

GLOBAL SUN TECHNOLOGY INC.

GL-241101

Wireless LAN PCMCIA Card

USER MANUAL

Version 0.2, July 07, 2000

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy. If this equipment is not installed and used in accordance with the manufacturer's instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Manufacturer's Disclaimer Statement

The information in this document is subject to change without notice and does not represent a commitment on the part of the vendor. No warranty or representation, either expressed or implied, is made with respect to the quality, accuracy or fitness for any particular purpose of this document. The manufacturer reserves the right to make changes to the content of this document and/or the products associated with it at any time without obligation to notify any person or organization of such changes. In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages arising out of the use or inability to use this product or documentation, even if advised of the possibility of such damages. This document contains materials protected by copyright. All rights are reserved. No part of this manual may be reproduced or transmitted in any form, by any means or for any purpose without expressed written consent of its authors. Product names appearing in this document are mentioned for identification purposes only. All trademarks, product names or brand names appearing in this document are registered property of their respective owners.

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Chapter 1 About the GL-241101 PCMCIA Card

The GL-241101 IEEE 802.11b PCMCIA PC Card is compatible with any standard, notebook computer Type II or Type III PCMCIA slot. As a Plug-and-Play device, Windows 95/98 will automatically recognize the GL-241101 PCMCIA card and initiate the installation process. Upon successful installation, the GL-241101 PCMCIA card will communicate seamlessly with other GL-241101 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 NT[™]
8. Easy Plug and Play installation
9. Omni - directional antenna included
10. Greater flexibility to locate or move networked PC's

1-2 APPLICATIONS

GL-241101 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. 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 monthly lease fees, and provide the flexibility to reconfigure easily.

1-3 PRODUCT KIT

The GL-241101 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 GL-241101 PCMCIA Type II Adapter
- 1 X Driver
- 1 X User Manual & Utility CD pack

Chapter 2 Network Configuration and Planning

The GL-241101 supports legacy Ethernet LAN network configuration options as defined by the IEEE 802 standards committee.

The GL-241101 can be configured as:

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

2-1 NETWORK TOPOLOGY

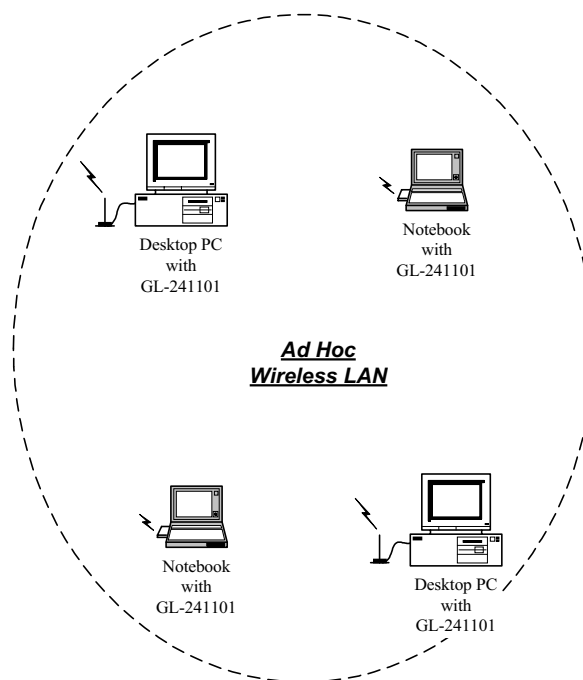


Fig. 1 - Ad-Hoc Wireless LAN

An Ad-Hoc wireless LAN is a group of computers, each equipped with one GL-241101 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

