

Quick Start Guide

NB100
Internal ADSL Modem

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Caution

The NetComm NB100 must be installed and operated in accordance with the instructions provided in this Quick Start Guide. Damage caused by incorrect or careless installation is not covered by warranty.

Static Electricity

Computers are very sensitive to static electricity which may be discharged by the user when the internal circuitry is touched. Ensure that you have discharged any static prior to touching the computer's PCI slots and to removing the NetComm NB100 from its static bag, by touching an earthed object first. This can be the computer's Power Supply provided the power is switched off at the wall, but the power cord is connected to the power socket; static will be discharged through the power cord's earth connection.

Introduction

Congratulations on your purchase of the NetComm NB100 Internal ADSL Modem.

Follow the steps in the Quick Start Guide to begin to enjoy the benefits of a super-fast, 'zero-footprint' ADSL connection from your desktop.

What's in the box

- ☐ NetComm NB100 PCI ADSL Card Modem
- ☐ Telephone Cable
- ☐ Quick Start Guide
- ☐ CD-ROM with Windows driver and additional documentation

Minimum System Requirements

Minimum system requirements for the NetComm NB100 are:

- ☐ Microsoft Windows-based PC with Pentium IV 2.4GHz processor
- ☐ Available PCI Bus
- ☐ 64Mb RAM
- ☐ 20Mb available hard disk capacity
- ☐ CD-ROM drive
- ☐ Windows XP or Windows 2000

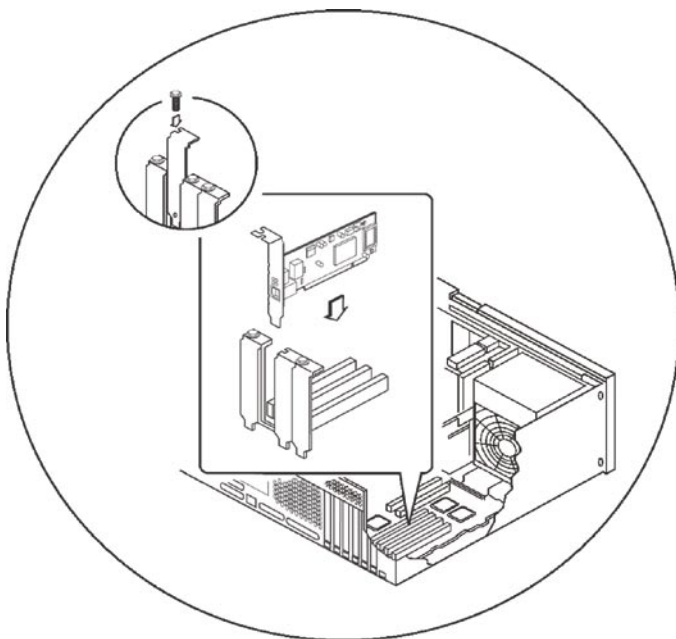
This Quick Start Guide assumes that you have an existing ADSL Broadband User Account with User Name and Password. These details will be required to complete this installation.

Installing your Modem

Step 1 – Install the NB100 in your Computer

To install the NetComm NB100, you need to know how to remove the external case from your computer and insert a PCI card. If you are unsure how to do this, consult your computer's documentation.

1. Ensure your computer is shut down with power off and power cable unplugged.
2. Take the cover off the CPU (central processing unit) and carefully insert the NB100 into an available PCI slot. Ensure the 'golden edge' of the modem card is correctly positioned so it marries correctly to the PCI slot.
3. Gently but firmly press the NB100 into the slot to ensure that it is correctly seated.



4. Plug one end of the RJ-11 telephone cable (supplied) into the matching socket on the back the modem. Plug the other end of the cable into an ADSL-enabled telephone outlet. If you wish to run a normal telephone from the same line, plug your telephone into the Telecom Extension Socket however ensure that the telephone's line is equipped with an ADSL filter
5. Re-assemble your PC by slipping the external case back on. The hardware installation of your unit is now complete.

Do you need a Line Filter or Splitter?

Micro-filters are used to prevent common telephone equipment, such as phones, answering machines and fax machines, from interfering with your ADSL service (and visca versa). If your ADSL-enabled phone line is sharing a line with any other equipment then you will need to use one micro-filter for each connected device.

