Air Live®
Powered by OvisLink Corp.

AirMedia-350

Network Multimedia Player

User's Manual

www.airlive.com

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Table of Contents

1 Introduction

Thank you for purchasing the AirLive AirMedia-350 Network MultiAirMedia-350. AirMedia-350 is the next generation home networked appliance for playing the videos, photos, and music through internal hard disk or external sources such as USB HDD, USB Flash drive and Memory cards (via USB Card Reader). It also supports network playback of the digital contents from the PC or NAS on your home network. This player can be seamlessly integrated with TV and stereo system for playing your digital collections in the living room or anywhere at home.

AirMedia-350 featured with HDMI 1.3 and S/PDIF output, internal SATA HDD interface, 10/100Mbps network port and excellent network sharing. It also supports various file formats such as the high-quality H.264, MKV, M2TS, FLV and the popular RM/RMVB. AirMedia-350 is small and lightweight, yet powerful to deliver smooth playback of Full HD video and brings the excitement to your home theater.

Built-in Bit-Torrent download engine, this engine allows you to download the legally shared contents on the Internet without leaving your PC power-ON all the time.

Product Features:

- Movie/Music/Photo, wide variety of media formats support
- High resolution with Full HD 1080P playback via HDMI
- Dolby Digital and DTS ready with S/PDIF audio output
- 1-bay SATA hard disk drive, 2.5-inch and 3.5-inch compatible
- Embedded BitTorrent client and network sharing compatibility
- Friendly operation interface with easy-to-use on-screen display

1.1. System Requirements

- TV/Monitor with Composite (AV), Component (YPbPr) or HDMI input
- Windows XP/Vista and Windows 7 required for utility installation

1.2. Package Contents

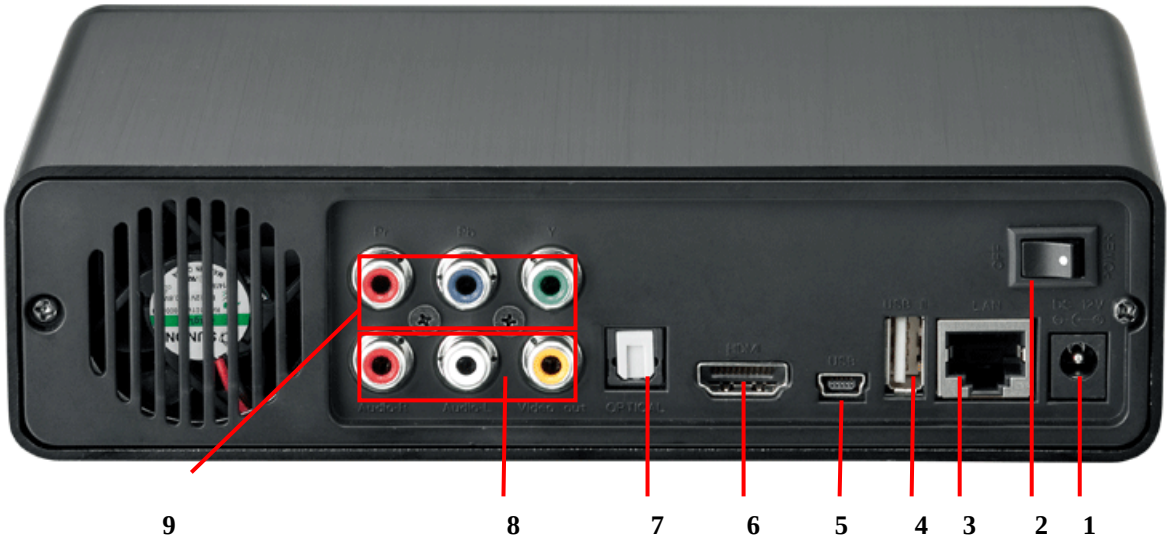
Before installing the adapter, please check if there's anything missing in the package, and contact your dealer of purchase to claim for missing items:

- AirMedia-350
- Remote Control, AAA battery x2
- Power Adapter (12V 3A)
- Screw pack and mounting kit for 2.5" HDD
- Composite (AV) Cable, USB Cable
- HDMI Cable (Optional)
- Software CD, Quick Setup Guide

2 Hardware Installation

- Connect AirMedia-350 to the TV via HDMI/Component (YPbPr) or Composite (AV) cable
- Turn on the power, the TV screen will show the welcome screen of AirMedia-350, please refer to the Chapter 3 for detail information
- Advanced features such as File Sharing and BitTorrent download management; you need to install a 2.5-inch or 3.5-inch SATA Hard Disk into AirMedia-350. Please refer to the next section for hard disk drive installation.
- For users who only want to playback via external devices, then there is no need to install a hard disk drive into AirMedia-350

1	Power On/Off	5	HDD LED
2	USB Host #1	6	USB LED
3	Power LED	7	IR Receiver
4	LAN LED		



1	Power Jack	6	HDMI Output
2	Power Switch	7	S/PDIF Output
3	Ethernet Port	8	Composite Video (AV)
4	USB Host #2	9	Component (YPbPr)
5	USB Client		

LED Indicator

LED	Mode	Status
PWR/STBY	Steady On (Red)	Standby
	Steady On (Green)	Power ON
LAN/ACC	Steady ON (Green)	Ethernet port connected
	Flash (Red)	Transferring data
HDD	Steady ON (Green)	Detect internal hard disk drive
	Flash (Green)	
USB	Steady ON (Green)	Detect USB device

2.1 Hard Disk Drive Installation

The advanced features such as File Sharing or BitTorrent download management; you need to install a 2.5-inch or 3.5-inch SATA Hard Disk into AirMedia-350 drive bay. Otherwise, these features will not be able to work.

Please refer to the following for disk drive installation.

Note: Installing a hard disk drive into AirMedia-350 is not necessary if you only want to do playback via USB external hard drive.

3.5-inch SATA Hard Disk

Step 1: Loose the two screws in the rear panel, and then slide out the tray

Step 2: Carefully and slowly slide out the tray

Step 3: Insert a 3.5-inch SATA HDD to the AirMedia-350 drive bay

Step 4: Lock the two screws as indicates in the below picture

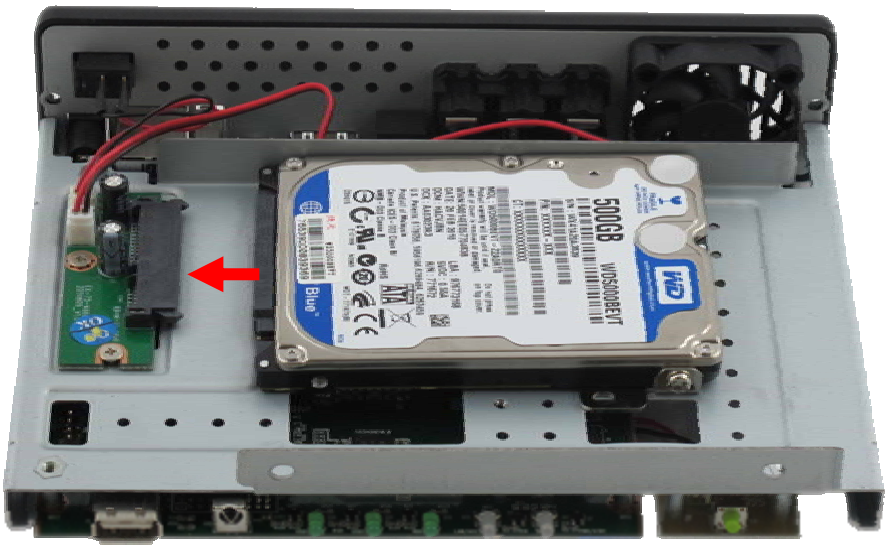
Step 5: Slide the tray back into the aluminum case and lock both screws in rear panel.

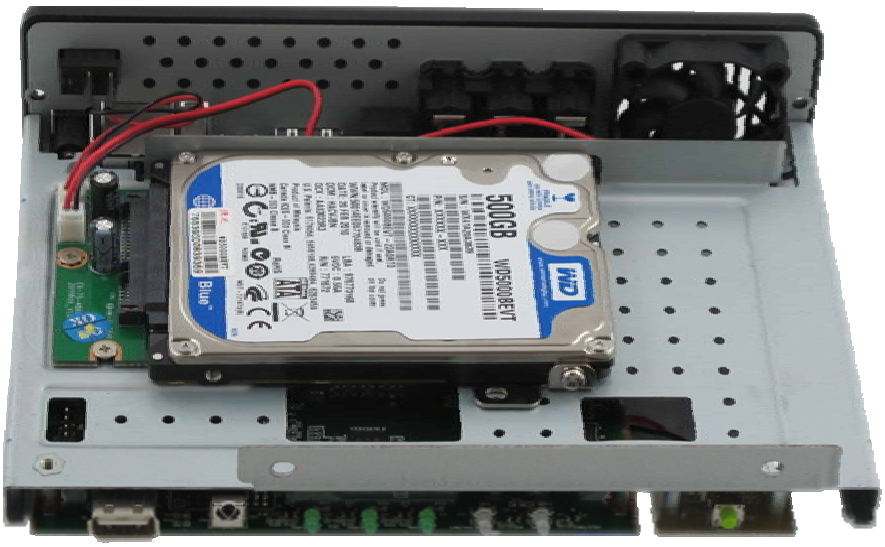
2.5-inch SATA Hard Disk

Step 1: Loose the two screws in the rear panel, and then slide out the tray

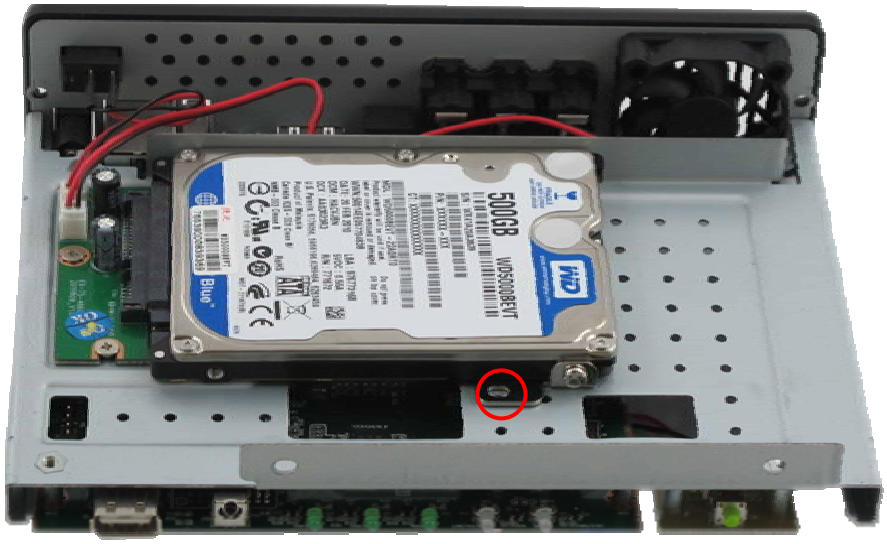
Step 2: Lock a screw to connect the mounting kit and hard disk

Step 3: Install 2.5” SATA HDD to the SATA connector





Step 4: Lock a screw to fix the hard disk mounting kit with AirMedia-350

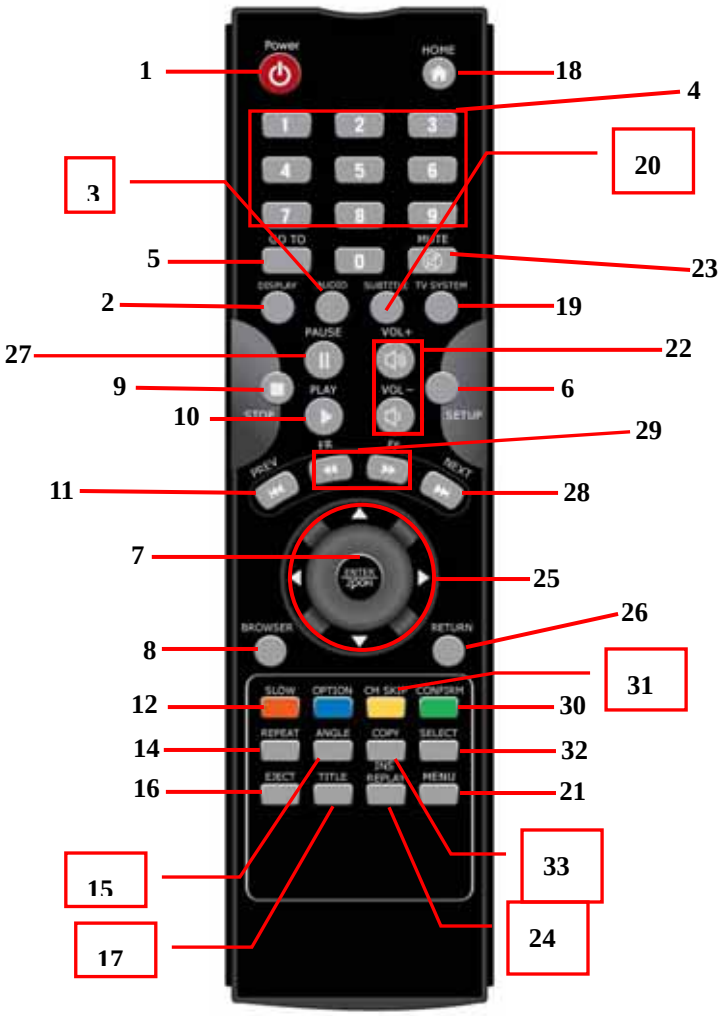


Step 5: Slide the tray back into the aluminum case and lock both screws in rear panel

