

Instant Broadband™ Series

ADSL Ethernet Modem



Use this guide to install the following:

Model No.: ADSLME1

User Guide

 **LINKSYS®**

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FCC STATEMENT

This product has been tested and complies with the specifications 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 and, if not installed and used according to the instructions, 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 is found 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 or device
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

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Introduction

The Instant Broadband™ ADSL Ethernet Modem

Congratulations on the purchase of your new Instant Broadband™ ADSL Ethernet Modem. With ADSL's high-speed Internet access, now you can enjoy the full potential of Internet applications.

Now you can make the most of the Internet and surf the web at speeds you never imagined possible. ADSL broadband service means no more waiting for slow downloads even the most graphic-intensive web pages load in seconds. If you're looking for convenience and affordability, the Instant Broadband™ ADSL Ethernet Modem really delivers! The Instant Broadband™ ADSL Ethernet Modem also makes sharing your high-speed Internet connection easy. Just connect the ADSL Ethernet Modem to your Ethernet network, and you're ready to go.

So if you're ready for broadband speed, then you're ready for the Instant Broadband™ ADSL Ethernet Modem from Linksys. It's the easiest and most affordable way to harness the full potential of the Internet.

Features

- Compliant with ANSI T1.413 Issue 2, ITU-T G.dmt (G.992.1), and ITU-T G.lite (G.992.2) Standards
- Dedicated Connection
- Download Speeds of up to 8Mbps
- Upload Speeds of up to 800 Kbps
- No Second Phone Line Required
- Support 10Mbps half-duplex Mode for LAN

Package Contents



- One Instant Broadband™ ADSL Ethernet Modem
- One Telus® QuickConnect™ Kit (contents included)
- One AC Power Cable
- One Cross-Over Network Cable (for connecting to a PC with an Ethernet Adapter)
- One Standard Phone Cable
- One User Guide
- One Quick Installation Sheet and Registration Card (not shown)

System Requirements

- Windows 95, 98, Millennium, NT or 2000
- Pentium 100MHz CPU or faster with:
 - ADSL Internet Service
 - CD-ROM Drive
 - Network Adapter

Getting to Know the ADSL Ethernet Modem

Overview

Asymmetric Digital Subscriber Line (ADSL), the most popular residential DSL technology, provides high-speed Internet access over regular, copper phone lines by maximizing bandwidth use. In this way, ADSL Internet service can coexist on the same line as your phone service, without disrupting calls. ADSL is “asymmetric” because it downloads, or receives data, faster than it uploads, or transmits data. Asymmetric operation is ideal for home and small office use where files and information are downloaded more frequently than uploaded.

The ADSL Ethernet Modem's Rear Panel



Power	The Power port is where you will connect the power adapter.
Console	This port is reserved for future development and is currently of no use.
Line	This port connects your modem to your ADSL line.
LAN	This LAN (Local Area Network) port connects to your PC with the included network cable. You can also connect network devices, such as a hubs and switches with a straight-through RJ-45 cable or use a cross-over RJ-45 cable to connect a router.

The ADSL Ethernet Modem's Front Panel



Power	<i>Green.</i> The Power LED lights up when the Modem is powered on.
Alert	<i>Red.</i> The Alert LED is off during normal Modem operation. When an alarm or error occurs, this light will be on. The LED will blink when firmware is being downloaded or self-testing is in progress.
LAN Activity	<i>Green.</i> Lights when the LAN connection has an activity.
LAN Link	<i>Green.</i> The LAN Link lights up when a successful Ethernet connection is made through the corresponding port. If this LED is not lighting up, then an Ethernet connection has not been established.
ADSL Link	<i>Green.</i> The ADSL Link is continuously lit up when the Modem is successfully connected to an ADSL line. If the Link LED is blinking, the unit is attempting a connection to an ADSL line.
ADSL Tx	<i>Green.</i> The ADSL Tx LED blinks when the Router is actively sending or receiving data over that port.

Connecting the ADSL Ethernet Modem to Your PC

1. **Attach one end of a standard network cable** (included) to your computer's network adapter and the other to the ADSL Ethernet Modem's LAN port.
2. **Connect the standard phone cable** (included) from the ADSL outlet to the Line port on the ADSL Ethernet Modem.
3. **Plug in the Modem's AC power adapter to the Power port on the back of the Modem.** Plug the other end of the Power adapter into an electrical outlet. The Power LED will light up.

The Hardware Installation is complete. If you are configuring the ADSL Ethernet Modem using your network connection, refer to the Installing the TCP/IP Protocol section in the Appendix.

Troubleshooting

This section offers solutions to common issues that may occur during the installation and operation of your ADSL Ethernet Modem.

