

Model # AWLH4030

User's Manual

Ver. 1A

Table of Contents

Package Contents	3
System Requirements	3
Introduction	4
Installation Considerations	6
Installing the PCI Card and Utility	7
Install Driver	10
Using the WLAN Monitor	12
Troubleshooting	22
Technical Specifications	23

Package Contents

- 108Mbps SuperG Wireless PCI Adapter
- Quick Installation Guide
- Manual and Drivers/Utility on CD

Note: If any of the above items are missing, please contact your reseller.

System Requirements

- A desktop computer with an available PCI 32-bit slot
- Windows XP, Windows 2000, Windows ME, or Windows 98SE
- At least 32 MB of memory and a 300 MHz processor or higher
- An 802.11b/g Access Point for (**Infrastructure Mode**) or another computer with an 802.11b/g wireless card installed (for **Ad-Hoc Mode**)

Introduction

The **108Mbps SuperG Wireless PCI Adapter** is an advanced IEEE 802.11b/g compatible, high performance wireless card that supports data transfer speeds of up to 54 Mbps or 108Mbps in **SuperG** mode.

The **108Mbps SuperG Wireless PCI Adapter** comes with software drivers for the most popular Microsoft Windows operating systems and can be integrated into a larger network, running Windows XP, Windows 2000, Windows ME, Windows 98SE, in either **Ad Hoc** mode (without an Access Point) or **Infrastructure mode** (with an Access Point).

Product Features

- Compatible with IEEE 802.11b standard to provide wireless Ethernet data rates of up to11Mbps data rate
- Compatible with IEEE 802.11g high rate standard to provide wireless 54Mbps data rate or 108Mbps data rate (108Mbps requires a SuperG enabled access point/wireless router)
- Operation at dual 2.4 GHz frequency bands to meet worldwide regulations
- Dynamic data rate scaling at 1, 2, 5.5, and 11Mbps for IEEE 802.11b
- Dynamic data rate scaling at 6, 9, 12, 18, 24, 36, 48, 54,108 Mbps for IEEE 802.11g
- Maximum reliability, throughput and connectivity with automatic data rate switching
- Supports wireless data encryption with 64/128/152-bit WEP for security
- Supports infrastructure networks via Access Point and ad-hoc network via peer-topeer communication
- Built-in dual diversity antenna for reduction of interference in a multi-path environment
- Supports AES enhanced security
- Supports DFS/TPC for European operation
- Supports PCI- Bus (32-bit) 2.2 Type PCI Card
- User-friendly configuration and diagnostic utilities
- Driver support for Windows 98SE, ME, 2000, and XP

LEDS

The 108Mbps SuperG Wireless PCI Adapter has two LEDs: POWER and ACTIVITY.

Network Mode	LED Activity
Network Activity	Both LEDs flash in unison
Searching for a Network Connection	Both LEDs flash alternately
Associated with the Network, but No Activity	Both LEDs flicker dimly
Power Save Mode (Power-up or Reset)	POWER LED – slow rate blink
Card is disabled	Only the POWER LED flashes

Installation Considerations

Designed to traverse distances up to 900 feet (~300 meters), the **108Mbps SuperG Wireless PCI Adapter** lets you access your network from your computer virtually anywhere you want. Keep in mind, however, that the number and thickness of walls, ceilings or other objects that the wireless signals must pass through may limit the range. Typical ranges vary depending on the types of materials and background RF noise in your home or business. The key to maximizing the transmission range is to follow these basic principles:

- Keep the number of walls and ceilings between the Access Point and your receiving device to a minimum - Each wall or ceiling can reduce your Wireless product's range from 3-90 feet (1-30 meters.) For some businesses or for a large residential home deployment, it may be beneficial to have more than one access point with overlapping coverage.
- 2. Be aware of the direct line between Access Points and computers with wireless cards -A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks as if it were over 42 feet (14 meters) thick! Try to make sure that the Access Points and Cards are positioned so that the signal will travel in as straight a line through a wall or ceiling as possible for better reception.
- 3. Building Materials make a difference A solid metal door or aluminum studs can have a negative effect on range. Try to position Access Points and computers with wireless cards so that the signal passes through drywall or open doorways and not other materials.
- 4. Make sure that the antenna is positioned for best reception by using the software signal strength tools included with your **108Mbps SuperG Wireless PCI Adapter**.
- 5. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate RF noise.

