English

AceLink ADSL Modem

SAM-335

User Guide

Class B Digital Device or Peripheral

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 and, if not installed and used in accordance with 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 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 into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or experienced radio TV technician for help.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment

Before Starting

This manual is for AceLink ADSL modem users. This book includes from the introduction to installation, and problem solutions.

We recommend that the user read this guide carefully before operation of equipment. If already familiar with the ADSL modem or similar systems, please read the notices in the explanations for review.

If you encounter any problems or have any questions, please contact the service provider.

About Manual

Following contents are described in each chapter of AceLink ADSL modem manual.

Chapter 1 '**Introduction**' describes the main functions of the AceLink ADSL modem, as well as its applications, hardware structure, and specifications

Chapter 2 '**AceLink ADSL Modem Setup**' examines what the user must know before installation, and describes the AceLink ADSL modem setting environment and connection to network.

Appendix A '**Troubleshooting**' describes major problems in using the AceLink ADSL modem, and solutions.

Appendix B '**Cable Specifications**' describes every sort of cable specification that is needed for installation of AceLink ADSL modem.

Appendix C '**Description of Terms**' explains terminology that you need to know during the use of AceLink ADSL modem.

Contents

Chapter 1 Introduction ..... 1-1~1-7

Introduction to AceLink ADSL modem 1-2

Name and Function of each part 1-3

Front View 1-3

Rear View 1-4

AceLink ADSL modem specifications 1-5

Software Specifications 1-7

Chapter 2 AceLink ADSL Modem Setup ..... 2-1~2-13

Before Installation 2-2

Safety Check 2-2

Service Environment Check 2-3

Preparing cables 2-4

Modem Setting Environment 2-6

Checking the Contents 2-7

Modem Setup 2-8

1. Drawing the Network Configuration 2-9
2. Power Disconnection 2-10
3. Connecting Ethernet Cables 2-10
4. POTS Micro-filter Connection 2-11
5. Power Connection 2-12
6. Checking all the Connections 2-13

Appendix A Troubleshooting ..... A-1~A-3

Points You Must Know before Inquiring at the Place Where You Purchased A-1

Troubleshooting - Problems and Solution A-2

Appendix B Cable Specifications ..... B-1~B-3

Twisted pair Category-3,4,5 Straight-through Ethernet Cable B-1

Telephone Cable (RJ-11) B-3

Appendix C Description of Terms ..... C-1~C-4

Figure Contents

Figure 1-1 Front view of AceLink ADSL modem 1-3
Figure 1-2 Rear view of AceLink ADSL modem 1-4

Figure 2-1 RJ-11 telephone cable 2-5
Figure 2-2 RJ-45 UTP Ethernet Cable 2-5
Figure 2-3 AceLink modem package 2-7
Figure 2-4 Example of network configuration 2-9
Figure 2-5 Ethernet Cable Connection 2-10
Figure 2-6 POTS micro-filter connection 2-11
Figure 2-7 Power adapter connection 2-12

Figure B-1 Twisted pair Category-3,4,5 Straight-through cable B-1
Figure B-2 Twisted pair Category-3,4,5 Straight-through cable connector signal B-2
Figure B-3 Pin connection of Twisted pair Category-3,4,5 Straight-through cable connector B-2
Figure B-4 RJ-11 telephone cable B-3

Table Contents

Table 1-1 AceLink ADSL modem's LED functions 1-3
Table 1-2 AceLink ADSL modem's port functions 1-4
Table 1-3 Hardware specifications of AceLink ADSL modem 1-5
Table 1-4 DMT specifications of AceLink ADSL modem 1-6
Table 1-5 Specifications of external connector of AceLink ADSL modem 1-6
Table 1-6 Specifications of external connector of AceLink ADSL modem 1-6
Table 1-7 Specifications of AceLink ADSL modem software 1-7

Table B-1 Pin connection of RJ-11 telephone cable connector B-3

Chapter I
Introduction

Chapter 1 Introduction

This chapter describes the main functions of the AceLink ADSL modem, as well as its applications, hardware structure, and specifications.

- Introduction to the AceLink ADSL modem
- Name and function of each component
- AceLink ADSL modem specifications

Introduction to AceLink ADSL modem

It is possible to access the Internet and other multimedia service networks through an existing telephone line (PSTN) using AceLink ADSL modem.

Unlike previous dial-up modems, AceLink ADSL modems provide the fastest speed available as well as allow use of the telephone at the same time.

Characteristics of AceLink ADSL modem;

Various Applications

Some of the applications of AceLink ADSL modem include Internet access, chatting (real-time communication), file transfers, and data download/upload.

Inexpensive Price

AceLink ADSL modem uses a pre-existing phone line (PSTN) instead of using a separate cable, which needs a great amount of money and time to install.

