InfoRanger User Guide

SCM-110R

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Before Starting

This manual is for users of the SAMSUNG InfoRanger™ cable modem. This manual includes an introduction of the InfoRanger and shows how to install, connect to a network, and use the InfoRanger. It also explains various problems that the user may encounter while using the InfoRanger and how to troubleshoot these problems.

Users who are accustomed to cable modem products as well as first time users should read this manual carefully before installing and using the InfoRanger.

If you have any questions about this product or you think that the product is damaged, please contact the SAMSUNG customer service center, as described in the technical support page at the end of this manual or at the store where you purchased this product.

Structure of User Guide

This InfoRanger User Guide includes the following contents in each chapter.

Chapter1 **Introduction to the InfoRanger** explains the features of the cable modem, the reasons for its wide use, the features and advantages of the InfoRanger.

Chapter2 **Prior to Installation** explains the items that the user should prepare prior to installing the InfoRanger. It also explains the environment configuration of a PC for use with the InfoRanger.

Chapter3 **Installing the InfoRanger** explains how to install the InfoRanger and how to connect cables.

Chapter4 **Using the InfoRanger** explains the names and features of each part of the InfoRanger, how to distinguish the product status from the LEDs and how to check whether the product is installed correctly or not.

Appendix A **Troubleshooting** explains how to troubleshoot various problems that may occur while using the InfoRanger.

Appendix B **Product Specifications** explains the specification of the InfoRanger in table format.

Appendix C **Glossary** explains the terms that are useful when you use the InfoRanger.

Appendix D **Cable Specifications** explains the cable specifications that are used to connect the InfoRanger.

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Chapter 1
Introduction to the InfoRanger

Chapter 1 Introduction to the InfoRanger

The SAMSUNG InfoRanger is an external cable modem, which enables fast data communications using a cable TV network.

With the SAMSUNG InfoRanger, you can receive data at the speed of 40Mbps, and send data at the speed of 10Mbps. Compared with conventional telephone lines, this remarkable speed is 100 times faster than 56K bps modem.

Even though cable modems provide fast data transmission speed, normally they are too expensive for common users to avail of as they include many heavy features. SAMSUNG InfoRanger is specially designed for the users who want to transmit data at high speed with lower cost. With SAMSUNG InfoRanger, you can enjoy the fastest communication speed.

InfoRanger speed can be changed by the following factors.

- User's computer specification
  - ☞ Speed of CPU, size of main memory, size of hard disk, etc
- Number of programs that is running on the user's computer
  - ☞ During Internet is connected, if you send e-mail or download files, each work transmit speed gets slow.
- Network traffic when user is connected
  - ☞ According to the current network traffic, transmission seed is varied.
- Capacity level provided by CATV provider
  - ☞ The capacity level for which you're provided by your cable TV provider

Features of InfoRanger

Uncomparable speed

The InfoRanger lets you connect to the Internet, transmit e-mails, and download data at speeds up to 100 times faster than a 56K bps modem.

Simultaneous data transform

The InfoRanger provides two-way data transmission. With the InfoRanger, you can download data at a maximum speed of 40Mbps, and simultaneously upload data at a maximum speed of 10Mbps.

Excellent Compatibility : DOCSIS-compliant InfoRanger

In compliance with DOCSIS (Data Over Cable Service Interface Specification) Version 1.1, the InfoRanger can receive services from all cable TV providers and can be used with other manufacturer's cable modems.

Quick and easy installation process

With the InfoRanger, the IP address are set automatically. The only thing you need to do is connect the cables, and the installation is done.

Compact and convenient design

The InfoRanger is designed for easy to use and it fits well in any office environment.

Examples of Network Connection

If you subscribe to both Cable TV and the Cable Internet Services

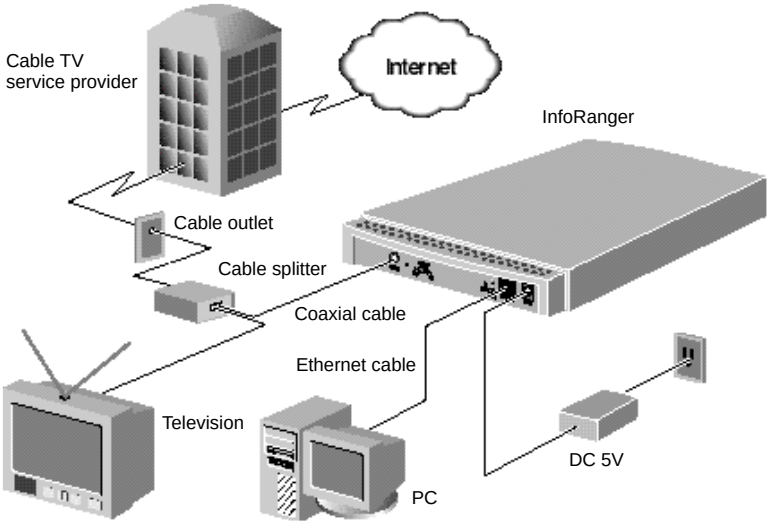

Figure 1-1 Network connection if you subscribe to both cable TV and the cable Internet service.

