AMBIT®

USER'S MANUAL

Model Name T60H424

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Chapter 1 About the T60H424 MiniPCI Card

The IEEE 802.11 T60H424 MiniPCI Card is compatible with any standard, notebook computer Type II or Type III PCMCIA slot / Type III MiniPCI slot. As a Plug-and-Play device, Windows 95/98/2000 will automatically recognize the T60L198 PCMCIA and initiate the installation process. Upon successful installation, the T60H424 MiniPCI card will communicate seamlessly with other T60H424 wireless home and office networking products.

1-1 FEATURES

- 1. Supports up to 11 Mbps data rate: T-1 line alternative/replacement that dramatically cuts costs.
- 2. Working range up to 800 ft. in an open environment enhances mobility.
- 3. Supports point-to-point and point-to-multipoint access provides increased flexibility.
- 4. Seamless connectivity to wired Ethernet and PC network LAN's offers quick, trouble-free integration with existing networks.
- 5. Robust Direct Sequence Spread Spectrum (DSSS) technology provides secure, interference-resistant wireless connection.
- 6. Wireless connections eliminate the hassle and cost of cabling.
- 7. Supports a wide range of LAN (Local Area Network) Network Operating Systems (NOS) including Windows @ 98 and Windows @ 2000
- 8. Easy Plug and Play installation(T60L198).
- 9. Omni directional antenna included
- 10. Greater flexibility to locate or move networked PC's

1-2 APPLICATIONS

T60H424 products offer a fast, reliable, cost-effective solution for wireless client access to the

network the following applications and environments:

- Remote access to corporate network information
- E-mail, file transfer and terminal emulation
- Difficult-to-wire environments
- Historic or older buildings
- Buildings with asbestos insulation
- Open areas where wiring is difficult to employ
- Frequently changing environments
- Retailers, manufacturers or other organizations that frequently rearrange the workplace or relocate
- Temporary LANs for special projects or peak time usage
- Trade shows, exhibitions and construction sites that employ temporary networks.

3



Retailers, airline and shipping companies that need additional workstations for a peak

period and Auditors that require workgroups at customer sites.

- Access to database for mobile workers
- Medical, Technical and Retail specialists that require roaming access to a database or

other network resources.

- SOHO (Small Office and Home Office) users
- Perfect for users that need a small, easy-to-install network that deploys rapidly.
- Inter-building connection
- Wireless building-to-building networks are quickly and easily installed, require no monthlylease fees, and provide the flexibility to reconfigure easily.

1-3 PRODUCT KIT

The T60H424 product kit includes the following items. Ensure that the items in the following list have been included. If any of the listed items are missing, please contact your local dealer.

- 1 X T60L198 PCMCIA Type II Adapter or Type III T60H424 MiniPCI Adapter
- 1 X Driver
- 1 X User Manual & Utility

Chapter 2 Network Configuring and Planning

The T60H424 supports legacy Ethernet LAN network configuration options as defined by the IEEE 802.11 standards committee. The T60H424 can be configured as:

- . Ad-Hoc for departmental or SOHO LANs.
- . Infrastucture for enterprise LANs.
- . LAN-Interconnection for to point-to-point link as a campus backbone.

2-1 Network Topology



Fig.1 Ad-Hoc Wireless LAN

An Ad-Hoc wireless LAN is a group of computers. Each equipped with on T60H424 adapter, connected as an independent wireless LAN.Computers in a specific Ad-Hoc wireless LAN must be configured to share the same radio channel.

Ad-Hoc wireless LAN configurations are appropriate for branch level departments or SOHO operations.



Fig.2 Infrastructure Wireless LAN Configuration

The T60H424 provides access to a wired LAN for wireless workstations. An integrated wireless and wired LAN is called an Infrastructure configuration. A group of T60H424 PC users and an Access Point compose a Basic Service Set (BSS). Each T60H424 can talk to any computer in the wired LAN infrastructure via the Access Point.

An Infrastructure configuration extends the accessibility of a T60H424 equipped PC to a wired LAN and doubles the effective



wireless transmission range for 2 T60H424 PCs. Since the Access Point is able to forward data within its BSS, the effective transmission range in an infrastucture LAN is doubled.



Fig 3 The effective transmission ranges

2-2 Roaming

Infrastructure mode also supports roaming capabilities for mobile users More than one BSS can be configured as an Extended Service Set (ESS). The continuous network allows users to roam freely within an ESS. All T60H424 PCs and Access Point within one ESS must be configured with the same ESSID and use the same radio channel.



Fig.4 Roaming in an Extended Service Set (ESS)

Before enabling an ESS with roaming capability, choosing a feasible radio channel and optimum Access Point position is recommended. Proper Access Point positioning combined with a clear radio signal will greatly enhance performance.