Reliable Network Connection

AceLink ADSL modem operates in connection with the master system in the local telephone office letting the telephone office manage all of the networking services.

Easy Installation

AceLink ADSL modem is easy install so that a popular user can easily connect to ISP and receive the internet service.

Web-based Management

AceLink ADSL modem provides a web environment management function. Whereby, the user can monitor the modem's state and change the settings easily.

Name and Function of each part

Front View

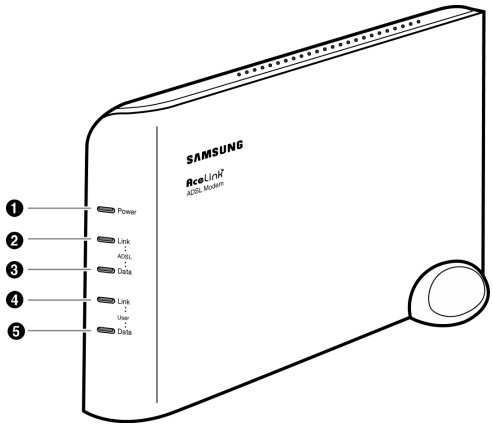


Figure 1-1 Front view of AceLink ADSL modem

Number	Label	Color	Function
❶	Power	Green	On, while AC power is provided.
❷	Link(ADSL)	Green	On, while connected to telephone office's ADSL master system.
❸	Data(ADSL)	Green	Flashing, when sending/receiving to/from telephone office's ADSL master system.
❹	Link(User)	Green	On, while connected to PC.
❺	Data(User)	Green	Flashing, when sending/receiving data through PC.

Table 1-1 AceLink ADSL modem's LED functions

Rear View

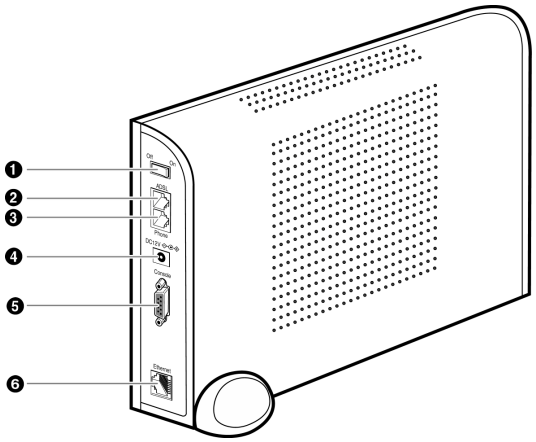


Figure 1-2 Rear view of AceLink ADSL modem

Number	Label	Port	Function
❶	Off / On	Power Switch	A power switch of AceLink ADSL Modem.
❷	ADSL	ADSL line port	Connect RJ-11 telephone line from the telephone socket on the wall. This port is used to send/receive ADSL data.
❸	Phone	Telephone port	Connected to ordinary telephone through micro-filter.
❹	DC 5V	Power input port	A jack to connect Input power (AC 110V, DC 5V adapter) to ADSL modem.
❺	Console	Serial port (RS232C)	Used for maintenance of ADSL by technician.
❻	Ethernet	Ethernet port	Connect to PC's network adapter by using UTP. Category-3,4,5 Straight-through cable. Provide up to 10Mbps speed.

Table 1-2 AceLink ADSL modem's port functions

AceLink ADSL modem specifications

Hardware Features

Category	Specification
Power Supply of Main Board	• Input Power : DC 5V (5V/1.5A) • Voltage usable : 3.3V and 12V • Power consumed : 4.5Watts (Max)
Power Supply Adapter	• Rated Input : AC 110V, 60Hz • Rated Output : DC +5.0V 1.5A
User Interface	• ADSL Interface(RJ-11) : Telephone line • Telephone Interface(RJ-11) : Telephone • Ethernet Interface(RJ-45) : Connection to 10Mbps Ethernet Port (Straight-through) • Console Interface(DB-9:Female) : 19,600bps Null modem interface
LED	• Power : A green light is on during normal operation of the modem. • Link (ADSL) : A green light is on when it is linked to ADSL home system network. • Data (ADSL) : A green light flickers during transmitting/receiving of data with ADSL home system network. • Link (User) : A green light is on when it is linked to Ethernet port of PC. • Data (User) : A green light is on during transmitting/receiving of data with PC.
Package	• Package Material : Plastic • Dimension : 37(width) x 233(length) x 164.2(height) mm • Weight : 1 Kg (modem, power supply device and cables are included) • Installation : Vertical installation is available (an installation rack is provided).