3 Operation

Connect AirMedia-350 to the TV via HDMI/Component (YPbPr) or Composite (AV) cable and then turn on the power, the TV screen will show the welcome screen of AirMedia-350

3.1 Remote Control

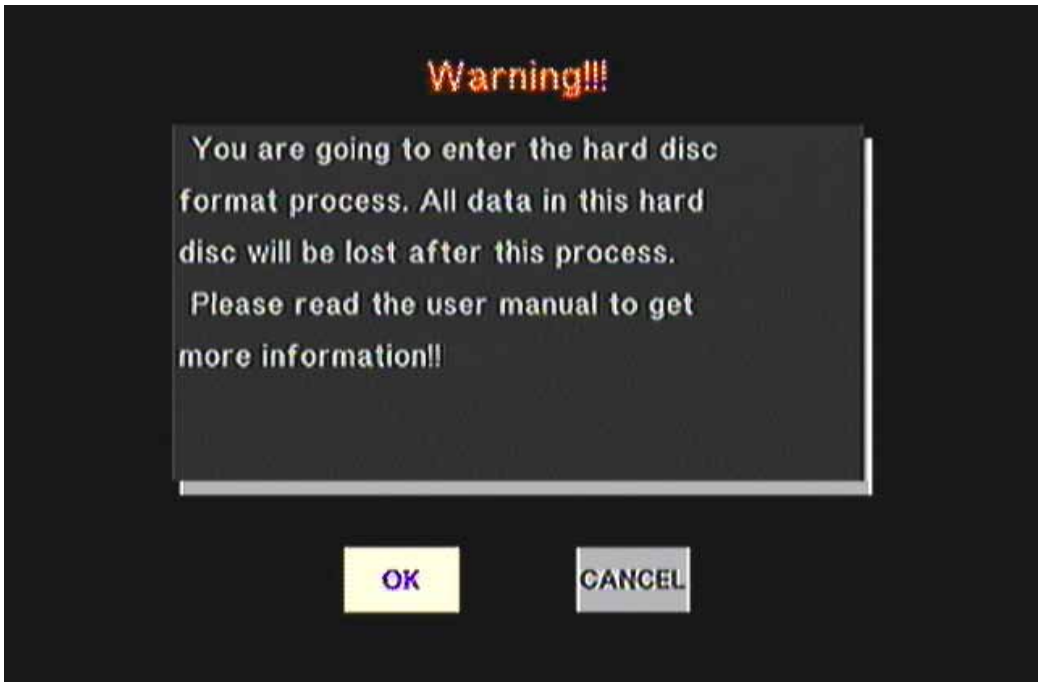


1. POWER
2. Display
3. Audio
4 Number Buttons
5. GOTO
6. Setup
7. Enter/ZOOM
8. Browser
9. STOP
10. PLAY
11. PREV
12. SLOW
13. Option
14. REPEAT
15. ANGLE
16. EJECT
17. TITLE
18. HOME
19. TV SYSTEM
20. SUBTITLE
21.MENU
22. VOL + / -
23. MUTE
24.REPLAY
25. Navigation
26. RETURN
27. PAUSE
28. NEXT
29. FR/FF
30. CONFIRM
31. CM SKIP
32. SELECT
33. COPY

3.2 Initialize AirMedia-350

When using the AirMedia-350 for the first time, you will be required to format the SATA hard disk inside.

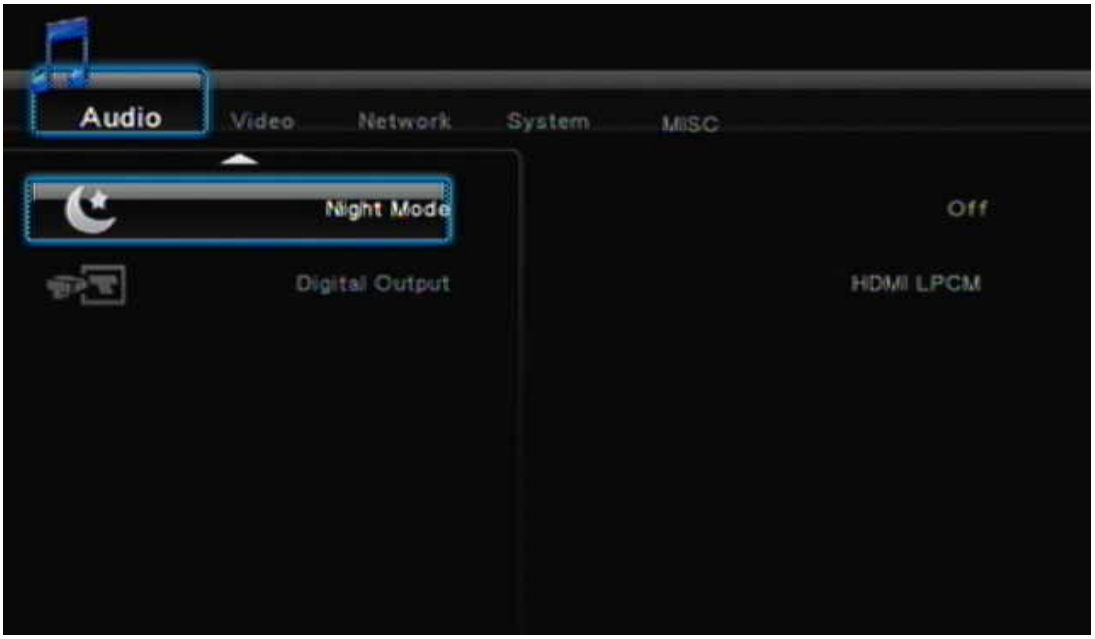
Note: Installing SATA hard disk is not necessary if you only want to playback via USB external hard disk. But some of the advanced features will be disabled.



3.3 Configuration - Setup

Through main screen menu, you will be able to enter the Setup page. There are **Audio**, **Video**, **Network**, **System** and **MISC** categories under the Setup page. Press ENTER Key (#7) to access each settings.

3.3.1 Setup – Audio/Night Mode



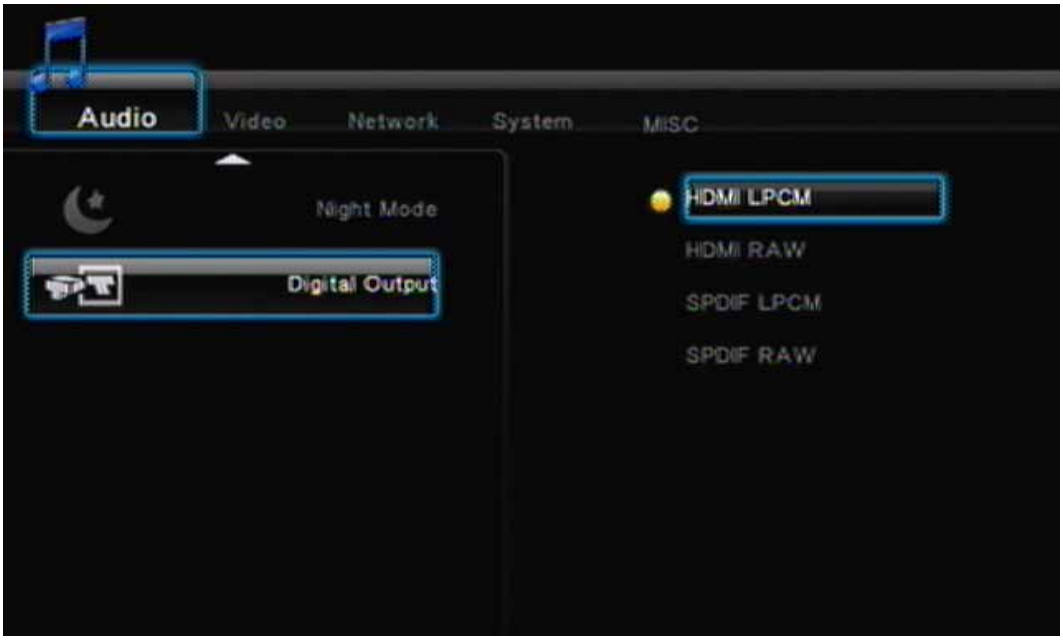
Night Mode On

After you set the system time and enable the “Night Mode,” AirMedia-350 will auto adjust the value at night, avoiding the value interference to the others.

Night Mode Comfort

The system will auto adjust the value to the comfortable level.

3.3.2 Setup – Audio/Digital Output



There are 4 types of digital outputs, HDMI LPCM, HDMI RAW, SPDIF LPCM and SPDIF RAW.

HDMI LPCM (2CH): When player audio output connects to TV via HDMI, the player will decode audio as STEREO.

HDMI LPCM Multi CH: When player audio output connects to TV via HDMI, the player will decode audio up to 5.1 channels.

HDMI RAW: When player audio output connects to amplifier via HDMI, the player will send the RAW data to amplifier. Amplifier will decode RAW data into multiple audio channels such as 5.1 or 7.1

SPDIF LPCM (2CH): When player audio output connects to amplifier via S/PDIF, the player will decode audio as STEREO through amplifier.

SPDIF RAW: When player audio output connects to amplifier via SPDIF, the player will send the RAW data to amplifier. Amplifier will decode RAW data into multiple audio channels such as 5.1 or 7.1

Note:

- If you using HDMI TV without amplifier or external audio speakers, please choose HDMI LPCM (Stereo)
- If you are using HDMI TV with amplifier or external audio speakers connected by HDMI, please choose HDMI RAW or HDMI LPCM (Stereo)
- If you are using HDMI TV with S/PDIF amplifier or external audio speakers, please choose SPDIF RAW or SPDIF LPCM (Stereo)

3.3.3 Setup – Video/Aspect Ratio

Choose one of the aspect ratio that matches your TV system.

Pan Scan 4:3: Keep the height of wide screen, and cut off the right/left screen to fit the 4:3 TV systems.

Letter Box 4:3: Keep wide screen and black border will be covered on the top and bottom of screen to fit the 4:3 TV systems.

16:9: Choose 16:9 to fit 16:9 HDMI LCD/LED TV systems.

3.3.4 Setup – Video/Digital Noise Reduction

The default setting is “Auto,” it is recommended not to disable this function. This function helps reduce the digital noise when you connect with HDMI cable.

3.3.5 Setup – Video/Video System

TV System: Choose the correct resolution for your TV system. It is recommended to connect AirMedia-350 to your TV via HDMI cable. By doing so, the TV system and AirMedia-350 will detect the best resolution automatically.

Analog TV System	**Standard Resolution(SD)**	**High Definition Resolution(HD)**
NTSC	NTSC, 480p	720p@60Hz, 1080i@60Hz, 1080p@60Hz
PAL	PAL, 576p	720p@50Hz, 1080i@50Hz, 1080p@50Hz

Note:

- Only HDMI supports High Definition resolution display
- Connect AirMedia-350 to TV via HDMI cable, the TV system will notify player what resolution it supports, the non-support resolutions, will become un-selectable.
- In case if you choose a wrong resolution and your TV screen goes blind, you can save it by connect composite (AV) cable to set it right.

3.3.6 Setup –Video/1080P 24HZ

Some of the HD (High Definition) videos require 1080P 24HZ, therefore, it is recommended not to disable this function. The default value is **“On.”**

3.3.7 Setup – Network/Wired LAN Setup

Connect the RJ-45 Ethernet cable to the Network port of AirMedia-350 and configure your network settings.