Chapter 3 Adapter Installation and Configuration – Windows ® 98 / 2000

3-1 SYSTEM REQUIREMENTS

In order to install and use the T60L198 PCMCIA/T60H424 MiniPCI card your PC system must meet the following requirements:

- A PCMCIA Type II or Type III slot / Type III MiniPCI slot
- PCMCIA/MiniPCI revision 2.10 compliant card and socket services
- Windows 98 (with the Floppy, for use during installation)
- 500 Kbytes free disk space for utility and driver installation

3-2 INSERTING THE ADAPTER

To insert the T60L198/ T60H424 Network Adapter into a notebook computer, do the following:

1. Locate an available Type II or Type III PCMCIA slot / Type III MiniPCI slot.

2. With the PCMCIA adapter's 68-pin / MiniPCI Adapter's 124-pin connector facing the PCMCIA/MiniPCI

slot and the "T60H424 MiniPCI" label facing up slide the PCMCIA adapter

completely into the PCMCIA slot , the MiniPCI Adapter completely into the MiniPCI slot.



T60L198/T60L244

Fig. 5.1 Insert the PCMCIA Adapter into Notebook Fig. 5.2 Insert the MiniPCI Adapter into Notebook

After properly inserting the Network Adapter into your notebook, continue with the T60H424 driver and Lan-Express Configuration Utility installation.

NOTE: The PCMCIA slot allows "hot swap" of PCMCIA adapter. You may insert or remove the



T60L198 / PCMCIA adapter from the slot anytime, even when the power of your computer is on.

NOTE: Windows 98 requires that the Network card and socket services must be compliant with the PCMCIA revision 2.10 specification. Please check the documentation of the PCMCIA/MiniPCI driver before installing the T60L198 PCMCIA/T60H424 MiniPCI adapter.

3-3.1 T60H424 DRIVER INSTALLATION -WINDOWS 98

Note: Before proceeding, have the Windows 98 Floppy ready, as it will be required during the

software installation process.

1. Insert the T60H424 MiniPCI adapter into a standard Type II or Type III PCMCIA /Type III MiniPCI card slot, as described in the preceding section.

2. Windows 98 will automatically detect the T60H424 and prompt you to install the

necessary driver. Click "Next" to begin the installation.

Add New Hardware Wizard		
	This wizard searches for new drivers for:	
	LAN-Express PC Card-HFA384x/IEEE	
	A device driver is a software program that makes a hardware device work.	
8		
	< Back. [Next > Cancel	

(PCMCIA Adapter is left-hand or right-hand side ; MiniPCI Adapter is button side)

3. Check "Search for the best driver..." click "Next".



Add New Hardware Wiz	ard
	 What do you want Windows to do? Search for the best driver for your device. (Recommended). Display a list of all the drivers in a specific location, so you can select the driver you want.
	< <u>B</u> ack Next > Cancel

4. Check "floppy disk drivers" , click "Next". Windows @ 98 will automatically find the file.

Add New Hardware Wizard		
	Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search. 	
	< <u>B</u> ack Next > Cancel	

5. Windows \otimes 98 will then acknowledge that it has found the appropriate driver, click "Next".



Add New Hardware Wiz	ard
Add New Hardware Wiz	Windows driver file search for the device: LAN-Express IEEE 802.11 PC Card Adapter Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
	Location of driver:
	< Back Next > Cancel

6. Clink "Finish" to compete the installation.

Add New Hardware Wiz	ard
	LAN-Express IEEE 802.11 PC Card Adapter
	Windows has finished installing the software that your new hardware device requires.
~	
	< Back. Finish Cancel

3-3.2 ADAPTER CONFIGURATION – WINDOWS 98

After successful installation of the T60H424 and its driver, continue the installation process by configuring the T60H424 adapter properties. To configure the T60H424 Adapter complete the following steps :

1. From the Control Panel, double-click the "Network" icon.



📴 Control Panel					_ 🗆 ×
∫ <u>F</u> ile <u>E</u> dit <u>V</u> iew <u>G</u> o	F <u>a</u> vorites <u>H</u>	elp			
Back Forward	€ Up	X D Cut Copy	Paste	い)) Undo Dek	K » ete
Address 🞯 Control Panel					-
-	Accessibility Options	Add New Hardware	Add/Remove Programs	Date/Time	*
Panel		4		ł	
Use the settings in Control Panel to personalize your computer.	Display	Find Fast	Fonts	Game Controllers	
Select an item to view its	Internet Options	Keyboard	Mail	Modems	
description.	Ó	٤Q	₽Ŷ	\$?	
Microsoft Home Technical Support	Mouse -	Multimedia	Network	ODBC Data Sources (32bit) —	•
		>	🗐 My Comput	er	

2.Select "LAN-Express IEEE 802.11 PC Card Adapter" or "LAN-Express IEEE 802.11 MiniPCI Adapter" from the list and press the "Properties" button.