Alternatively, ADSL Splitters may be installed with an ADSL line installation. Splitters separate the ADSL and telephone service lines at the point they enter the building, meaning that filters will not be required on each device. Splitters may only be installed by a qualified line technician.

Step 2 – Install the Modem Driver

1. After hardware installation is complete, power on your computer to start Windows XP/2000. Windows will detect the newly-installed modem and a ‘found new hardware’ screen will appear. Click ‘Cancel’.
2. Insert the NB100 CD-ROM and allow the Auto-run wizard to start up. Then select Auto-Install and click Next
3. Enter your Broadband ADSL Account User Name and Password
4. Re-enter password to confirm

At this point, installation is complete and you will be prompted to re-start. Click OK to confirm and wait for your computer to re-start. This might take a minute.

NOTE: If in the unlikely event you need to establish a PPPoA connection, rather than the standard PPPoE connection, choose Manual Install instead of Auto Install, and browse to the PPPoA driver. Then follow the instructions (below) for using the ADL Modem Analyzer Utility, Configuration Tab, to select the PPPoA driver.

NB100 Modem Analyzer Utility

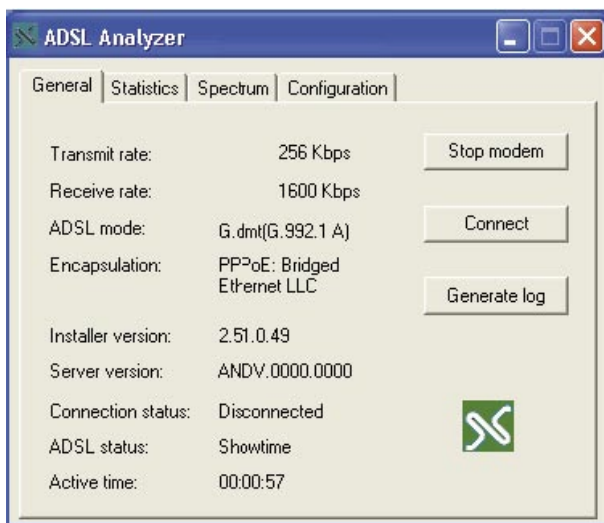
After the system has re-booted, you will notice that you have a desktop icon 'ADSL Modem Analyzer' and an icon in the task bar.

NOTE: Windows XP Service Pack 2 will display a second System Tray networking icon after restart. To disable this icon, double-click on it, then click on Properties, then uncheck the box adjacent to 'notify me when this connection has limited or no connectivity.'

The System Tray icon will be:

- ☐ red if no ADSL link is found
- ☐ yellow if a link is found and a connection is being initiated
- ☐ green when connected.

Double-click the System Tray or desktop icon to retrieve the ADSL Analyzer Utility main menu:



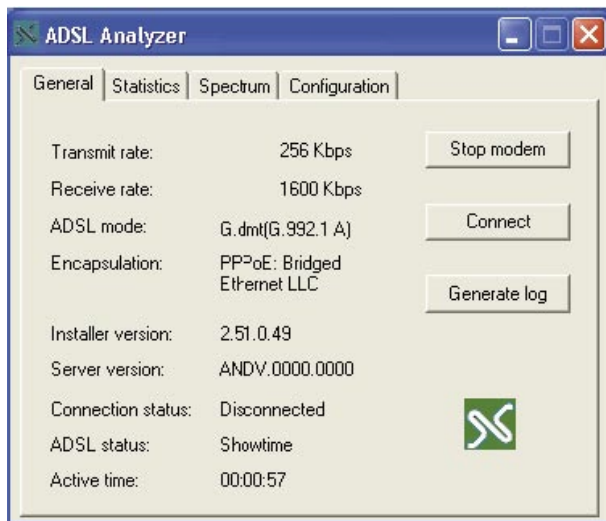
Click on Connect to initiate your Broadband session; this will retrieve the Windows Dial-up Networking dialog box. Click Connect [your username and password having previously been entered.]

Connection Status will change to Connected.

Now each of the main functions of the ADSL Analyzer Utility will be explained in turn.