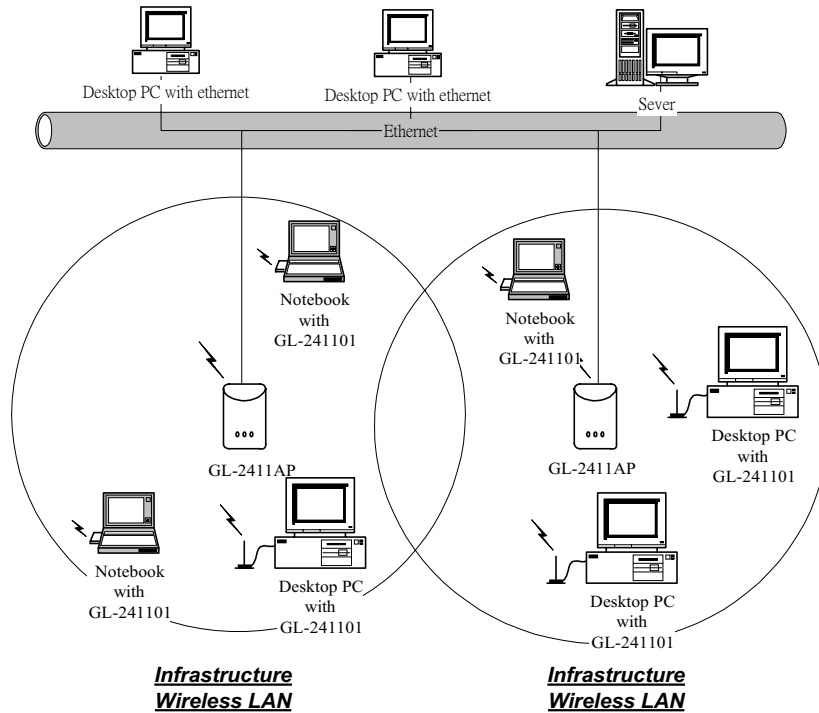


Fig. 2 - Infrastructure Wireless LAN Configuration

The GL-241101 provides access to a wired LAN for wireless workstations. An integrated wireless and wired LAN is called an Infrastructure configuration. A group of GL-241101 PC users and an Access Point compose a Basic Service Set (BSS). Each GL-241101 PC in a BSS can talk to any computer in the wired LAN infrastructure via the Access Point.

An Infrastructure configuration extends the accessibility of a GL-241101 equipped PC to a wired LAN, and doubles the effective wireless transmission range for 2 GL-241101 PCs. Since the Access Point is able to forward data within its BSS, the effective transmission range in an infrastructure LAN is **doubled**.

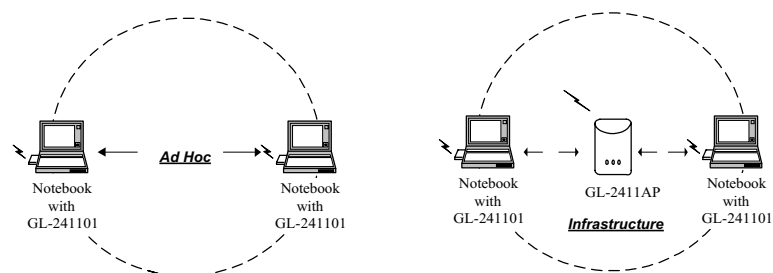


Fig. 3 - The effective Transmission Range

The use of a unique ID in a BSS is essential. All GL-241101 equipped PCs configured without roaming options in an independent BSS must be configured with a BSS ID corresponding to the GL-241101SA used in the BSS. Check your GL-241101SA for its BSS ID or use the Access Point Browser Utility program to determine the BSS ID.

The Infrastructure Wireless LAN configuration is appropriate for enterprise-scale wireless access to a central database, or as a wireless application for mobile users.

A point-to-point LAN configuration is possible when two access points are linked with an optional directional antenna (the directional antenna is an optional accessory, please contact your dealer for information). The optional directional antenna makes LAN-Interconnection to a wireless backbone between buildings possible.

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 GL-241101 PCs and GL-241101SAs within one ESS must be configured with the same ESS ID and use the same radio channel.

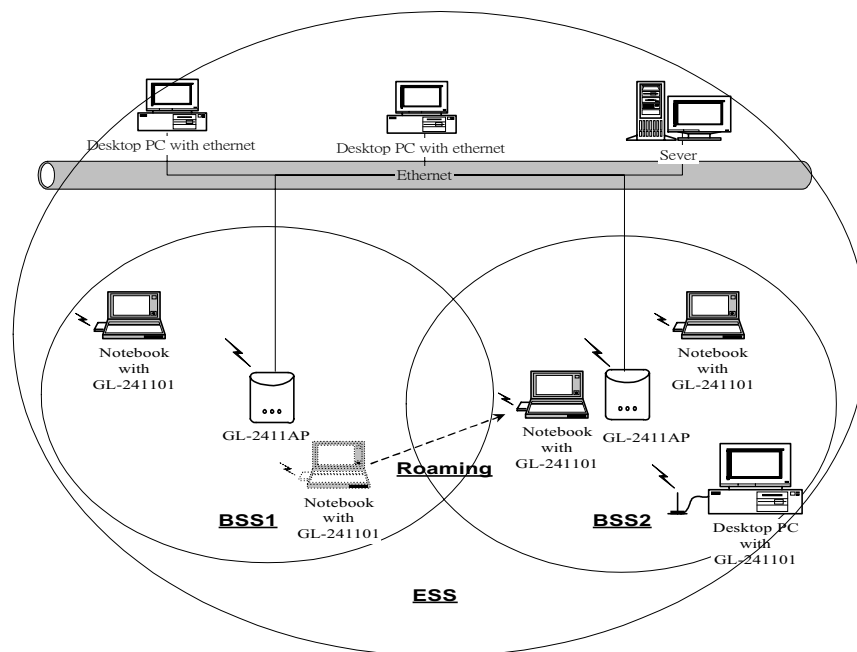


Fig. 4 - Roaming in an Extended Service Set (ESS)

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

3-1 SYSTEM REQUIREMENTS

In order to install and use the GL-241101 PCMCIA card your PC system must meet the following requirements:

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

3-2 INSERTING THE ADAPTER

To insert the GL-241101 Network Adapter into a notebook computer, do the following:

1. Locate an available Type II or Type III PCMCIA slot.
2. With the PCMCIA adapter's 68-pin connector facing the PCMCIA slot and the "GL-241101PCMCIA" label facing up slide the PCMCIA adapter completely into the PCMCIA slot.