Table 1-3 Hardware specifications of AceLink ADSL modem

DMT Specifications

Category	Down Stream	Up stream	Remarks
Max Data Rate	8Mbps	640Kbps	접속 DSLAM 및 전송거리에 따라 차이가 있을 수 있습니다.
ADSL OverHead	96Kbps	32Kbps	Frame Mode 3
Bandwidth	0.11Mhz ~ 1.1Mhz	30Khz ~ 110Khz	
TX Power	20dBm	12dBm	
Bin Width	4.3125Khz		T1.413 standard (+/-50ppm)
Max Sym/bin	16 Bit		
Latency	Fast channel : < 2ms, Interleaved < 20ms		
Applied Standard	ANSI/T1.413, ITU-T/G.992.1, ITU-T/G.992.2		

Table 1-4 DMT specifications of AceLink ADSL modem

External Connector Specifications

Type	Options	Remarks
RJ-45 Ethernet	• Internet access available by connecting to external PC	
RJ-11 Telephone Line	• Telephone access available through external micro-filter	
RJ-11 ADSL Line	• Connected to external ADSL line	
Power Jack	• AC/DC converter 5V adapter	
Power Switch	• Power On/Off switch	

Table 1-5 Specifications of external connector of AceLink ADSL modem

Other Specifications

Content	Item	Remarks
Working Temp.	0 ~ 45℃	
Telephone Service	Linked to telephone using external micro-filter	
Foreign Standard	Form approval(EMI CLASS B) U.S. FCC Part 15 & 68	

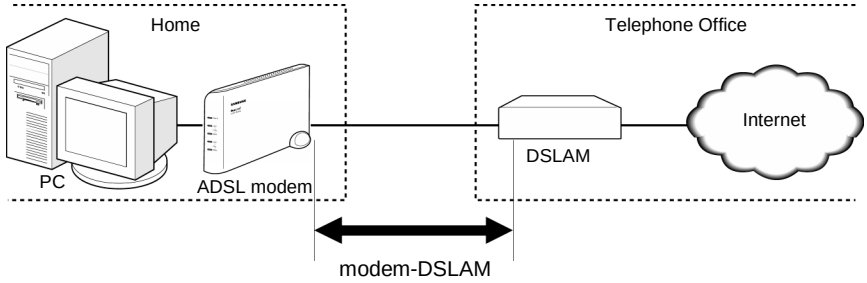
Table 1-6 Specifications of external connector of AceLink ADSL modem

Software Specifications

Category	Specification	Remarks
Access Mode	• PPPoA mode (RFC2364 - PPP Over ATM) • IPoA mode (RFC 1483 Routed Mode) • RFC 1483 Bridged mode • PPPoE mode (RFC 1516-PPP Over Ethernet) • PPTP mode	
Routing Additional Function	• IP routing • NAT • DHCP server	
Management Function	• CLI (Command Line Interpreter) • Telnet • SNMP agent • Setup of web environment • Software upgrade • Traffic statistics monitoring	

Table 1-7 Specifications of AceLink ADSL modem software

NOTE AceLink ADSL modem's speed can vary depending on length and characterics of the line between DSLAM and modem.



Chapter 2

AceLink ADSL Modem Setup

Chapter 2 AceLink ADSL Modem Setup

This chapter introduces the environment where AceLink ADSL modem can be installed and explains how to install this product and link it to a network.

This chapter consists of the following contents.

- Before installation
- Checking the Contents
- Modem Setup

Before Installation

This chapter examines what the user must know before installation.
Before installation of your ADSL modem follow the directions described in this chapter.

Safety Check

Before proceeding with the installation of the AceLink ADSL modem, user must check the following categories.

Electricity Safety check

- The user should not remove or open the product's cover, it is especially dangerous when the power is on.
- Check and make sure if there are any flammable, electric conducting objects around the modem. Make sure that there are no wet objects around. And check if the cable is not worn out and other electrical devices around the modem are properly grounded.

Location check

- Electrical products tend to generate heat during operation. It is possible that if the environment does not provide enough ventilation it would result in improper function of the modem. Make sure that the modem is exposed to circulating air.
- Check if the power is properly provided. If it happens to cause sparks or noise, be sure to install a voltage regulator.

Service Environment Check

Check the followings before installing your AceLink ADSL modem.

Telephone network service

The AceLink ADSL modem should be installed where telephone network service is available.

If there is no telephone line available in your area, be sure to report to the local telephone office to construct a telephone line.

The telephone network service must support ADSL modem connection.

Some of the telephone network services will support ADSL applications. Check with your local telephone office for subscription of ADSL.

PC Specification Check

In order to use AceLink ADSL modem by connecting to a PC, a LAN card (10Base-T or 10/100Base-T network adapter) must be installed in your PC. You can purchase the LAN card at any PC shop.

CAUTION

Using the USB port on the SAM-335U model requires a higher version operating system than Windows 98 SE (Second Edition).