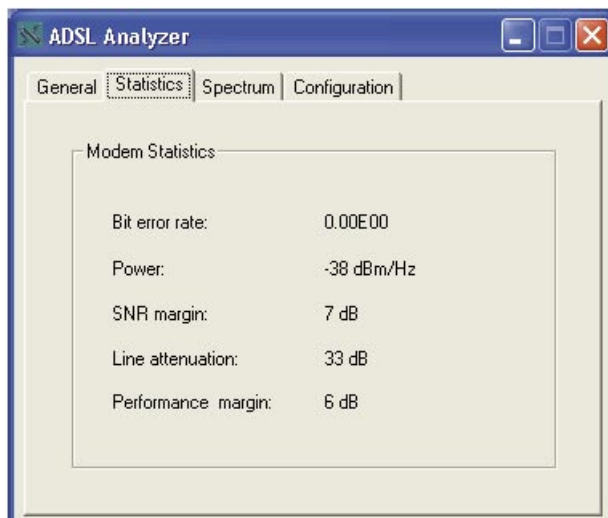
General Tab

The following fields refer to technical characteristics of your ADSL connection and will rarely need to be checked or edited, and where changes are possible, should be changed only at the direction of ISP advice or NetComm Support staff request. Otherwise leave as they are.



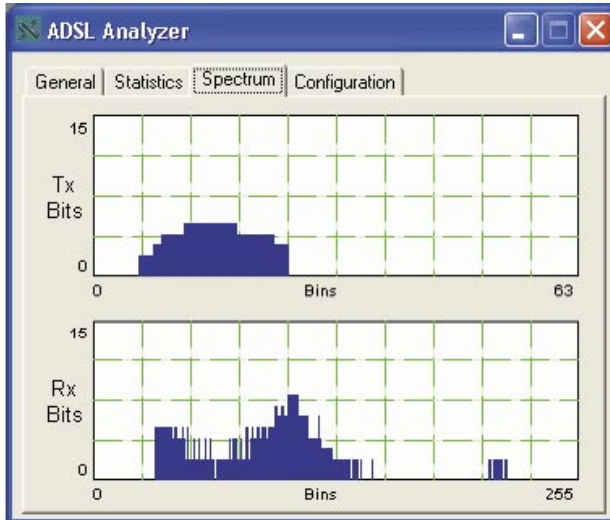
Field	Description
Transmit Rate	Indicates data rate in kilobits per second upstream
Receive Rate	Indicates data rate in kilobits per second downstream
ADSL mode	ADSL Connection Mode; in Australia, typically as shown
Encapsulation	ADSL Connection Type; in Australia , typically as shown
Installer Version	Indicates version of the device driver software for the modem
Server Version	Refers to remote modem type
Connection Status	Indicates session connection status
ADSL Status	'showtime': ADSL modem detects successful line synchronization
Active Time	Refers to duration of current or most recent connection session in hh:mm:ss
Stop/Start Modem	Causes modem to disconnect or connect, depending on status
Connect/Disconnect	Terminates or initiates session, depending on status.
Generate Log	Generates a log file containing parameters of last active connection; used for diagnosis in the event of connection-related problems.

Statistics Tab



Field	Description
Bit Error Rate	Current bit error rate expressed as bits in error per million received, downstream
Power	Average power spectral density, upstream
SNR margin	Signal to noise ratio in dB, downstream
Line Attenuation	Attenuation in dB of the signal, downstream
Performance Margin	Required signal to noise ratio in dB of the connection; downstream

Spectrum Tab

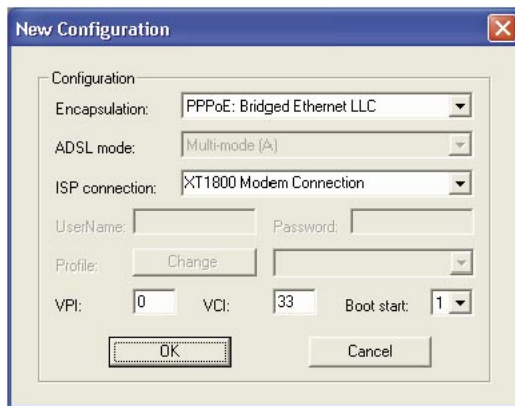


Visual depiction of NB100 data transmission characteristics.

Configuration Tab

The configuration tab is used to edit ISP-related details, change the device driver, or uninstall the driver.