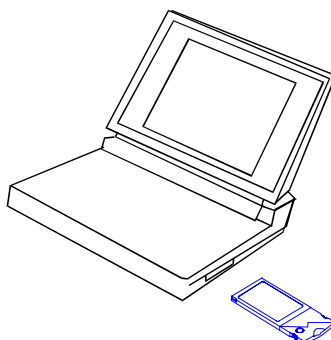


Fig. 5 Insert the GL-241101 into Notebook

After properly inserting the Network Adapter into your notebook, continue with the GL-241101 driver and PRISM Configuration Utility installation.

NOTE: The PCMCIA slot allows "hot swap" of PCMCIA adapter. You may insert or remove the GL-241101 / PCMCIA adapter from the slot anytime, even when the power of your computer is on.

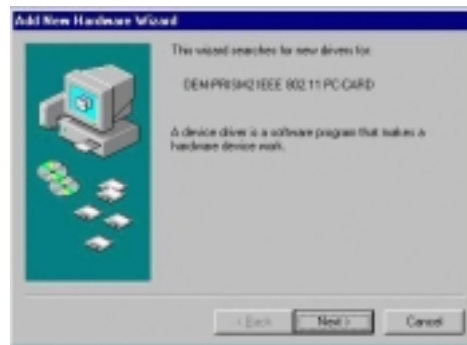
NOTE: Windows® 98 requires that the Network card and socket services must be compliant with the PCMCIA revision 2.10 specification. Please check the documentation of the PCMCIA driver before installing the GL-241101 PCMCIA adapter.

NOTE: To comply with FCC RF exposure requirements, this device should be operated in lap-top computer configurations with a separation distance of 20 cm or more between the antenna and persons. The antenna should not be operated next to a person's body.

3-3 GL-241101 DRIVER INSTALLATION -WINDOWS® 98

Note: Before proceeding, have the Windows® 98 CD ready, as it will be required during the software installation process.

1. Insert the GL-241101 A adapter into a standard Type II or Type III PCMCIA card slot, as described in the preceding section.
2. Windows® 98 will automatically detect the GL-241101 and prompt you to install the necessary driver. Click "Next" to begin the installation.



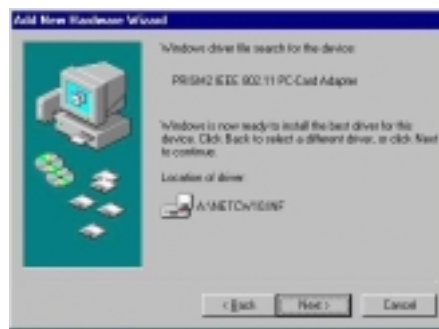
3. Check "Search for the best driver..." click "Next".



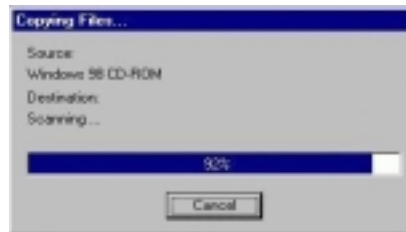
4. Check "Floppy-disk drives" click "Browse". Double-click the "Setup" folder icon from the list, double-click the setup.exe icon. Windows® will automatically enter the path click "Next".



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

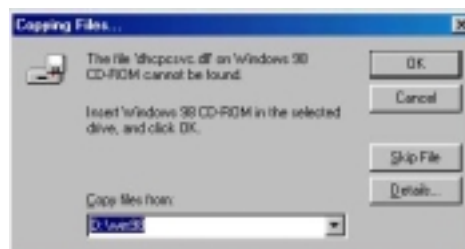


Windows® will now install the driver



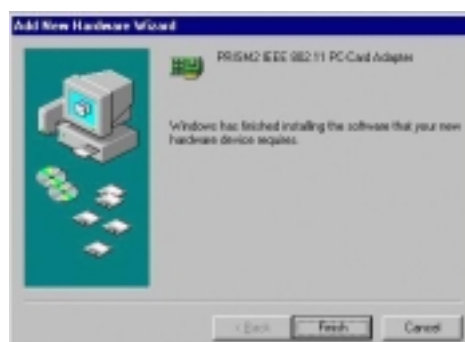
As the driver files are being copied to the appropriate location, you will be prompted to insert the Windows® 98 CD.