For the average residence, range should not be a problem. If you experience low or no signal strength in areas of your home that you wish to access, consider positioning the Access Point in a location directly between the computers with wireless cards that will be connected. Additional Access Points can be connected to provide better coverage in rooms where the signal does not appear as strongly as desired.

Installing the PCI Card and Utility

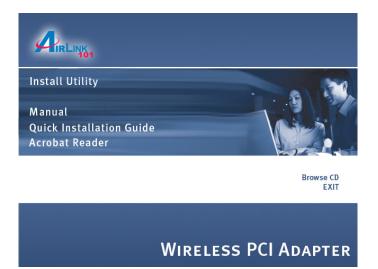
Note: Be sure to power off your computer before inserting the PCI adapter.

Step 1 Insert the PCI adapter into an available PCI slot and turn on your computer.

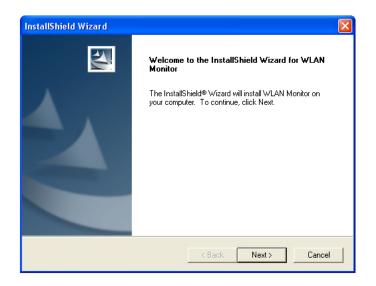
Step 2 Windows will detect the adapter and request for a driver. Click **Cancel** to quit the wizard. Insert the Driver & Utility CD into your CD drive and wait for the autorun page to appear on screen.

Step 3 Click on Install Utility at the autorun page.

Note: If the autorun page doesn't appear automatically go to **Start**, **Run**, and type **D:\autorun.exe** (where **D** is the letter of your CD drive) and click **OK**.



Step 4 Click Next at the welcome screen.



Step 5 Click **Next** to accept the default destination folder to install the software or click **Browse** to manually select a different destination folder.

InstallShield Wizard	X
Choose Destination Location Select folder where Setup will install files.	1
Setup will install WLAN Monitor in the following folder.	
To install to this folder, click Next. To install to a different folder, click another folder.	Browse and select
Destination Folder	
C:\Program Files\AirLink101\WLAN Monitor	Browse
	Next > Cancel

Step 6 Click Next at the Select Program Folder screen.

InstallShield Wizard
Select Program Folder Please select a program folder.
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue. Program Folders: AirLink101 Existing Folders: Accessories Startup
InstallShield < Back Next > Cancel

Step 7 Click Continue Anyway at the Windows Logo Screen.



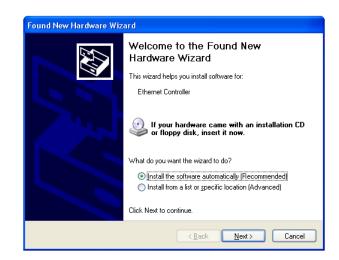
Step 8 Verify "Yes, I want to restart my computer now" is selected and click Finish to restart your computer.



Install Driver

Note: After restarting the computer, Windows will launch the **Found New Hardware Wizard**. The Found New Hardware Wizard will look different depending on your operating system. Follow the on-screen instructions to complete the installation.

For Windows 98SE and ME users, you may be prompted to insert the Windows 98SE or ME CD during the driver installation. Be sure to have your Windows 98SE or ME CD ready.



Step 1 Select Install the software automatically and click Next.

For Windows 98SE and ME, select "**Search for the best driver for your device**" and click **Next**. Verify all the check boxes are unchecked except for "**Specify a location**" and click **Browse**.

Step 2 Select the driver from the "Driver" folder and click Next.

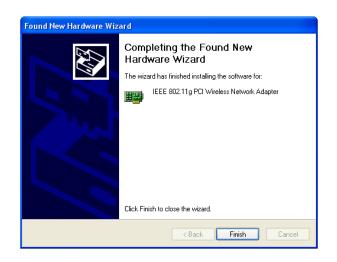
Found New Hardware Wizard
Please select the best match for your hardware from the list below.
IEEE 802.11g PCI Wireless Network Adapter
Version Manufacturer Location
81 3.0.0.43 dt\driver
This driver is not digitally signed! <u>Tell me why driver signing is important</u>
< Back Next> Cancel

For Windows 98SE and ME, browse to **D:\Driver** folder (where **D** is the letter of your CD drive) and click **OK** then **Next**. Insert the Windows 98SE or ME CD if you are prompted to do so.

Step 3 Click Continue Anyway at the Windows Logo Screen.



Step 4 Click Finish. Restart the computer if you are prompted to do so.