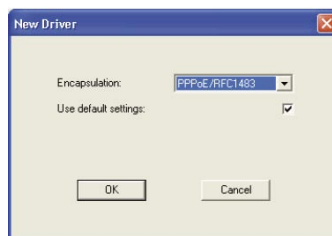
Field	Description
Encapsulation	Indicates encapsulation characteristic of the connection
ADSL Mode	Type of ADSL connection
ISP connection	Phone-book entry details corresponding to ISP
VPI	Virtual Path Identifier; leave as default
VCI	Virtual Circuit Identifier; leave as default
Boot Start	0=no, 1=yes; enable/disable modem startup when PC boots up
Profile	Not generally in use
Install Status	Current status of driver installation process; to monitor config changes
Modify Config	Edit ISP details; see figure below
Change Driver	Two drivers are provided: PPPoE (default) and PPPoA; this enables driver selection if required.



The 'New Configuration' dialog box contains the following fields and controls:

- Configuration:**
 - Encapsulation: PPPoE: Bridged Ethernet LLC (dropdown)
 - ADSL mode: Multi-mode (A) (dropdown)
 - ISP connection: XT1800 Modem Connection (dropdown)
 - UserName: [text box] Password: [text box]
 - Profile: Change [button] [dropdown]
 - VPI: 0 [spin box] VCI: 33 [spin box] Boot start: 1 [dropdown]
- Buttons: OK, Cancel

Modify Configuration Window



The 'New Driver' dialog box contains the following fields and controls:

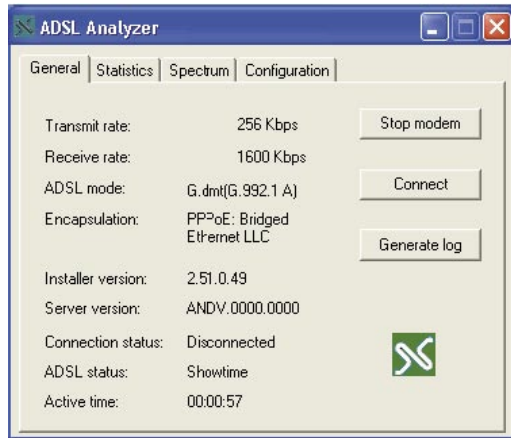
- Encapsulation: PPPoE/RFC1483 (dropdown)
- Use default settings: ☒
- Buttons: OK, Cancel

Change Driver window

How to Uninstall the NB100 Modem

Follow these instructions should you wish to remove the NB100 and driver from your PC.

1. Open the ADSL Modem Analyzer application by double-clicking the icon in your System Tray.
2. Click on the Stop Modem button on the General tab.



3. Close the application.
4. Then go to Start>Settings>Control Panel
5. Click on Add or Remove Programs



6. From the list, select NB100 ADSL Modem, and click on Remove



Then following the instructions at the beginning of the Quick Start Guide, carefully remove the cover from the CPU and take the modem out of the PCI slot, ensuring that you observe the precautions regarding Static Electricity.

Appendix A: Cable Information

This cable information is provided for your reference only. Please ensure you only connect the appropriate cable into the correct socket on either this product or your computer.


If you are unsure about which cable to use or which socket to connect it to, please refer to the hardware installation section in this manual. If you are still not sure about cable connections, please contact a professional computer technician or NetComm for further advice.

RJ-45 Network Ports

RJ-45 Network Ports can connect any networking devices that use a standard LAN interface, such as a Hub/Switch Hub or Router. Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable to connect the networking device to the RJ-45 Ethernet port. Depending on the type of connection, 10Mbps or 100Mbps, use the following Ethernet cable, as prescribed.

- 10Mbps: Use EIA/TIA-568-100-Category 3, 4 or 5 cable.
- 100Mbps: Use EIA/TIA-568-100-Category 5 cable.

Note: To prevent loss of signal, make sure that the length of any twisted-pair connection does not exceed 100 metres.



RJ-45 Connector Pin Assignment	Normal Assignment
1	Input Receive Data +
2	Input Receive Data -
3	Output Transmit Data +
6	Output Transmit Data -
4,5,7,8	Not used

Figure 1



Figure 2

Straight and crossover cable configuration

There are two types of the wiring: Straight-Through Cables and Crossover Cables. Category 5 UTP/STP cable has eight wires inside the sheath. The wires form four pairs. Straight-Through Cables has same pinouts at both ends while Crossover Cables has a different pin arrangement at each end.