Preparing cables

You must have all cables ready before connecting to the network. The following cables are needed to connect the AceLink ADSL modem to the network.

Port	Required cable
Telephone line port (PHONE)	RJ-11 telephone cables.
Ethernet port (10BASE-T)	RJ-45 UTP Category-3,4,5 Straight-through cable.

Table 2-1 Cables used by AceLink ADSL modem

NOTE A console port connection cable is not provided with the product.

RJ-11 telephone cable

One end of the RJ-11 telephone cable is connected to telephone line port (phone) in the back of the AceLink ADSL modem, and the other is connected to the POTS micro-filter (LINE) which is provided separately.

Figure 2-1 RJ-11 telephone cable

RJ-45 UTP Ethernet cable

Connect one end of the RJ-45 UTP Ethernet cable to the Ethernet port (10BASE-T) which is at the rear plane of AceLink ADSL modem and connect the other end to the LAN card of the PC.

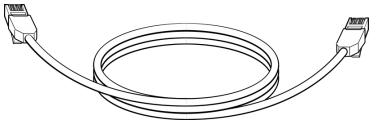


Figure 2-2 RJ-45 UTP Ethernet Cable

NOTE Cables may look alike, however they could be different, for example they could have different inner pins. Therefore, in order not to use them with other cables, it is recommended to label each cable.

Modem Setting Environment

For safe installation, let's examine the AceLink ADSL modem setting environment.

The AceLink ADSL modem should be kept at moderate temperature and humidity.

The recommended environment is as follows:

- Temperature : 0 ~ 45℃
- Relative humidity : 10 ~ 90% (uncondensed)
- Power : 4.5 Watts (maximum)
- Input power : AC 110V, DC 5V
- Frequency : 60Hz

CAUTION

The voltage variation of the power input during operation should be within 5 % of regulatory voltage. The electrical outlet should be grounded. Also, the AceLink ADSL modem's power connecter should not be used on the same outlet where a hair dryer, iron or refrigerator is connected. To provide a stable power supply, an AVR (Automatic Voltage Regulator) is recommended to be used.

Checking the Contents

After purchasing your AceLink ADSL modem package, open the box and check if all the following contents are included.

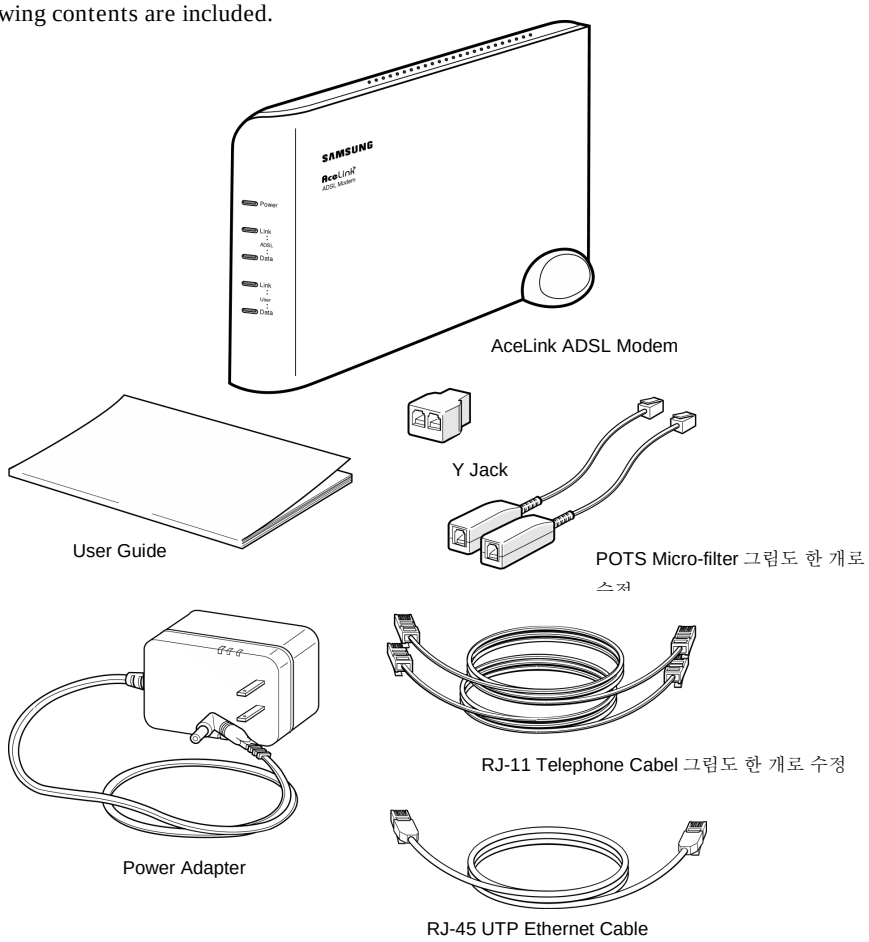


Figure 2-3 AceLink modem package

NOTE A POTS micro-filter is needed to use the ordinary telephone service and ADSL data service at the same time. You need to prepare a POTS micro-filter for each telephone used in your home. Ask your AceLink ADSL modem provider about purchasing additional POTS micro-filters.

