



Automatic Transfer Switch

User Manual

DN-95639

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Safety and Grounding:

Read the following information before installing or operating your DIGITUS Automatic Transfer Switch:

- This ATS is intended for indoor use only.
- This ATS must not be operated one behind the other!
- Operation only in dry and closed rooms.
- This ATS may not be operated covered. Always ensure free accessibility.
- The maximum power stated on the rating plate must not be exceeded.
- Plug this ATS into a three-wire, grounded power outlet only. The power outlet must be connected to appropriate branch circuit/ mains protection (fuse or circuit breaker). Connection to any other type of power outlet may result in a shock hazard.
- Use only the supplied brackets of mounting.
- Check that the power cord, plug, and socket are in good condition.
- Voltage free only when the power plug is unplugged.
- Disconnect the PUD from the power outlet before you install or connect equipment to reduce the risk of electric shock when you cannot verify grounding. Reconnect the ATS to the power outlet only after you make all connections.
- Operation under unfavorable environmental conditions must be avoided. (Humidity over 80% relative, wet, ambient temperatures above 50 ° C, solvents, flammable gases, dust, vapors).
- If external damage to this ATS is detected, do not operate this ATS. Take this ATS immediately out of service if external damage is detected.
- Do not pour liquids over the power strip. There is a high risk of fire or life-threatening electric shock.
- When opening the power strip, live parts can be exposed. There is a risk of electric shock. The power strip may only be opened by a specialist.

1. ATS Overview

Automatic Transfer Switch is a highly reliable switch that provide redundant power to connected equipment. If the primary power source becomes unavailable, the ATS will seamlessly switch to the secondary power source automatically. The device can be monitored and managed through web interface or SNMP browser.

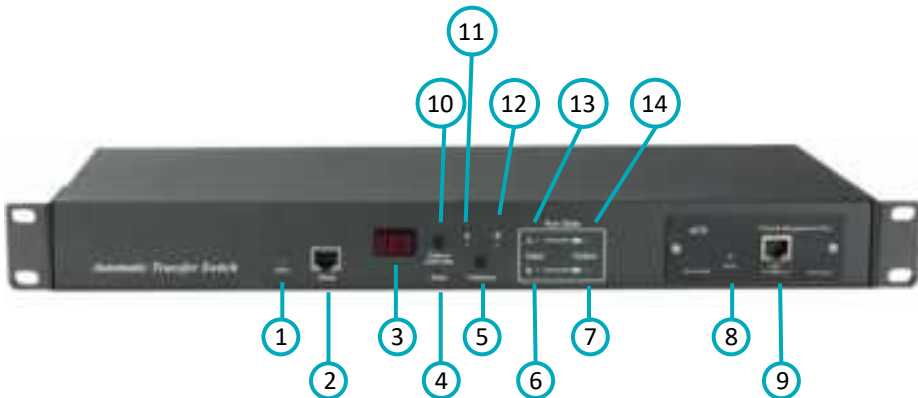
2. Function Description

1. Switching: Switch over between Source A and Source B automatically, transfer time $10 \leq 16\text{ms}$
2. Monitoring: the total load current; input and output voltage.
 - Source A and Source B power input; the status of the device
3. Remote controlling: switch over between Source A and Source B
 - Set the threshold for the total load current and input voltage.
4. Automatic alarming: automatically alarm when exceed the threshold
5. System default alarming: when total load current/voltage exceed the limit value
 - when only single source power up
 - when automatically switching occur
6. Alarming method: Buzz and flesh alarming
 - E-mail alarming (only intelligent type)
7. Log recording: record and save the log of the device running and alarming information
 - User can view and export the data history.
8. System support: Single user operation system, support software update
9. Account management: set the authorization of the account
10. Access method: Ethernet connection, web interface through IE browser
 - SNMP(V1), access and control through standard network management
 - Serial Connection (Modbus protocol by defaulted)
11. System setting: system time setting.
 - Lock devices through software
 - The threshold of the voltage setting
 - Re-transfer time setting.

3. Application

ATS series product are adaptable to the need of all kinds of server rack; network cabinet etc.