- **Cancel:** Click “Cancel” to abort the IP setting
- **DHCP IP (Auto):** Select DHCP IP (Auto) will retrieve IP address automatically from your gateway.
- **Fix IP (Manual):** Select this option to input the IP address manually.
- **PPPoE:** AirMedia-350 can connect to the modem directly and perform the dial-up. This function allows AirMedia-350 to connect to the Internet without the need of router.

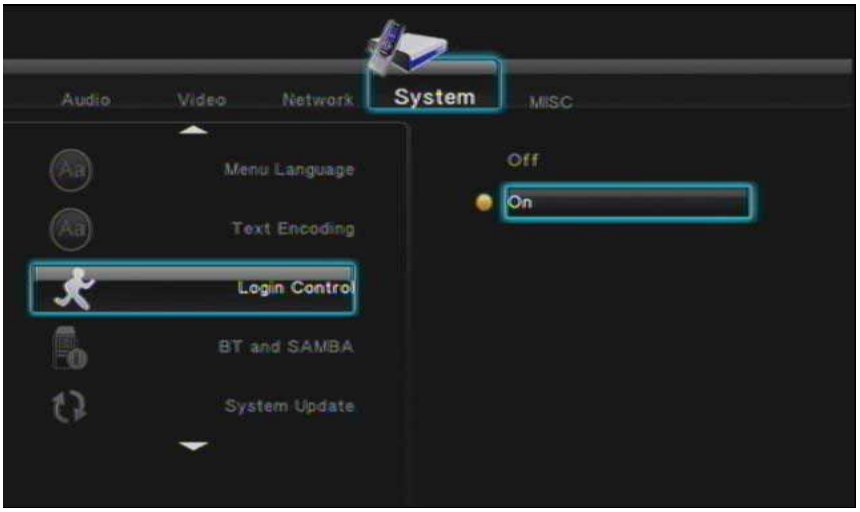
3.3.8 Setup – Network/Wireless Setup

Wi-Fi connection requires a Wireless USB adapter*.

When plug-in the Wireless USB adapter, AirMedia-350 will detect the adapter automatically. Select to set the wireless network setting, for detail information, please refer to USB adapter's user manual.

*AirMedia-350 only recognizes certain Wireless USB adapter, it is recommended to pair with AirLive WN-250USB 11b/g/n Mini USB Dongle. Please refer to www.airlive.com for detail.

3.3.9 Setup –System



- **Menu Language:** Select your preferable language for operation, the default language is English. Other available languages are Spanish, French, Germany, Italian, Dutch, Russian, Czech, Japanese, Traditional Chinese and Simplified Chinese.

- **Text Encoding:** This setting is related to the subtitle display, file name and folder name. Unicode UTF-8 can support most of the languages. However if your language is not supported by Unicode, please select the suitable one from the list. Incorrect setting may cause the unrecognizable characters.

- **Login Control:** This option is related to the web management access control. Select ON to enable the BT web management access control. The default user name and password is admin/password.

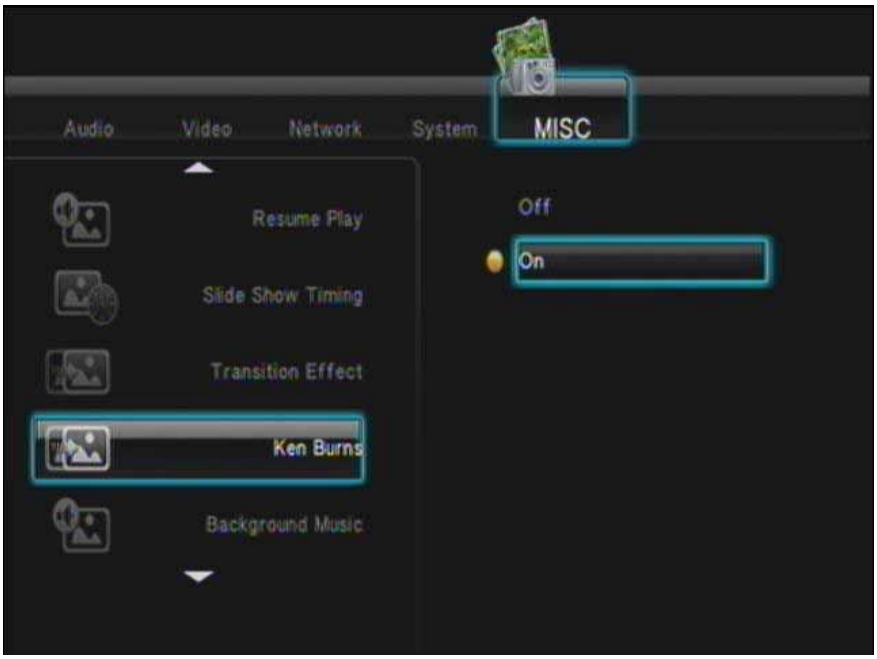
- **BT and SAMBA:** Enable or disable the File Sharing and BitTorrent client service.

- **System Update:** Select this setting to do the firmware upgrade. Please follow the steps list below.

    1. Prepare a USB flash drive or USB external hard disk and connect it to PC, then copy the firmware file to the root folder
    2. Plug in USB flash drive or USB external hard disk into the USB 1 or USB 2 host port of AirMedia-350
    3. Select System Upgrade, press OK to proceed
    4. Please wait for about 5 minutes, during the upgrade procedure, please DO NOT power off the device.
    5. When the process is complete, AirMedia-350 will reboot automatically

- **Time:** Set the time by Time Zone or input the time manually
- **HDD Format:** Select HDD format t format the internal SATA hard disk
- **Restore to Default:** All settings will back to default value

3.3.10 Setup – MISC



- **Resume Play:** This function allows you to resume video playback from the last stop point. Select ON or OFF to enable/disable this function.
- **Slide Show Timing:** Set the time of interval for photo viewing. There are options for OFF, 2 Sec, 5 Sec, 10 Sec, 30 Sec/, 1 Min and 2 Min.
- **Transition Effect:** Select effects when viewing the slide show.
- **Ken Burns:** This effect is enabled by the default setting
- **Seamless Playback:** Select On/Off to make the movie file (.ts) play smoothly.
- **Background Music:** Play background music during slide show
- **Screen Saver:** Screen saver will activate if there is no any action for more than 5 minutes. The screen saver is ON by default.
- **Movie Preview:** Select On/Off for movie preview, the default setting is ON

3.4 Browser

AirMedia-350 is capable for playing Music, Photo and Movie by plug-in USB Flash Drive, USB External Hard Disk or stream directly from the Net (LAN only). When enter into the Browser icon you will be able to browse all media files where you stored in 3.5” Hard Disk, USB Flash Drive, USB External Hard Disk or PC/NAS.

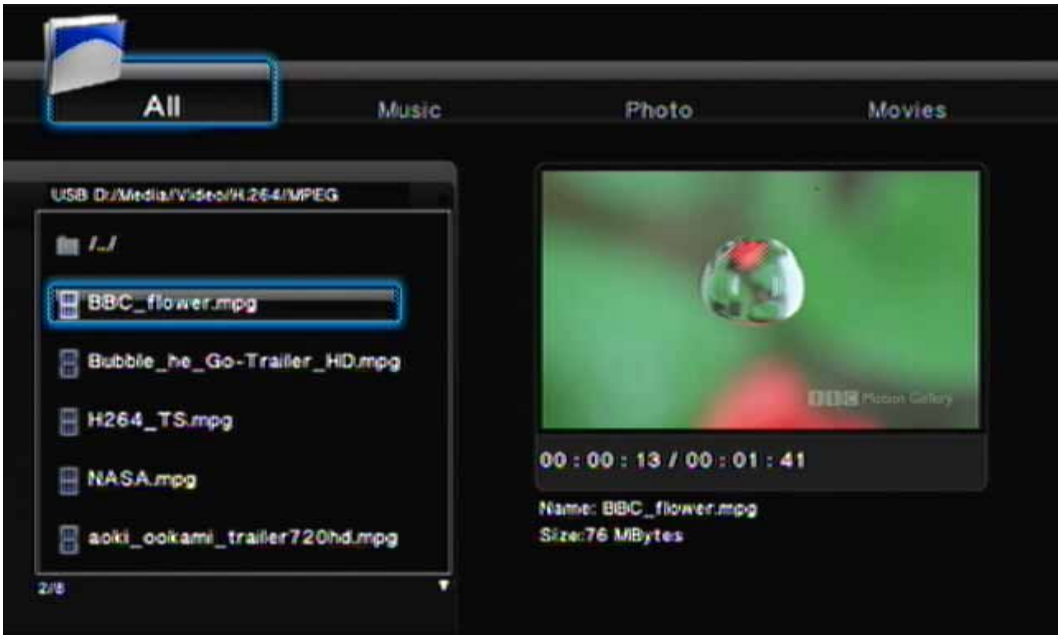
- When plug-in USB device into AirMedia-350, the USB icon indicator will be lighted. User can browse the media files from the USB devices. Once you remove the USB device from AirMedia-350, the USB icon indicator will be off.

- By pressing Navigation Right/Left (Key 25) buttons on remote control to select whether you would like to browse Music only, Photo Only, Movie only or Browse All. You may press RETURN (Key 26) anytime when you want to return to the last page.

- By pressing Navigation Up/Down (Key 25) buttons on remote control to select whether you would like to browse USB, HDD, NET, UPNP or Playlist. You may press RETURN (Key 26) at anytime when you want to return to previous page.

3.4.1 Browser - Movies

Select “Movie” or “All” tab to browse movie files. In the browser, use Up/Down (Key 25) to select file or folder, press Enter (Key 7) to play the file or open the folder. You may press RETURN (Key 26) back to the previous page. In the browser, move your selection to one of the movie files, you will see the preview on the right side of screen if the preview function did not be turned off.



- Press **PLAY (Key 10)** on remote control to play the movie
- Press **STOP (Key 9)** on remote control to stop the movie
- Press **PAUSE (Key 27)** on remote control to pause
- Press **FF/FR (Key 29)** on remote control to Fast Forward or Backward
- Press **NEXT (Key 28) / PREV (key 11)** on remote control to go next or previous chapter if applicable

- Press **SUBTITLE (Key 20)** on the remote control to enable or switch subtitles. AirMedia-350 supports srt, sub, smi, idx+sub, ssa, ass. Please make sure the subtitle file name matches the movie file name. Multiple subtitles are allowed to co-exist at the same time; AirMedia-350 will ask you to choose when you begin to play.

    1. **Text Encoding:** This setting is related to the subtitle, file name and folder name in your language. Please select one of the following options: Unicode (UTF8), Simplified Chinese, Traditional Chinese, Western, Turkish, Central European, Greek, Cyrillic, Hebrew, SE Europe. Incorrect setting may result the unrecognizable characters.
    2. **Time Sync:** Adjust the time of subtitle
    3. **Color:** Adjust the color of subtitle
    4. **Size:** Adjust the size of subtitle
    5. **Off set:** Adjust the position of subtitle

Adjust the navigation key in playing mode:

Horizontal: Adjust the size of subtitle

Vertical: Adjust the position of subtitle

- Press **AUDIO (Key 3)** on remote control to switch different audio outputs.
- Press **VOL +/- (Key 22)** on remote control to increase or decrease the volume.
- Press **MUTE (Key 23)** on remote control to mute the audio output; press again to resume.
- Press **SELECT (Key 32)** on remote control to add the movie into PLAYLIST. Press **CONFIRM (Key 30)** to confirm.