If you only subscribe to a Cable Internet Service

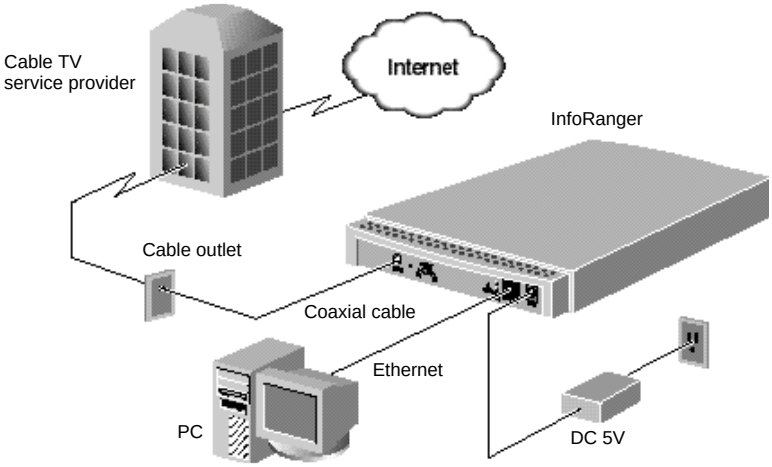

Figure 1-2 Network connection if you only subscribe to a cable Internet service.

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Chapter 2
Prior to Installation

Chapter 2 Prior to Installing

This chapter explains what you should do before installing the InfoRanger.

Subscribing Cable Internet Service

The cable modem receives data through a cable TV network. Therefore, it is necessary to have a Cable Internet Service to use your cable modem. If you are already subscribing to cable TV, please make sure that you are also subscribing to Cable Internet Service. If you do not have cable Internet service, please contact your cable TV provider and ask the following services.

- **Whether they support two-way cable modem access service or not.**

  The InfoRanger enables two-way data transmission. If you want to use all features of the InfoRanger, you need to subscribe to a cable TV provider which provides two-way cable modem access service.

- **Whether they provide the Internet service or not.**

  If you want to send or receive e-mails, access to WWW and/or use other Internet services through the cable modem, you need to have cable Internet service. Once you are an Internet service subscriber, your cable TV provider will provide you with an Internet account, which you can connect to via your cable modem. Please note that your Internet account should be established before the installation of cable modem.

Environment Preparation for Installation

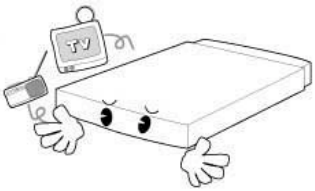
You should install the InfoRanger in a place with the following temperature, humidity and stable electric power.

- Operation temperature : 0 ~ 40℃,
  Storage temperature : - 32 ~ 70℃
- Operation humidity : below 90% (40℃, non-condensing),
  Preservation humidity : below 90% (65℃, non-condensing)
- Power Consumption : 10Watt
- Input voltage : 100-240VAC
- Rated frequency : 50/60Hz

CAUTION

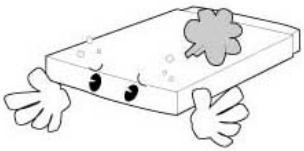
While the InfoRanger is operating, the fluctuation range of input voltage should be whithin 5% of regulated voltage. Also, th electricy outlet which is connected to input terminal should be grounded.

◆ *Avoid static electricity and electric noise….*



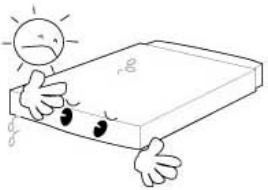
It may be necessary to use preventive equipment if the InfoRanger is installed in a place where high static electricity or noise is present.

◆ *Clean and well ventilated place….*



Install the InfoRanger in a ventilated place where the appropriate temperature and airflow is present. As dust can cause a serious failure of operation, please install the InfoRanger at a clean place.

◆ *Avoid the direct rays of light*



Direct rays of light can increase temperature of the InfoRanger and this can cause damage to operational parts and lead to operation failure. Therefore, it is recommended to keep the InfoRanger away from direct rays of light.

Preparing the Necessary Items

The following items should be prepared in order to use the InfoRanger.

Included items

- InfoRanger (SCM-110R)
- A power adapter
- A power cable
- A stand holder
- A RJ-45 Ethernet cable (6Ft.)
- This manual

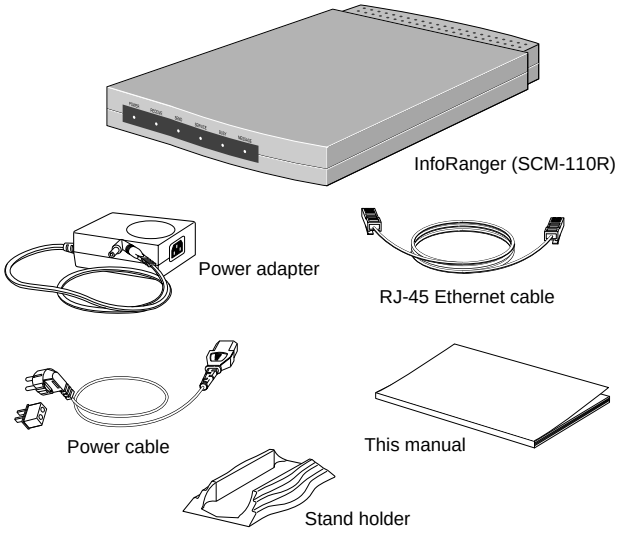


Figure 2-1 Included items in the InfoRanger package

Not Included Items

The following items are not included in the InfoRanger package. These need to be prepared separately.

- A TCP/IP protocol installed on an IBM compatible PC, running on Windows 95 (or later), or on a Macintosh running on System 7.5 (or later).
- A two-way coaxial cable
- A Network Interface Card (NIC)

Configuring TCP/IP Protocol

Once you have set-up the IBM compatible PC running on Windows 95 (or later version) or the Macintosh running on System 7.5(or later), you need to install a network interface card and TCP/IP protocol.