4. Product Schematic



- ① Alarm: the port of buzz and flesh, used to connect to external annunciator
- ② RS232: Serial communication port, connect the device to local PC
- ③ LED screen: display the current; voltage; IP address and hardware version
- ④ Reset: Rest button
- ⑤ Preference: to select the preferred power source
- ⑥ Input indicator of source B
- ⑦ Output indicator of source B
- ⑧ RUN: Operation indicator
- ⑨ NET: Ethernet Port
- ⑩ Press to select data: To view power date and information
- ⑪ Preference indicator of source A
- ⑫ Preference indicator of source B
- ⑬ Input indicator of source A
- ⑭ Output indicator of source A

5. Accessories list

1. One serial cable
2. One network cable (only intelligent ATS)

3. Four \varnothing 6 x 16 mm cross bolt
4. One user manual and CD
5. Optional accessories
 - 5.1. Circuit breaker (either circuit breaker or surge protection)
 - 5.2. Surge protection module (either surge protection or circuit breaker)

6. Mounting Method

Horizontal rack mounting

7. Hardware Introduction

1. Self-checking when power on

The buzz beep once when power on, the LED indicator always lights on, digital screen display load current after self-checking.

2. Operation status viewing

Through "press to select date" button, user can view the voltage; IP address (only intelligent type) and device version number.

3. Select the preferred power source.

Use Preferred button to select the primary power source, three options users can have: set the source A as the preferred power source; set the source B as the preferred power source; or user can leave this open. The corresponding indicator will always light on if a choice was made. If not, the two indicators will stay the off status. Please be noted that the intelligent ATS is with the Lock function, if user cannot do the setting above, please log on to the Web web interface to unlock.

4. Reset operation.

If want to manual-reset ATS, Press the Reset button to reset the rack PDU without affecting the outlet status.

5. Restore to factory settings

Press and hold the "press to select data" button for 6 seconds, the LED screen will display "IP" when release, then press the Reset to restore to the default IP 192.168.1.163 and default Username and password.

6. Serial connection

Use the supplied serial cable, insert the RJ45 connector to RS232 communication port and connect the other end to the serial port of local PC.

7. External connection annunciator

Use the supplied terminal to connect the annunciator, the terminal allows maximum voltage of 50VDC and load current of 5A.

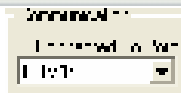
8. Ethernet connection (only intelligent type)

Use supplied network cable, connect one side to the NET port of device and the other end to network.

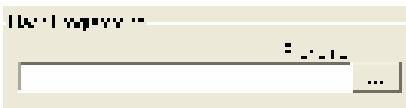
9. The software of hardware update method



- 9.1 Save the software update file **ATS.hex** provided by supplier to the local PC.
- 9.2 Open the the software update file, double-click the setup.exe file to install.
- 9.3 Running the software as below when installation finished.
- 9.4 Insert the RJ45 connector of the update signal cable into the RS232 port of the ATS front panel, connect the other end to the port COM1 of local PC.



- 9.5 Select the serial port are using from , other items please refer to the above pictures.



- 9.6 Click the  from  and submit the



file **ATS.hex** to the frame.

- 9.7 Power on the ATS.

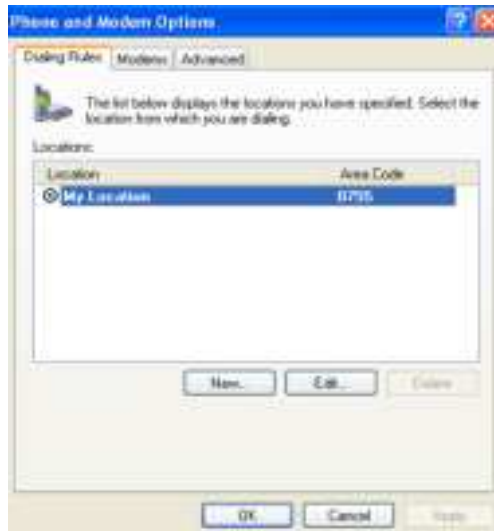
- 9.8 Click **Read Device ID**, **Read Part ID Successfully** will be displayed on the interface if read success, if not, please double-check the cable connection and communication port.
- 9.9 Click **Erase**, **Erased LPC2000 Flash Successfully** will be displayed on the interface if erase success, if not, please double-check the cable connection and communication port.
- 9.10 Click **Upload to Flash**, **Executing Uploaded Code** will be displayed on the interface if loading success, if not, please double check the cable and communication port.
- 9.11 Power off the ATS.
- 9.12 Power on on the ATS, digital screen will display the new hardware version number, it can perform normal communication after software update success.