Using the WLAN Monitor

Note to Windows XP Users:

You must disable the Wireless Zero Configuration Utility in order to use the WLAN Monitor. Please refer to the following steps to disable the Wireless Zero Configuration Utility.

Step 1 Double-click on the **Wireless Network Connection Icon** in the system tray, then click on **Properties** or **Advanced**.



Step 2 Go to the Wireless Networks tab, uncheck the "Use Windows to configure my wireless network settings" check box and click OK.

1
🕹 Wireless Net ork Connection 12 Properties 👘 🛜 🔀
General Wireless Networks Advanced
Use Windows to configure my wireless network settings
Available networks:
To connect to an available network, click Configure.
A default
Preferred networks: Automatically connect to available networks in the order listed below:
Move up
Move down
Add Remove Properties
Learn about <u>setting up wireless network</u> <u>configuration.</u> Advanced
OK Cancel

To open the PCI Adapter's utility, double-click on the WLAN Monitor Icon in the system tray.



The utility automatically adds an available wireless network to the **Preferred WLANs** box. If no SSID is added, or if the SSID is wrong, please refer to the following steps to join the appropriate wireless network.

Note: Be sure to remove the wrong SSID from the **Preferred WLANs** box before adding any new SSID. You can remove the wrong SSID by selecting it and clicking on **Remove**.

Step 1 Select the SSID of the wireless network you wish to connect to from the **Available WLANs** box and click **Add**.

Wireless Network	Config Utility						×
Configuration Status	Option About						- 1
	able WLAN, click Add to s	etup.		[Refresh	Add	
SSID	MAC(BSSID)	Signal	Security	CH	Freq	Mode	
P default	00:03:2F:22:C9:60	32%	Disable	6	2.437Ghz	g	
A wireless	00:30:36:80:03:05	all' 30%	Disable		2.462GNZ	g	
👗 AR315W	00:E0:98:4E:B3:CE		🖙 WEP	11	2.462Ghz	g	
11gAP	00:90:96:52:38:ED	<u>j</u> 50%	Disable	7	2.442Ghz	g	
👗 tech1	00:E0:98:4D:D3:CE	, 96%	Disable	11	2.462Ghz	g	
Profile Group Contro Please select a profi		eferred WLAN omatically cor	ls: nnect to available V	/LAN per b	elow order:	New	
	New	SSID	Secu	ity		Remove	
	Rename				T	Properties	
	Delete					Move to	
	Select					ReConnect	
			0	к	Cancel	Apply	

Step 2 Verify all the settings are correct and click OK.

Wireless Network Properties
Wireless network name (SSID): default
Wireless network key (WEP) This network requires a key for the following: Authentication Mode: Open System
Data Encryption: Disable
Key length: 64 bits (40+24) · 10 Hexadecimal d
Key 1:
Key 2:
Key 3:
Key 4:
Default key: Key 1
Enable 802.1X Authentication Config
This is a computer to computer (ad hoc) network; no access points are used.
IP & Proxy Setting OK Cancel

Step 3 Verify the SSID you have selected is in the Preferred WLANs box and click Apply.

o connect to avair	able WLAN, click Ac	dd to setu	p.				Refresh	Add
SSID	MAC(BSSID	0	Signal		Security	CH	Freq	Mode
💡 default	00:03:2F:22:C9		32%		Disable	6	2.437Ghz	g
👗 wireless	00:90:96:80:C3				Disable	11	2.462Ghz	g
👗 AR315W	00:E0:98:4E:B3			∞∞	WEP	11	2.462Ghz	g
👗 11gAP	00:90:96:52:38	BED 👼	ד0% 1		Disable	7	2.442Ghz	g
🛔 tech1	00:E0:98:4D:D3	3:CE 🎜	96%		Disable	11	2.462Ghz	g
Profile Group Contro Please select a profi			ed WLAN tically co	_	to available V	/LAN per	below order:	New
		Automa	itically co SID	nnect	Secu	rity	i	New Remove
	ile group to apply :	Automa	itically co SID	nnect	Secu		- R	
	ile group to apply :	Automa	itically co SID	nnect	Secu	rity	i	Remove

Step 4 A blue circle will surround the SSID you have chosen. Click OK.