Referring to the manual that provided with your network interface card, please install the network interface card on your computer and install the network interface card driver . Then, install TCP/IP protocol as follows.
If you already installed TCP/IP protocol, skip this chapter and go to the next chapter.

Installing TCP/IP Protocol on IBM Compatible PC

his installation is an example of an IBM compatible PC running on Windows 95. Installation of TCP/IP protocal may varies depending on the different operating system and/or a network interface card used, but the overall process is generally similar.

1. Click the **Start** button on the Windows 95 desktop, and click **Settings ➔ Control Panel.**
2. In <Control Panel> window, double click **Network** icon.
3. When <Network> window appears, click **[Add...]** button.
4. When <Select Network Component> window appears, click **[Protocol]** and then click **[Add...]** button.
5. When <Select Network Protocol> window appears, click **Microsoft** from the 'Manufacture' list and then click **TCP/IP** from the 'Network Protocols' list. Click **[OK]** button.
6. In <Network> Window, click **TCP/IP** from 'The following network components are installed' list and click **[Properties]** button.
7. When <TCP/IP Properties> window appears, click **IP Address** tab. On the <IP Address> tab, select **Obtain an IP address automatically** item and then click **[OK]** button.
8. When the system reboot prompt message appears, click **[Yes]**.

Installing TCP/IP Protocol on Macintosh PC

This installation is an example of a Macintosh running on System 7.5. Installation of TCP/IP protocol may varies depending on the different operating system and/or a network interface card used, but the overall process is generally similar.

1. Double click **System** folder.
2. In <System> folder, double click **Control Panels**
3. In <Control Panels>, find **TCP/IP** icon.
4. Close all open windows.

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Chapter 3
Installing the InfoRanger

Chapter 3 Installing the InfoRanger

This chapter explains how to install the InfoRanger and how to connect the cables to the InfoRanger. The following describes the process.

1. Install InfoRanger at the appropriate place.
2. Connect the coaxial cable.
3. Connect to PC (Single PC / Multi PC).
4. Connect the power adapter.

Installing

The InfoRanger should be installed on a flat surface away from direct rays of light. It should also be close to the cable outlet or cable splitter for easier connection of cables. Then slot the InfoRanger into the provided stand holder.

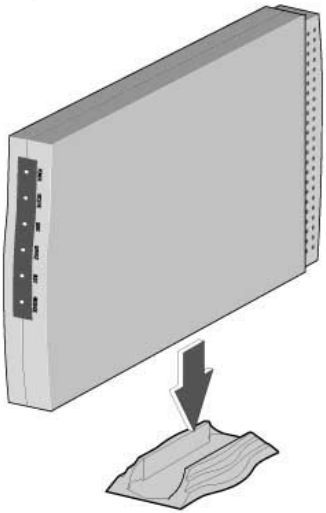

Figure 3-1 Slotting the InfoRanger into the stand holder

Connecting the Coaxial Cable

Connect the coaxial cable from the InfoRanger **CABLE** connector to the cable outlet or cable splitter. Slide pin in the center of the coaxial cable into the hole in the CABLE connector carefully without bending, and turn the connector clockwise until the cable is firmly attached.

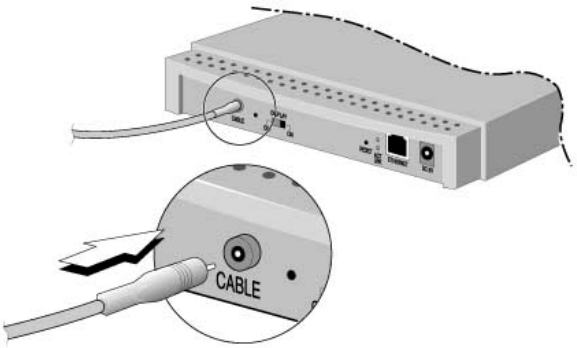

Figure 3-2 Connecting the coaxial line to the CABLE connector

Connecting PCs

The InfoRanger can be connected to a single PC or to group of PCs by using a hub or switch. Separate network cables are necessary when you connect PCs and note that the InfoRanger only provides the straight-through network cable for a single PC connection. If connecting more than one PC then separate cables should be prepared.

Single PC Connection

First, turn off the PC, which you will connect to the InfoRanger. Using the RJ-45 network cable (provided with the InfoRanger), connect the **ETHERNET** port of the InfoRanger to the port of the network interface card on the PC.

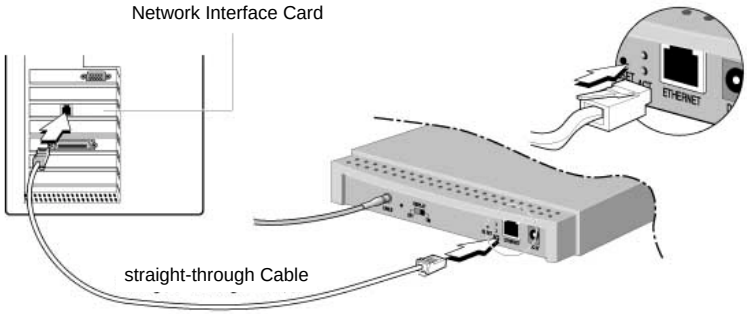

Figure 3-3 Connecting the RJ-45 Ethernet cable to the ETHERNET port and a singnal PC

Multiple PC Connection

If you want to connect more than one PC to the InfoRanger, you need to prepare the following additional items:

- An Ethernet hub or switch with 10Mbps transmission speed
- Twisted pair category-3,4,5 crossover cable
- Twisted pair-category-3,4,5 straight-through cables equal to the number of PCs

NOTE The specifications of twisted pair category-3,4,5 crossover cables and straight-through cables are described at Appendix D in detail.