8. Hyper Terminal user guide

- Use the supplied serial cable, connect one end to the RS232 port and the other end to serial port of local PC.
Running the Hyper terminal program (like Windows Hyper terminal), Here we take the Windows Hyper Terminal for instance. Click Start → Programs → Accessories → Communication → Hyper terminal
- Dialog box as below will pop up if it is the first time that the PC run the Hyper Terminal



3. Enter one or several numbers at random when it require your area code, for instance 0755 and click OK.



4. Click OK, it pop-up the link description window as below:



5. Enter a Name like ATS and click OK.



6. Select the COM port will be using and click OK.
7. Set the baud rate of AT as 19200 and enter configuration information for data bits, parity and flow control as provided below, then click OK.



8. If it is not the first time that the PC run the Hyper Terminal, it will goes directly to the window as the 4th item of this chapter, then follow up the instruction from the 4th to 7th and enter the Hyper Terminal monitoring interface as below:



9. Setup ASCII code

9.1. Click the file in the main menu and select attributes or click on the icon



directly.

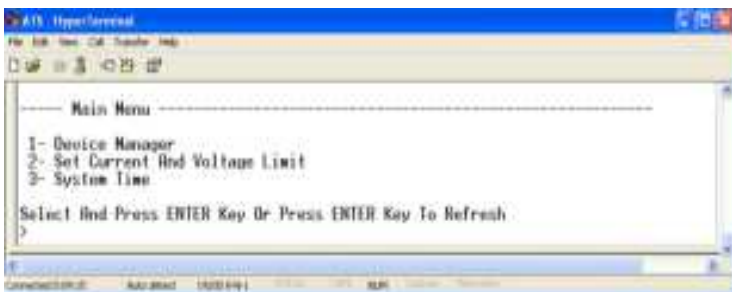
9.2. Click on ASCII Setup.



9.3. Tick off the boxes as window above, then click the OK button and return to the monitoring interface.



10. Press Enter, following message will be displayed in the interface if setting success.



Main Menu

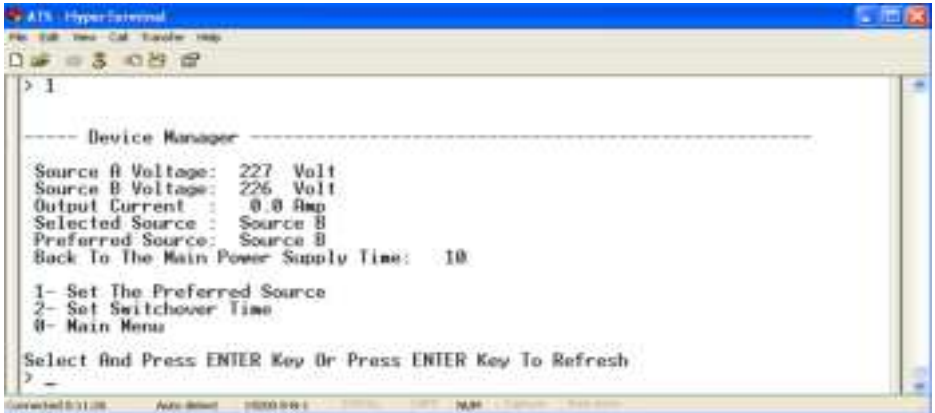
1-Device Manager

2-Set Current And Voltage Limit

3-System Time

11. View the ATS status

Enter 1 and press Enter, the ATS status will be displayed in the interface as below:



Device Manager: Device manager

Source A Voltage: The voltage of the source A

Source B Voltage: The voltage of the source B

Output Current : The output current

Selected Source : The current input power is source B

Preferred Source: The preferred input power is source A

Back To The Main Power Supply Time: Re-transfer time is 10 seconds

1- Set The Preferred Source: Enter 1 then press Enter to set the primary power source