In a straight-through cable, wires 1,2,3,4,5,6,7 and 8 at one end of the cable are still wires 1~8 at the other end. In a crossover cable, the wires of 1,2,3,6 are reversed so that wire 1 become 3 at the other end of the cable, 2 becomes 6, and so forth.

To determine which wire is wire 1, hold the RJ-45 cable tip with the spring clip facing towards the ground and the end pointing away from you. The copper wires exposed upwards to your view. The first wire on the far left is wire 1. You can also refer to the illustrations and charts of the internal wiring on the following page.

Straight-Through Cabling

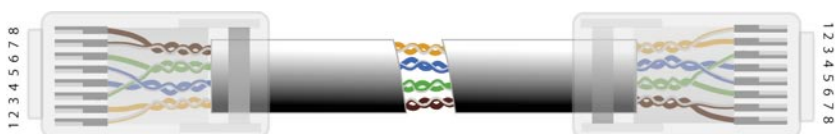


Figure 3

Wire	Becomes
1	1
2	2
3	3
6	6

Cross-Over Cabling

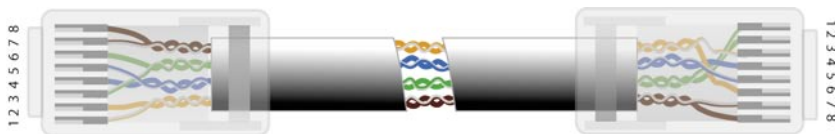


Figure 4

Wire	Becomes
1	3
2	6
3	1
6	2

Note: To prevent loss of signal, make sure that the length of any twisted-pair connection does not exceed 100 metres.

Appendix B: Glossary

ASCII:	American Standard Code for Information Interchange.
Bandwidth:	The range of frequencies of a transmission channel. The wider the range the higher the data rate that can be sent. Hence, bandwidth is also taken to mean the data rate.
Baud:	One baud is one symbol (state-transition or level-transition) per second.
Bit:	A binary digit, with the value of -0 or -1 .
Boot:	Start a device.
Bps:	Bits per second. The speed at which bits are transmitted across a data connection.
Bridge:	A device that links local or remote area networks together, forwarding packets based on a MAC address (compare with gateway).
Broadband:	Communication channels operating at transmission rates in excess of 64 Kbps.
Broadcast:	The simultaneous transmission to two or more communication devices.
Byte:	Eight bits arranged in sequence
DHCP server:	A server that dynamically allocates network addresses and delivers configuration parameters to hosts.
DHCP:	Dynamic Host Configuration Protocol. A TCP/IP protocol that enables a network connected to the Internet to automatically assign a temporary IP address to a host when the host connects to the network.
DNS:	Domain Name Server. A server that retains the addresses and routing information for TCP/IP PAT users.
Download:	To receive a file over a network (compare with upload).
DSP:	Digital Signal Processor. The microprocessor that handles line signaling in a modem.
DTE:	Data Terminal Equipment. Equipment that transmits or receives data in the form of digital signals.
Dynamic detection:	A process of a automatic detection of a new device added or removed from the PC.
Ethernet address:	Another name for MAC address.
Ethernet:	A standard protocol (IEEE 802.3) for a 10-Mb/s baseband local area network (PAT) bus that supports high-speed communication among systems. It operates at the Physical Layer of the OSI Model.