3.4.2 Browser - Music

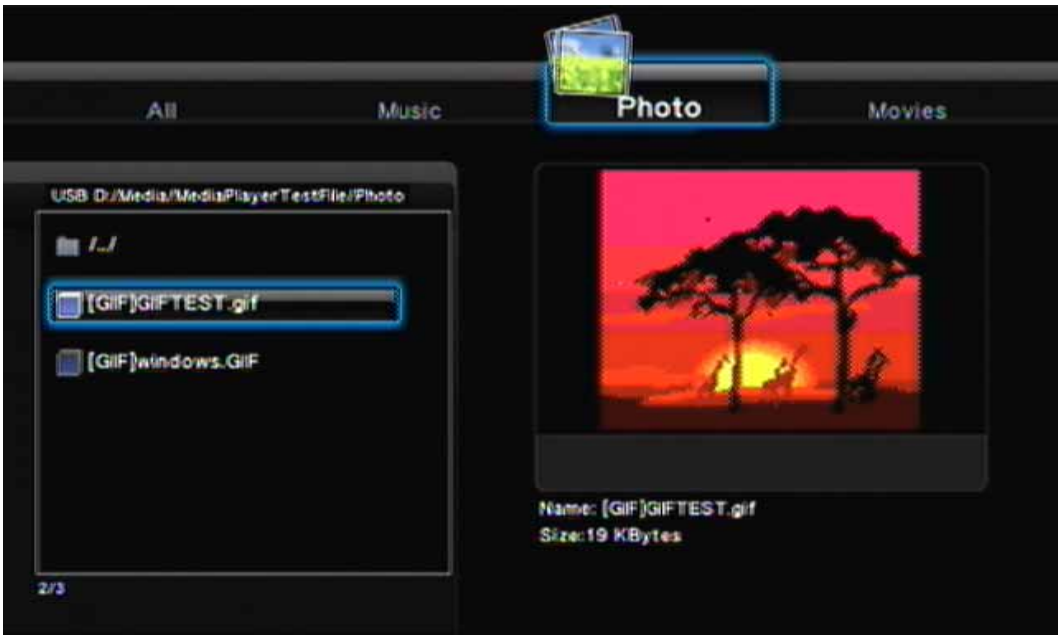
Select Music or All tabs to browse music files. In the browser, use **Up/Down (Key 25)** to select a file or a folder, and then press **Enter (Key 7)** to play the file or open the folder. You may press **RETURN (Key 26)** back to previous page. In the browser, moving the scroll bar to music file, you will see the music information on the right side window.

- Press **PLAY (Key 10)** on remote control to play the music.
- Press **STOP (Key 9)** on remote control to stop the music.
- Press **PAUSE (Key 27)** on remote control to pause.
- Press **FF/FR (Key 29)** on remote control to Fast Forward or Backward.
- Press **REPEAT (Key 14)** on remote control to repeat the same music; press again to repeat all music.

- Press **VOL +/- (Key 22)** on remote control to increase or decrease the volume.
- Press **MUTE (Key 23)** on remote control to mute the audio output; press again to resume.
- Press SELECT (Key 32) on remote control to add the music into PLAYLIST. Press CONFIRM (Key 30) to confirm.

3.4.3 Browser - Photo

Select Photo or All tabs to browse photo files. In the browser, use Up/Down (Key 25) to select a file or a folder, and then press Enter (Key 7) to play the file or open the folder. You may press RETURN (Key 26) back to previous page. In the browser, moving the scroll bar to photo file, you will see the photo on the right side preview window.



- Press **PLAY (Key 10)** on remote control to play the photo.
- Press **STOP (Key 9)** on remote control to stop the photo.
- Press **PAUSE (Key 27)** on remote control to pause.
- Press **VOL +/- (Key 22)** on remote control to increase or decrease the volume.
- Press **SELECT (Key 32)** on remote control to add photo into PLAYLIST. Press **CONFIRM (Key 30)** to confirm.

3.4.4 Create a Playlist

Playlist creates a shortcut to allow quick access to the media files. You can play all selected files together regardless of different folders they are located in.

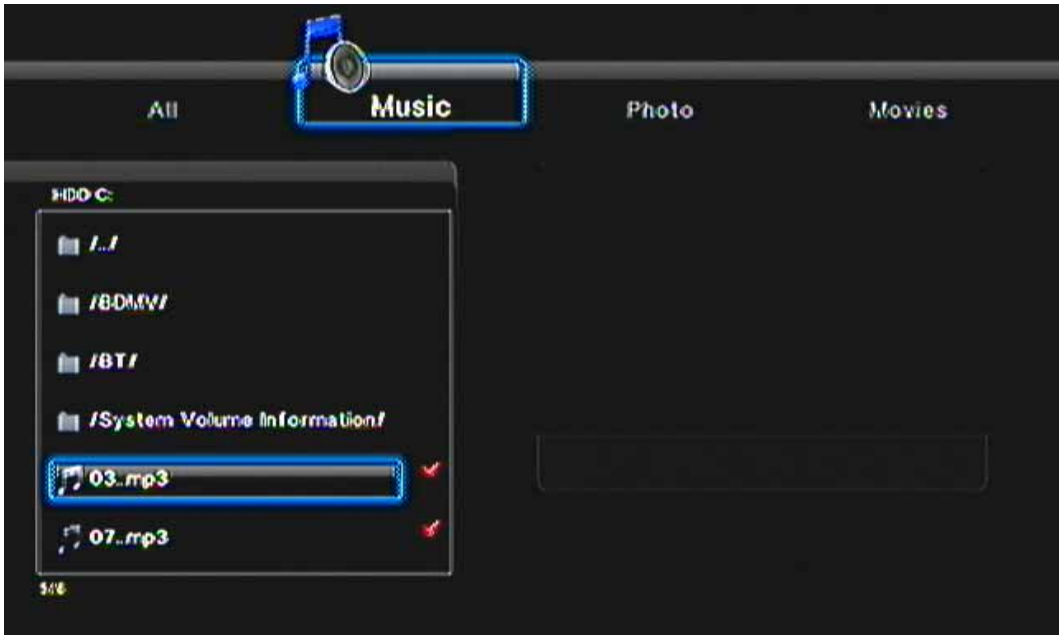
- Go to Browser and go to the media files that you'd like to put in the PLAYLIST
- Press **SELECT (Key 32)** to choose file(s)
- Press **CONFIRM (Key 30)** to add the file(s) into the PLAYLIST**.** You will see the file(s) that you selected in PLAYLIST

Note:

- PLAYLIST function is only available if you installed a SATA HDD into AirMedia-350; the function is not available for any USB device such as USB external HDD
- Folder is not selectable, files only

3.4.5 Slide Show

You may run the slide show to see the photos on TV while listening to the selected music.



- Go to **Setup → MISC → Slide Show** Timing and set the timing for slide show.
- And then, go to Background Music and set the source of music files from Folder or PLAYLIST
- Go back to Browser and press Right/Left to choose the Music tab
- Add music files into PLAYLIST. Press **SELECT (Key 32)** to select and press **Confirm (Key 30)** to confirm
- Press Right/Left to choose the Photo tab and choose photos that you'd like to play slide show with
- Press **PLAY (Key 10)** or **ENTER (Key 7)** to play the slide show

Note:

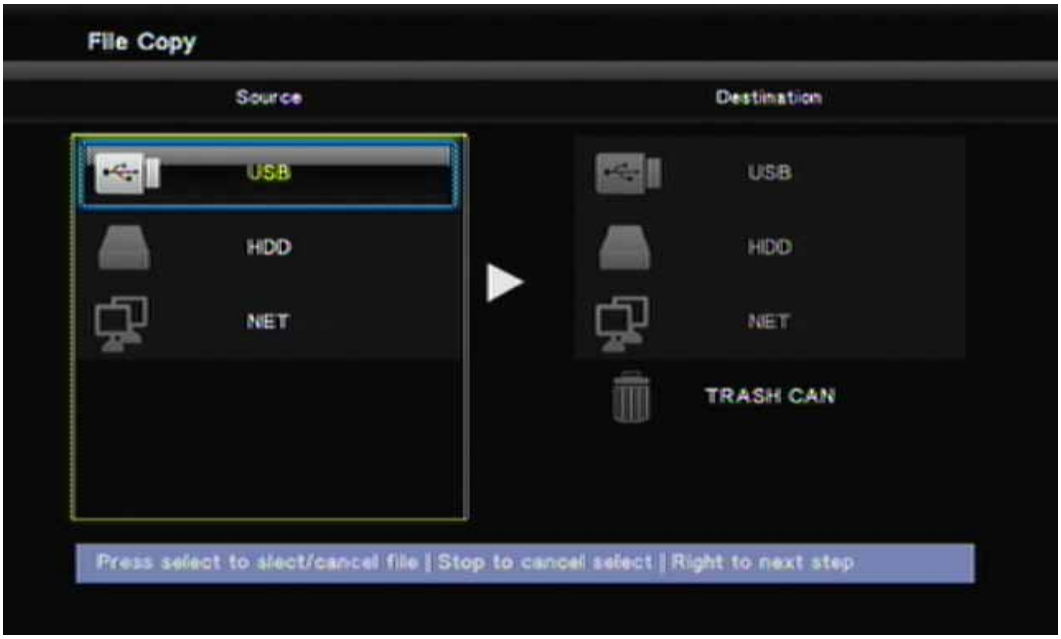
- If you set the Background Music source from a Folder, then you must put all the photo files and music files into the same folder, so that you may have slide show along with background music.

3.5 File Copy

This function allows you to copy/move file(s) between USB, HDD and NET. You may also move file(s) to the trash and the file will be deleted.

Note:

- Press **COPY (Key 33)** at anytime to go to File Copy menu.
- This short cut will not work when you are in the Setup page.

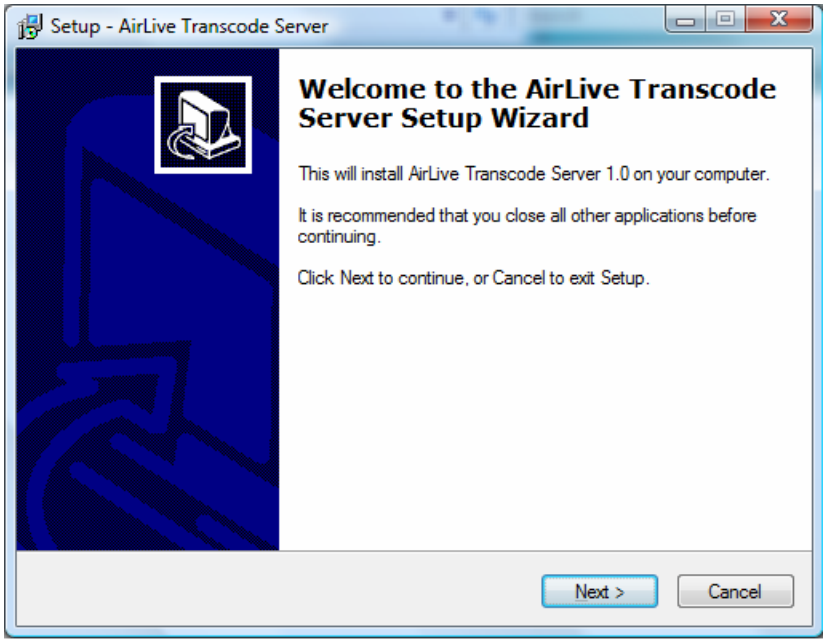


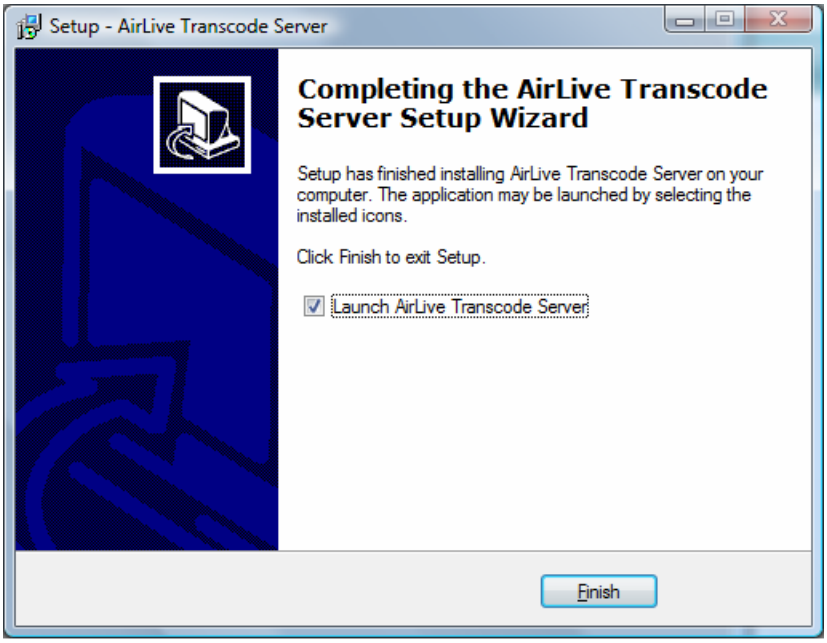
- Use **Up/Down (Key 25)** to move the scroll bar and choose the source/ destination. Press **ENTER (Key 7)** to proceed.
- Press **ENTER (Key 7)** to go into folders for both Source and Destination.
- Press **SELECT (Key 32)** to select the source file that you want to copy. Press again to cancel the selection.
- Press **RIGHT (Key 25)** to COPY file to the chosen destination. Then choose OK to copy, Move to move the chosen file(s) or Cancel the copy.
- If you choose Destination to TRASH CAN, the file(s) will be deleted.