Modem Setup

We will go over how to configure your AceLink ADSL modem.

Configuration procedures are as follows :

1. Drawing the network configuration
2. Power disconnection
3. Ethernet Cable connection
4. POTS micro-filter connection
5. Power connection
6. Checking all the connections

Each step is described in detail below.

1. Drawing the Network Configuration

First, it is better to draw a network configuration for the AceLink ADSL modem. You must consider the following matters when drawing a network configuration.

- What will the AceLink ADSL modem are used for?
- Are you going to use the AceLink ADSL modem and telephone at the same time?
- Have you prepared all the necessary equipment such as PC, POTS micro-filter, telephone, and network cable?

The diagram below is an example configuration of an AceLink modem to PC, POTS micro-filter and telephone. Draw your own configuration in reference with this diagram.

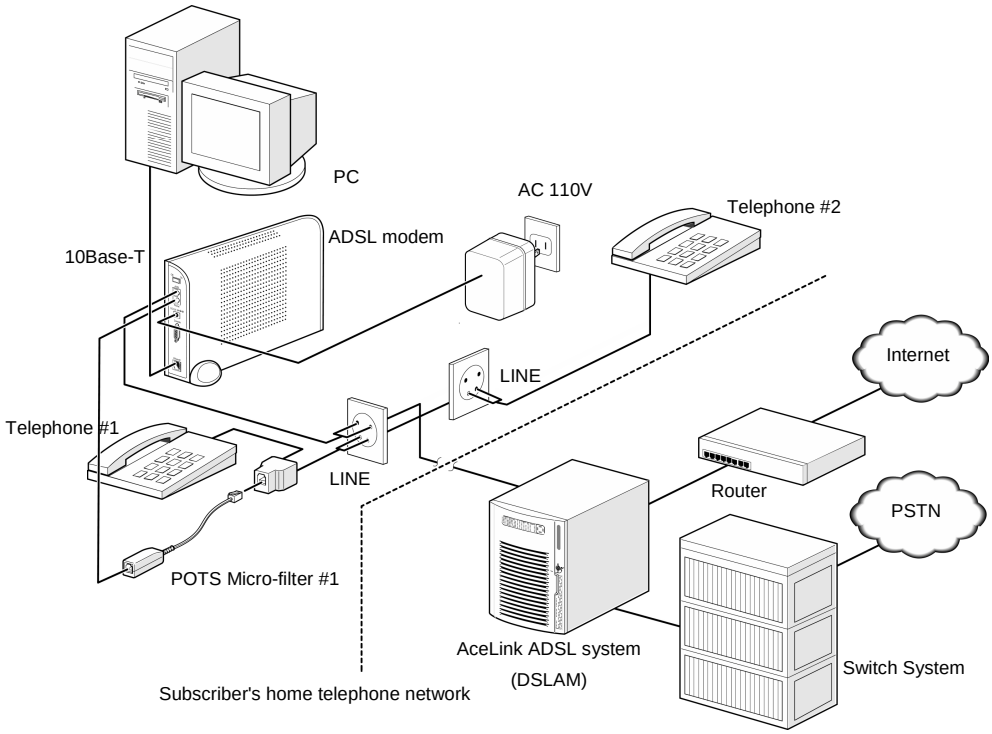


Figure 2-4 Example of network configuration

2. Power Disconnection

If power is supplied to the AceLink ADSL modem, be sure to pull out the power cord from the electrical outlet before connecting the modem to any other device.

3. Connecting Ethernet Cables

Connect one side of the RJ-45 UTP Ethernet cable to the AceLink ADSL modem's Ethernet port (Label:10BASE-T) and connect the other side to the network adapter installed in the PC.

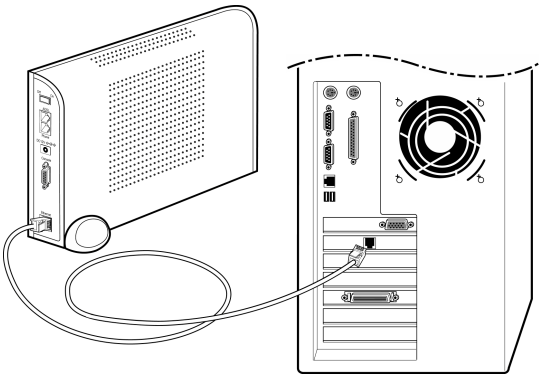


Figure 2-5 Ethernet Cable Connection

NOTE In order to connect the AceLink ADSL modem to a PC, the PC must have a 10Mbps or 10/100 Mbps speed network adapter. For network adapter installation, refer to the manual provided with the network adapter.