etwork	?
Configuration Identification Access Control	
The following <u>n</u> etwork components are installed: D-Link DFE-530TX PCI Fast Ethernet Adapter D Intersil PRISM2 Mini-PCI 11Mbps Wireless Ada An-Express IEEE 802.11 MiniPCI Adapter AN-Express IEEE 802.11 PC Card Adapter	pter
VetBEUI -> D-Link DFE-530TX PCI Fast Ether	net Adapter 💌
Primary Network Logon:	- <u>r</u> operties
Client for Microsoft Networks	•
File and Print Sharing	
Description A network adapter is a hardware device that physic connects your computer to a network.	sically
OK	Cancel

3. From the "Properties" menu select the "Advanced" tab.

LAN-Express IEEE 802.11 PC Card Adapter Properties 💽 🗙		
Driver Type Bindings Advanced		
Click the type of the network driver to use:		
Enhanced mode (32 bit and 16 bit) NDIS driver		
C Real mode (16 bit) NDIS driver		
C Real mode (16 bit) ODI driver		
OK Cancel		



4. Select "Channel" from the list, and choose a "Value" from the drop down list. FCC

regulations require a "Value" between 1 and 11.

LAN-Express IEEE 802.11 P	C Card Adapter Properties <mark>?</mark> 🗙
Driver Type Bindings Advar Click the setting you want to select its new value on the rig	nced change on the left, and then ght.
Property: Authentication Algorithm Channel FRAG Threshold NetworkType PowerSaveMode RTS Threshold SSID Use Wep	Value: 03 ▼ 06 07 08 09 10 11 ▼
	OK Cancel

5. Select "Network Type", and choose "Infrastructure" or "Ad-Hoc" as the "Value".

AN-Express IEEE 802.11 PC	Card Adapter Pro	operties <mark>?</mark> 🗙
Driver Type Bindings Advance	ed	
Click the setting you want to ch select its new value on the right	ange on the left, an t.	d then
Property: Authentication Algorithm Channel FRAG Threshold NetworkType PowerSaveMode RTS Threshold SSID Use Wep	⊻alue: AdHoc	
	ОК	Cancel



Note: "Infrastructure" mode allows a wireless adapter to communicate with a wired network, While "Ad-Hoc" mode allows wireless-to-wireless communication. Consult your System Administrator for information about your network communication type. For more information About Infrastructure and Ad-Hoc networks, see Chapter 2 of this manual

6. Select "Power Save Mode" and choose a "Value".

LAN-Express IEEE 802.11 PC C	ard Adapter Properties _? 🗙
Driver Type Bindings Advanced	l]
select its new value on the right.	nge on me iert, and men
Property: Authentication Algorithm	Value: Disabled
FRAG Threshold	
PowerSaveMode RTS Threshold	
Use Wep	
	OK Cancel

NOTE: To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your network type. For more information about Power Save Mode, see the chapter entitled "LAN-Express Configuration Utility" in this manual.

8. Select "SSID"; enter a "Value" of "ANY".



LAN-Express IEEE 802.11 PC Card Adapter Properties 🔗 🔀
Driver Type Bindings Advanced Click the setting you want to change on the left, and then select its new value on the right.
Property: Value: Authentication Algorithm ANY Channel ANY FRAG Threshold ANY NetworkType PowerSaveMode RTS Threshold SSID Use Wep Use Wep
OK Cancel

NOTE: The SSID can have any value, but should have the same value as the Access Point

(AP). In Ad-Hoc mode, all clients should share the same SSID

9. Select "Transmit Rate", and choose a "Value".



LAN-Express IEEE 802.11 PC Card Adapter Properties ? 🗙
Driver Type Bindings Advanced Click the setting you want to change on the left, and then select its new value on the right.
Property: Value: %LISTENINTERVAL_STR% Authentication Algorithm Channel FRAG Threshold FRAG Threshold NetworkType PowerSaveMode RTS Threshold SSID Transmit Rate Use Wep Value:
OK Cancel

NOT*E*: Fixed 11 Mb/s is the preferred "Value" for environments where the client has line of sight access and is a short distance away from the AP. Fully Auto is the recommended setting for clients that are farther away from the AP and where there may be interference between the client and the AP.

10. Select "Use Wep", and choose a "Value".

16



LAN-Express IEEE 802.11	PC Card Adapter Properties _? 🗙
Driver Type Bindings Adv Click the setting you want i select its new value on the	vanced to change on the left, and then eright.
Property: %LISTENINTERVAL_STF Authentication Algorithm Channel FRAG Threshold NetworkType PowerSaveMode RTS Threshold SSID Transmit Rate Use Wep	Value: 3≋ Disabled ▼
	OK Cancel

NOTE: Wired Equivalent Privacy (Wep) is an encryption scheme used to protect wireless data communication. Selecting "Disabled" will prevent you from sharing data with other computers if your network uses Wep. If your network is Wep enabled, you must choose "64bit" or "128bit". Consult your System Administrator for more information about your network type. For more information about Wep, see the chapter entitled "PRISM Configuration Utility" in this manual.