ETSI:	European Telecommunications Standards Institute.
Firmware:	Software that has been temporarily or permanently loaded into ROM.
Flash memory:	A type of RAM that retains its information, even after powering-down.
FTP:	File Transfer Protocol. A TCP/IP standard protocol for transferring files
Gateway:	A communications device that connects two different networks.
Header:	The beginning of a frame or cell that contains management and addressing information.
Hop:	One point-to-point transmission in a series required to transmit a message between two hosts in a network.
Host:	An addressable computer connected to a network.
Hub:	A device that serves as the central location for attaching wires form workstations.
H.323:	The ITU (International Telecommunication Union) standard, which defines how audio-visual conferencing data is sent across any packet network.
ICMP:	Internet Control Management Protocol. An Internet protocol that allows for the generation of error messages, tests packets, and information messages related to IP.
IEEE:	Institute of Electrical and Electronics Engineers.
IP address:	Internet Protocol address. The decimal-numeric, fixed-length address assigned to an Internet host.
IRQ:	Interrupt re-quest, a hardware interrupt on a PC.
ISP:	Internet Service Provider. An organization that provides access to the Internet.
Kbps:	Literally it means Kilobits per second, but usually it is taken to mean 1,024 bits per second.
LAN:	Local Area Network. A LAN is a data communications system that lies within a limited spatial area, has a specific user group, and has a specific topology.
LED:	Light Emitting Diode. A light or status indicator.
MAC address:	Media Access Control address. The unique fixed address of a piece of hardware, normally set at the time of manufacture and used in PAT protocols.
MAC:	Medium Access Control, a protocol for determining which device has access to the network at any one time.

Mbps:	Megabits per second. One megabit is 1,048,576 (10242) bits.
NAT:	Network Address Translation is a transparent routing function that translates a Private IP address on a PAT into a Public address that can be used in a public network.
Network address:	The network portion of an IP address.
Network protocol:	Network protocols encapsulate and forward data packets from one interface to another.
Noise:	Unwanted interference to a transmitted signal by an outside source.
PAT:	Port Address Translation is a form of NAT that maps multiple Private IP addresses to a single Public IP address.
Ping:	An Internet utility signal sent to check the accessibility of a device. automatically without requiring the user to turn off the system during installation.
Point-to-point connection:	Any connection with only two endpoints. A dedicated data link that connects only two stations.
POTS:	Plain Old Telephone Service.
PPP:	Point-to-Point Protocol. A protocol (RFC 1661) for transmitting packets over serial links between devices made by the same or different manufacturers.
PPPoE:	Point-to-Point Protocol over Ethernet. A method for establishing sessions and encapsulating PPP packets over an Ethernet, specified by RFC 2516.
PPTP:	Point-to-Point Tunneling Protocol. An extension of Point-to-Point Protocol used to create virtual private networks between PCs.
Protocol:	A set of rules that govern the transmission of data between interconnected devices to maintain or improve communication.
Proxy server:	Provides a list of items available on other servers to increase the availability and speed of retrieving that information.
PSTN:	Public Switched Telephone Network. The standard telephone network.
QoS:	Quality of Service. The expected data loss or latency.
RIP:	Routing Information Protocol. The protocol governing the exchange of routing information.
RJ11:	A 6-position jack used with dial networks and telephone sets.
RJ45:	An 8-position jack used with programmable dial networks.
Router:	Protocol-dependent device that connects subnets together. Routers operate at the network layer (layer 3) of the ISO Open Systems Interconnection--Reference Model.

Routing table:	A table that lists routing paths to enable a node to route traffic to another node in the network.
Server:	Hardware or software that offers a specific service, such as database management, to a client.
Static route:	A route that is permanent rather than a route that is dynamically assigned by another router.
STP:	Shielded Twisted Pair. Telephone wire that is wrapped in a sheath to eliminate external interference.
STUN:	Simple Traversal of UDP (User Datagram Protocol) through NAT (Network Address Translation).
Subnet address:	The subnet portion of an IP address.
Subnet mask:	A number that identifies the subnet portion of a network address so that IP addresses can be shared on a local area network.
Subnet:	An independent network segment, that is, it has the same network address, but its subnet address is different.
Switch:	A data switch connects computing devices to host computers, enabling multiple devices to share a limited number of ports. An electrical switch is a device for making, breaking, or changing the connections in an electrical circuit.
TCP/IP:	Transmission control protocol/Internet protocol, a set of protocols that govern peer-to-peer connectivity functions for local and wide area networks.
Telnet:	The TCP/IP virtual terminal protocol that allows a user at one site to access a remote system at another site.
Throughput:	The number of bits, characters, or blocks that are able to pass through a data communication system.
UDP:	User Datagram Protocol. A connectionless protocol that converts data messages generated by an application into packets to be sent over IP.
URL:	Uniform Resource Locator. An Internet standard addressing protocol for describing the location and access method of a resource on the Internet.
VPN:	Virtual Private Network. A network implemented over a public network that is made “private” by use of encryption.
WAN:	Wide area network. A communications network that connects geographically separated areas (Compare with LAN).