4. POTS Micro-filter Connection

Connect your AceLink ADSL modem to a telephone using a micro-filter by following the procedures below.

❶ Pull out the telephone line currently in use from your wall jack and connect it to the AceLink ADSL modem's **ADSL** port.

❷ With the provided RJ-11 telephone cable, connect one side to the POTS micro-filter LINE port, the other side to the AceLink ADSL modem's **Phone** port.

❸

Connect RJ-11 telephone cable attached to POTS micro-filter to Y-jack port.

❹ Connect RJ-11 telephone cable from Y-jack port to telephone.

❺ Reverse-wire remaining Y-jack port.

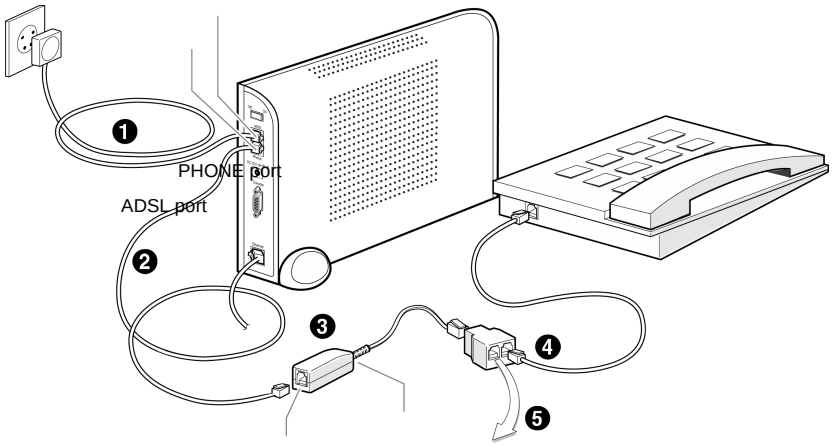


Figure 2-6 POTS micro-filter connection

Reverse Wiring

PHONE port
LINE port

NOTE

If more than two telephones are used, more POTS micro-filters are needed. Ask your AceLink ADSL modem provider to purchase additional POTS micro-filters.

CAUTION

If the telephone, used with AceLink ADSL modem, is not connected through a POTS micro-filter, telephone conversation quality will go down.

5. Power Connection

Connect power adapter to AceLink ADSL modem's power input port (DC 5V). And then, connect power adapter to electrical outlet.

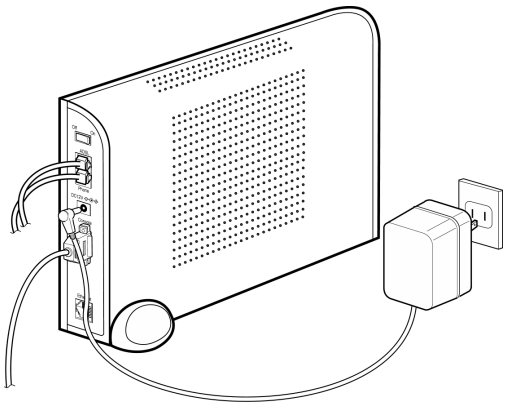


Figure 2-7 Power adapter connection

Installation of the AceLink ADSL modem has now been completed.

CAUTION

The power adapter used with your ADSL modem must be the adapter provided with your ADSL modem package.

6. Checking all the Connections

Use the following method to check all the connections.

Checking ADSL Line connection

If the ADSL Link LED blinks and then is keeping up ON within seconds of power connection, the ADSL line is properly connected.

Checking PC connection

If network adapter's LINK LED and AceLink ADSL modem's User Link LED are green, connection between PC and AceLink ADSL modem is properly established.

Checking telephone line connection

If you hear a normal signal on your telephone, and have clear reception without ghost voices, the telephone line is properly connected.

NOTE The AceLink ADSL modem's power source does not affect the use of telephone

Appendix A
Troubleshooting

Appendix A Troubleshooting

In appendix A, major problems in using the AceLink ADSL modem, and solutions thereof will be described. Appendix A covers the following:

- Points you must know before inquiring at the place where you purchased
- Troubleshooting - Problems and Solutions

Points You Must Know before Inquiring at the Place Where You Purchased

When a problem, which you cannot solve, occurs during use of the system, you will inevitably inquire at the place where you purchased it and have them assist you.