NOTE InfoRanger can be connected with twelve PCs simultaneously.

When the cables and hub are prepared, connect PCs, hub, and the InfoRanger as follows ;

1. Turn off all PCs to be connected to the InfoRanger.
2. Connect one end of twisted pair category-3,4,5 **crossover** cable to the **ETHERNET** port of the InfoRanger. Then, connect the other end of cable to the port of hub.
3. Connect one end of twisted pair category-3,4,5 **straight-through** cable to the port of network interface card installed on PC. Then, connect the other end of cable to the port of hub.

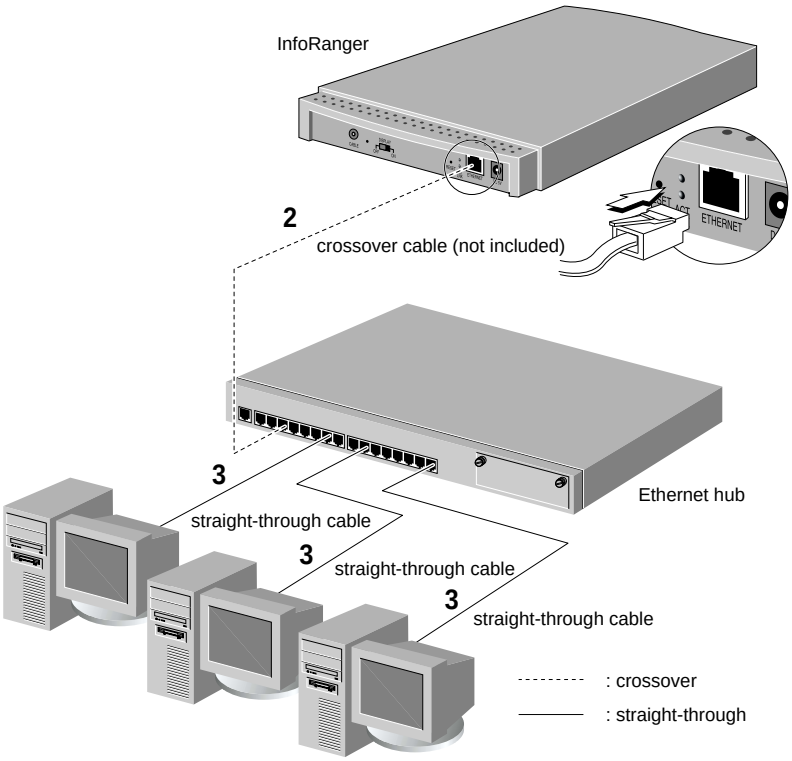

Figure 3-4 Connecting the InfoRanger to three PCs through an Ethernet hub

Connecting the Power Adapter

Once you have connected the coaxial cable and Ethernet cables, you need to connect the power adapter to provide power to the InfoRanger.

Connect the power adapter to **DC 5V** jack of the InfoRanger. Plug one end of the power cable into the adapter and the other end into a wall outlet.

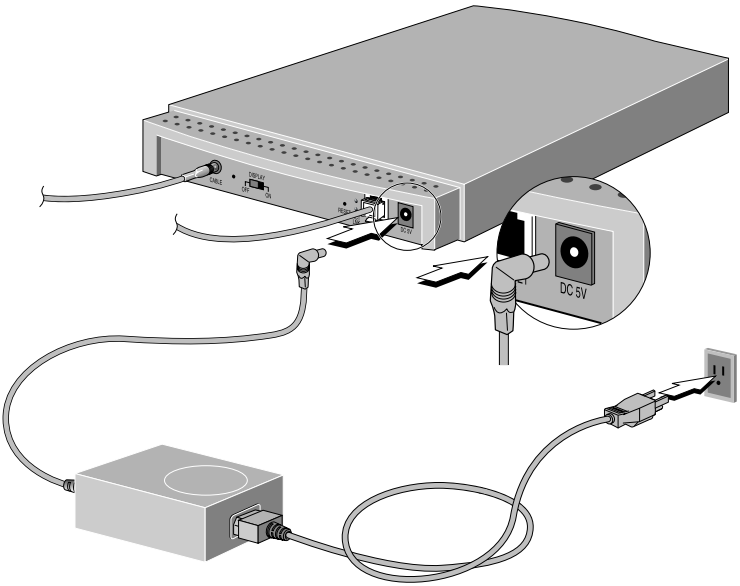

Figure 3-5 Connect the power adapter and the power cable

Please do not connect other power adapters apart from the one supplied with the InfoRanger. If other than a DC 5V voltage is provided to the InfoRanger, it may cause serious damage the InfoRanger.

Inspecting Cable Connection

The followings are diagrams show correct cable installation.