6. Insert the Windows® 98 CD. Select "D:\win98" from the drop down list (where "D" represents the CD-ROM drive), click "OK"

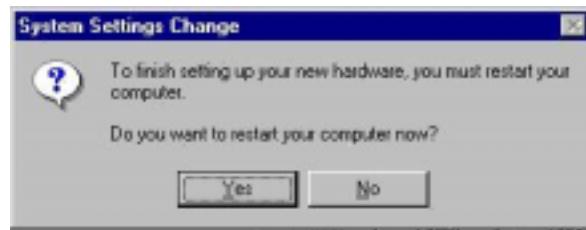


NOTE: You must insert the Windows 98® CD as the driver installation requires special files that will not be available even if you have stored a copy of Windows® 98 on your hard drive.

7. After Windows® has finished installing the appropriate files click "Finish"



8. You will be prompted to restart your computer, click "YES" to complete the installation.



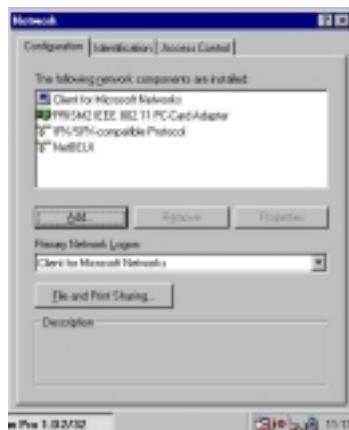
3-4 ADAPTER CONFIGURATION – WINDOWS® 98

After successful installation of the GL-241101 and its driver, continue the installation process by configuring the GL-241101 adapter properties. To configure the GL-241101 Adapter complete the following steps :

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



2. Select "PRISM2IEEE 802.11b PC Card Adapter" from the list and press the "Properties" button.



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



4. Select "Channel" from the list, and choose a "Value" from the drop down list. FCC regulations require a "Value" between 1 and 11.



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



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".



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 "PRISM Configuration Utility" in this manual.

7. Select "SSID"; enter a "Value" of "PRISM2".



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.

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



NOTE: 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.

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



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 "Mandatory". 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.*

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

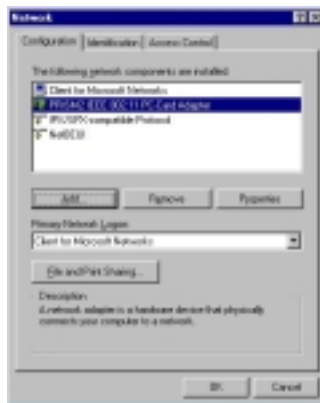
3-5 PROTOCOL INSTALLATION – WINDOWS® 98

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 "PRISM2 IEEE 902.11 PC Card Adapter" and click "Add".



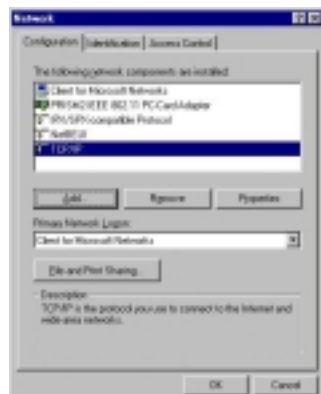
3. Highlight "Protocol" and click "Add"



4. Select "Microsoft" from the list of "Manufacturers" and "TCP-IP" from the list of "Network Protocols", click "OK"



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



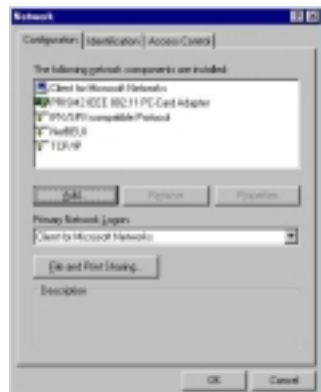
Repeat step 2 – 5 to install other protocols such as NetBeui or IPX/SPX.

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.

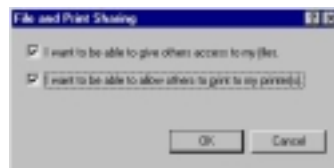
6. Check "Obtain an IP address..." and click "OK". If you are using a DHCP server the IP address will be entered automatically.



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



8. Check both boxes and click "OK".



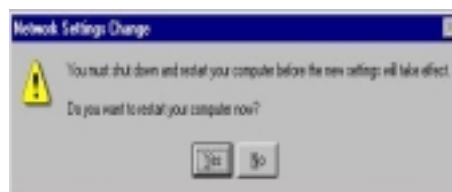
9. Enter a "Computer name", "Workgroup" and "Computer Description", click "OK"



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



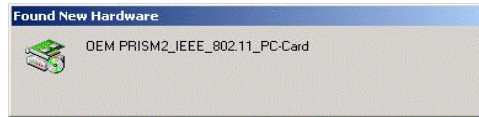
11. You will be prompted to restart your computer, click "Yes" to complete the installation.