1. Which protocols might I need to use with my ADSL Ethernet Modem?

- Refer to the documentation or manual provided by your ISP for details. The protocol required in your configuration depends on the equipment used by your DSL service provider. There are several possibilities:
 - a. **Point-to-Point Protocol Over ATM (PPPoA)** (RFC 2364) - PPP provides session setup, user authentication (login), and encapsulation for upper-layer protocols such as IP (Internet Protocol). The use of PPP makes the modem appear as a dial modem to the operating system. Dial-Up Networking is used to establish a connection.
 - b. **Bridged/Routed Ethernet/IP over ATM** (RFC 1483) - This protocol makes the modem appear as a local area network (LAN) device to the operating system.
 - c. **Point-to-Point Protocol Over Ethernet (PPPoE)** (RFC 2516) - PPP provides session setup, user authentication (login), and encapsulation for upper-layer protocols such as IP (Internet Protocol). PPP makes the modem appear as a dial modem to the operating system. Dial-Up Networking is used to establish a connection. The protocol must be supported by a PPPoE client, such as WinPoet or EnterNET 300 logon software, on the RFC 1483 driver.

2. The ADSL Ethernet Modem can achieve an ADSL connection, but cannot access the Internet.

- If network settings are assigned by the DHCP server, check whether the IP address and Gateway IP address have actually been assigned by the DHCP server.
- Try to ping the Gateway IP Address, then check the response from the Gateway.
- If this fails, contact your ISP for more information.

Appendix

Installing the TCP/IP Protocol

Follow these instructions to install the TCP/IP Protocol on one of your PCs *only* after a network card has been successfully installed inside the PC. These instructions are for Windows 95, 98, and Millennium. For TCP/IP setup under Windows NT or 2000, please refer to your Windows NT or 2000 manual.

1. Click the **Start** button. Choose **Settings**, then **Control Panel**.
2. Double-click the **Network** icon. Your Network window should pop up. Select the **Configuration** tab.



3. Click the **Add** button.
4. Double-click **Protocol**.
5. Highlight **Microsoft** under the list of manufacturers.

6. Find and double-click **TCP/IP** in the list to the right (below).



7. After a few seconds you will be brought back to the main Network window. The TCP/IP Protocol should now be listed.



8. Click **OK**. Windows may ask for original Windows installation files. Supply them as needed (i.e.: D:\win98, D:\win95, c:\windows\options\cabs.)

9. Windows will ask you to restart the PC. Click **Yes**.

The TCP/IP Installation is complete.

Glossary

Adapter - Printed circuit board that plugs into a PC to add to capabilities or connectivity to a PC. In a networked environment, a network interface card (NIC) is the typical adapter that allows the PC or server to connect to the Internet.

ADSL (Asymmetric Digital Subscriber Line) - A technology for transmitting digital information at a high bandwidth on existing phone lines to homes and businesses. Unlike regular dialup phone service, ADSL provides continuously-available, "always on" connection. ADSL is asymmetric in that it uses most of the channel to transmit downstream to the user and only a small part to receive information from the user. ADSL simultaneously accommodates analog (voice) information on the same line. ADSL is generally offered at downstream data rates from 144 Kbps to about 6 Mbps. A form of ADSL, known as Universal ADSL or G.lite, has been approved as a standard by the ITU-TS.

ADSL was specifically designed to exploit the one-way nature of most multimedia communication in which large amounts of information flow toward the user and only a small amount of interactive control information is returned. Several experiments with ADSL to real users began in 1996. In 1998, wide-scale installations began in several parts of the U.S. In 2000 and beyond, ADSL and other forms of DSL are expected to become generally available in urban areas. With ADSL (and other forms of DSL), telephone companies are competing with cable companies and their cable modem services.

Bandwidth - The transmission capacity of a given facility, in terms of how much data the facility can transmit in a fixed amount of time; expressed in bits per second (bps).

Bit - A binary digit. The value - 0 or 1-used in the binary numbering system. Also, the smallest form of data.

Broadband - A data-transmission scheme in which multiple signals share the bandwidth of a medium. This allows the transmission of voice, data and video signals over a single medium. Cable television uses broadband techniques to deliver dozens of channels over one cable.

CPU (Central Processing Unit) - The computing part of the computer. Also called the "processor," it is made up of the control unit and ALU.

DHCP (Dynamic Host Configuration Protocol) - A protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be entered. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short leases, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP addresses.

DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

Download - To receive a file transmitted over a network. In a communications session, download means receive, upload means transmit.

Driver - A workstation or server software module that provides an interface between a network interface card and the upper-layer protocol software running in the computer; it is designed for a specific NIC, and is installed during the initial installation of a network-compatible client or server operating system.

Ethernet - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium. Has a transfer rate of 10 Mbps. Forms the underlying transport vehicle used by several upper-level protocols, including TCP/IP and XNS.

Firmware - Programming that is inserted into programmable read-only memory (programmable read-only memory), thus becoming a permanent part of a computing device.