Single PC Connection

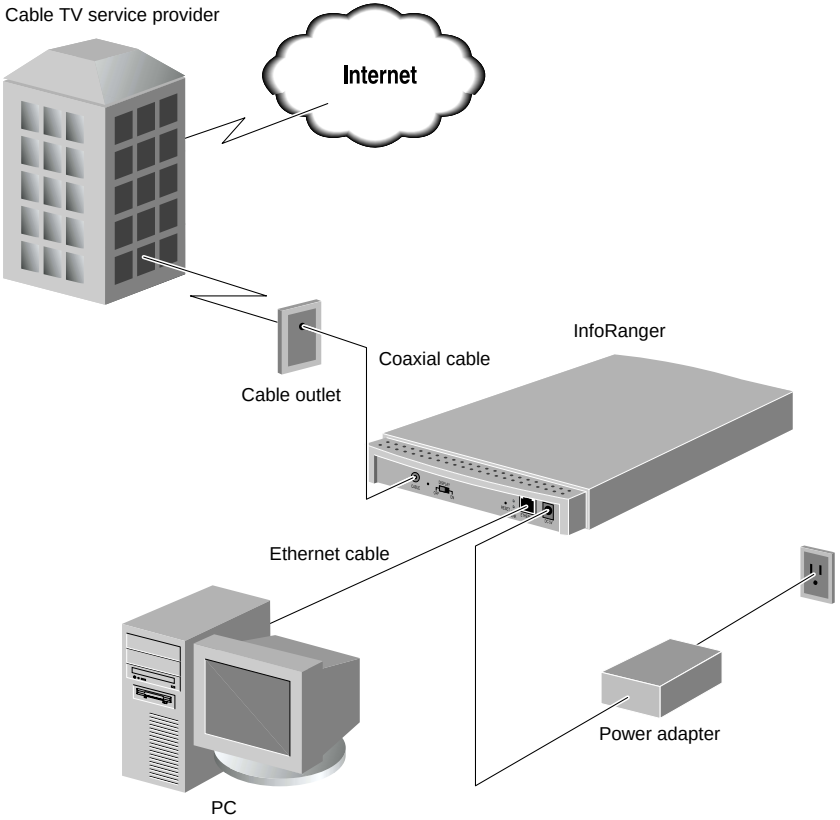

Figure 3–6 Cable connection in case of singal PC connection.

Multiple PC Connection

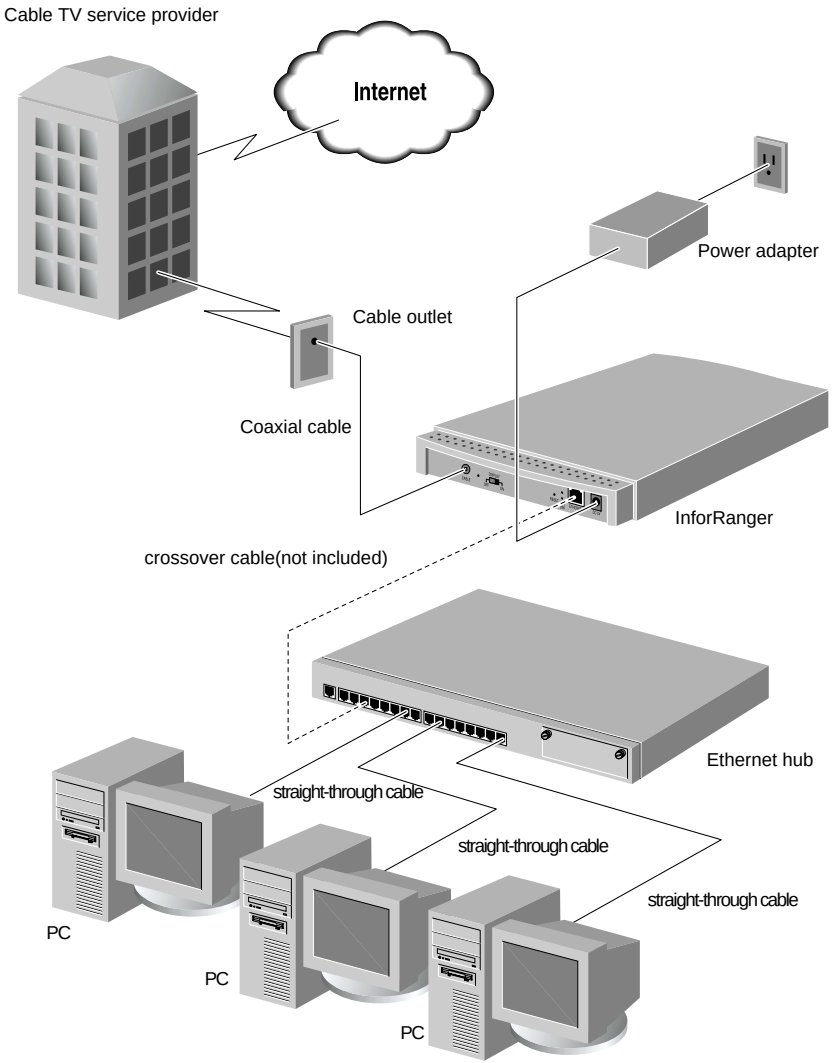

Figure 3-7 Cable connection in case of multiple PC connection.

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Chapter 4
Using the InfoRanger

Chapter 4 Using the InfoRanger

This chapter explains features of the LED's and the connectors at the front and back of the InfoRanger.

Front Panel

The front panel of the InfoRanger has 6 LED indicator lights that signal the operating status of the InfoRanger.

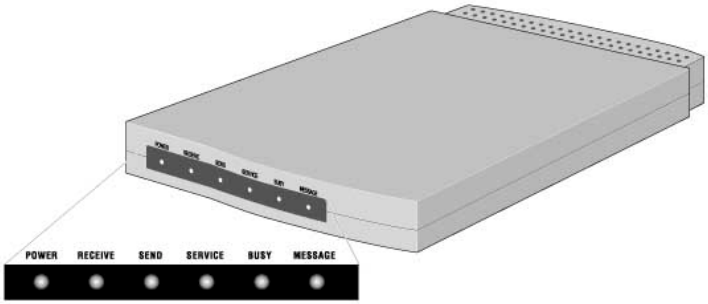

Figure 4-1 Front panel of the InfoRanger

NOTE

When the power adapter is connected to the InfoRanger, the InfoRanger processes Self diagnosis Initialization for receiving Initialization for sending Registering modem and Authentificating services. While these processes are running, the POWER LED blinks sequentially from the far most left to the fourth SERVICE LED. When this process is complete and the InfoRanger operates normally, these four LED's will be green.