o connect to avai	lable WLAN, click Ad	ld to setup.					Refresh	Add
SSID	MAC(BSSID)) 9	Signal		Security	СН	Freq	Mode
💡 default	00:03:2F:22:C9	:60 🔊	32%		Disable	6	2.437Ghz	g
🛔 wireless	00:90:96:80:C3:		18%		Disable	11	2.462Ghz	g
11gAP	00:90:96:52:38:	ED 🔊	52%		Disable	7	2.442Ghz	g
tech1	00:E0:98:4D:D3	3:CE 🔊	88%		Disable	11	2.462Ghz	g
AR315W	00:E0:98:4E:B3:	ECE 🔊	64%	⊗∞	WEP	11	2.462Ghz	g
Profile Group Conti	rol	Preferre	d WLAN	ls:				
	rol file group to apply :				to available W	/LAN per	below order:	New
•			cally cor		to available W	· . ,		New
•	file group to apply :	Automati	cally cor	nnect	,	rity	- R	Remove
	file group to apply :	Automati	cally cor ID	nnect	Secur	rity		

Step 5 Restart your computer to complete the wireless network connection.

Configuration Tab

The Configuration tab displays a list of available Access Points.

Wi	reless Network Co	onfig Utility								X
С	onfiguration Status	Option About								
	Available WLANs: To connect to availab	le WLAN, click Add t	o setup.					Refresh	Add	
	SSID	MAC(BSSID)	S	ignal		Security	CH	Freq	Mode	
	💡 default	00:03:2F:22:C9:60	្រភ្លា	32%		Disable	6	2.437Ghz	g	
	🗼 wireless	00:90:96:80:C3:05		18%		Disable	11	2.462Ghz	g	
	👗 11gAP	00:90:96:52:38:EE		52%		Disable	7	2.442Ghz	g	
	👗 tech1	00:E0:98:4D:D3:C	E 🔊	88%		Disable	11	2.462Ghz	g	
	👗 AR315W	00:E0:98:4E:B3:Cl	E 🔊	64%	⊚≫	WEP	11	2.462Ghz	g	
	Profile Group Control-		Preferred							
	Please select a profile					to available \	VLAN per l	below order:	New	
		New	SS	ID		Secu	rity		Bemove	
			_	default			System		TTEINOVE	
		Rename					-,		Properties	
		Delete							Move to	
								-M		
	<u> </u>	Select						-M	ReConnect	
L										
						1	ок	Cancel	Apply	

Available WLANs: displays a list of available Access Points that you can connect to. To update the list, click on **Refresh**. To manually add a SSID to the list, click on **Add**.

Profile Group Control: once you have added all the SSID you want to the preferred WLANs, you can group them by giving them a name in the **Profile Group Control** box and click **Add**. Any settings you set to the group will automatically be applied to all WLANS belonging to that group.

Preferred WLANs: you may add a preferred SSID which the wireless adapter will automatically connect to upon startup. To add a new SSID from the available WLANs list, select the desired SSID and click **Add**. To add a new SSID that is not listed in the available WLANs list, click on **New** and manually enter the name of the SSID. If you have more than one preferred WLAN, you may move the SSID up or down the list. Each time the computer starts up, the wireless adapter will attempt to connect to the SSID listed beginning from the top of the list. If you wish to configure the properties of a WLAN, highlight it and click on **Properties**.

Configuring WEP Encryption

The following screen will appear after you click on the **Properties** button from the Preferred WLANs box.

Wireless Network Properties
Wireless network name (SSID): default
Wireless network key (WEP) This network requires a key for the following: Authentication Mode: Open System
Data Encryption: WEP
Key length: 64 bits (40+24) - 10 Hexadecimal d
Key 1:
Кеу 2:
Кеу 3:
Key 4:
Default key: Key 1 💌
Enable 802.1X Authentication Config
This is a computer to computer (ad hoc) network; no access points are used.
IP & Proxy Setting OK Cancel

If your existing wireless network has WEP encryption enabled, you need to configure the wireless adapter with the identical encryption settings in order to establish a connection.

Step 1 Verify that the Wireless network name matches the **SSID** of the Access Point you're trying to connect to.

Step 2 Verify the **Authentication Mode** is set to the same setting as the Access Point you're trying to connect to.

Step 3 Select WEP from the Data Encryption drop-down menu.

Step 4 Choose the same Key length that the Access Point is using.

Step 5 Enter the identical key in the corresponding key number

Step 6 Make sure the default key is the same key number used by the Access Point.

Note: both the key and the key number must be identical with the Access Point.

Step 7 Click OK to save your settings.

Step 8 Click Apply and OK..

Configuring WPA Encryption

If your existing wireless network has WPA encryption enabled, you need to configure the wireless adapter with the identical encryption settings in order to establish a connection.