Before you inquire at the place where you purchased the system, prepare a note including the following product information :

- Product model name (e.g.: External AceLink ADSL Modem - Model name : SAM-335)
- Product serial number
- Date when product was purchased
- Memo about the problem
- Memo about what you have sequentially done to solve the problem by yourself

Troubleshooting - Problems and Solution

Many types of problems are proposed, and problems of each type that may happen are described in detail with solutions to the problems.

Types of Problem That May Happen

The following types of problems may frequently occur when using the AceLink ADSL modem.

- Problems related to power
- Problems related to network connection

Problems Related to Power

The following problems related to power may occur.

✓ Even when the power supply adapter is connected to the system and the power supply cable connected to the power supply adapter is coupled to an electrical plug socket, the Power LED is not lit green.

When this problem occurs, check the following :

➲ Check that the electrical plug socket is working.

➲ Remove the jack from the power input port (DC 5V) on the back of the AceLink ADSL modem. After about 10 seconds, connect the jack to the port again and restart the AceLink ADSL modem.

If the problem is not solved with the above method, remove the jack from the power-input port of AceLink ADSL modem and inquire at the place you purchased the product.

Problems Related to Network Connection

The following problems related to network connection might occur.

- ✓ The modem is not connected to the Internet.
- ✓ User Link LED or ADSL Link LED is not light.

When this problem occurs, check the following :

- ➲ Check the connection state of the cables connecting the AceLink ADSL modem, POTS micro-filter and PC.
- ➲ Check the state of the network adapter installed in the PC.
- ➲ Check the operating state of the PC.
- ➲ Check whether an IP address is set to meet the connection service provided.

If the problem is not solved with the above method, remove the jack from the power-input port of AceLink ADSL modem and inquire through ISP(Internet Service Provider) or at the place you purchased the product.

Appendix B
Cable Specifications

Appendix B Cable Specifications

Appendix B explains the specifications of the cables connected to each port of AceLink ADSL modem, every connector signal, and pin connection.

- Ethernet Cable
- Telephone (RJ-11) Cable

Twisted pair Category-3,4,5 Straight-through Ethernet Cable

Twisted pair Category-3,4,5 Straight-through Ethernet is needed for connecting AceLink ADSL modem to the LAN card of a PC.

NOTE Make sure to use Category-5 cable in case of connection with devices using 100Mbps Fast Ethernet.

Cable Diagram

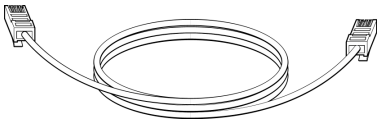


Figure B-1 Twisted pair Category-3,4,5 Straight-through cable

Connector Signal

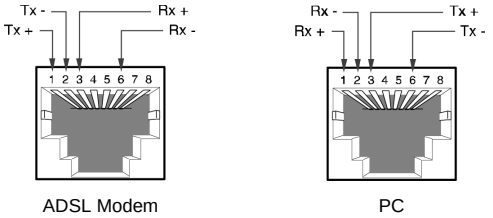


Figure B-2 Twisted pair Category-3,4,5 Straight-through cable connector signal

Pin Connection

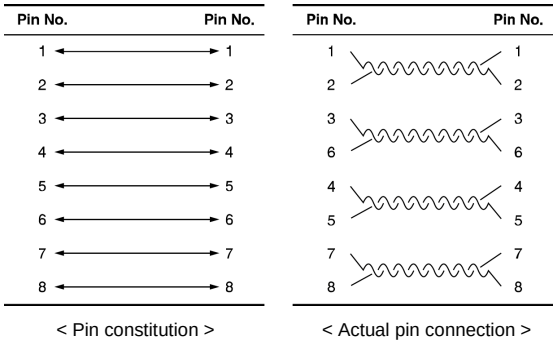


Figure B-3 Pin connection of Twisted pair Category-3,4,5 Straight-through cable connector

Telephone Cable (RJ-11)

We will examine the RJ-ll telephone cable connector that is used as a connector between AceLink ADSL modem and a telephone line.

Connect one end (RJ-11 jack) of the telephone cable to the telephone port at the back of the modem and the other end (RJ-11 jack) to the RJ-11 connector of the POTS micro-filter.

Cable Diagram

Figure B-4 RJ-11 telephone cable

Pin Connection

RJ11		RJ11	
1	NC	1	NC
2	(A)Tip	2	(A)Tip
3	(B)Ring	3	(B)Ring
4	NC	4	NC

Table B-1 Pin connection of RJ-11 telephone cable connector

Appendix C
Description of Terms

Appendix C Description of Terms

10BASE-T

An Ethernet interface having a bandwidth, which provides a transmission rate, that may go up to 10 Mbps using a Category 5 cable.

ATU-C (ADSL Transceiver-Central Office)

A central unit managed by an ISP(Internet Service Provider) for connection of ADSL subscriber lines.