4 Transcode Server

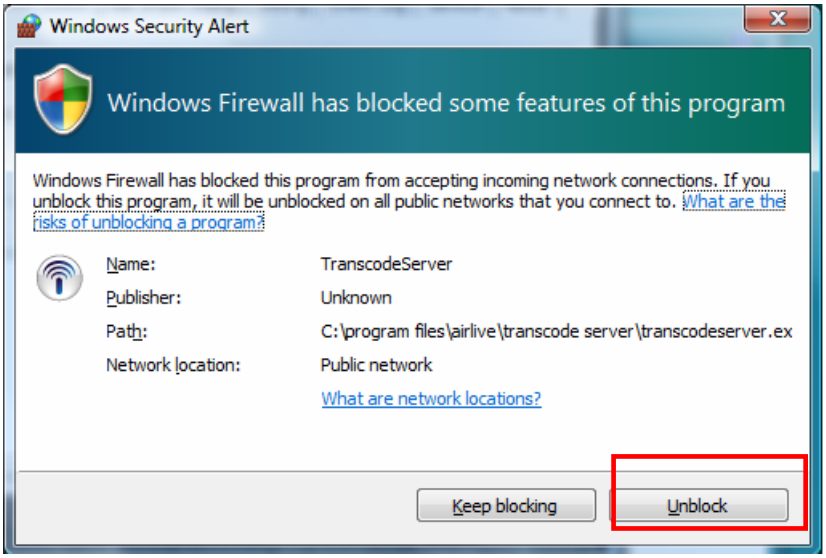
1. Insert the enclosed software CD in the CDROM drive and click "**Install Driver & Utility**" from the autorun screen. If the autorun screen did not appear, run the "**Setup.exe**" program in the "**Driver**" folder.

2. Follow the on-screen instruction to complete the setup





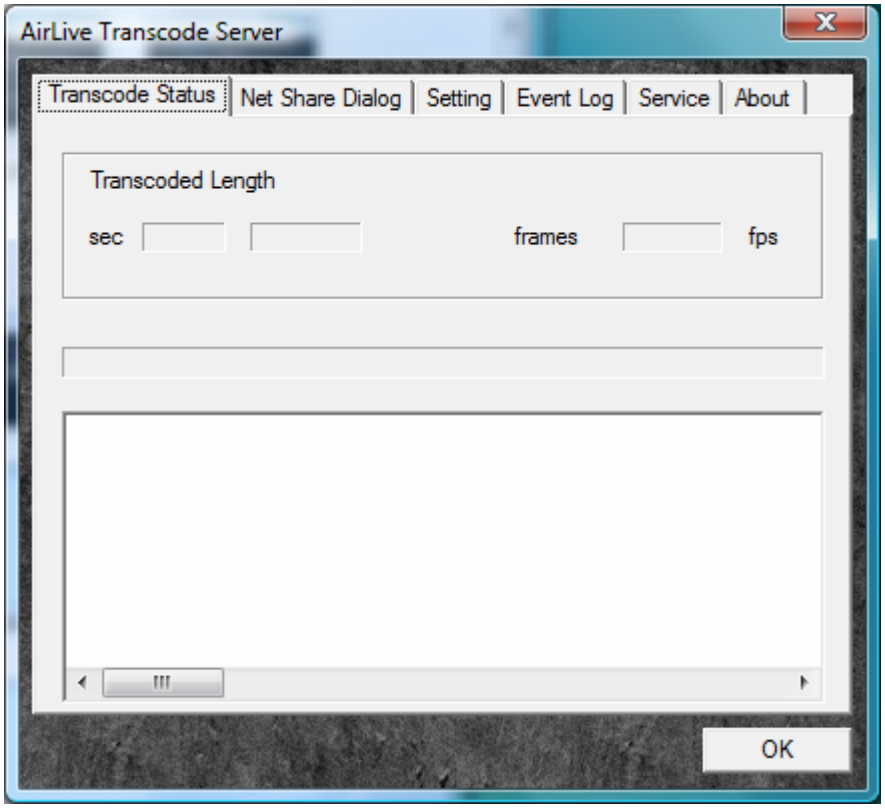
3. When the below screen appears, click **"Unblock"** to allow this utility pass-through the firewall.



*After installing the Transcode Server, you will be able to run BT download and File Sharing function on AirMedia-350.

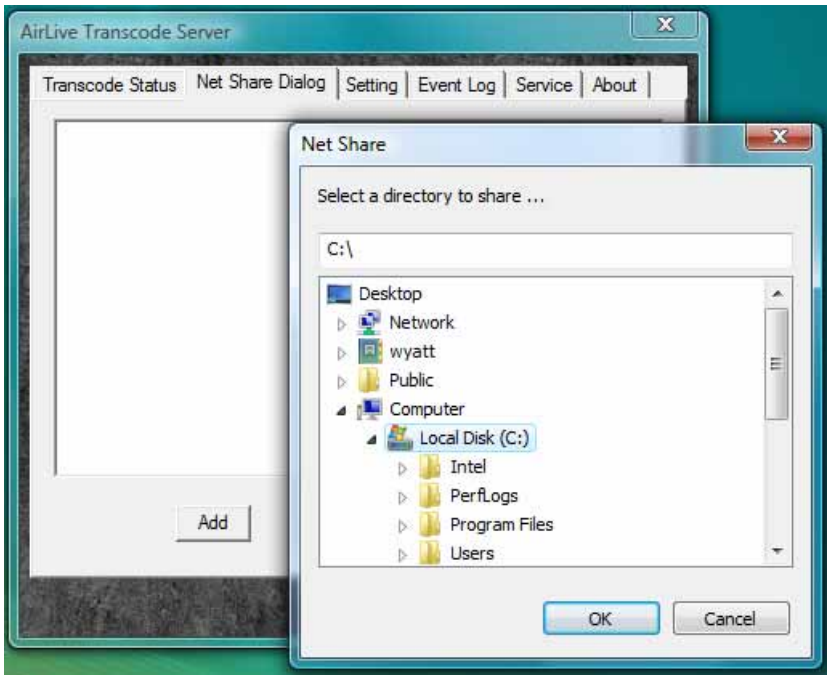
4.1 Configure AirLive Transcode Server

Please find the AirLive Transcode Server shortcut on the desktop or under the Start, Application. Active the AirLive Transcode Server on your computer, the following screen will appear.



4.2 Add a Share Folder on PC

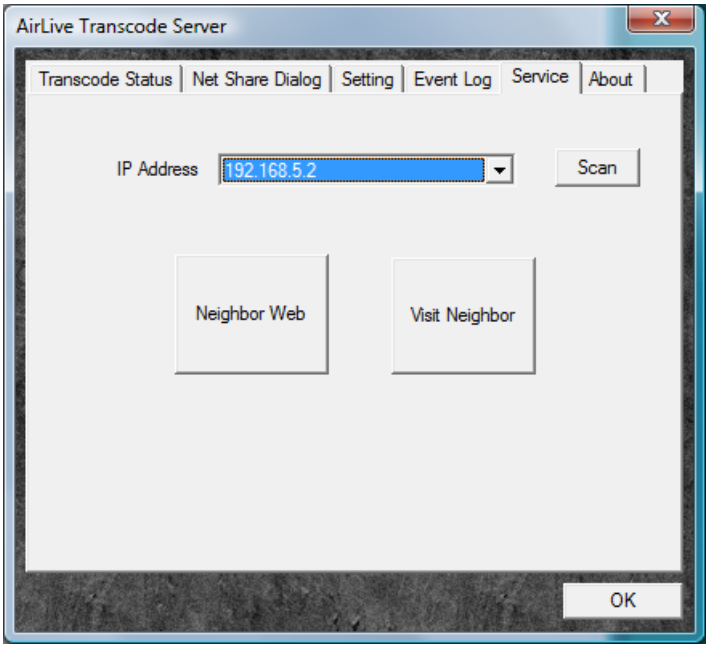
Adding share folders to NetShare Dialog will help AirMedia-350 to recognize the folder on Intranet quickly; once you have opened sharing folder and kept Transcode software running on the PC, the PC folders will be seen in My_Neighbors under BROWER and FILE COPY of the AirMedia-350 main screen.



Note: By selecting a folder, and then click on OK, the folder will be added to NetShare Dialog as an Open Shared Folder on Intranet.

4.3 File Sharing and BT download management

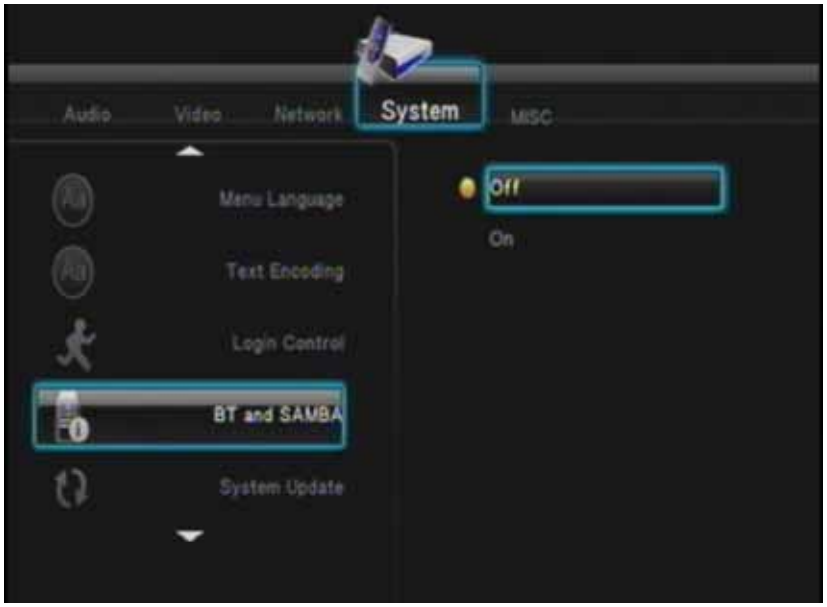
Make sure your Network Connection is connected and IP had been assigned (Either assign from DHCP server or fixed IP) to AirMedia-350. Therefore, if you set the IP of AirMedia-350 correctly, you will see the IP address when you click on **Service tab→ Scan**.



Note: Before you set up File Sharing and BT download management, please install 3.5” SATA Hard Disk into AirMedia-350 and format it. Otherwise, this function will not work properly.

4.3.1 Set up the AirMedia-350

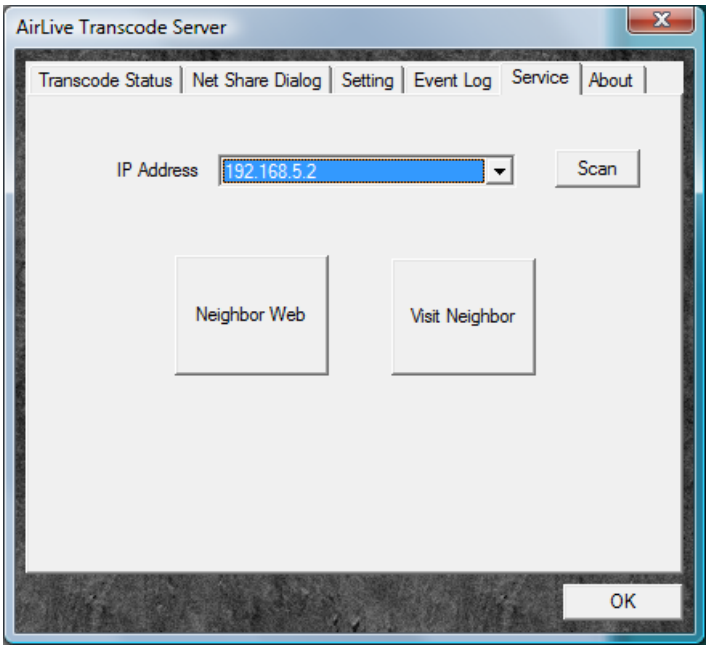
Before you access to File Sharing folder or BT download management, you will need to set up the player. Please go to the main menu of player, and then clicks as following: Setup → System → BT and SAMBA.



Move the scroll bar down to BT and SAMBA, and then press OK on remote control. The system will show tow selections (On/Off). Move the scroll bar down to **"On"** and then press **"OK,"** it will enable the BT and SAMBA function.