Step 1 Go to the **Properties** screen of the preferred WLAN as described above and verify that the Wireless network name is the SSID of the Access Point you're trying to connect to.

Step 2 Choose **WPA-PSK** from the **Authentication Mode**. Select **TKIP** as the **Data Encryption** and click on the **Authentication Config** button.

Wireless Network Properties	×		
Wireless network name (SSID): default			
Wireless network key (WEP) This network requires a key for the following:			
Authentication Mode: WPA-PSK	•		
Data Encryption: TKIP	.		
Key length: 64 bits (40+24) - 10 Hexadecimal d	-		
Key 1:			
Key 2:			
Key 3:			
Key 4:			
Default key: Key 1 🖃			
Enable 802.1X Authentication Conf	g		
This is a computer to computer (ad hoc) network; no access points are used.			
IP & Proxy Setting OK Cance			

Step 3 Enter a passphare in the WPA Passphrase field and click **OK**. (Note: the passphrase must be between 8 – 63 characters long).

Advance Security Settings
WPA-PSN WPA Passphrase
EAP Type EAP Type:
Certificate
User Certificate
🔲 Validate Server Certificate
User Information User Name Domain Name
Password
Confirm Password
TTLS Identity
Trust CA List
Add
Remove
OK Cancel

Status Tab

Under the **Status Tab** you will find information on the connection state, hardware information, and advanced state.

Wireless Network Config Utility	
Configuration Status Option About	
Connection State Connection Status : Connected SSID: default	
BSSID:00:03:2F:22:C9:60Network Type :InfrastructureFrequency :802.11g-2.4GHzChannel :6Data Encryption :Disable	
Speed : 36.0 Mbps Authentication State : Connected Signal Strength : 30 %	
Hardware Information Advance State MAC Address : 00:0F:3D:84:AD:B0 Radio Status: ON Regulatory Domain : ETSI	
OK Cancel	Apply

Connection Status: displays the status of the connection

SSID: The SSID that the wireless adapter is connected to
BSSID: The MAC Address of the Access Point that the wireless adapter is connected to
Network Type: The network connection type
Frequency: The frequency that the wireless adapter is using
Channel: The channel number that the wireless adapter is using
Data Encryption: Displays if WEP encryption is disabled or enabled
Speed: Displays the speed of the connection
Authentication State: Displays the authentication state
Signal Strength: A bar shows the signal strength of the connection

Hardware Information: Displays the MAC Address of the wireless adapter and the regulatory domain.

Advanced State: Displays whether the radio signal is On or Off.

Option Tab

Under the **Option Tab**, general settings and advanced settings are shown.

Wireless Network Config Utility			
Configuration Status Option About			
General Setting Auto launch when Windows start up Remember mini status position Auto hide mini status Set mini status always on top Enable IP Setting and Proxy Setting in Profile Group Roaming	Advance Setting Disable Radio Radio Frequency : Start ad hoc network : Adhoc Channel : Power Save Mode : Transmit Power :	802.11b/g-2.4GHz 2.4GHz Auto Fast Save 100%	
WLAN type to connect Infrastructure and ad hoc network Infrastructure network only ad hoc network only Automatically connect to non-preferred networks	Super G : Fragmentation Threshold : RTS Threshold :	Enable	2346 2346
	OK	Cancel	Apply

General Setting:

Auto launch when Windows starts up: check the box to launch the WLAN Monitor when Windows starts up

Remember mini status position: remembers the mini status position

Auto hide mini status: auto hides the mini status screen

Set mini status always on top: the mini status screen will always stay on top of the desktop

Enable IP setting and Proxy setting in profile: allows you to back up previous IP settings

Group Roaming: Check the box to enable group roaming.

WLAN type to connect:

Infrastructure and Ad-Hoc network: for connecting to either an access point or a peer network client without the use of an access point

Infrastructure: for connecting to an access point only

Ad-Hoc: for connecting directly to another wireless client without using an Access Point or wireless router. (Both wireless clients must be set to using Ad-Hoc mode).

Automatically connect to non-preferred networks: Check the box to connect to non-preferred networks upon startup.

Advance Setting:

Disable Radio: Check the box to disable the radio signal

Radio Frequency: 802.11b/g switches automatically between 802.11b and 802.11g speed depending on the other wireless devices. 802.11b will only connect at 802.11b speed (11 Mbps or lower).

Start ad hoc network: Choose the appropriate frequency for your ad-hoc network Ad-Hoc Channel: Choose the desired channel for your ad-hoc network. All devices in the ad-hoc network must use the same channel.