11. After the configuring the "Properties", click "OK" and continue with the Protocol Installation, described in the following section.

3-3.3 PROTOCOL INSTALLATION – WINDOWS 98

Before continuing with the Protocol installation consult your System Administrator for details about your specific network. To install network protocols complete the following steps.

1. From the "Control Panel" double-click the "Network" icon.

2. Select "LAN-Express IEEE 802.11 PC Card Adapter" or "LAN-Express IEEE 802.11 MiniPCI Adapter" and click "Add".



etwork	?
Configuration Identification Access Control	
The following network components are installed:	_
 TCP/IP -> Intersil PRISM2 Mini-PCI 11Mbps Wireless Ada TCP/IP -> LAN-Express IEEE 802.11 MiniPCI Adapter 	
 TCP/IP -> LAN-Express IEEE 802.11 PC Card Adapter File and printer sharing for Microsoft Networks 	•
Add Remove Properties	
Primary Network Logon: Client for Microsoft Networks	•
<u>F</u> ile and Print Sharing	
Description TCP/IP is the protocol you use to connect to the Internet and wide-area networks.	1
OK Can	cel

3. Highlight "Protocol" and click "Add".

Select Network Component Type	? ×
Click the type of network component you want to install:	
📃 Client	<u>A</u> dd
🕮 Adapter	
Y Protocol	Cancel
Service	
Protocol is a 'language' a computer uses. Computers must use the same protocol to communicate.	

4. Select "Microsoft" from the list of "Manufacturers" and "TCP-IP" from the list of "Network

Protocols", click "OK"



Select Network Protocol	×
Click the Network Pro an installation disk for	otocol that you want to install, then click OK. If you have r this device, click Have Disk.
<u>M</u> anufacturers:	Network Protocols:
🖗 Banyan	🖗 Microsoft 32-bit DLC
ibm	G Microsoft DLC
Y Microsoft	🐺 NetBEUI
🧯 Novell	Y TCP/IP
	WAN support for ATM
	🐨 Winsock2 ATM Service Provider 🛛 🗨
	<u>H</u> ave Disk
	OK Cancel

5. Select "TCP/IP " and click "Properties".

Configuration Identification Access Control
The following network components are installed:
TCP/IP -> D-Link DFE-530TX PCI Fast Ethernet Adapter
TCP/IP -> Intersil Philom2 Mini-PCI 11Mbps Wireless Ada
TCP/IP -> LAN-Express IEEE 802.11 PC Card Adapter
📮 File and printer sharing for Microsoft Networks 📃 🔽
Add Remove Properties
Primary Network Logon:
<u>File and Print Sharing</u>
- Description
TCP/IP is the protocol you use to connect to the Internet and
wide-area networks.
OK Cancel

Repeat step 2 – 5 to install other protocols such as NetBeui or IPX/SPX.

NOTE: The following steps apply to DHCP servers. Consult your system administrator for

specific information regarding your server type, and for help in specifying an IP address if you do



not use a DHCP server and must manually enter the IP address and DNS number.

6. Check "Obtain an IP address..." and click "OK". If you are using a DHCP server the IP

address will be entered automatically.

TCP/IP Properties				? ×
Bindings DNS Configuration	Adv Gateway	anced WINS Confi	Ni guration	etBIOS IP Address
An IP address can If your network doe your network admir the space below.	be automat es not auton histrator for a	ically assigned natically assign an address, ar	d to this c n IP addro nd then ty	omputer. esses, ask ipe it in
Obtain an IP	address aut	omatically		
C Specify an IP	address:—			
JP Address:				
S <u>u</u> bnet Mas	k:			
		OK		Cancel

7. From the Network menu highlight "Client from Microsoft Networks", and click" File and Print Sharing".



Network		? ×
Configuration Identification Access Cor	ntrol]	din na sana sa
The following network components are in TCP/IP -> D-Link DFE-530TX PCI F TCP/IP -> Intersil PRISM2 Mini-PCI TCP/IP -> LAN-Express IEEE 802.1 TCP/IP -> LAN-Express IEEE 802.1	nstalled: ^T ast Ethernet 11Mbps Wire 1 MiniPCI Ad 1 PC Card Ac Networks	Adapter 🔺 sless Ada lapter dapter
1		
Add Remove	P <u>r</u>	operties
Client for Microsoft Networks		_
Eile and Print Sharing Description File and print sharing for Microsoft netw ability to share your files or printers with Windows for Workgroups computers.	vorks gives y n Windows N	ou the T and
	ОК	Cancel

8. Check both boxes and click "OK".

9. Enter a "Computer name", "Workgroup" and "Computer Description", click "OK"



Network			? ×
Configuration Iden	tification Access	Control	
Windov comput comput descript	is uses the following on the network. Fr, the workgroup ion of the compute	ng information to in Please type a na it will appear in, ar er.	dentify your Ime for this Ind a short
Computer name:	WIRELESS		
Workgroup:	СОМ		
Computer Description:	WIRELESS		
		ОК	Cancel

11. You will be prompted to restart your computer, click "Yes" to complete the installation.

Note: Please see the trouble shooting if you encounter some problem while installing the PC-Card or your PC-Card is non-functional.