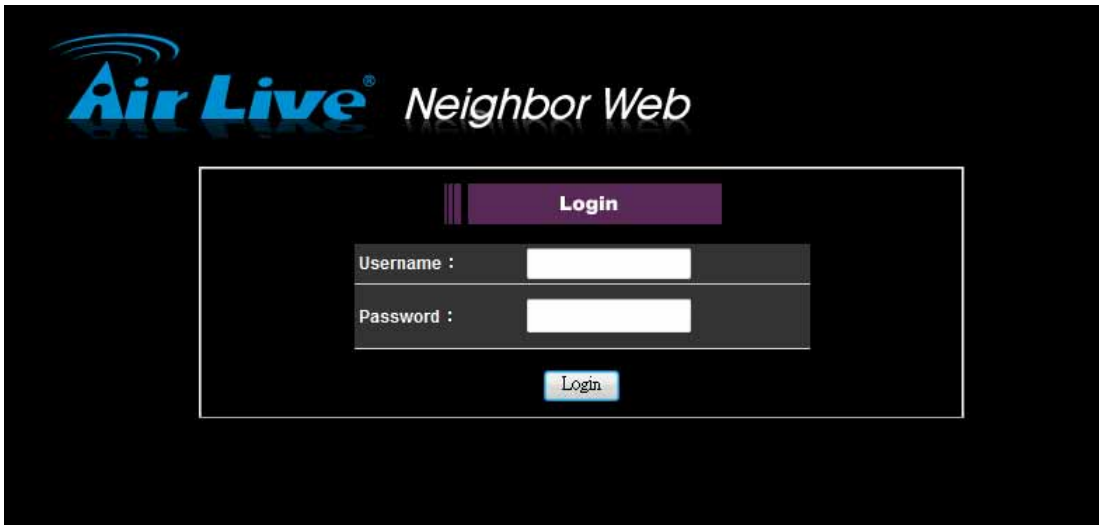
4.3.2 Connect to File Sharing Folder

Click on **"Visit Neighbor**" on AirLive Transcode Server, you will be redirected to the File Sharing folders. You will be able to browse all the files that you had stored inside the 3.5" SATA HDD.



4.3.3 Connect to BT Download Management

Click on **"Neighbor Web"** on AirLive Transcode Server, you will be redirected to the peer to peer download web user interface. You will be able to add/delete BT seeds under Internet browser page. If you set the Login Control as ON, login account and password are required. The default account name and password are **"admin/123"**



4.3.3.1 Setting

You need to set up the settings before you use P2P download. Please click on BitTorrent Download on the top, and then click on **"Setting"** tab for BitTorrent Setting.

Max Download Rate: Set the maximum download speed, **"0"** means no limit.

Max Upload Rate: Set the maximum upload speed. Set to **"0"** means no limit.

The default setting is 20KB/s.

Seeding time: Setting of how long you would like to keep sharing the seed after the download task is complete. The default time is 24 hours; set to **“0”** mean not sharing after finished.

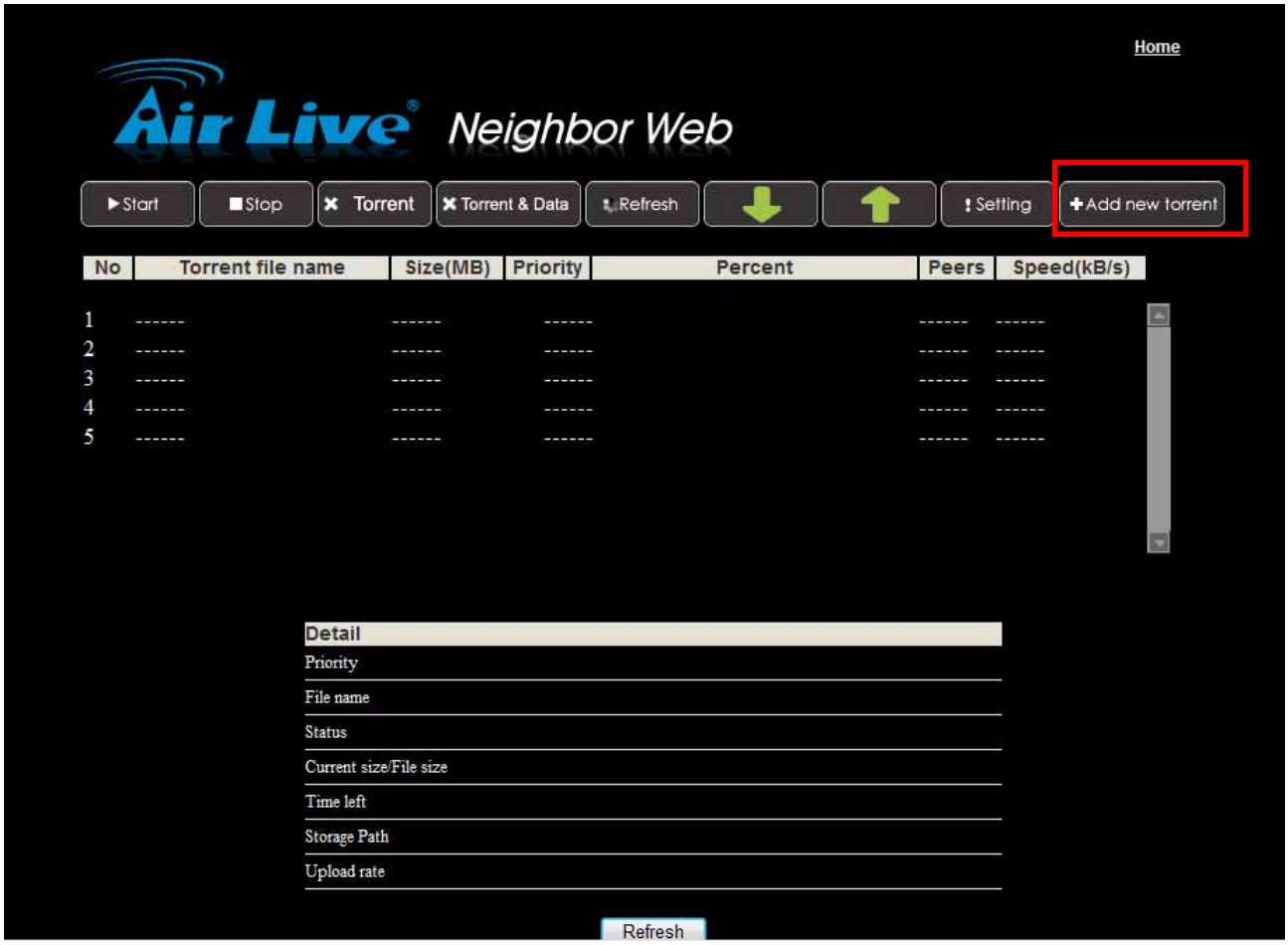
Delete the torrent file: When download task is complete, the system will delete the torrent file automatically. The default setting is disabled (No).

Max simultaneous download task number: Setting of how many tasks you would like to run at the same time. The default setting is 4 tasks, with maximum up to 10 tasks. After you change the setting, click on the **“Save Setting”** to save all settings.

Note: Please be aware that overloading BT tasks would impact the performance of the AirMedia-350. It is recommended to leave the device idle when BT download is activated.

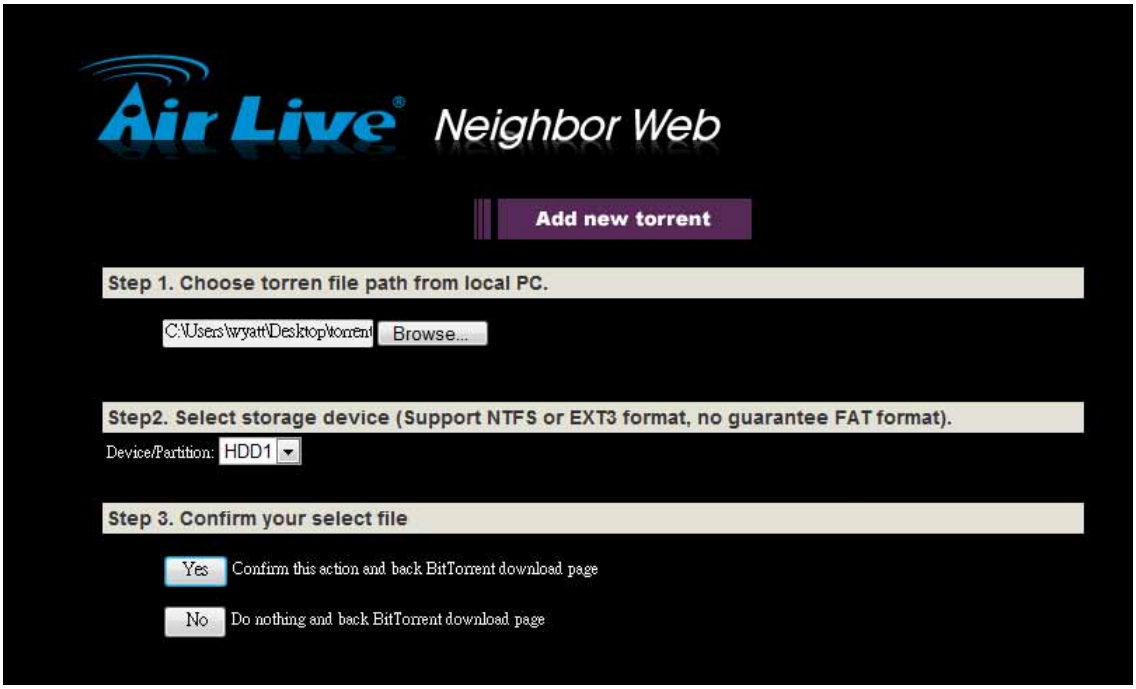
4.3.3.2 Adding new torrent

1. Click on **"+Add new torrent"** to add a new download task.



2. Click on **“Browse”** button to select where you stored the seed file.

3. Click on **“Yes”** button to confirm the task and back to download main page or click on **“No”** back to download page.

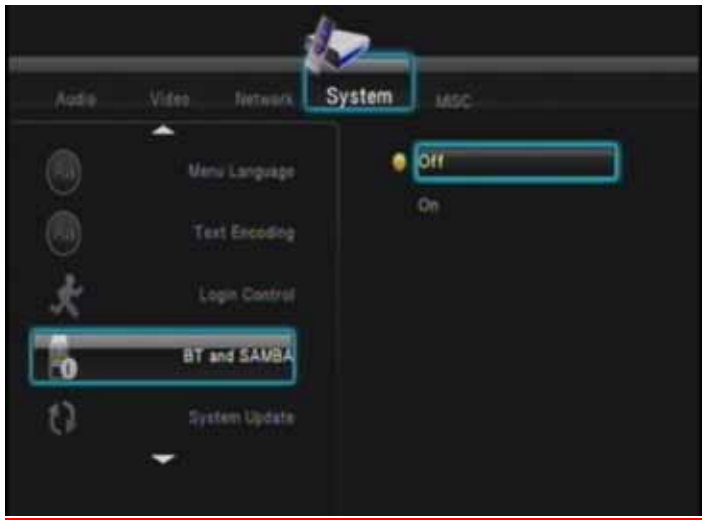


4.3.3.3 Delete Task

1. Click on **“Check box”** to select task in which you would like to delete
2. Click on **“Delete”** tab on the top to delete the task

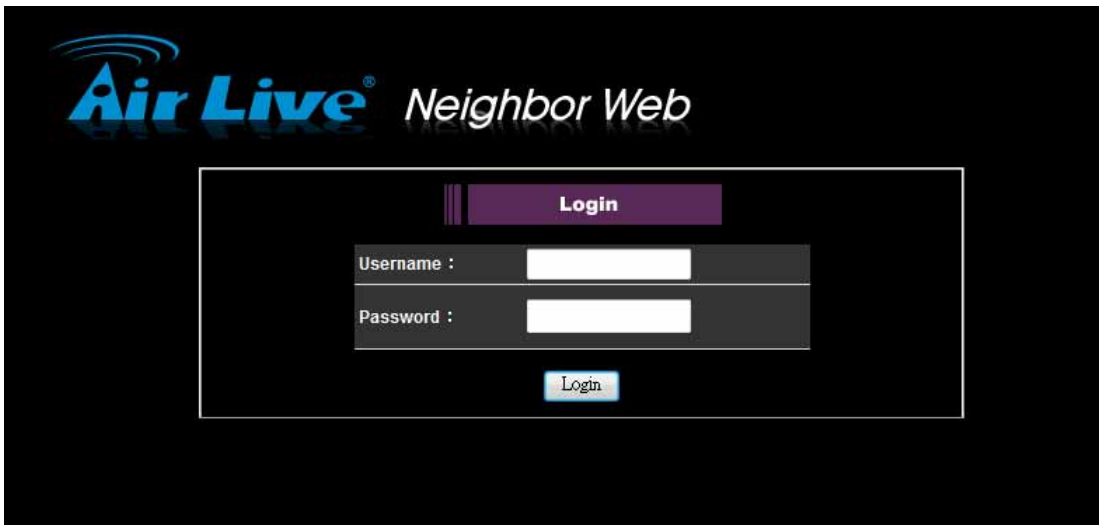
4.3.4 Account Management

Please enable the **"Login Control"** under System of AirMedia-350 before you click on Account Management.