POWER LED

When InfoRanger's power is turned on, the green POWER LED flashes to indicate that the modem is automatically performing self-diagnostics routines. When the diagnostics are completed, the green POWER LED is illuminated and remains continuously lit while the modem is operational. The POWER LED is turned off when the InfoRanger is turned off.

RECEIVE LED

The green RECEIVE LED flashes during modem initialization, which means scanning for a downstream(receiving) channel. When the scanning is complete, the RECEIVE LED is illuminated green and remains continuously lit as long as the modem is locked on the channel. The RECEIVE LED is turned off when the modem is non-operational. The RECEIVE LED flashes fast to indicate the modem is receiving data through the cable network.

SEND LED

The green SEND LED flashes during initialization(ranging) for transmitting data (upstream). When ranging is complete, the SEND LED is illuminated green and remains continuously lit. The SEND LED is turned off (not flashing and not illuminated) when the modem is non-operational. The SEND LED flashes fast when the modem is transmitting data.

SERVICE LED

The green SERVICE LED flashes during the modem registration and service authorization process. When the process is complete, the SERVICE LED is illuminated green and remains continuously lit. The SERVICE LED is turned off when the modem is non-operational.

BUSY LED

The green BUSY LED is reserved..

MESSAGE LED

The green MESSAGE LED indicates incoming e-mail messages. It flashes 60 times per minute (or once ever second). Currently, this feature is only available through a limited number of cable service providers, who actually send out signals to cable modems to activate the message LED function.

While you are using the InfoRanger, in the case where all LEDs are off except the POWER LED and the RECEIVE LED is blinking, you should check if the cable does not connect to the CABLE connect.

Back Panel

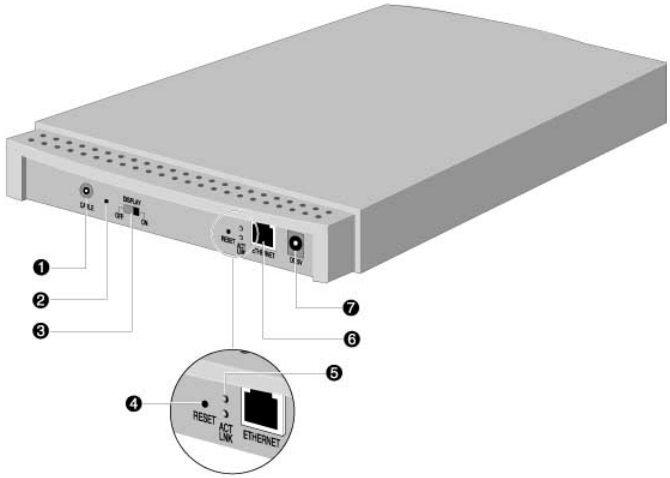

Figure 4-2 Back panel of the InfoRanger

CABLE Connector

This is used to connect the coaxial cables to the cable outlet or the cable splitter.

DEFAULT Switch

This is not for the end-users, so please do not use it.

DISPLAY Switch

If you set the DISPLAY switch to OFF, all LEDs on the InfoRanger will be turned off. When you need to keep the InfoRanger turned on while you are sleeping, use this switch to turn off all the lights, so it will not disturb your sleeping.

RESET Switch

This is used to initialize the modem.

ETHERNET LED (ACT/LNK)

ACT LED and LNK LED indicate the operating status of the ETHERNET port. While the data is transmitting through the ETHERNET port, the green light is blinking on the ACT(Activity) LED. The green light will be turned on the LNK(Link) LED, while it is connected to a PC through the network cable.

ETHERNET Port

This is an ETHERNET port which supports 10Mbps. This port is connected to the network interface card installed on PC or a hub or a switch if it is connected to multiple PCs.

DC Input Terminal

This is an input terminal, which provides DC 5V to the InfoRanger through the power adapter.

Appendix A
Troubleshooting

Appendix A Troubleshooting

Appendix A explains the most common and frequent problems that may occur while you are using the InfoRanger and suggests how to solve these problems. If you can not solve the problem with the method described in this Appendix, please refer to the Technical Support page at the end of this manual or contact the store where you purchased the InfoRanger.

Problem **You cannot connect to the Internet service.**

Solution

- Check if the cables are connected correctly.
- If LNK LED is off, check the Ethernet interface card installed on PC.
  ☞ *Please refer to the manual of Ethernet interface card.*
- Check if PC runs normally.
- Check if TCP/IP protocol is installed on PC.
- Check if the specification of RJ-45 Ethernet cable, which is used for connecting the Ethernet interface card installed on PC, is suitable.
  ☞ *Please refer to Appendix D.*
- Contact the cable TV service provider and check if the services you are subscribing can provide two-way cable modem.

Problem **The POWER LED is not turned on even though the power adapter is connected.**

Solution

- Check if the wall outlet where the power adapter is connected.
- Make sure that the power adapter is the one supplied with the InfoRanger.
- Pull out the power adapter from the DC input terminal and try to connect again about 10 seconds later.

