Now the load power comes from Bypass loop.



3. To maintain or replace ATS module.
4. To command output source of ATS module same as Bypass loop.
5. To turn “Output Switch” from “Bypass” to “Normal” position. It will have 4ms maximum breaker time at this step. Now the load power comes back to ATS loop.


Source A
Source B
ATS
2.
LOAD
1.
Output Switch
Source Switch

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) x1 pcs
④ User manual
⑤ Handle and screws x1 set
⑥ Backplate and screws x1 set (only ATS Standard Series)

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:

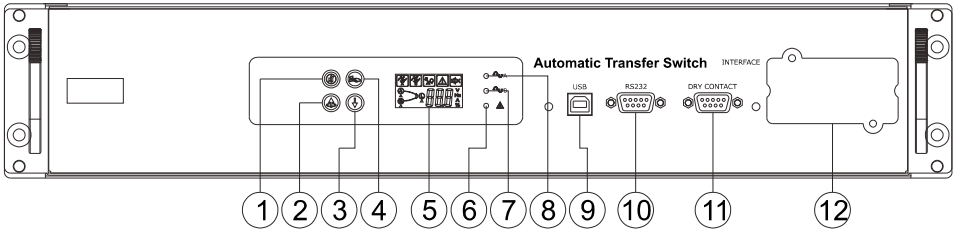
3.2.1. Avoid excessive high temperature or high humidity;

3.2.2. Keep away from dust, volatile gases, excessive salt content, or corrosive gases;

3.2.3. Do not use outdoors.

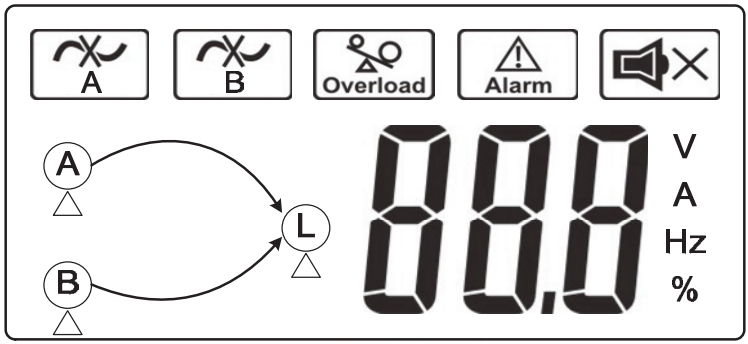
3.3. *Product Introduction*

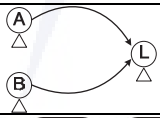
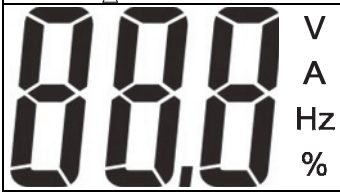
3.3.1. Front Panel



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	Error indicator	Lit: System malfunction or abnormal Dim: System normal
⑦	Input indicator B	Lit: Normal input voltage and frequency Dim: Abnormal input voltage and frequency Flashing: Indicates higher priority
⑧	Input indicator A	Lit: Normal input voltage and frequency Dim: Abnormal input voltage and frequency Flashing: Indicates higher priority
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

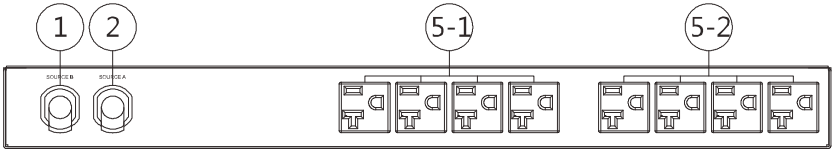


Symbol	Description/function
	Input A error or power failure
	Input B error or power failure
	Overload
	System malfunction or abnormal
	 Alarm on  Alarm off
	Digital display showing input/output power connected to load
	ATS numeric display

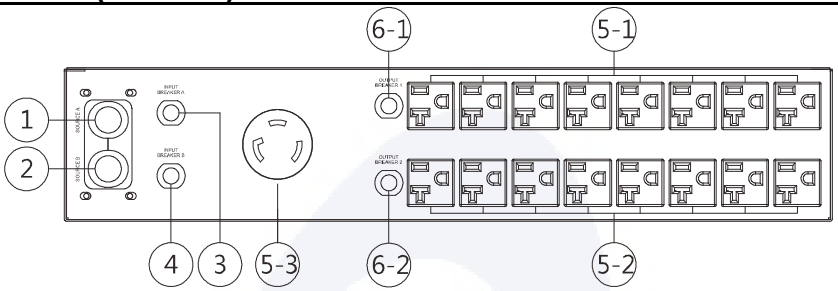
3.3.3. Rear Panel

■ATS Standard Series:

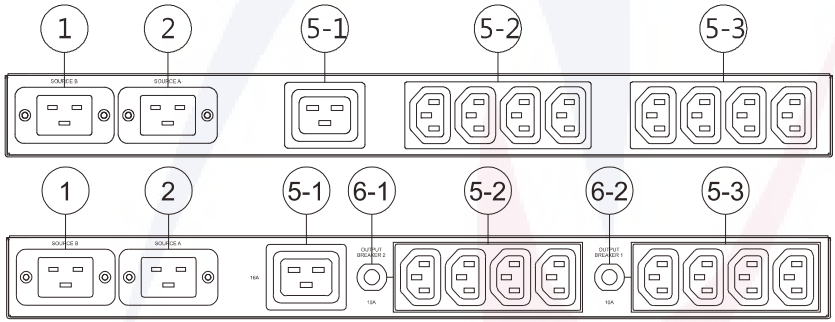
ATS-120(120V-20A)



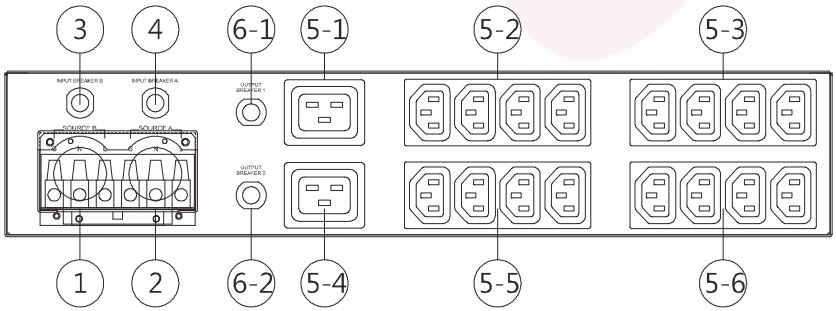
ATS- 130(120V-30A)

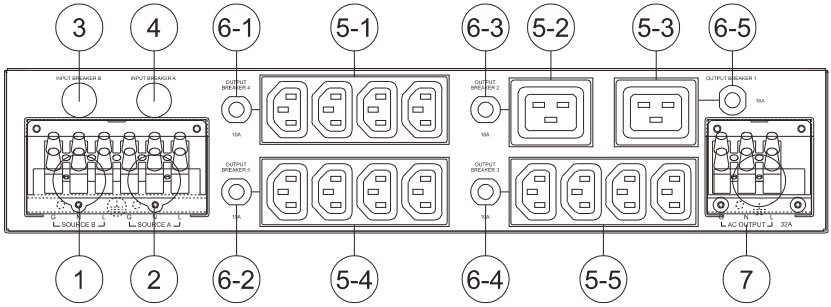


ATS-216(230V-16A)



ATS- 232(230V-32A)

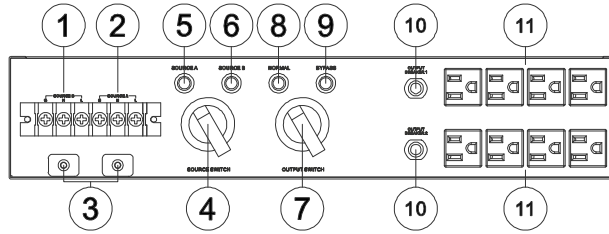




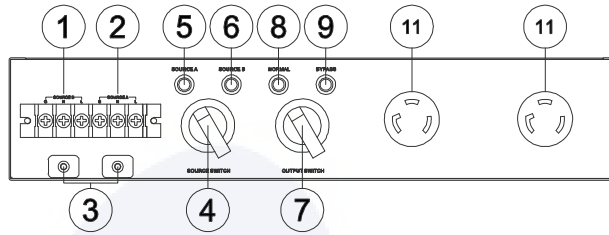
① Power input (B)
② Power input (A)
③,④ Input breaker (optional, sold separately)
⑦ Power output
⑤ Output socket
⑥ Output breaker

■ITS HOT SWAP Series:

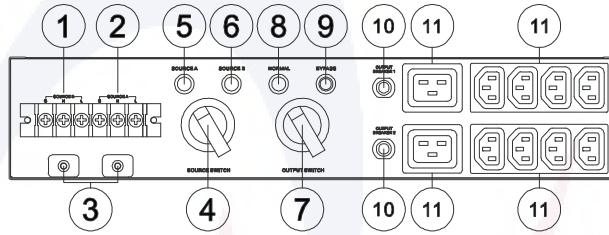
ITS-130



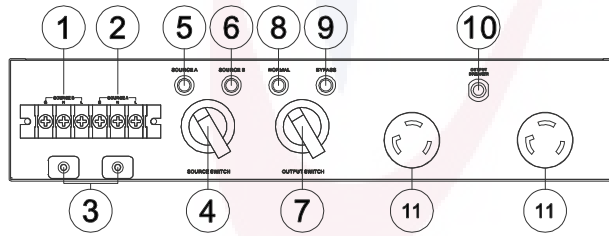
ITS-130F



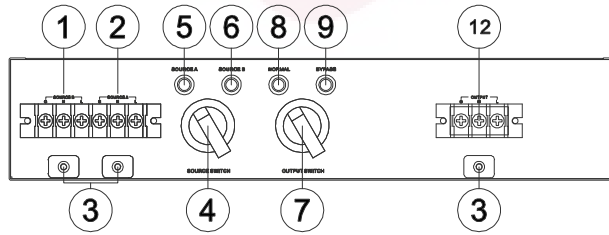
ITS-232



ITS-232F



ITS-232T 130T



7. Input Power (B)
8. Input Power (A)
9. Cable tie mount
10. Source switch
11. Source A indicator
12. Source B indicator

1. Output switch
2. Normal indicator
3. Bypass indicator
4. Output Breaker
5. Output socket
6. Output terminal

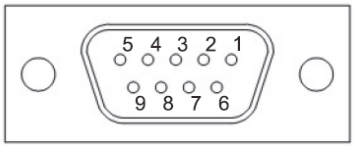
3.3.4. Interface

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

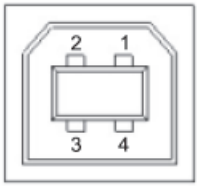
External communication slot: SNMP, RS-485

3.3.4.1. RS-232



Pin	Signal	Type
1	N/A	N/A
2	TX	Output
3	RX	Input
4	N/A	N/A
5	GND	Ground
6	N/A	N/A
7	N/A	N/A
8	N/A	N/A
9	N/A	N/A

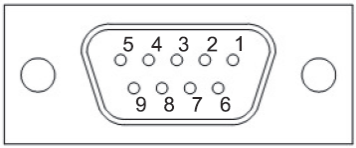
3.3.4.2. USB

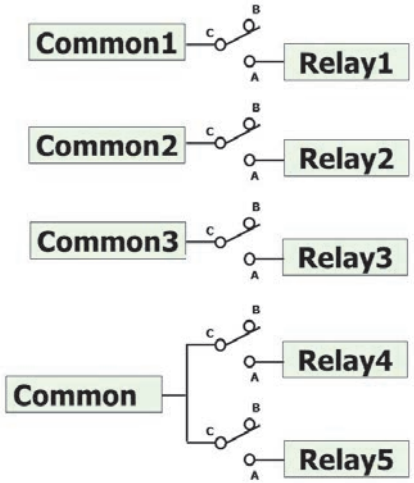


Pin	Signal
1	VBUS
2	D-
3	D+
4	GND

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	**Overload**
3	Relay 4	**Overload time out**
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.