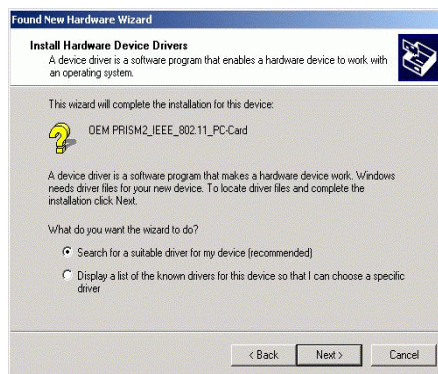
Note: Please see the trouble shooting if you encounter some problem while installing the PC-Card card or your PC-Card is non-functional.

3-6 GL-241101 DRIVER INSTALLATION -WINDOWS® 2000

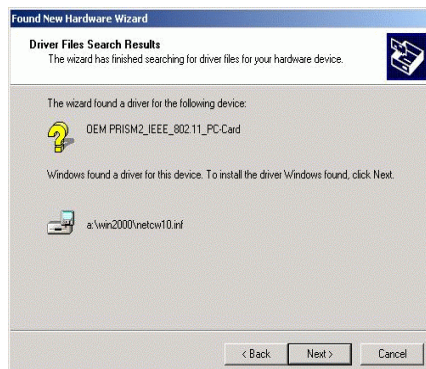
1. Insert the GL-241101 A adapter into a standard Type II or Type III PCMCIA card slot, as described in the preceding section. Then insert the driver CD into the CD-ROM.
2. Windows® 2000 will automatically detect the GL-241101 and prompt you to install the necessary driver. Click "Next" to begin the installation.



3. Select "Search for a suitable driver..." click "Next".



4. Computer will automatically scan the driver. After acknowledge of , Windows® , please click "Next"



5. Show windows information dialog , No carrier , click "Yes".



3-7 GL-241101 SETUP FOR WINDOWS® NT 4.0

Login as Administrator

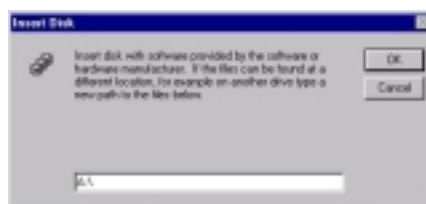
1. From the desktop, select "Control Panel", double-click "Network", click "Adapters", click "Add"



2. Click "Have Disk"

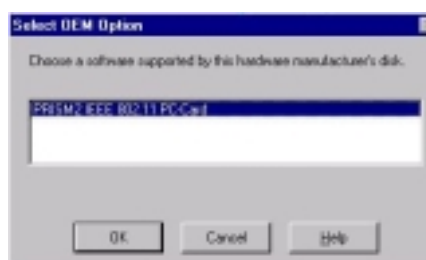


3. Insert the GL-241101 disk; Windows NT will manually enter the path to the driver click

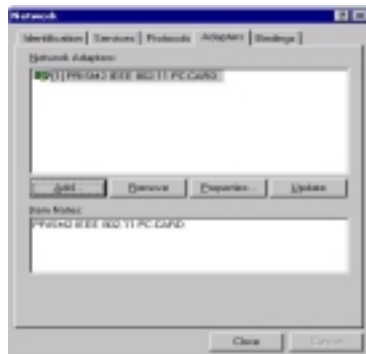


"OK".

4. Select your adapter from the list click "OK".



- Click "Close" from the "Network" dialog. Windows NT will auto-bind the new adapter with any network protocols already installed on the system.



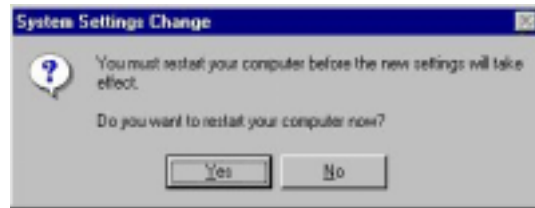
- After the auto-binding procedure is complete, select "Properties" from the "Network" dialog. At this point you may choose to manually specify an IP address, or automatically obtain an IP address if you are using a DHCP server. Consult your Systems Administrator for information about your server type, IP address settings and DNS number.



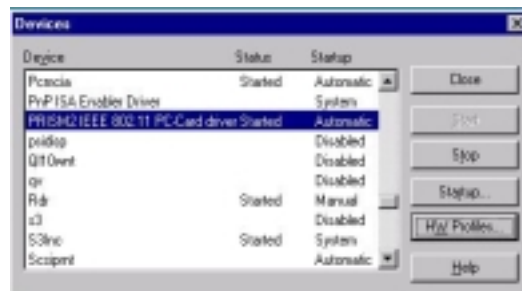
- After the settings configuration is complete, confirm that the "Computer Name" and "Workgroup" designations are correct, and click "OK".



8. You will be prompted to restart your computer, click yes to complete the installation



9. Upon restart, open the "Devices" menu from the "Control Panel", to confirm that the driver installation was successful. Your adapters driver should now be listed in the "Devices" menu.