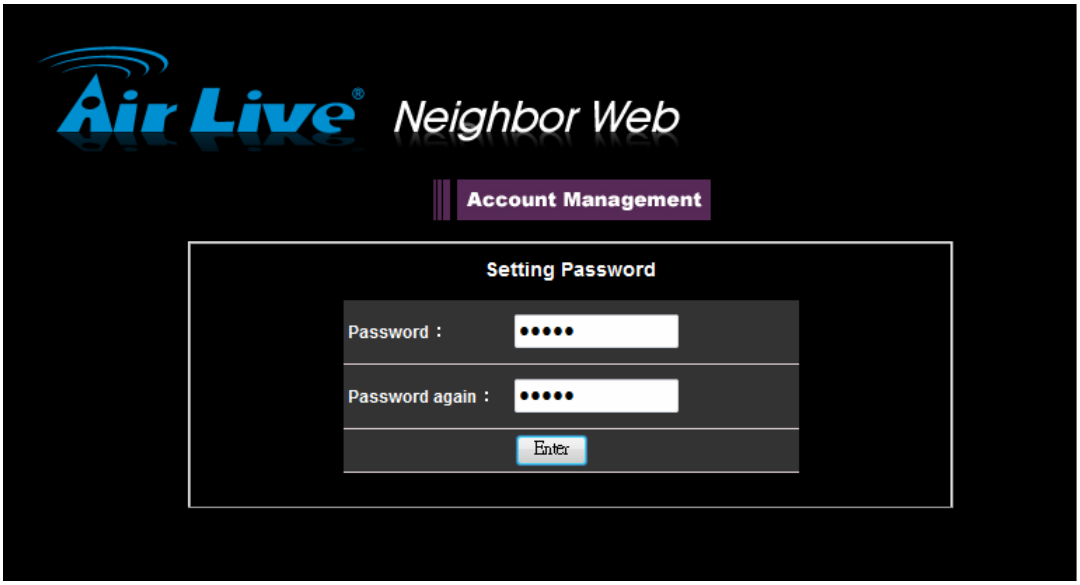


After the Login Control is set, the system will require you to login.

Account name: admin
Password: 123



Click Account Management under AirLive Neighbor Web, you will be able to set the new login password for AirMedia-350. Type in the new password and click **"Enter"** to confirm new password.



5 Specifications

Supported Formats	**Video:** MPEG1/2/4,RM/RMVB,VC-1,H.264 **Video File Extension:** .mpg, mpeg, dat, vob, iso, ifo, ts, tp, m2ts, mp4, avi, mkv, mov, wmv, rm, rmvb, flv, divX, Xvid **Audio:** WMA, MP3, Real Audio, Dolby, DTS **Image:** JPEG,BMP,PNG,GIF **Subtitle:** SRT,SUB,SMI,SSA
User Interface Language	English, Spanish, French, Deutsch, Italian, Dutch, Russia, Cezch, Traditional/Simplified Chinese, Japanese
Internal HDD Slot (Hard Disk not included)	2.5” or 3.5” SATA I/II Hard Disk 2.5” Hard Disk support up to 500GB 3.5” Hard Disk support up to 2TB
I/O Port	**Input:** DC Power In 2xUSB 2.0 Host 1xUSB 2.0 Client RJ-45 LAN Port **Output:** Composite (A/V) Component (Y/Pb/Pr) S/PDIF Out HDMI 1.3

Accessories	AC-DC Power Adapter Remote Control 2x AAA battery Composite A/V Cable HDMI Cable (Optional) USB Cable Screw Package Quick Setup Guide CD (Utility & User Manual)
Dimensions	190mmx140mmx52mmmm(W x D x H)
Power	Power Source: 100-240 12VDC, 3A Operating Temperature: 5°C~40°C

6 Wireless Network Glossary

The wireless network glossary contains explanation or information about common terms used in wireless networking products. Some of information in this glossary might be outdated, please use with caution.

802.11a
An IEEE specification for wireless networking that operates in the 5 GHz frequency range (5.15 GHz to 5.850 GHz) with a maximum of 54Mbps data transfer rate. The 5GHz frequency band is not as crowded as the 2.4GHz band. In addition, the 802.11a have 12 non-overlapping channels, comparing to 802.11b/g's 3 non-overlapping channels. This means the possibility to build larger non-interfering networks. However, the 802.11a deliver shorter distance at the same output power when comparing to 802.11g.

802.11b
International standard for wireless networking that operates in the 2.4GHz frequency band (2.4 GHz to 2.4835 GHz) and provides a throughput up to 11 Mbps.

802.11d
Also known as “Global Roaming”. 802.11d is a standard for use in countries where systems using other standards in the 802.11 family are not allowed to operate.

802.11e
The IEEE QoS standard for prioritizing traffic of the VoIP and multimedia applications. The WMM is based on a subset of the 802.11e.

802.11g

A standard provides a throughput up to 54 Mbps using OFDM technology. It also operates in the 2.4GHz frequency band as 802.11b. 802.11g devices are backward compatible with 802.11b devices.

802.11h

This IEEE standard define the TPC (transmission power control) and DFS (dynamic frequency selection) required to operate WiFi devices in 5GHz for EU.

802.11i

The IEEE standard for wireless security, 802.11i standard includes TKIP, CCMP, and AES encryption to improve wireless security. It is also know as WPA2.

802.11n

802.11n is a recent amendment which improves upon the previous 802.11 standards by adding multiple-input multiple-output (MIMO) and many other newer features. The IEEE has approved the amendment and it was published in October 2009. Enterprises, however, have already begun migrating to 802.11n networks based on the Wi-Fi Alliance's certification of products conforming to a 2007 draft of the 802.11n proposal. 802.11n provides a throughput up to 300Mbps using OFDM technology.

802.3ad

802.3ad is an IEEE standard for bonding or aggregating multiple Ethernet ports into one virtual port (also known as trunking) to increase the bandwidth.

802.3af

This is the PoE (Power over Ethernet) standard by IEEE committee. 803.af uses 48V POE standard that can deliver up to 100 meter distance over Ethernet cable.

802.1d STP

Spanning Tree Protocol. It is an algorithm to prevent network from forming. The STP protocol allows net work to provide a redundant link in the event of a link failure. It is advise to turn on this option for multi-link bridge network.

802.1Q Tag VLAN

In 802.1Q VLAN, the VLAN information is written into the Ethernet packet itself. Each packet carries a VLAN ID (called Tag) as it traveled across the network. Therefore, the VLAN configuration can be configured across multiple switches. In 802.1Q spec, possible 4096 VLAN ID can be created. Although for some devices, they can only view in frames of 256 ID at a time.

802.1x

802.1x is a security standard for wired and wireless LANs. In the 802.1x parlance, there are usually supplicants (client), authenticator (switch or AP), and authentication server (radius server) in the network. When a supplicants request a service, the authenticator will pass the request and wait for the authentication server to grant access and register accounting. The 802.1x is the most widely used method of authentication by WISP.

Ad-hoc

A Peer-to-Peer wireless network. An Ad-hoc wireless network do not use wireless AP or router as the central hub of the network. Instead, wireless client are connected directly to each other. The disadvantage of Adhoc network is the lack of wired interface to Internet connections. It is not recommended for network more than 2 nodes.

Access Point (AP)

The central hub of a wireless LAN network. Access Points have one or more Ethernet ports that can connect devices (such as Internet connection) for sharing. Multi-function Access Point can also function as an Ethernet client, wireless bridge, or repeat signals from other AP. Access Points typically have more wireless functions comparing to wireless routers.

ACK Timeout

Acknowledgement Timeout Windows. When a packet is sent out from one wireless station to the other, it will waits for an Acknowledgement frame from the remote station. The station will only wait for a certain amount of time; this time is called the ACK timeout. If the ACK is NOT received within that timeout period then the packet will be re-transmitted resulting in reduced throughput. If the ACK setting is too high then throughput will be lost due to waiting for the ACK Window to timeout on lost packets. If the ACK setting is too low then the ACK window will have expired and the returning packet will be dropped, greatly lowering throughput. By having the ability to adjust the ACK setting we can effectively optimize the throughput over long distance links. This is especially true for 802.11a and 802.11g networks. Setting the correct ACK timeout value needs to consider 3 factors: distance, AP response time, and interference.

Bandwidth Management

Bandwidth Management controls the transmission speed of a port, user, IP address, and application. Router can use bandwidth control to limit the Internet connection speed of individual IP or Application. It can also guarantee the speed of certain special application or privileged IP address - a crucial feature of QoS (Quality of Service) function.

Bootloader

Bootloader is the under layering program that will start at the power-up before the device loads firmware. It is similar to BIOS on a personal computer. When a firmware crashed, you might be able to recover your device from bootloader.

Bridge

A product that connects 2 different networks that uses the same protocol. Wireless bridges are commonly used to link network across remote buildings. For wireless application, there are 2 types of Bridges. WDS Bridge can be used in Point-to-Point or Point-to-Multipoint topology. Bridge Infrastructure works with AP mode to form a star topology.

Cable and Connector Loss

During wireless design and deployment, it is important to factor in the cable and connector loss. Cable and connector loss will reduce the output power and receiver sensitivity of the radio at connector end. The longer the cable length is, the more the cable loss. Cable loss should be subtracted from the total output power during distance calculation. For example, if the cable and connector loss is 3dBm and the output power is 20dBm; the output power at the cable end is only 17dBm.

Client

Client means a network device or utility that receives service from host or server. A client device means end user device such as wireless cards or wireless CPE.

CPE Devices

CPE stands for Customer Premises Equipment. A CPE is a device installed on the end user's side to receive network services. For example, on an ADSL network, the ADSL modem/router on the subscriber's home is the CPE device. Wireless CPE means a complete Wireless (usually an AP with built-in Antenna) that receives wireless broadband access from the WISP. The opposite of CPE is CO.

CTS

Clear To Send. A signal sent by a device to indicate that it is ready to receive data.

DDNS

Dynamic Domain Name System. An algorithm that allows the use of dynamic IP address for hosting Internet Server. A DDNS service provides each user account with a domain name. A router with DDNS capability has a built-in DDNS client that updates the IP address information to DDNS service provider whenever there is a change. Therefore, users can build website or other Internet servers even if they don't have fixed IP connection.

DHCP

Dynamic Hosting Configuration Protocol. A protocol that enables a server to dynamically assign IP addresses. When DHCP is used, whenever a computer logs onto the network, it automatically gets an IP address assigned to it by DHCP server. A DHCP server can either be a designated PC on the network or another network device, such as a router.

DMZ

Demilitarized Zone. When a router opens a DMZ port to an internal network device, it opens all the TCP/UDP service ports to this particular device. The feature is used commonly for setting up H.323 VoIP or Multi-Media servers.

DNS

A program that translates URLs to IP addresses by accessing a database maintained on a collection of Internet servers.

Domain Name

The unique name that identifies an Internet site. Domain Names always have 2 or more parts, separated by dots. In www.airlive.com, the "airlive.com" is the doman name.

DoS Attack

Denial of Service. A type of network attack that floods the network with useless traffic. Many DoS attacks, such as the Ping of Death and Teardrop attacks, exploit limitations in the TCP/IP protocols.

Encryption

Encoding data to prevent it from being read by unauthorized people. The common wireless encryption schemes are WEP, WPA, and WPA2.

ESSID (SSID)

The identification name of an 802.11 wireless network. Since wireless network has no physical boundary liked wired Ethernet network, wireless LAN needs an identifier to distinguish one network from the other. Wireless clients must know the SSID in order to associate with a WLAN network. Hide SSID feature disable SSID broadcast, so users must know the correct SSID in order to join a wireless network.

Firewall

A system that secures a network and prevents access by unauthorized users. Firewalls can be software, router, or gateway. Firewalls can prevent unrestricted access into a network, as well as restricting data from flowing out of a network.

Firmware

The program that runs inside embedded device such as router or AP. Many network devices are firmware upgradeable through web interface or utility program.

FTP

File Transfer Protocol. A standard protocol for sending files between computers over a TCP/IP network and the Internet.

Fragment Threshold

Frame Size larger than this will be divided into smaller fragment. If there are interferences in your area, lower this value can improve the performance. If there are not, keep this parameter at higher value. The default size is 2346. You can try 1500, 1000, or 500 when there are interference around your network.