3-5 T60H424 setup for windows @2000

 Insert the T60H424 MiniPCI adapter into a standard Type II or Type III PCMCIA card slot / Type MiniPCI card slot, as described in the preceding section.
 Windows

 Windows
 2000 will automatically detect the T60H424 and prompt you to install the necessary driver. Click "Next" to begin the installation.



Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device.
	< Back Next > Cancel

3. Check "search for the best driver..." click "Next".

tall Ha	rdware Device Drivers
A devid an ope	e driver is a software program that enables a hardware device to work with rating system.
This wi	zard will complete the installation for this device:
%	LAN-Express_PC_Card HFA384x/IEEE
A devid needs installat	e driver is a software program that makes a hardware device work. Windows driver files for your new device. To locate driver files and complete the ion click Next.
What c	o you want the wizard to do?
œ	Search for a suitable driver for my device (recommended)
0	Display a list of the known drivers for this device so that I can choose a specific driver
	< Back Next > Cance



Found New Hardware Wizard
Locate Driver Files Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
LAN-Express_PC_Card HFA384x/IEEE
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify. To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations: ▼ Floppy disk drives ■ CD-ROM drives ■ Specify a location ■ Microsoft Windows Update
< Back Next > Cancel

5. Windows ® 2000 will then acknowledge that it has found the appropriate driver, click "Next".

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
LAN-Express_PC_Card HFA384x/IEEE Windows found a driver for this device. To install the driver Windows found, click Next.
a:\netwlan.inf
< Back Next > Cancel

6. Click "Yes" to continue the installation.





7. Clink "Finish" to compete the installation.

Found New Hardware Wizard	
	Completing the Found New Hardware Wizard Image: Completing the Solution of Completing the S
	To close this wizard, click Finish.
	< Back Finish Cancel

Chapter 4 Installing & Navigating the LAN-Express Configuration Utility

4-1 LAN-Express CONFIGURATION UTILITY - INSTALLATION

Insert the LAN-Express Network Configuration Utility disk into an available floppy disk drive. From the "Run" window type "A:\utility \setup.exe" (where "A" represents a floppy disk drive).

4-2 LAN-Express CONFIGURATION UTILITY - NAVIGATION



The following section describes and defines the various functions of the LAN-Express Network Configuration Utility. This utility provides quick access to all adapter settings.

After installation is complete, a LAN-Express utility icon will appear in

the "Start" ->"Program"->"Wireless LAN Card Utility"->"Wireless LAN Utility" Icon.

The LAN-Express About Icon: Clicking the upper left corner icon in the LAN-Express Utility will open the About, here you will find Version, Copyright and Manufacturer information.

Wireless LAN Adapter : (0).LAN-Express IEEE 802.11 PC Card Adapter 💌
Card Status Quality Test Card Monitor Config Adapter Card Encryption Firmware Upgrade
Connected with AP Information
ESSID : AirPort Network 2196cb Rescan
Throughput (Bytes/Sec)
BSSID: 00:60:1D:21:96:CB Tx: 0 Rx: 869
Current channel : 1 Current Tx Rate 11 Mbits/Sec
Card Information
MAC Address 00:20:CA:00:13:19
Frequency Domain : FCC Firmware Version : 8.02
Link Quality : Excellent (100%)
Signal Level : Excellent (93%)

The LAN-Express Card Status: Clicking the Card Status button in the LAN-Express Utility

will open the Card Status, The Link Info menu provides information about the current link between the adapter and the base station(or AP).



Wireless LAN Card	Utility for Windows Utility for Windows Image: Comparison of the second se
Card Status Qu	ality Test 🕴 Card Monitor 🖡 Config Adapter 🖡 Card Encryption 🖡 Firmware Upgrade 📔
Connected with	AP Information
ESSID :	AirPort Network 2196cb Rescan
BSSID :	Throughput (Bytes/Sec) 00:60:1D:21:96:CB Tx : 0 Rx : 869
Current cham	nel : 1 Current Tx Rate 11 Mbits/Sec
Card Informatio MAC Addres Frequency Do	n
- Link Quality	7: Excellent (100%)

The LAN-Express Quality Test: Clicking the Quality Test button in the LAN-Express Utility

will open the Quality Test, providing a simple test on two station. While one station Set a Master mode, another station set a slave mode. Master station must set slave station's Mac Address. If a station is tested under loopback test mode, it should use AP of LAN-Express.