Power save Mode:

Fast Save - This setting consumes half the power.

Max Save - This setting consumes the least power.

Disable - This default setting consumes the most power.

Transmit Power: Choose to transmit power from 100%, 50%, 25%, 12.5% and Lowest. **Super G:** Enable or Disable the Super G function (108Mbps). In order to transfer speeds at 108 Mbps, all wireless devices must be Super G compatible and set to use Super G.

Fragmentation Threshold: Set the desired fragmentation threshold

RTS Threshold: Set the desired RTS threshold

About Tab

Displays the Driver and Utility version

Wireless Network Config Utility	×
Configuration Status Option About	
Utility Version: V3.0.31.40720 Driver Version: 3.3.0.156 Secured by Odyssey Copyright 2004, AirLink101. All Rights Reserved.	
OK Cancel Apply	

Troubleshooting

1. How do I verify if the driver is installed correctly?

To verify if the driver for the wireless adapter is installed correctly, follow the steps below.

Step 1 Right-click on My Computer from your desktop and choose Properties.

Step 2 Select the **Device Manager** tab. (For Windows 2000/XP, select the **Hardware tab** first then click on **Device Manager**).

Step 3 Expand **Network adapters** and verify that **IEEE 802.11g PCI Wireless Network Adapter** is in the list and that no yellow question mark or exclamation mark is beside it.

🚇 Device Manager	
File Action View Help	
$\leftarrow \rightarrow \mathbf{II} \mathbf{E} \triangleq \mathbf{E} \mathbf{E} $	
Computer Compu	

Step 4 Close the Device Manager. If you do not see IEEE 802.11g PCI Wireless Network Adapter in the list, try to reinstall the driver again.

2. The computer does not recognize the PCI adapter.

Make sure that the PCI adapter is properly seated in the computer's PCI bus slot. If there are additional free PCI slots, try to install the PCI adapter in those slots.

3. The PCI adapter does not work properly after the driver is installed.

- **Restart** the computer. In some cases, it will be necessary to restart the computer after installing the driver.
- If the device is not working properly and a yellow exclamation mark is displayed, then there is probably a resource conflict. In this case, make sure the computer system has a free IRQ and if necessary, uninstall the driver, restart the system, and repeat the driver installation procedure.

Technical Specifications

Standards

IEEE 802.11b IEEE 802.11g IEEE 802.11

Buy Type

PCI 2.2

Supported OS

Windows XP Windows 2000 Windows ME Windows 98SE

Frequency Range

2.4GHz ~2.497GHz

Data Rates

1, 2, 5.5, 11 Mbps (IEEE 802.11b) 6, 9, 12, 18, 24, 36, 48, 54 (IEEE 802.11g), 108 Mbps (must have Super G enabled access point/wireless router).

Modulation Techniques

IEEE 802.11g

BPSK QPSK 16 QAM 64 QAM OFDM

IEEE 802.11b

DQPSK DBPSK DSSS CCK

Data Security

64, 128, 154-bit WEP (Wired Equivalent Privacy) Encryption

Media Access Control

CSMA/CA with ACK

Diagnostic LED

Power, Link

Receiver Sensitivity:

54Mbps OFDM, 10% PER,-68dBm 48Mbps OFDM, 10% PER,-68dBm 36Mbps OFDM, 10% PER,-75dBm 24Mbps OFDM, 10% PER,-79dBm 18Mbps OFDM, 10% PER,-82dBm 12Mbps OFDM, 10% PER,-82dBm 11Mbps OFDM, 10% PER,-82dBm 9Mbps OFDM, 10% PER,-87dBm 6Mbps OFDM, 10% PER,-85dBm 5.5Mbps CCK, 8% PER,-85dBm 2Mbps QPSK, 8% PER,-86dBm 1Mbps BPSK, 8% PER,-89dBm

Weight:

0.12 lb. (55 grams)

Physical Dimensions:

L = 4.64 inches (130.3mm) W = 2.13 inches (64mm) H = 0.34 inches (8.1mm)

Temperature

Operating: 0°C to 55°C (32°F to 149°F)

Humidity

95% maximum, non-condensing

Internal Antenna Type

Dipole with detachable reverse SMA connector

Transmitter Output Power

15dBm ± 2 dB

Technical Support

E-mail: support@airlink101.com

Toll-Free: 1-888-746-3238

Web Site: www.airlink101.com

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