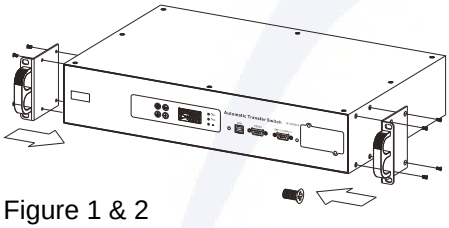


Figure 1 & 2

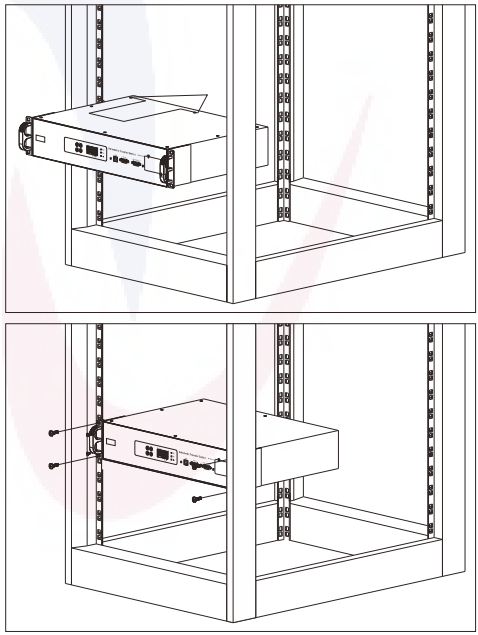


Figure 3

3.4.2. ATS HOT SWAP Series Installation Steps:

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) Affix the ATS onto the frame of the Maintenance Box (Figure 2) .
5. Insert the load plugs into the ATS sockets labeled "OUTPUT" and spreading them as evenly as possible. , Then enter the product's rated operating power connection。
6. Check that the total load does not exceed ATS specifications (e.g. voltage, current).
7. Supply power to the ATS (Figure 3),. The ATS automatically boots up after 1 second and supplies the capacity power to the connected load.
8. Finally, the ATS host body with screws to the rack (Figure 4), to complete the installation

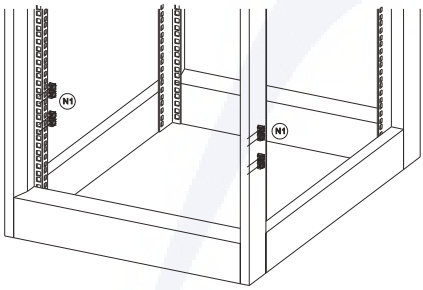


Figure 1

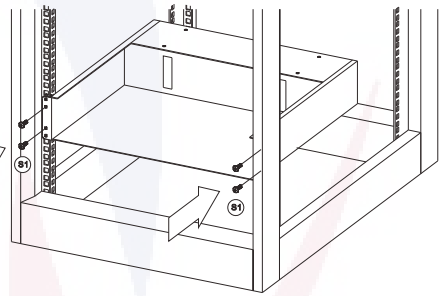


Figure 2

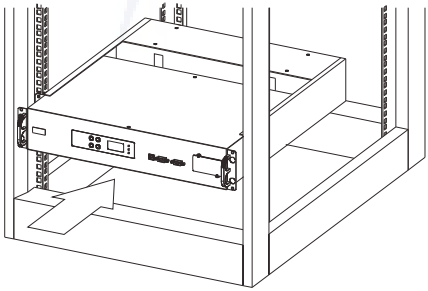


Figure 3

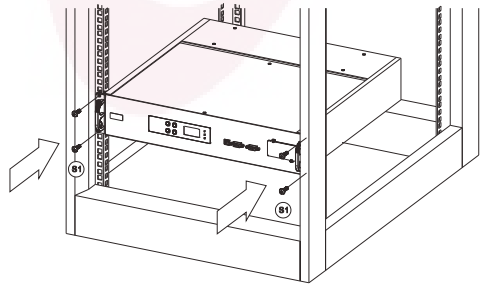


Figure 4

3.4.3. Boot up

Once input power is connected, the ATS automatically boots up. The LCD display during boot is as shown in Figure 5 and all LEDs (A , B , ⚠) are lit. LCD display is as shown in Figure 6 after boot up, only the LEDs for Power A (A) and Power B (B) are lit.

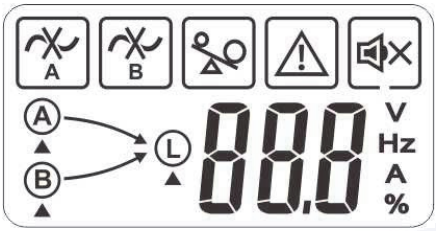


Figure 5

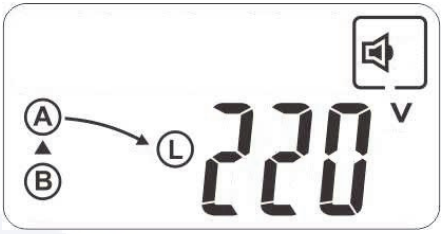


Figure 6

3.4.4. Switch input source

This products 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 7), 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 8) if the power supply is normal, otherwise the transfer is not made and a warning is shown (LCD display as shown in Figure 9).

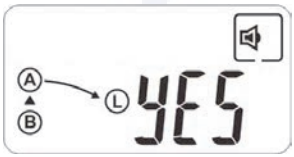


Figure 7

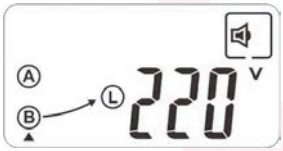


Figure 8

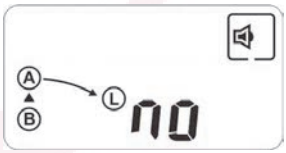


Figure 9

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 Er03 to Er06	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 Er16	Overload	Check the load capacity
Error code Er22 to Er33	Abnormal internal components	Please contact the distributor

*Only Er16, Er30, Er31, Er32, Er33 error codes are available displayed on LCD. All error codes are available for SNMP card event.