Choose the station			
 Master test 	Slave Address: 📋	0:20:CA:00:13:20	<u>s</u> tart
🔿 Slave test	My Address:	00:20:CA:00:13:19	Stop
Test Result My Address : 00:	20:CA:00:13:19 Te	st Address :	
Sent Packets:	Received Packets :	Time Elapsed :	

The LAN-Express Card Monitor: Clicking the Card Monitor button in the LAN-Express Utility



will open the Card Monitor, It can monitor a physical layer in the Adapter currently.

Wireless LAN Card Utility for V	Vindows Wireless LAN Adapter : (0).LAN-Express II	EEE 802.11 PC Card Adapter
Card Status Quality Test	Card Monitor Config Adapter Card En	cryption Firmware Upgrade
Ix Monitor Unicast Frames: Muticast Frames: Framents: Unicast Octects: Multicast Octects: Deferred Transmission: Single Retry Frames: Multiple Retry Frames: Multiple Retry Frames: Discard: Discard Wrong S.A:	0 Unicast Frames: 0 Muticast Frames: 0 Framents: 0 Unicast Octects: 0 Multicast Octects: 0 FCS Errors: 0 Disacrd No Buffer: 0 WEP Undecrypt: 0 Msg In Msg Fragments: 0 Msg In BadMsg Frags: 0 Rx Over:	Hunt Command: 0 Retry Many: 0 Retry Single: 0 Retry Exhaust: 0 CRC Errors: 0 PLCP CRC: 0 0 Start 0 Clear 0 Stop
Cink Quality : Exceller Signal Level : Exceller	ut (100%)	Exit

The LAN-Express Configuration: Clicking Config Adapter in the LAN-Express Utility

will open the Config Adapter, providing quick access to all adapter settings. The following image shows the LAN-Express Configuration Utility. It can change every parameters.

🥰 Wireless LAN Card Utility for Windows	_ 🗆 🗵
AMBIT [®] Wireless LAN Adapter : (0).LAN-Express IEEE 802.11 PC Ca	rd Adapter 💌
Card Status Quality Test Card Monitor Config Adapter Card Encryption Firmwa	re Upgrade
ESSID Network Type ANY (Can connected with any AP) Specific Al.Hoc Channel	03 🔽
RTS threshold : (2432)	
Fragment threshold (2432)	1000 -
Modify	Default
Link Quality : Excellent (93%) Signal Level : Good (80%)	Exit



The LAN-Express Card Encryption: Clicking the Card Encryption button in the LAN-Express Utility

will open the Card Encryption, An acronym for Wired Equivalent Privacy, WEP is an encryption scheme used to protect your wireless

data communications. WEP uses a combination of 64-bit keys,128-bit keys to provide

access control to your network and encryption security for every data transmission. To decode a

data transmission, each wireless client on the network must use an identical 64-bit key,128-bit key.

Wireless LAN Card	Utility fo	Window Wireles	s s lan a	dapter : [D).LAN-E	xpress I	EEE 802.1	1 PC Card Adapter 💌
Card Status Q	uality Test	t Card I	Monitor	Config I	Adapter	Card Er	ncryption	Firmware Upgrade
WEP Key Entry Create with Passphrase Manual En Key1 : Key2 :	h Passphr : *** ntry ** **	8.59 ******** *** ***	**	**	**	De	efault Key	Disable Your encryption setting must match those of your network, or your computer will be unable to communicate
Key4 :	**	**	**	**	**			Modify
Link Qualit Signal Leve	y: Excel 1: Exce	lent (1009 llent (86%	16) 🔳					

The LAN-Express Firmware Upgrade: Clicking the Firmware Upgrade button in the LAN-Express Utility will open the Firmware Upgrade, It can upgrade a firmware of differ version.



Wireless LAN Card Utility for Windows	PC Card Adapter 💌
Card Status Quality Fest Card Monitor Config Adapter Card Encryption F Firmware Upgrade © File Name : S10008C2.HEX Current Firmware Version : 8.02 Percent (%)	This is firmware update mode. Be sure to use a correct file. After flash update completion, Wireless LAN Card will reboot. Download
Link Quality : Excellent (86%) Signal Level : Good (73%)	

Configuration: Selecting this tab opens the "Configuration" menu. Here you will find options for configuring your adapter.

Description of Settings

Following is an explanation of each adapter setting presented by the "Configuration" menu. **Mode:** The Mode setting determines the architecture of your wireless LAN. Choose Ad-Hoc or Infrastructure Mode depending on your network type. A brief explanation of each mode follows:

 Ad-Hoc: This mode is used for a simple peer-to-peer network. This type of network allows the sharing of local resources only between wireless clients without a wireless Access Point (AP).