ATU-R (ADSL Transceiver -Remote Terminal)

A subscriber terminal which is connected to ATU-C through a telephone line, which processes ADSL service.

ADSL (Asymmetric Digital Subscriber Line)

A device providing a high-speed data interface to the Internet, and other services, through a telephone network. This does not influence existing telephone service. 데이터 전송속도는 전송거리 및 ATU-C 및 서비스 종류에 따라 차이가 있으며 다운로드 속도는 640Kbps 에서 8Mbps, 업로드 속도는 16Kbps 에서 800Kbps 입니다..

ATM (Asynchronous Transfer Mode)

One of the communications transfer modes. A control mode in which a series of terminals can simultaneously send data while a terminal is sending data, thereby allowing a series of terminals to share a single transmission line for communication.

Bridge

A functional unit interconnecting two or more local area networks (LANs) that uses the same link protocol. The bridge not only transmits but also filters packets. The bridge usually operates on a Data Link Layer when it transmits packets.

DMT (Discrete Multi-Tone)

A modulation technique of segmenting and transmitting a large amount of data by way of Multi-carrier, in which a carrier frequency band is multiplexed, thereby realizing optimal performance on a Loop.

Ethernet

A representative method of interconnecting LANs was using a transmission cable of 10BASE standard. Three companies, i.e., Xerox, Intel and DEC develop this method, in cooperation. Its transmission rate is about 10 Mbps, and employs a CSMA/CD access method in which a node monitors signals over a transmission line and sends data after confirming that the other nodes do not send signals.

Hub

A communications interface used for interconnecting a series of devices on a network. This retransmits a signal, which is received from a device, or segments a received signal and transmits the segmented signal.

FTP (File Transfer Protocol)

A protocol for transferring files from one host to another or from a host to a personal computer over a network.

Gopher

An interface that has been used as the easiest interface before the WWW service was developed. The gopher constructs a menu by classifying the contents of information by topic or type, thereby allowing even people, whom is not familiar with the Internet, to easily search information. In addition, other functions of the Internet such as remote access, file transfer, news, etc. can be performed in the gopher menu. A series of gopher servers are interconnected so that a user can search for desired information moving from one gopher server to another.

IP (Internet Protocol) Address

An address of a host or a device on the Internet. It is composed of 4 bytes. Each byte is divided by a period. An IP address is assigned by IANA (Internet Assigned Numbers Authority) to avoid duplication.

PPPoA (Point-to-Point Protocol)

The standard protocol for providing the serial interface between nodes, e.g., between a PC and a RAS or between routers, on the Internet. PPPoA provides an Internet access rate, and is widely used substituting for a SLIP (Serial Line Internet Protocol) which is a previously used serial interface protocol. PPPoA is designed to transmit various network protocols including IPX. PPPoA performs various and useful functions including negotiation of a receiving maximum packet size over a serial line.

POTS (Plane Old Telephone Service) Micro filter

A POTS micro filter separate a voice signal from a data signals not to influence an existing telephone service. By separating PSTN using a POTS micro filter, network service such as Internet and telephone service can be simultaneously used.

Switch

A network device for filtering and transmitting frames based on the destination address of a frame. A switch operates at the Data Link Layer of the OSI-RM.

TCP/IP (Transmission Control Protocol/Internet Protocol)

One of the network protocols that are frequently used in a LAN. When data is transferred through a network, data is segmented into a series of packets before transmission. IP moves a data packet from one place to another, and TCP manages the flow of data and checks whether data is correct.

Telnet

One of the Internets services, which is used for connecting to another computer on the Internet. Telnet is used for remote control of a computer. When a user accesses another computer, a user ID and a password are requested for using the computer. Telnet is used for connecting to domestic communications on the Internet. Accordingly, a user having a domestic communications ID can immediately connect to a domestic communications network through ‘Telnet’.

PSTN (Public Switched Telephone Network)

A switching connection type provided by an ISP and a public communications network premising the use by many and unspecified persons. It was originally used for the telephone, but it is also used for communication among facsimiles and computers as more advanced communications equipment are developed. It is also referred to as POTS.

POTS (Plain Old Telephone Service)

A telephone network which does not provide additional services.

Router

A hardware and software unit for allowing a user on one network to communicate with another network by interconnecting two or more networks. A router transmits packets. In addition, a router converts an address between networks at the Network Layer of OSI-RM, and also appropriately converts a protocol.

WWW (World Wide Web)

A latest multimedia service among many Internet services. Unlike Internet services performing transmission based on letters, WWW enables photographs, graphics, voice and motion diagrams to be transmitted and searched in a convenient hypertext format. With the advent of this convenient and easy service, WWW enables even elementary school students to easily access the Internet, which has been exclusively enjoyed by only a few professionals. WWW is referred to as W3 or Web as an abbreviation.

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