5. System Specifications

Model		ATS-120	ATS-130	ATS-216	ATS-232
Input					
Input voltage		100/110/115/120/127 (+/- 5% / 10% / 15% / 20%)		200/208/220/230/240 (+/- 5% / 10% / 15% / 20%)	
Input voltage range		75Vac~150Vac		150Vac~300Vac	
Input frequency		50 / 60Hz (+/- 5% / 10% / 15% / 20%)			
Input current		20A	30A	16A	32A
Output					
Output voltage		100/110/115/120/127		200/208/220/230/240	
Output current		20A	30A	16A	32A
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			
Connection					
Input		NEMA 5-20 x 2	NEMA L5-30 x 2	IEC C20 x 2	Terminal Block 6P
output		NEMA 5-20 x 8	NEMA L5-30R x 1 NEMA 5-20x 8	IEC C19 x 1 IEC C13 x 8	IEC C19 x 2 IEC C13 x 16
Physical					
Dimension, D X W X H (mm)		275x440x44	275x440x88	275x440x44	275x440x88
Net Weight (kgs)		4	6	4	6
Environment					
Operating temperature		-5~40◦C @ 0~90% 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			

Model		ITS - 130	ITS - 130F	ITS - 232	ITS - 232F
Input					
Input voltage (V)		100V / 110V / 115V / 120V / 127V (±5%、±10%、±15%、±20%)		200V / 208V / 220V / 230V / 240V (±5%、±10%、±15%、±20%)	
Input voltage range		75Vac~150Vac		150Vac~300Vac	
Input frequency (Hz)		50 Hz /60Hz (±5%、±10%、±15%、±20%)			
Input current (A)		30A	30A	32A	32A
Output					
Output voltage (V)		100V / 110V / 115V / 120V / 127V		200V / 208V / 220V / 230V / 240V	
Output current (A)		30A	30A	32A	32A
Protection		Input Breaker(option)			
		Electronic circuit			
Communication		RS-232, USB, Dry contact external slot for option card(SNMP, RS-485)			
Transfer time (ms)		8~12 ms (Typical) *			
Efficiency		99%(with full linear load)			
Display		LCD+LED			
Connection					
Input		Terminal Block 6P	Terminal Block 6P	Terminal Block 6P	Terminal Block 6P
Output		NEMA5-15 x 8	NEMA L5-30R x 2	IEC-C13 x 8 IEC-C19 x 2	NEMA L6-30 x 2
Physical					
Dimension, D X W X H (mm)		325x440x88			
NetWeight(kgs)		6			
Environment					
Operating temperature		-5~40◦C @ 0~90% 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
1	Source A voltage abnormal
2	Source B voltage abnormal
3	Source A frequency abnormal
4	Source B frequency abnormal
5	Output Over Load
6	Unit fault (Source A circuit power defected)
7	Unit fault (Source B circuit power defected)
8	Cabinet temperature abnormal
9	Unit fault (Sensor circuit defect)
10	Unit fault (EEPROM data abnormal)
11	LCD panel connection abnormal
12	Overload time out
13	Transferring fail by sync setting condition
14	Pre-alarm active
15	Communication connection abnormal

7. Appendix B. SNMP Card available Error Code

	Event	Code
1	Source A voltage abnormal	Er03
2	Source B voltage abnormal	Er04
3	Source A frequency abnormal	Er05
4	Source B frequency abnormal	Er06
5	Output Over Load	Er16
6	Unit fault (Source A circuit power defected)	Er22
7	Unit fault (Source B circuit power defected)	Er23
8	Cabinet temperature abnormal	Er24
9	Unit fault (Sensor circuit defect)	Er25
10	Unit fault (EEPROM data abnormal)	Er26
11	LCD panel connection abnormal	Er28
12	Overload time out	Er30
13	Transferring fail by sync setting condition	Er31
14	Pre-alarm active	Er32
15	Communication connection abnormal	Er33

8. Appendix C. LCD available Error Code

	Event	Code
1	Output Over Load	Er16
2	Overload time out	Er30
3	Transferring fail by sync setting condition	Er31
4	Pre-alarm active	Er32
5	Communication connection abnormal	Er33

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