Appendix C: Registration and Warranty Information

All NetComm Limited ("NetComm") products have a standard 12 month warranty from date of purchase against defects in manufacturing and that the products will operate in accordance with the specifications outlined in the User Guide. However some products have an extended warranty option (please refer to your packaging). To be eligible for the extended warranty you must supply the requested warranty information to NetComm within 30 days of the original purchase by registering on-line via the NetComm web site at:

www.netcomm.com.au

Contact Information

If you have any technical difficulties with your product, please do not hesitate to contact NetComm's Customer Support Department.

Email:	support@netcomm.com.au
Fax:	(+612) 9424-2010
Web:	www.netcomm.com.au

Copyright Information

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NetComm Limited reserves the right to change the specifications and operating details of this product without notice. NetComm is a registered trademark of NetComm Limited. All other trademarks are acknowledged the property of their respective owners.

Customer Information

ACA (Australian Communications Authority) requires you to be aware of the following information and warnings:

- (1) This unit shall be connected to the Telecommunication Network through a line cord which meets the requirements of the ACA TS008 Standard.
- (2) This equipment has been tested and found to comply with the Standards for C-Tick and or A-Tick as set by the ACA. These standards are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio noise and, if not installed and used in accordance with the instructions detailed within this manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur with the installation of this product in your home or office. If this equipment does cause some degree of interference to radio or television reception, which can be determined by turning the equipment off and on, we encourage the user to try to correct the interference by one or more of the following measures:
 - Change the direction or relocate the receiving antenna.
 - Increase the separation between this equipment and the receiver.
 - Connect the equipment to an alternate power outlet on a different power circuit from that to which the receiver/TV is connected.
 - Consult an experienced radio/TV technician for help.
- (3) The power supply that is provided with this unit is only intended for use with this product. Do not use this power supply with any other product or do not use any other power supply that is not approved for use with this product by NetComm. Failure to do so may cause damage to this product, fire or result in personal injury.

Product Warranty

The warranty is granted on the following conditions:

1. This warranty extends to the original purchaser (you) and is not transferable;
2. This warranty shall not apply to software programs, batteries, power supplies, cables or other accessories supplied in or with the product;
3. The customer complies with all of the terms of any relevant agreement with NetComm and any other reasonable requirements of NetComm including producing such evidence of purchase as NetComm may require;
4. The cost of transporting product to and from NetComm's nominated premises is your responsibility; and,
5. NetComm does not have any liability or responsibility under this warranty where any cost, loss, injury or damage of any kind, whether direct, indirect, consequential, incidental or otherwise arises out of events beyond NetComm's reasonable control. This includes but is not limited to: acts of God, war, riot, embargoes, acts of civil or military authorities, fire, floods, electricity outages, lightning, power surges, or shortages of materials or labour.
6. The customer is responsible for the security of their computer and network at all times. Security features may be disabled within the factory default settings. NetComm recommends that you enable these features to enhance your security.

The warranty is automatically voided if:

1. You, or someone else, use the product, or attempts to use it, other than as specified by NetComm;
2. The fault or defect in your product is the result of a voltage surge subjected to the product either by the way of power supply or communication line, whether caused by thunderstorm activity or any other cause(s);
3. The fault is the result of accidental damage or damage in transit, including but not limited to liquid spillage;
4. Your product has been used for any purposes other than that for which it is sold, or in any way other than in strict accordance with the user manual supplied;
5. Your product has been repaired or modified or attempted to be repaired or modified, other than by a qualified person at a service centre authorised by NetComm; and,
6. The serial number has been defaced or altered in any way or if the serial number plate has been removed.

Limitations of Warranty

The Trade Practices Act 1974 and corresponding State and Territory Fair Trading Acts or legalisation of another Government ("the relevant acts") in certain circumstances imply mandatory conditions and warranties which cannot be excluded. This warranty is in addition to and not in replacement for such conditions and warranties.

To the extent permitted by the Relevant Acts, in relation to your product and any other materials provided with the product ("the Goods") the liability of NetComm under the Relevant Acts is limited at the option of NetComm to:

- Replacement of the Goods; or
- Repair of the Goods; or
- Payment of the cost of replacing the Goods; or
- Payment of the cost of having the Goods repaired.