Problem **All LEDs on the front panel of the InfoRanger are not turned on.**

Solution

- Check if DISPLAY switch is set to OFF.
- Check if the power adapter is connected to the wall outlet and DC input terminal of the InfoRanger.
- Check if the wall outlet where the power adapter is connected.

Problem **LNK LED is not turned on even though the cable is connected to the ETHERNET port.**

Solution

- Check if the cable is connected accordingly to the Ethernet interface card installed on PC.
- Check the Ethernet interface card installed on PC.
  ☞ *Please refer to the manual of Ethernet interface card..*
- Check if PC runs normally.
- Check if TCP/IP protocol is installed on PC.
- Check if the specification of RJ-45 Ethernet cable, which is used to connect the Ethernet interface card installed on PC, is suitable.
  ☞ *Please refer to Appendix D.*

Appendix B
Product Specifications

Appendix B Product Specifications

Item		Specification
Memory	SDRAM	4MB
	Flash	2 x 2MB
Interface	Ethernet	10Mbps, RJ-45 1 port
Temperature	Operating	0 ~ 40℃
	Storage	-32 ~ 70℃
Frequency	Downstream	91 ~ 858MHz
	Upstream	5 ~ 42MHz
Modulation	Downstream	256QAM : 64QAM
	Upstream	16QAM : QPSK
Data rate	Downstream	64QAM (30Mbps), 256 QAM (40Mbps)
	Upstream	QPSK (5Mbps), 16QAM (10Mbps)
Channel spacing / bandwidth	Downstream	6MHz
	Upstream	200KHz, 400KHz, 800KHz, 1.6MHz, 3.2MHz
FEC	Downstream	RS (128,122) / Trellis
	Upstream	RS (Programmable)
Symbol rate	Downstream	64QAM : 5.056941MSPS 256QAM : 5.360537MSPS
	Upstream	160K, 320K, 640K, 1280K, 2560Ksps
Bit per symbol	Downstream	64QAM : 6-bit 256QAM : 8-bit
	Upstream	QPSK : 2-bit 16QAM : 4-bit

Table B-1 Specifications of the InfoRanger

Level range	**Downstream**	-15 ~ +15dBmV
	Upstream	QPSK : +8 ~ +58dBmV 16QAM : +8 ~ +55dBmV
Carrier to noise ratio		64QAM : >23.5dB @ BER < 10^{-8} 256QAM : >30dB @ BER < 10^{-8}
Security		DES decryption / encryption
Physical dimension	**Size**	187(w) x 245(l) x 38(h) mm
	Weight	1.3kg (InfoRanger + Adapter)
Power supply	**AC**	AC 100-240V, 50/60Hz
	DC	+5V, 3A
Warranty		2 year limited
Regulatory Agency Approval		FCC, UL / CUL, CE

Table B-1 Specifications of the InfoRanger

Appendix C
Glossary

Appendix C Glossay

10BASE-T

An 10BASE-T is a version of Ethernet using category 3,4,5 cable interface.

Cable modem

A cable modem is a device connected to your computer that enables you to receive and request information from the Internet over your local cable TV line. Cable modems are designed to enable peak connection speeds over 100 times faster than traditional dial-up connections.

Cable splitter

A cable splitter is a metal interface that accepts single input and divides it into multiple outputs.

Coaxial cable

A coaxial cable is an electrical cable that contains two separate wires. One wire is solid and the other is a tube. The solid wire is inside the tube, Both wires have the same center point, or axis. It is typically used by cable TV companies for distributing video signal.

DOCSIS (Data Over Cable Service Interface Specification)

DOCSIS defines interface requirements for cable modems involved in high-speed data distribution over cable television networks. The certified cable modem project also provides cable modem equipment suppliers with a fast, market-oriented method for attaining cable industry acknowledgment of DOCSIS compliance and has resulted in high-speed modems being certified for retail sale.

Download

Download is the transfer of data from a server to your computer's hard disk. You can use your browser or an FTP program to download files to your computer. When you're retrieving your email, you're downloading your email to your computer.

E-mail (Electronic mail)

An e-mail is message, usually text, transmitted over the Internet and sent from one person to another (although you can also sent email to a large number of email addresses (mailing list)).

Ethernet

Ethernet is one of the standard specifications for LAN connection. In the Ethernet configuration, computers are connected with the same axle cable or twisted pair cable that compete for network access using CSMA/CD method. Data is transmitted at a maximum speed of 10Mbps.
The representative cables that can be used for Ethernet connection are of three-types such as 10BASE-5, 10BASE-2, 10BASE-T. InfoRanger uses 10BASE-T cable.

Hub

A hub is a communication device used to connect with several devices and share resources with the computers on network. It retransmits the signal that is sent by a device and transmits the received signal dividing it.

Internet

Internet is :

1. The worldwide system of linked networks that is capable of exchanging mail and data through a common addressing and naming system based on TCP/IP protocols. (Internet)
2. Any group of linked networks capable of exchanging electronic mail and data using a common protocol. (Internet)

IP address

An IP address is defined as IP and a 32-bit address, assigned to the host using TCP/IP. All resources of Internet have their own number, IP address that is marked as decimal system. The address consists of a network part, optional subnet part and host part.

LAN (Local Area Network)

A LAN is a network used for relatively small areas (single-story or small building) as an Ethernet and token-ring network. LAN makes it possible for users to send/receive e-mail and share resources such as files, printers and modems. The bigger companies connect their own LAN with the Internet to allow users to connect with resources outside the LAN.

NIC (Network Interface Card)

A NIC is a hardware device that translates electronic signals between a computing device's native network hardware and the transmission media.