3-8 GL-241101 SETUP FOR LINUX

1. Description

The Linux-wlan-ng package is a Linux device driver and subsystem package that is designed to provide the full range of IEEE 802.11b MAC management capabilities for use in user-mode utilities and scripts. The package currently supports the Prism2 11Mb/s reference design PCMCIA wireless LAN (WLAN) card.

For a list of elements that are still undone, see the TODO file in this directory.

2. License

See the COPYING and LICENSE files.

Top level directory for Linux-wlan-ng:

./doc	- source distribution documentation
./man	- man pages
./etc	- scripts used at run-time
./src	- source code for various components

3. Note

Some of the subdirectories have empty README files. This means we haven't gotten to the contents of these directories. The empty README is just a trick to prevent CVS from pruning the directory.

4. DISCLAIMER!!!

prism2dl This utility is used for loading firmware images into prism2 cards. DO NOT USE IT! UNLESS YOU KNOW EXACTLY WHAT YOU ARE DOING.

This utility has the capability to damage a card in a way that can only be repaired by the manufacturer.

This software has currently been tested on the following configurations:

linux-2.2.9 + pcmcia-cs-3.1.8 + RedHat6.0

linux-2.2.12 + pcmcia-cs-3.0.14 + RedHat6.1

The following building and installing instructions assume you have configured source code for both the Linux kernel package and PCMCIA-CS package installed on your system. It's important that the configured code for these packages match the kernel and PCMCIA-CS you currently have running.

Build Instructions: (Login as root. You may follow the mark '#' to type the command.)

1) untar the package using the command:

Copy Linux-wlan-ng-0.1.3.tar.gz and PCMCIA-CS-3.0.14.tar.gz into the /usr/src directory.

```
# cd /usr/src
```

```
# tar -zxvf pcmcia-cs-3.0.14.tar.gz
```

```
# tar -zxvf linux-wlan-ng-0.1.3.tar.gz
```

2) Make sure you have Linux sources on your system.

3) # cd /usr/src/pcmcia-cs-3.0.14

To clean up any unwanted files accidentally included in the tar package, run 'make clean'. If make clean behaves badly (infinite loop, for example), you may have a date/time mismatch. Run the command:

```
find . -type f -exec touch {} \;
```

to fix the date and time stamps, then run 'make clean' again.

4) # make config.

To configure the pcmcia-cs-3.0.14 package, run 'make config.' and respond to the questions. The defaults should be sufficient for most users. 'make config.' must be run after a 'make clean' and before 'make all'.

5) To build the package.

```
# make all
```

6) To install the package.

```
# make install
```

7) # cd /usr/src/linux-wlan-ng-0.1.5

To clean up any unwanted files accidentally included in the tar package, run 'make clean'. If make clean behaves badly (infinite loop, for example), you may have a date/time mismatch. Run the command:

```
find . -type f -exec touch {} \;
```

to fix the date and time stamps, then run 'make clean' again.

8) # make config.

To configure the linux-wlan-ng-0.1.5 package, run 'make config.' and respond to the questions. The defaults should be sufficient for most users. 'make config.' must be run after a 'make clean' and before 'make all'.

9) To build the package.

```
# make all
```

10) To install the package.

```
# make install
```

11) Edit the /etc/pcmcia/wlan-ng.opts file for configuration. These options are set every time you insert a card.

```
# cd /etc/pcmcia
```

```
# vi /etc/pcmcia/wlan-ng.opts
```

```
; Do we want to enable the card at all? It always sets to 'y'.
```

```
; Set to 'n' if you wish to load the flash.
```

```
WLAN_ENABLE=y
```

```
; Download code/data?
```

```
; If you want to configure the card for station, set WLAN_DOWNLOAD to 'n'.
```

```
WLAN_DOWNLOAD=n
```

```
DLIMAGE=/etc/wlan/t10002c0.hex
```

```
; Enable Privacy?
```

```
PRIV_ENABLE=n
```

```
PRIV_DEFKEY=1
```

```
PRIV_EXCLUDE=true
```

```
; Use the genstr to generate keys or set them explicitly
```

```
PRIV_GENSTR="12345"
```

```
PRIV_KEY0=
```

```
PRIV_KEY1=
```

```
PRIV_KEY2=
```

```
PRIV_KEY3=
```

```
; Do we want to be an AP? If not, set IS_AP to 'n'.
```

```
; If you want to configure the card for station, set IS_AP to 'n' and
```

```
; jump to the end to modify DESIRED_SSID.
```

```
IS_AP=n
```

```
APBRIDGEDEVICE=eth0
```

```
APSSID="WLAN_PRISM2"
```

```
APBCNINT=100
```

```

APDTIMINT=3
APCFPOLLABLE=false
APCFPOLLREQ=false
APCFPPERIOD=3
APCFPMAXDURATION=100
APPROBEDELAY=100
APCHANNEL=6
APBASICRATES="2 4"
AOPRATES="2 4 11 22"