2- Set Switchover Time: Enter 2 then press Enter to set the Re-transfer time

0- Main Menu: Enter 0 then press Enter to return to main menu

12. Set the preferred power input, follow up the path step by sep: Main Menu=>1

Device Manager=>1 Set The Preferred Source, it will end up with the following window:



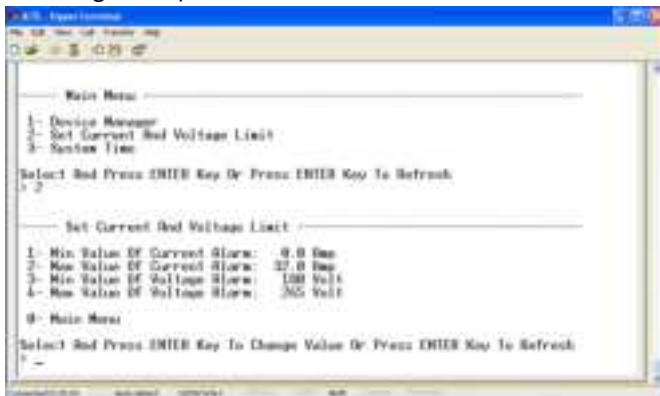
12.1. Enter the corresponding code, for instance: Enter 1 then press Enter to select input A as the preferred power input. The interface will return to Device Manager interface. See the below window: Preferred Source: Source A means that input A was select as the primary power source



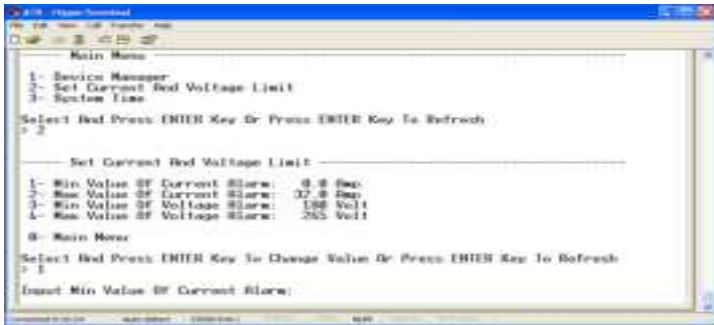
13. Set the Re-transfer time, the path are: Main Menu=>1 (Device Manager) =>2 (Set Switchover Time) enter the value preferred then press Enter. The Re-transfer time ranges from 10 to 60 seconds. The ATS will transfer to the preferred input power after defined time when user give the order to transfer or the preferred input line recover from power failure.



14. Define the threshold voltage and current The Path are Main Menu=>2 (- Set Current And Voltage Limit)



Enter corresponding number to Re-define the item that user want to change, select 1 to set the minimum value of current to alarm; select 2 to set the maximum value of current to alarm; select 3 to set the minimum value of voltage to alarm; select 4 to set the maximum value of voltage to alarm. For instance, if user want to change the value of the minimum current to alarm, enter 1 then press Enter to enter the interface as below:

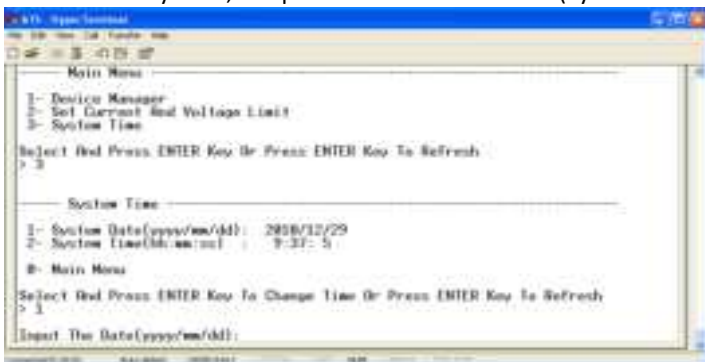


Enter the value wanted, then press Enter. Return to Set Current And Voltage Limit interface, user can view the Re-define value just now.

15. Setup the system time of ATS; the path are: Main Menu=>3 (System Time)



- 15.1. Select 1 to modify date; the path are: Main Menu=>3 (System Time) => 1



Enter the correct date format in the window. For instance 2010/07/22



The above window shows that the setting is a success.

15.2. Timing re-define the path are Main Menu=>3 (System Time) =>2



Enter the correct time form in the window; for instance 11:15:23



The above window show that the setting is a success.