Infrastructure: This mode allows a wireless LAN to be integrated into an existing wired network through an AP. Infrastructure type networks also permit roaming between Access Points while maintaining connection to all network resources. Infrastructure mode provides additional features, such as WEP security, power saving and extended range.
 SSID: An acronym for Service Set Identifier, SSID is the unique name shared among all clients and Access Points in a wireless network. The SSID must be identical for all clients or Access Points participating in the same network. The SSID is case sensitive and must not exceed 30 characters.
 Ethernet Conversion: The RFC1042 mode is the 802.11 standard conversion method and is selected by default. If compatibility with older wireless LAN systems is necessary select another conversion implementation from the Ethernet Conversion drop down list.
 Tx Rate: The transmit rate or Tx Rate selects the allowable transfer rates of the wireless client. To

optimize performance and range, the Tx Rate should be set to Fully Automatic, which will



automatically adjust the transfer speed for best performance and longest range. **Note:** The Tx rate setting must be supported by the AP. If the AP does not support the Tx rate, undesired results may occur.

WEP: An acronym for Wired Equivalent Privacy, WEP is an encryption scheme used to protect your wireless data communications. WEP uses a combination of 64-bit keys,128-bit keys to provide access control to your network and encryption security for every data transmission. To decode a data transmission, each wireless client on the network must use an identical 64-bit key,128-bit key. **NOTE:** This feature is only available in Infrastructure Mode and must also be enabled on the Access Point. Select the WEP tab to enable or disable this feature.

PS Mode: Power Saving Mode enables or disables the power saving features of your wireless adapter. When enabled on a laptop, the power saving mode can reduce power consumption by the wireless card and extend the battery life of your laptop. This setting is only implemented in a network operating in Infrastructure mode.

• Changing the PS mode: The PS Mode on your adapter is set to "Disabled" by default. To change the setting, select "Enabled" from the drop-down list, click "OK" and wait a few seconds. The screen will then is updated and show the current Connection Status, Link Quality and Signal Strength.

Channel: This setting specifies the default 802.11 channel used by the Wireless LAN communication. In an Infrastructure type network without an Access Point active on the default channel, clients will scan through all available channels searching for a network with matching SSID.

Changing the Channel: Changing the channel is only effective in Ad-Hoc networks.
 Networks operating in Infrastructure mode automatically scan for a channel. The following table presents contains the operational channel frequency for several countries.

Appendix A Troubleshooting

Problem Solving

My computer does not recognize the T60H424.

Probable Solution:

- The T60H424 is not properly inserted into the PCMCIA/MiniPCI slot.
- Ensure that the T60H424 has been inserted into an available PCMCIA/MiniPCI slot.

The T60H424 does not work properly.

Probable Solution:

 Insert the PCMCIA/MiniPCI adapter into Notebook's slot again. A beep should be heard if the adapter is properly inserted.

1	 	R
	D	

LAN-Express IEEE 802.11 MiniPCI Adapter Properties	? X
General Driver Resources	
LAN-Express IEEE 802.11 MiniPCI Adapter	
☑ <u>U</u> se automatic settings	
Setting based on: Basic configuration 0000	
Resource type Setting Input/Output Range 0000 - 003F Interrupt Request 00	
Change Setting	
Conflicting device list:	
Input/Output Range 0000 - 003F used by: Motherboard resources Input/Output Range 0000 - 003F used by: Direct memory access controller	•
OK Car	ncel

- Check the I/O cable that connects the RF module and the PCMCIA/MiniPCI adapter. The power

LED(T60L198) indicator will be active if the cable is properly connected.

For non-Windows 95/98 environments, ensure that a PCMCIA/MiniPCI card service driver is

installed in your computer.

1) Click on the Control Panel and then on PC-Card/MiniPCI. Check whether it has PCMCIA/MiniPCI card

in one of the sockets or not. If you find "LAN-Express IEEE 802.11 PC-Card Adapter" or "LAN-Express IEEE 802.11 MiniPCI Adapter" in one of the sockets, it means the card is detected properly. If you see the yellow sign of

- question-mark(?), the resources are conflicting.
- 2)Right click on "My Computer" and the select Properties. Select the device Manager and click on the Network Adapter. You will find "LAN-Express IEEE 802.11 PC-Card Adapter" or "LAN-Express IEEE 802.11 MiniPCI Adapter" if it is installed successfully. If you see the Yellow sign the resources are conflicting. Click on PCMCIA/MiniPCI card and then on PCMCIA/MiniPCI Card service, you can see

the status of PCMCIA/MiniPCI.

card. If there are yellow sign either on adapter or PCMCIA/MIniPCI card, please check followings.

- 2-1) Check if your Notebook supports 3.3V card.
- 2-2)Check if your Notebook has a free IRQ
- 2-3) Check that you have inserted the right card and have installed the proper driver.