```

; Station Settings (SSID is all we have for now)

; Set the DESIRED_SSID to the SSID of the AP which you want to link.

```
DESIRED_SSID="WLAN_PRISM2"
```

12) Edit your network.opts file to set up your IP settings.

```
# vi /etc/pcmcia/network.opts
```

; Transceiver selection, for some cards -- see 'man ifport'

```
IF_PORT=""
```

; Use BOOTP? [y/n]

```
BOOTP="n"
```

; Use DHCP? [y/n]

; If your local network has DHCP, you can set DHCP to 'y' then save the

; file and exit. If you set DHCP to 'n', you must set the items below.

```
DHCP="n"
```

; Host's IP address, netmask, network address, broadcast address

; It is an example to set the items for my local network. You must depend

; on your system.

```
IPADDR="192.168.0.201"
```

```
NETMASK="255.255.255.0"
```

```
NETWORK="192.168.0.0"
```

```
BROADCAST="192.168.0.255"
```

; Gateway address for static routing

```
GATEWAY="192.168.0.1"
```

; Things to add to /etc/resolv.conf for this interface

```
DOMAIN="lcat"
```

```
SEARCH=""
```

```
DNS_1="140.118.7.125"
```

```
DNS_2=""
```

```
DNS_3=""
```

; You can save the file and exit now if you don't care the other options.

; NFS mounts, should be listed in /etc/fstab

```
MOUNTS=""
```

; For IPX interfaces, the frame type and network number

```
IPX_FRAME=""
```

```
IPX_NETNUM=""
```

; Extra stuff to do after setting up the interface

```
start_fn () { return; }
```

; Extra stuff to do before shutting down the interface

```
stop_fn () { return; }
```

13) Restart pcmcia-cs with the command

```
# ln -s /etc/rc.d/init.d/pcmcia pcmcia
```

```
# ./pcmcia restart
```

14) Insert the card. A solid LED indicates that the SSID you specified was found, a bss was joined, and the firmware completed the authenticate and associate processes.

15) Run ifconfig and route to determine if the device WLAN0 is included and your IP and route settings are listed as you wanted them. It's also a good idea to look at the file /etc/resolv.conf to see if your nameserver address has been set up correctly.

Chapter 4 Installing & Navigating the PRISM Configuration Utility

4-1 PRISM CONFIGURATION UTILITY - INSTALLATION

1. Insert the PRISM Network Configuration Utility disk into an available floppy disk drive.
From the "Run" window type "A:\WL1100\WLU\setup.exe" (where "A" represents a floppy disk drive).
2. Click "Yes" to accept the License Agreement and continue with the installation.



3. Click "Next".



4. Enter the System ID click "Next".



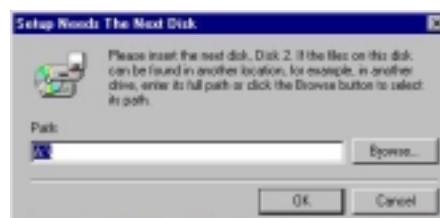
5. Choose the Network Mode, click "Next"



6. Browse to install the utility in another folder, or confirm the installation and click "Next".



7. You will be prompted to insert Disk 2. Insert the disk and click "Browse". Double-click the "Setup" folder; double-click again on the "setup" icon. When the path has been automatically entered in the "Setup Needs The Next Disk" dialog, click "OK".



8. After installation is complete, you will be prompted to restart your computer. Check "Yes" and click "Finish" to complete the installation and begin navigating the PRISM Configuration Utility.



4-2 PRISM CONFIGURATION UTILITY- NAVIGATION

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

PRISM Quick-Launch Icon: After installation is complete, a PRISM utility icon will appear in the "Quick-Launch" menu in the lower right hand corner of the screen, near the clock.

The PRISM Configuration Utility: Double clicking the PRISM icon in the Quick Launch bar will open the PRISM Configuration Utility main menu, providing quick access to all adapter settings. The following image shows the PRISM Configuration Utility with the "About" tab selected, here you will find Version, Copyright and Manufacturer information.



Link Info: The Link Info menu provides information about the current link between the adapter and the base station.



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 802.11b 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 40-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 40-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 be updated and show the current Connection Status, Link Quality and Signal Strength.

Channel: This setting specifies the default 802.11b 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.

Regulatory Channel Frequency

Channel	Frequency (MHZ)	FCC	Canada	ETSI	France	Spain	Japan
1	2412	✓	✓	✓			
2	2417	✓	✓	✓			
3	2422	✓	✓	✓			
4	2427	✓	✓	✓			
5	2432	✓	✓	✓			
6	2437	✓	✓	✓			
7	2442	✓	✓	✓			
8	2447	✓	✓	✓			
9	2452	✓	✓	✓			
10	2457	✓	✓	✓	✓	✓	
11	2462	✓	✓	✓	✓	✓	
12	2467			✓		✓	
13	2472			✓		✓	
14	2484						✓

Encryption: Selecting the Encryption tab allows you to create new WEP keys.