9. Software user guide

1. Software Introduction

ATS monitoring and management software using the embedded Web Server system, supports HTTP and SNMP. It helps to monitor the total load current; input/output of the voltage timely so that the user can manual or automatic switch the input power between source A and source B to ensure uninterrupted power supply of the crucial devices. When abnormality detected, the software will send E-mail/TRAP message to administrator. In addition, the system support system operation and alarm records inquiring and exporting. It supports multiple account and single user logging.

2. Software configuration

2.1. Device default settings

Device default IP: 192.168.1.163

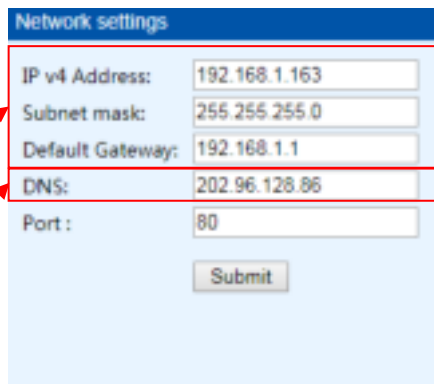
Default username: admin

Default password: admin

Note: Both the default username and password are in lowercase, user cannot log on to the interface with uppercase.

2.2. Device configuration when first log in

- Connect the device to PC directly.
- Rework the network configuration of PC, make sure the changed PC IP address and the IP of the ATS is in the same segment, the default of the IP address is 192.168.1.163; Default subnet Mask is 255.255.255.0; Default gateway is 192.168.1.1. For instance, change the network configuration of the PC to IP: 192.168.1.145; log on to the management interface.
- Click the "Network Config" on the left menu to rework the IP of the ATS, see the below interface, change the IP address of the ATS and make sure it is in the same segment where the PC IP is.
- Restore the PC network configuration, Sign into the management interface with the changed IP address of ATS.



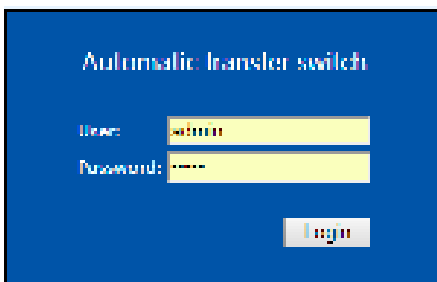
2. Access method

Connect the device to LAN or WAN, user can access and manage the device through Web and SNMP, please see detail information as below.

2.1 Web

Device support HTTP protocol, we recommend user to access through IE 6.0, IE 7.0, IE 8.0, IE 9.0, Firefox and Google chrome, the Web access method are as below:

- Open the browser.
- Enter the IP address of the ATS in the address bar, support HTTP protocol (user can enable or disable the HTTP function according to situation, for more information please refer to Network Config menu)
- Enter the valid username and password in the login window.



- The below interface will show up if log success.



2.1.1 Device Status

Device Status interface display the status of the power input as well as the current & voltage status of the Device.

1. The Status section shows the current operating status of ATS: Green means OK; Red means abnormality; Grey means power failure.
2. The Input section shows the voltage of source A and Source B, when voltage abnormality detected, the value of the voltage displayed in the interface will turn to red.
3. The Output section shows the value of the output current and voltage, when current abnormality detected, the value of the current will turn to red.
4. The Status Description shows the connection status of the source A and source B, OK mean normal and displayed in green, "abnormal" means abnormality detected, when the the device disconnected, "abnormal" will be displayed in red.

2.1.2 Device Config

Device Config shows the preferred power source; re-transfer time; hardware lock and source name.

The screenshot shows the ATS Device Configuration interface. On the left is a 'Device Manager' sidebar with options like 'Device Status', 'Input Voltage', 'Output Voltage', 'Current', 'Status', 'System', 'User Admin', 'Device Config', 'Load Status', 'Lock', and 'Status'. The main area is titled 'Device Configuration' and contains four sections: 'Preference Setting' (Main Input: Source A, Switch Time: 10), 'Name Configuration' (Source Name: Load, Source B Name: Load), 'System Status' (System Status: ON), and 'Hardware Lock' (Switch Lock: UNLOCK).