Full Duplex

The ability of a networking device to receive and transmit data simultaneously. In wireless environment, this is usually done with 2 or more radios doing load balancing.

Gateway

In the global Internet network, the gateways are core routers that connect networks in different IP subnet together. In a LAN environment with an IP sharing router, the gateway is the router. In an office environment, gateway typically is a multi-function device that integrates NAT, firewall, bandwidth management, and other security functions.

Hotspot

A place where you can access Wi-Fi service. The term hotspot has two meanings in wireless deployment. One is the wireless infrastructure deployment, the other is the Internet access billing system. In a hotspot system, a service provider typically need an authentication and account system for billing purposes, and a wireless AP network to provide access for customers.

IGMP Snooping

Internet Group Management Protocol (IGMP) is a Layer 3 protocol to report IP multicast memberships to neighboring multicast switches and routers. IGMP snooping is a feature that allows an Ethernet switch to "listen in" on the IGMP conversation between hosts and routers. A switch support IGMP snooping has the possibility to avoid multicast traffic being treated as broadcast traffic; therefore, reducing the overall traffic on the network.

Infrastructure Mode

A wireless network that is built around one or more access points to provide wireless clients access to wired LAN / Internet service. The opposite of Infrastructure mode is Ad-hoc mode.

IP address

IP (Internet Protocol) is a layer-3 network protocol that is the basis of all Internet communication. An IP address is 32-bit number that identifies each sender or receiver of information that is sent across the Internet. An IP address has two parts: an identifier of a particular network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network. The new IPv6 specification supports 128-bit IP address format.

IPsec

IP Security. A set of protocols developed by the IETF to support secure exchange of packets at the IP layer. IPsec has been deployed widely to implement Virtual Private Networks (VPNs). IPsec supports two encryption modes: Transport and Tunnel. Transport mode encrypts only the data of each packet, but leaves the header untouched. The more secure Tunnel mode encrypts both the header and the payload. On the receiving side, an IPSec-compliant device decrypts each packet.

LACP (802.3ad) Trunking

The 802.3ad Link Aggregation standard defines how to combine the several Ethernet ports into one high-bandwidth port to increase the transmission speed. It is also known as port trunking. Both device must set the trunking feature to work.

MAC (Media Access Control)

MAC address provides layer-2 identification for Networking Devices. Each Ethernet device has its own unique address. The first 6 digits are unique for each manufacturer. When a network device have MAC access control feature, only the devices with the approved MAC address can connect with the network.

Mbps (Megabits per Second)
One million bits per second; a unit of measurement for data transmission

MESH
Mesh is an outdoor wireless technology that uses Spanning Tree Protocol (STP) and Wireless Distribution system to achieve self-forming, self-healing, and self-configuring outdoor network. MESH network are able to take the shortest path to a destination that does not have to be in the line of site.

MIMO (Multi-Input-Multi-Output)
A Smart Antenna technology designed to increase the coverage and performance of a WLAN network. In a MIMO device, 2 or more antennas are used to increase the receiver sensitivity and to focus available power at intended Rx.

NAT (Network Address Translation)
A network algorithm used by Routers to enables several PCs to share single IP address provided by the ISP. The IP that a router gets from the ISP side is called Real IP, the IP assigned to PC under the NAT environment is called Private IP.

Node
A network connection end point, typically a computer.

Packet
A unit of data sent over a network.

Passphrase
Used much like a password, a passphrase simplifies the WEP encryption process by automatically generating the WEP encryption keys for the company products.

POE (Power over Ethernet)

A standard to deliver both power and data through one single Ethernet cable (UTP/STP). It allows network device to be installed far away from power ource. A PoE system typically compose of 2 main component: DC Injector (Base Unit) and Splitter(Terminal Unit). The DC injector combines the power and data, and the splitter separates the data and power back. A PoE Access Point or CPE has the splitter built-in to the device. The IEEE 802.3af is a POE spec that uses 48 volt to deliver power up to 100 meter distance.

Port

This word has 2 different meaning for networking.
The hardware connection point on a computer or networking device used for plugging in a cable or an adapter.
The virtual connection point through which a computer uses a specific application on a server.

PPPoE

Point-to- Point Protocol over Ethernet. PPPoE relies on two widely accepted standards: PPP and Ethernet. PPPoE is a specification for connecting the users on an Ethernet to the Internet through a common broadband medium, such as a single DSL line, wireless device or cable modem.

PPTP

Point-to-Point Tunneling Protocol: A VPN protocol developed by PPTP Forum. With PPTP, users can dial in to their corporate network via the Internet. If users require data encryption when using the Windows PPTP client, the remote VPN server must support MPPE (Microsoft Point-To-Point Encryption Protocol) encryption. PPTP is also used by some ISP for user authentication, particularly when pairing with legacy Alcatel / Thomson ADSL modem.

Preamble Type

Preamble are sent with each wireless packet transmit for transmission status. Use the long preamble type for better compatibility. Use the short preamble type for better performance

Rate Control

Ethernet switches' function to control the upstream and downstream speed of an individual port. Rate Control management uses "Flow Control" to limit the speed of a port. Therefore, the Ethernet adapter must also have the flow control enabled. One way to force the adapter's flow control on is to set a port to half-duplex mode.

RADIUS (Remote Authentication Dial-In User Service)

An authentication and accounting system used by many Internet Service Providers (ISPs). When you dial in to the ISP, you must enter your username and password. This information is passed to a RADIUS server, which checks that the information is correct, and then authorizes access to the ISP system. Radius typically uses port 1812 and port 1813 for authentication and accounting port. Though not an official standard, the RADIUS specification is maintained by a working group of the IETF.

Receiver Sensitivity

Receiver sensitivity means how sensitive is the radio for receiving signal. In general; the slower the transmission speed, the more sensitive the radio is. The unit for Receiver Sensitivity is in dB; the lower the absolute value is, the higher the signal strength. For example, -50dB is higher than -80dB.

RJ-45

Standard connectors for Twisted Pair copper cable used in Ethernet networks. Although they look similar to standard RJ-11 telephone connectors, RJ-45 connectors can have up to eight wires, whereas telephone connectors have only four.

Router

An IP sharing router is a device that allows multiple PCs to share one single broadband connection using NAT technology. A wireless router is a device that combines the functions of wireless Access Point and the IP sharing router.

RSSI

Receiver Sensitivity Index. RSSI is a value to show the Receiver Sensitivity of the remote wireless device. In general, remote APs with stronger signal will display higher RSSI values. For RSSI value, the smaller the absolute value is, the stronger the signal. For example, “-50db” has stronger signal than “-80dB”. For outdoor connection, signal stronger than -60dB is considered as a good connection.

RTS

Request To Send. A packet sent when a computer has data to transmit. The computer will wait for a CTS (Clear To Send) message before sending data.

RTS Threshold

RTS (Request to Send). The RTS/CTS(clear to send) packet will be send before a frame if the packet frame is larger than this value. Lower this value can improve the performance if there are many clients in your network. You can try 1500, 1000 or 500 when there are many clients in your AP’s network.

SNMP (Simple Network Management Protocol)

A set of protocols for managing complex networks. The SNMP network contains 3 key elements: managed devices, agents, and network-management systems (NMSs). Managed devices are network devices that content SNMP agents. SNMP agents are programs that reside SNMP capable device's firmware to provide SNMP configuration service. The NMS typically is a PC based software such as HP Openview that can view and manage SNMP network device remotely.

SSH

Developed by SSH Communications Security Ltd., Secure Shell is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another. It provides strong authentication and secure communications over insecure channels. It is a replacement for rlogin, rsh, rcp, and rdist.

SSL

Secure Sockets Layer. It is a popular encryption scheme used by many online retail and banking sites to protect the financial integrity of transactions. When an SSL session begins, the server sends its public key to the browser. The browser then sends a randomly generated secret key back to the server in order to have a secret key exchange for that session. SSL VPN is also known as Web VPN. The HTTPS and SSH management interface use SSL for data encryption.

Subnet Mask

An address code mask that determines the size of the network. An IP subnet are determined by performing a BIT-wise AND operation between the IP address and the subnet mask. By changing the subnet mask, you can change the scope and size of a network.

Subnetwork or Subnet

Found in larger networks, these smaller networks are used to simplify addressing between numerous computers. Subnets connect to the central network through a router, hub or gateway. Each individual wireless LAN will probably use the same subnet for all the local computers it talks to.

Super A

Super A is an Atheros proprietary turbo mode to increase speed over standard 802.11a mode. It adds Bursting and Compression to increase the speed. If you live in countries that prohibit the channel binding technology (i.e. Europe), you should choose “Super-A without Turbo) if you need more speed than 11a mode

TCP

A layer-4 protocol used along with the IP to send data between computers over the Internet. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the packets that a message is divided into for efficient routing through the Internet.

Turbo A

Turbo A is an Atheros proprietary turbo mode to increase speed over standard 802.11a mode. It uses channel binding technology to increase speed. There are 2 types of Turbo A modes: Dynamic Turbo and Static Turbo. In Dynamic Turbo, the channel binding will be used only if necessary. In Static Turbo, the channel binding is always on. This protocol may be combined with Super-A model to increase the performance even more. The used of channel binding might be prohibited in EU countries.

TX Output Power

Transmit Output Power. The TX output power means the transmission output power of the radio. Normally, the TX output power level limit for 2.4GHz 11g/b is 20dBm at the antenna end. The output power limit for 5GHz 802.11a is 30dBm at the antenna end.

UDP (User Datagram Protocol)

A layer-4 network protocol for transmitting data which does not require acknowledgement from the recipient of the data.

Upgrade

To replace existing software or firmware with a newer version.

Upload
To send a file to the Internet or network device.

URL (Uniform Resource Locator)
The address of a file located on the Internet.

VPN (Virtual Private Network)
A type of technology designed to increase the security of information transferred over the Internet. VPN creates a private encrypted tunnel from the end user's computer, through the local wireless network, through the Internet, all the way to the corporate network.

Walled Garden
On the Internet, a walled garden refers to a browsing environment that controls the information and Web sites the user is able to access. This is a popular method used by ISPs in order to keep the user navigating only specific areas of the Web

WAN (Wide Area Network)
A communication system of connecting PCs and other computing devices across a large local, regional, national or international geographic area. A WAN port on the network device means the port (or wireless connection) that is connected to the Internet side of the network topology.

WEP (Wired Equivalent Privacy)
A wireless encryption protocol. WEP is available in 40-bit (64-bit), 108-bit (128-bit) or 152-bit (Atheros proprietary) encryption modes.

WPA (Wi-Fi Protected Access)

It is an encryption standard proposed by WiFi for advance protection by utilizing a password key (TKIP) or certificate. It is more secure than WEP encryption. The WPA-PSK utilizes pre-share key for encryption/authentication.

WPA2 (Wi-Fi Protected Access 2)

WPA2 is also known as 802.11i. It improves on the WPA security with CCMP and AES encryption. The WPA2 is backward compatible with WPA. WPA2-PSK utilizes pre-share key for encryption/authentication.

Wi-Fi (Wireless Fidelity)

An interoperability certification for wireless local area network (LAN) products based on the IEEE 802.11 standards. The governing body for Wi-Fi is called Wi-Fi Alliance (also known as WECA).

WiMAX (Worldwide Interoperability for Microwave Access)

A Wireless Metropolitan Network technology that complies with IEEE 802.16 and ETSI Hiperman standards. The orginal 802.16 standard call for operating frequency of 10 to 66Ghz spectrum. The 802.16a amendment extends the original standard into spectrum between 2 and 11 Ghz. 802.16d increase data rates to between 40 and 70 Mbps/s and add support for MIMO antennas, QoS, and multiple polling technologies. 802.16e adds mobility features, narrower bandwidth (a max of 5 mhz), slower speed and smaller antennas. Mobility is allowed up to 40 mph.

WDS (Wireless Distribution System)

WDS defines how multiple wireless Access Point or Wireless Router can connect together to form one single wireless network without using wired uplinks. WDS associate each other by MAC address, each device

WLAN (Wireless Local Area Network)

A type of local-area network that uses high-frequency radio waves rather than wires to communicate between nodes. The most popular standard for WLAN is the 802.11 standards.

WMM (Wi-Fi Multimedia)

WMM is a standard to prioritize traffic for multimedia applications. The WMM prioritize traffic\ on Voice-over-IP (VoIP), audio, video, and streaming media as well as traditional IP data over the AP.

WMS (Wireless Management System)

An utility program to manage multiple wireless AP/Bridges.