Gateway - A device that interconnects networks with different, incompatible communications protocols.

Hardware - Hardware is the physical aspect of computers, telecommunications, and other information technology devices. The term arose as a way to distinguish the "box" and the electronic circuitry and components of a computer from the program you put in it to make it do things. The program came to be known as the software.

Hub - The device that serves as the central location for attaching wires from workstations. Can be passive, where there is no amplification of the signals; or active, where the hubs are used like repeaters to provide an extension of the cable that connects to a workstation.

IEEE - The Institute of Electrical and Electronics Engineers. The IEEE describes itself as "the world's largest technical professional society -- promoting the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession, and the well-being of our members."

The IEEE fosters the development of standards that often become national and international standards. The organization publishes a number of journals, has many local chapters, and several large societies in special areas, such as the IEEE Computer Society.

IP Address - In the most widely installed level of the Internet Protocol (Internet Protocol) today, an IP address is a 32-binary digit number that identifies each sender or receiver of information that is sent in packet across the Internet. When you request an HTML page or send e-mail, the Internet Protocol part of TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requestor or the e-mail sender and can respond by sending another message using the IP address it received.

ISP - An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as Web site building and virtual hosting.

LAN - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

Mbps (MegaBits Per Second) - One million bits per second; unit of measurement for data transmission.

Network - A system that transmits any combination of voice, video and/or data between users.

NIC (Network Interface Card) - A board installed in a computer system, usually a PC, to provide network communication capabilities to and from that computer system. Also called an adapter.

Ping - (**P**acket **I**nternet **G**roper) An Internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response.

Port - A pathway into and out of the computer or a network device such as a switch or router. For example, the serial and parallel ports on a personal computer are external sockets for plugging in communications lines, modems and printers.

PPPoE (Point to Point Protocol over Ethernet) - A method used mostly by DSL providers for connecting personal computers to a broadband modem for Internet access. It is similar to how a dial-up connection works but at higher speeds and quicker access.

RJ-11 (Registered Jack-11) - A telephone connector that holds up to six wires. The RJ-11 the common connector used to plug a telephone into a wall.

RJ-45 (Registered Jack-45) - A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

Router - Protocol-dependent device that connects subnetworks together. Routers are useful in breaking down a very large network into smaller subnetworks; they introduce longer delays and typically have much lower throughput rates than bridges.

Server - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

Software - Instructions for the computer. A series of instructions that performs a particular task is called a "program." The two major categories of software are "system software" and "application software." System software is made up of control programs such as the operating system and database management system (DBMS). Application software is any program that processes data for the user.

A common misconception is that software is data. It is not. Software tells the hardware how to process the data.

Switch - 1. A data switch connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

TCP/IP - Transmission Control Protocol/Internet Protocol (TCP/IP) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

Throughput - The amount of data moved successfully from one place to another in a given time period.

Upload - To receive a file transmitted over a network. In a communications session, upload means transmit, download means receive.

UTP - Unshielded twisted pair is the most common kind of copper telephone wiring. Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company. To reduce crosstalk or electromagnetic induction between pairs of wires, two insulated copper wires are twisted around each other. Each signal on twisted pair requires both wires. Since some telephone sets or desktop locations require multiple connections, twisted pair is sometimes installed in two or more pairs, all within a single cable.

Specifications

Model No.:	ADSLME1
Standards:	IEEE 802.3 (10BaseT), ANSI T1.413 Issue 2, ITU-T G.dmt (G.992.1), ITU-T G.lite (G.992.2)
Protocol:	RFC 1483 Bridge
Ports:	One Console Port
Line	One RJ-11 port
LAN	One 10Mbps RJ-45 port
Cabling Type:	UTP Category 5 or better, standard phone line cable
Speed (Mbps):	Line 10 (Half Duplex) ADSL Up to 8Mbps (Download Speed) Up to 800Kbps (Upload Speed)
LEDs	Power, Alert, LAN Activity, LAN Link, ADSL Link, ADSL Tx

Environmental

Dimensions:	7.87 x 5.51 x 1.57 inches (200 mm x 140 mm x 40 mm)
Unit Weight:	10.58 oz. (0.3 kg)
Power:	Input 120V AC, Output 15V DC, 400mA
Certifications:	FCC Part 15, FCC Part 68, CSA-03
Operating Temp:	32°F to 122°F (0°C to 50°C)
Storage Temp:	14°F to 140°F (-10°C to 60°C)
Operating Humidity:	5% to 90%, Non-Condensing
Storage Humidity:	5% to 90%, Non-Condensing

Warranty Information

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Contact Information

For help with the installation or operation of this product, contact Linksys Customer Support at one of the phone numbers or Internet addresses below.

Sales Information	800-546-5797 (LINKSYS)
Tech Support	866-242-8558
RMA Issues	949-261-1288
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