1. Preference Setting: To Select preferred power source from the drop-down list of main Input.
2. Preference settings: To define the re-transfer time between 10 to 60 seconds.
3. Name Configuration: To name the power source, only allow 5 byte of letters and numbers.

4. Buzzer alarm: Set to "off", the equipment alarm mute; set to "on", the device alarm buzzer.
5. Panel Lock: To lock or unlock the hardware.

2.1.3 Threshold Setting

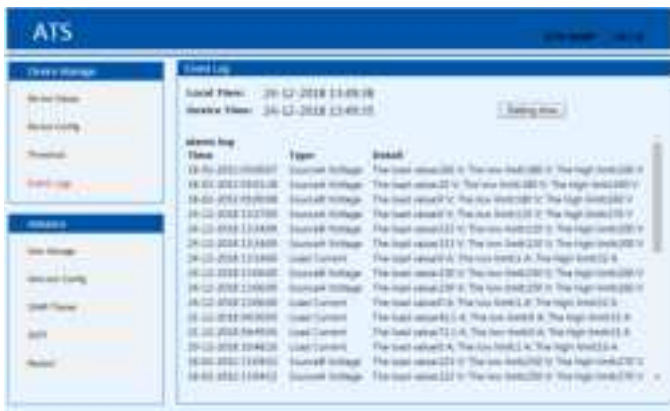
Threshold interface display user-defined minimum and maximum of current and voltage.



1. The default acceptable current range is between 0A to 32A, If the current is not within this range, device will alarm.
2. The default acceptable voltage range is between 180V to 260V, If the current is not within this range, device will alarm.

2.1.4 Event logs

User can adjust the system time and record, view and export event logs. There are alarm events and operation events, the details are as below:



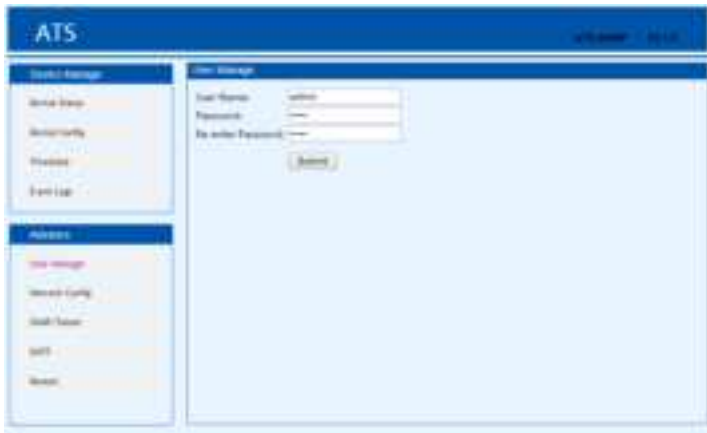
1. Click on Setting time to adjust the system time to PC time.
2. The alarm logs can be viewed from the alarm log down list.
3. The operate log from the drop down list can view the event logs like preferred source setting, re-transfer time settings and threshold settings.
4. Click Export can export the current logs to a excel format.
5. Click Clear all records to delete all alarm or operate logs.

Note: the maximum records of each page is 30, when alarm logs is up to 180 and operate logs up to 60, the alarm logs or operate logs will be delete automatically if new logs generated.

If a prompt message like Insufficient Permissions pop-up, please add the site to the trust list and adjust the trusted site to lowest security level. Follow the following steps to adjust the browser security level: Click Tools → Internet Options → Security → Custom Level → To enable the Script ActiveX controls marked safe for scripting. → OK → OK

2.1.5 User Manage

User manage interface display the account information, the user name and password can changed in this interface.



1. User number supports only letters, numbers, hyphen, underscore with limited 7 characters.
2. Password can be any character with limited 7 characters.