The 40-bit WEP keys can be generated from a user-defined passphrase (any text string with a maximum of 32 characters). To generate encryption keys for each client communicating in the wireless network, complete the following steps:

1. Type the exact same case sensitive text in the Passphrase entry field for each client.
2. Click, "Generate" to create the encryption keys. The Passphrase generates four (4) unique keys.
3. Select the same Default Key in the drop-down box for each client. This is the key the clients will use to encrypt data.
4. You must click "Write" to store the information in the registry.
5. Select the "Configuration" tab and enable WEP by choosing "Mandatory".
6. Click "Apply Changes".
7. Click "OK" to close the dialog.

Appendix A Troubleshooting

Problem Solving

My computer does not recognize the GL-241101.

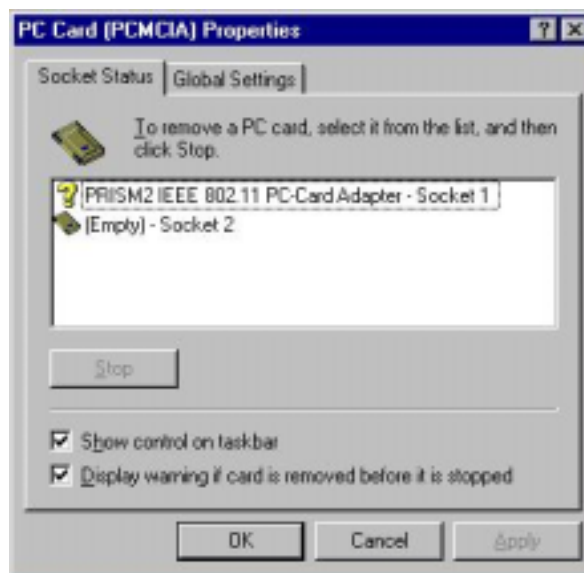
Probable Solution:

- The GL-241101 is not properly inserted into the PCMCIA slot.
- Ensure that the GL-241101 has been inserted into an available PCMCIA slot.

The GL-241101 does not work properly.

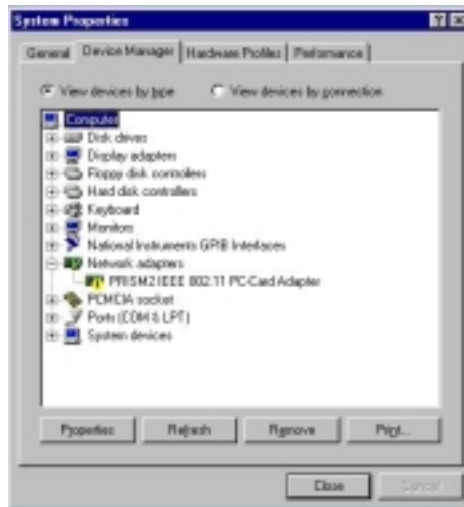
Probable Solution:

- Insert the PCMCIA adapter into Notebook's slot again. A beep should be heard if the adapter is properly inserted.
- Check the I/O cable that connects the RF module and the PCMCIA adapter. The power LED indicator will be active if the cable is properly connected.
- For non-Windows 95/98 environments, ensure that a PCMCIA card service driver is installed in your computer.
- 1) Click on the Control Panel and then on PC-Card. Check whether it has PCMCIA card in one of the sockets or not. If you find PRISM2 IEEE 802.11b PC-Card Adapter in one of the sockets, it means the card is detected properly. If you see the yellow sign 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 select Properties. Select the device Manager and click on the Network Adapter. You will find PRISM2 IEEE 802.11b PC-Card Adapter if it is installed successfully. If you see the Yellow sign the resources are conflicting. Click on

PCMCIA card and then on PCMCIA Card service, you can see the status of PCMCIA card. If there are yellow sign either on adapter or PCMCIA 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 GL-241101 does not function after attempting the above steps, remove the PCMCIA adapter, and do the following:

- From the run window enter, c:\windows\system, locate and delete the cw10.sys file
- Open the "Control Panel" double-click "System" and delete PRISM2 IEEE 802.11b PC-card Adapter.
- Restart the PC and repeat the hardware and software installation steps outlined in Chapters 3 and 4.

The GL-241101 station cannot communicate with other computers linked via Ethernet in the Infrastructure configuration.

Probable Solution:

- Ensure that the GL-241101 with which the station is associated is powered on.
- Confirm the station is configured with the same operating radio channel as the GL-241101. If the IDs are different, change the GL-241101 and all the stations within the BSS to another radio channel.
- Ensure that the station is configured with the same security options as the GL-241101, and can be turned off and on with the same security key.
- Confirm that the BSS ID is the same as the GL-241101 for a roaming disabled station. Alternately confirm that the ESS ID is the same as the GL-241101 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".