If the T60H424 does not function after attempting the above steps, remove the PCMCIA adapter,

and do the following:

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System Properti	es		1	
General Devic	e Manager 🛛 Ha	ardware Profi	les Perform	ance
View devi	ces by <u>t</u> ype	O View d	evices by <u>c</u> o	nnection
Compute Compu	r OM drives ay adapters by disk controllers ioard tors se work adapters O-Link DFE-5301 AN-Express IEE CIA socket c(COM & LPT) em devices ersal Serial Bus	's [X PCI Fast B [E 802.11 Mi controllers	Ethernet Adap niPCI Adapte	pter
Properties	Refre	sh	R <u>e</u> move	Pri <u>n</u> t
			OK	Cancel

- From the run window enter, c:\windows\system, locate and delete the Express.sys file
- Open the "Control Panel" double-click "System" and delete "LAN-Express IEEE 802.11 PC-card Adapter" or "LAN-Express IEEE 802.11 MiniPCI Adapter".
- Restart the PC and repeat the hardware and software installation steps outlined in

Chapters 3 and 4.

The T60H424 station cannot communicate with other computers linked via Ethernet in the Infrastructure configuration.

Probable Solution:

- Ensure that the T60H424 with which the station is associated is powered on.
- Confirm the station is configured with the same operating radio channel as the T60H424. If

the IDs are different, change the T60H424 and all the stations within the BSS to another radio channel.

- Ensure that the station is configured with the same security options as the T60H424, and can be turned off and on with the same security key.
- Confirm that the BSS ID is the same as the T60H424 for a roaming disabled station.
 Alternately confirm that the ESS ID is the same as the T60H424 for a roaming enabled
 Station



Appendix B Glossary

Access Point - An internetworking device that seamlessly connects wired and wireless networks together. Ad-Hoc - An Ad-Hoc wireless LAN is a group of computers each with wireless adapters, connected as an independent wireless LAN.

Backbone - The core infrastructure of a network, the portion of the network that transports information from one central location to another central location. The information is then off-loaded onto a local system.

Base Station - In mobile telecommunication, a base station is the central radio transmitter/ receiver that maintains communication with the mobile radio telephone sets within range. In cellular and personal communications applications, each cell or microcell has its own base station; each base station in turn is interconnected with other cells' base.

BSS - Stands for "Basic Service Set." An Access Point associated with several wireless stations.

ESS - Stands for "Extended Service Set." More than one BSS can be configured as an Extended Service Set. An ESS is basically a roaming domain.

Ethernet - A popular local area data communications network, originally developed by Xerox Corp., which accepts transmission from computers and terminals. Ethernet operates on 10 Mbps baseband transmission over shielded coaxial cable or over shielded twisted pair telephone wire.

Infrastructure - An integrated wireless and wired LAN is called an Infrastructure configuration.

PCMCIA - Personal Computer Memory Card International Association, which develops standards for PC cards, formerly known as PCMCIA cards, are available in three "types" which are about the same length and width as credit cards, but range in thickness from 3.3 mm (Type I) to 5.0 mm (Type II) to 10.5 mm (Type III). These cards can be used for many functions, including memory storage, as landline modems and as wireless LAN.

Roaming - A function that allows one to travel with a mobile end system (wireless LAN mobile station, for example) through the territory of a domain (an ESS, for example) while continuously connecting to the infrastructure.

RTS Threshold - Transmitters contending for the medium may not hear each other. RTS/CTS mechanism can solve this "Hidden Node Problem".

Product S pecifications for T60H424 : Radio: Complies with IEEE 802.11 Frequency Band: 2400 ~ 2483.5MHz (for US, Canada, and ETSI 2400 ~ 2497MHz (for Japan) Modulation TYPE: CCK, BPSK, QPSK **Operating Channels: IEEE 802.11 compliant** 11 channels (US, Canada) 13 channels (ETSI) 14 channels (Japan) **Radio Technology: Direct Sequence Spread Spectrum** 34 **Ambit Microsystems Corporation**



Data Rate: 1 / 2 / 5.5 / 11 Mbps Output Power: > 13.74dBm Receive sensitivity: Min. -76dBm for 11Mbps; Min. -80dBm for 5.5/2/1 Mbps ;(@BER 10E-5) Antenna Type: De-attached PCB patch diversity antenna or MMCX connector for external antenna Current Consumption : 3.3 V/5 V , Tx mode 350 m A (Max.) ; Rx mode 230 m A (Max.); Package : PCMCIA Type II/MiniPCI Type III Certification: FCC Part 15 ETSI 300.328 ARIB STD33 & T66 Driver : Windows 95/98/2000/ME

Warning

- This equipment must be installed and operated in accordance with provided instructions and a minimum 3 cm spacing must be provided between computer mounted antenna and person's body (excluding extremities of hands, wrist and feet) during wireless modes of operation.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

Warning

"NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV

INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS

EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO

OPERATE THE EQUIPMENT."



1. T60H424 is for OEM installation only.

2. "The antenna used for this transmitter must be installed to provide a separation distance of at least 3 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

3. OEM integrators are instructed to ensure that the End-User has NO manual instructions to remove or install the device (EUT).