2.1.6 Network Config

To configure the network like IP address, subnet mask, default gateway, DNS, HTTP port.



a. Network Configuration

1. IP Address: default address is 192.168.1.163
2. Subnet Mask: default address is 255.255.255.0
3. Gateway: Default gateway is 192.168.1.1
4. DNS: Default one is 0.0.0.0

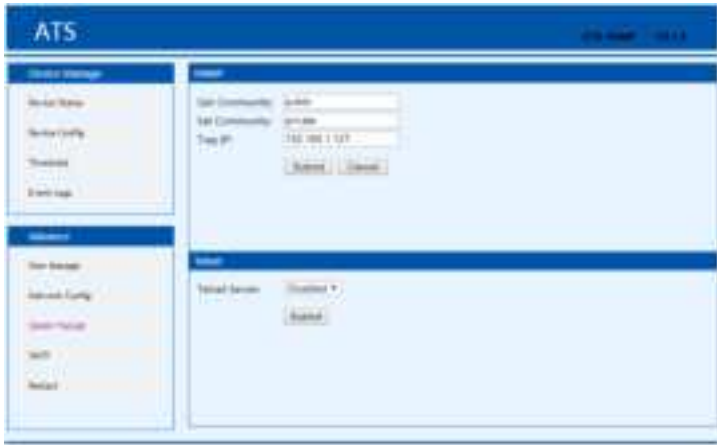
Note: Network configuration will take effect after restart. The changed IP address can be the same as other devices and must be in the same segment as PC

b. HTTP

1. HTTP function : default status is enabled.
2. Configurating and saving the HTTP port according to network environment, the port range from 1-65535 and default one is 80.

2.1.7 SNMP Settings

To configure the SNMP and Telnet access method as below:



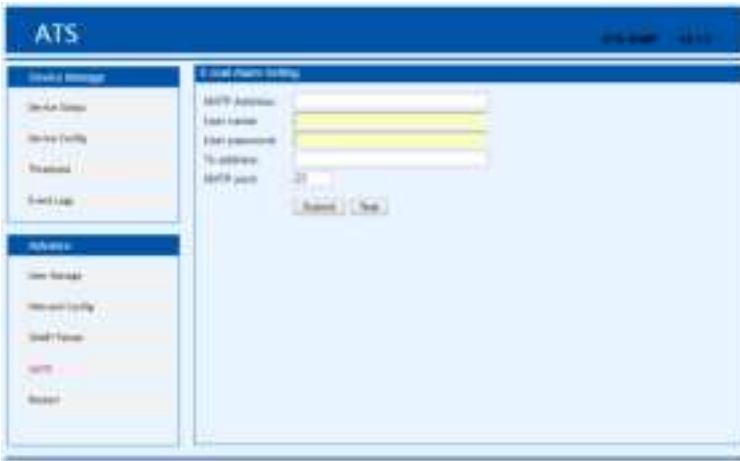
1. SNMP is enabled by default
2. Set “get” “set” character string to get and set community. getting the community is to offer read-only channel mark of visiting the MIB object, setting the community is to offer the read-write channel mark of visiting MIB object, TRAPPING the community is the style mark of all TRAP information generated and sent . The default status of these three item were: public, private, private. The length of the community string can reach 30 character at most.
3. Set the Trap destination, enter the address of the SNMP platform in the trap destination box, the trap information will be sent to corresponding address.
4. SNMP Contact to define the contact information of the SNMP system
5. SNMP Location defines the server location of SNMP

Note: SNMP configuration will take effect after restart. The Text box to enter letters, numbers, not allowed to enter Chinese, space, special symbols.

Telnet Settings: select “Enable” or “Disable” and save, make sure to restart the software after modification.

2.1.8 Email alarm

User can use the Simple Mail Transfer Protocol(SMTP) to send e-mail administrator when an event occurs.



1. E-mail is enabled by default
2. SMTP address is the outgoing email server address, support up to 25 character. E.g Sina SMTP address is smtp.sina.com;
3. SMTP port is the outgoing email port(regular port is 25), range from 0 to 65535, enter the corresponding port according to mail level.
4. User name: Enter the sender's e-mail address , make sure this e-mail address is accordant with the SMTP address
5. Password: require the password of the sender's e-mail address
6. Recipients address: enter the recipients e-mail address which limited 25 character.

Note: Click Test after configuration to make sure the settings is correct. The Text box to enter letters, numbers, not allowed to enter Chinese, space, special symbols.

Telnet Settings: select "Enable" or "Disable" and save, make sure to restart the software after modification.

2.1.9 Restart

User can restart the system or restore to factory settings in the Restart interface.

Restart is to refresh the system software like changing the IP address, SMTP, HTTP port, restart the system will not affect the power supply.