MAC (Media Access Control) address

A MAC address is the physical address of a devices connected to a network such as network interface card. MAC address is expressed by 6byte colon-separated hexadecimal numbers.

OSI 7-Layer model

OSI 7-Lay model is a method of describing the relationships between network protocols by grouping them according to the communication functions the protocols provide. The OSI model defines 7 distinct categories (Layers) that act successively on data as it makes its way between the user and the transmission media.

Protocol

A protocol is, in networking, a specification of the data structures and algorithms necessary to accomplish a particular network function.

RJ-45

A RJ-45 is a connector used with Ethernet and Token Ring devices that looks like a telephone jack but has eight wires instead of four or six.

TCP/IP (Transmission Control Protocol / Internet Protocol)

TCP/IP is one of the network protocols used mainly on LAN. When data is transmitted via network, data is divided into packets. IP transmits the data packets from one place to another. And TCP manages the data flow and confirms the correctness of data packets.

Twisted pair

A twisted pair is a cable made up of a pair of insulated copper wires wrapped around each other to cancel the effects of electrical noise.

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Appendix D
Cable Specifications

Appendix D Cable Specifications

RJ-45 Ethernet Cable

Twisted pair category-3,4,5 straight-through cable

The following RJ-45 Twisted pair category-3,4,5 straight-through cable is used to connect the ETHERNET port of the InfoRanger and the network interface card installed on PC.

Cable

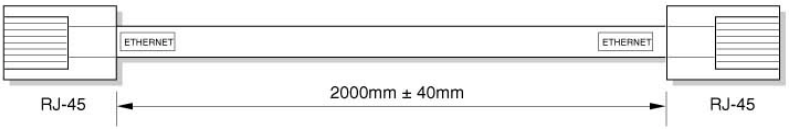


Figure D-1 Provided Ethernet cable with RJ-45 connectors.

Connector

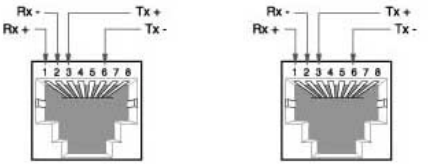
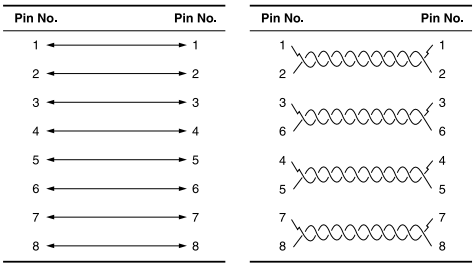


Figure D-2 Pin Signals of the straight-through cable

Pin connection



< Pin Configuration > < Actual Pin Connections >

Table D-1 Pin connections of the straight-through cable

Twisted pair category-3,4,5 crossover cable

The following RJ-45 Twisted pair category-3,4,5 crossover cable is used to connect the ETHERNET port and the network devices such as a hub or a switch.

Cable

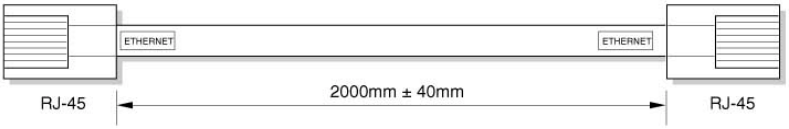


Figure D-3 Provided Ethernet cable with RJ-45 connectors.

Connector

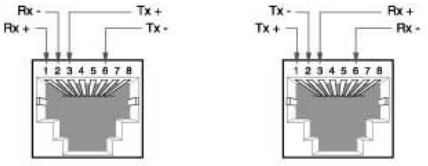
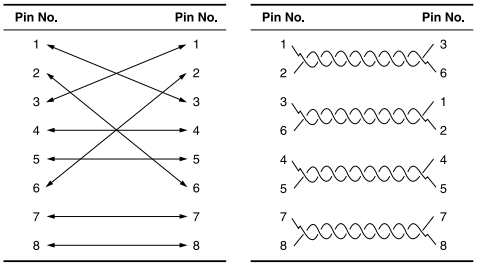


Figure D-4 Pin Signals of the crossover cable

Pin connection



< Pin Configuration > < Actual Pin Connections >

Table D-2 Pin connections of the crossover cable

Twisted pair category-3,4,5 Straight-through cable is supplied with the InfoRanger, but the crossover cable is not provided.

FCC Requirements

Model Name	Samsung InfoRanger™ Cable Modem
Model Number	SCM-110R
FCC Class B ID	A3LSCM100R

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 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 an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with emission limits. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions : (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Responsible Party :

Samsung Telecommunications America, Inc.

Customer Care Center
1601E. Plano Parkway, Suite 150
Plano, Texas 75074

Phone(972) 761-7500, (888)987-4357
Fax (972)761-7501

Technical Support

SAMSUNG offers the highest level of customer service in the industry. Friendly and knowledgeable customer service representatives available to provide you with following services:

- General information about the product
- Inquiry of order status
- Inquiry of order receiving and delivering status
- Technical support
- System configuration and optimization supports

Service hours are 6 a.m. to 9 p.m. and 7 days a week.

If you have any questions about our products and need to contact SAMSUNG customer service center for any other reasons, please Contact the following phone number, fax number, web site, and/or e-mail.

USA:

- Toll free phone 1-888-987-help(4357)
- Fax 972-761-7201
- Web site www.samsungtelecom.com
- E-mail webmaster@telecom.sna.samsung.com

Others

- Phone 82-2-751-2649/2658
- Fax 82-2-751-2685
- Web site www.samsungnetwork.com
- E-mail webmaster@samsungnetwork.com