Reset system setting is to restore the system to default IP, system configuration, user name and password.



Note: Make sure there is no power failure, no internet disconnection, and no operation on the web interface during restart, If the device is directly connected to PC, the local connection will disconnected and connected automatically.

2.2 SNMP

SNMP (Simple Network Management Protocol), the device software support V1 version of SNMP, A MIB file which contain an enterprise number will be attached to the software, network management system offer network management of device through SNMP and the user can change the output port name, view the device and sensor status, receive alarm information through SNMP approach. The user has to enable the SNMP function through IE browser, please refer to the 13th item of IE access method SNMP introduction. Install corresponding SNMP management software after completing the SNMP start setting, set up the configuration according to the software menu provided by SNMP software company, leading-in MIB file on the SNMP management platform, user can monitor and manage the device status information and alarm Trap information after translating and editing success, the details information of device status are as detailed in figure 2-1:

- SNMP software display the device information, power input information, status of the current /voltage and threshold information through mib description table format as below:

Name	OID	Description
sourceaname	1.3.6.1.4.1.30966.10.1.1.1	The name of power source A
sourcebname	1.3.6.1.4.1.30966.10.1.1.2	The name of power source B
prefered supply	1.3.6.1.4.1.30966.10.1.1.3	The preferred power source
switchtime	1.3.6.1.4.1.30966.10.1.1.4	The current power supply
sourceavol	1.3.6.1.4.1.30966.10.1.1.5	Re-transfer time
sourcebvol	1.3.6.1.4.1.30966.10.1.1.6	the voltage of power source A
outputVol	1.3.6.1.4.1.30966.10.1.1.7	the voltage of power source B
sourceacur	1.3.6.1.4.1.30966.10.1.1.8	The current voltage
sourcebcur	1.3.6.1.4.1.30966.10.1.1.9	The current load of power source A
outputcur	1.3.6.1.4.1.30966.10.1.1.10	The current load of power source B
voltlowlimit	1.3.6.1.4.1.30966.10.1.1.11	The current output load
volthighlimit	1.3.6.1.4.1.30966.10.1.1.12	The minimum value of voltage
curentlowlimit	1.3.6.1.4.1.30966.10.1.1.13	The maximum value of voltage
curenthighlimit	1.3.6.1.4.1.30966.10.1.1.14	The minimum value of load
sourcea	1.3.6.1.4.1.30966.10.1.1.15	The maximum value of load
sourceb	1.3.6.1.4.1.30966.10.1.1.16	A power status
buzzer	1.3.6.1.4.1.30966.10.1.1.17	B power status
	1.3.6.1.4.1.30966.10.1.1.18	Buzzer switch and status

Note: Considering the the decimal value of load is not allowed when the load current of both power source, current output load, the maximum/minimum value is bing monitored by SNMP, the value of curentlowlimit, curenthighlimit, sourceacur, sourcebcur, outputcur is 10 times larger than the actual value.

- TRAP information will be sent to the Trap Destination according to the SNMP settings in the IE browser, TRAP information includes the alarming time, device name, alarm types and status, TRAP information as below:
Minor 06/19/2013 14:30:29 ATS
sourceavol.0.0 [1] snmpTrapEnterprise.0 (ObjectID): sourceavol

2.3 Telnet access

The application of Telnet enable the user to remotely manager the PDU easily. The user can monitor and manage the device by entry the command line from the Telnet program. Telnet require the the customer terminal from the PC and there are free software like PUTTY available. The main command line are as following: STATUS, REBOOT, RESET, HELP

A. STATUS

“STATUS” command line can be used to view the device states like amps/volts or the low limit and high limit:

Command form: STATUS

For example: status: To view the input line, input voltage, and low limit, high limit; current value and low limit, high limit.

B. REBOOT

Entry REBOOT command line to restart the device.

C. RESET

Entry RESET command line to restore to factory settings.

10. Quality guarantee

The product is guaranteed for two years from the date of purchase. If product has already exceeded the warranty period or the problem are caused because of improper operation, a corresponding fee will be charged. The below cases are not covered by the warranty:

1. Problem caused because of improper maintenance
2. Problem caused because of unauthorized change, modify or improper use
3. The device are not used in the stipulate physical environment

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