SAMSUNG

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Ubigate iBG1003™

Installation Manual

www.samsungnetwork.com

The purposes of Safety Concerns are to ensure user's safety and to prevent property losses.
Please read this document carefully for proper use.

This manual should be read before the installation and operation, and the operator should correctly install and operate the product by using this manual.

This manual may be changed for the system improvement, standardization and other technical reasons without prior notice.

If you have a question for the content of manual or want to obtain further information on the updated manual, please contact the homepage below.

Homepage: http://www.samsungdocs.com

GENERAL USER INFORMATION

Radio Frequency Interference

The Ubigate iBG1003 equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to FCC Part 15 Rules.
These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own risk.

FCC Requirements

The Ubigate iBG1003 equipment complies with FCC Part 68 Rules and requirements adopted by Administrative Council for Terminal Attachment (ATCA).

FCC Part 68

The FCC Part 68 label is located on the bottom of the chassis.
The label contains:

- Product Identifier Number
- FCC Registration Number
- Ringer Equivalence Number (REN)

NOTE

If requested, this information must be provided to your telephone company.

Unauthorized Modifications

Any change or modifications performed on this equipment that are not expressly approved in writing by SAMSUNG ELECTRONICS, CO., LTD. could cause non-compliance with the FCC rules and void the user's authority to operate the equipment.

Telephone Connection Requirement

A plug and jack is used to connect this equipment to the premises wiring and telephone network must comply with the FCC Part 68 rules and requirements adopted by the ACTA.
A compliant telephone cord and modular plug is provided with this product which is designed to connect to a compatible Standard Modular jack.
Connection to the telephone network should be made by using standard modular telephone jacks, type RJ-11C. The RJ-11C plug and/or jacks used must comply with the FCC Part 68 rules.

CIRCUIT TYPE	MODULE TYPE	FACILITY INTERFACE CODE	NETWORK JACK
LOOP START LINE	FXO T1E1	02LS2 04DU9.DN 04DU9.1KN 04DU9.1SN 04DU9.1SN (PRI)	RJ11C RJ48C
DID LINE	FXS T1E1	02RV2.T 04DU9.BN	RJ11C RJ48C
E & M TIE LINE	T1E1	04DU9.BN	RJ48C

Ringer Equivalence Number

The REN is used to determine the number of devices to be connected to a telephone line. If the total allowable REN load is exceeded, the phone circuit may fail to ring. In most cases, the total REN for a telephone line should not exceed Five (5).
Contact Local Telephone Company, to be certain about the number of devices connected to a line, which is determined by the total REN.
For earlier products, the REN is separately shown on the label.

Incidence of Harm

The telephone company will notify you in advance about the temporary discontinuation of service, if the Ubigate iBG1003 equipment is causing harm to the telephone network.
In case advance notification is not feasible, the telephone company will notify the customer as soon as possible and you will also be advised about your right to file a complaint with the FCC, if it is necessary.

Changes to Telephone Company Equipment or Facilities

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment.
If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Service Center

If you need assistance during troubleshooting, please contact out local office SAMSUNG ELECTRONICS, CO., LTD. for repair or warranty information.
If the trouble is causing harm to the telephone network, the telephone company may request you to remove the equipment from the network until the problem is resolved.

Field Repairs

Only technicians certified on the Ubigate iBG1003 are authorized by SAMSUNG ELECTRONICS, CO., LTD. to perform system repairs.
Certified technicians may replace modular parts of a system to repair or diagnose trouble. Defective modular parts can be returned to SAMSUNG ELECTRONICS, CO., LTD. for repair.

General

Connection to party line service is subject to state tariffs. Contact the State Public Utility Commission, Public Service Commission or Corporation Commission for information.

Direct Inward Dialing ('DID')

If the equipment is not operating as per the **Proper Answer Supervision** mentioned in FCC Part 68 rules, then it is a violation.
Rules of PROPER ANSWER SUPERVISION:

1. Always On the following DID calls, the Equipment returns Answer Supervision to the Public Switched Telephone Network (PSTN)
   - Answered by the called station.
   - Answered by the attendant.
   - Routed to a recorded announcement that can be administered by the Customer Premises Equipment (CPE) user.
   - Routed to a dial prompt.

2. Always this equipment returns answer supervision on all DID calls forwarded to the PSTN.
   Permissible exceptions are:
   - A call is unanswered.
   - A busy tone is received.
   - A reorder tone is received.

Equal Access Requirements

Through the use of access codes, this equipment is capable of providing user's access to interstate providers of operator services. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

Electrical Safety Advisory

Parties responsible for equipment requiring AC power should consider including an advisory notice in their customer information suggesting them to use a surge arrestor. Telephone companies report that electrical surges, typically lightning transients, are very destructive to customer terminal equipment connected to AC power sources. This has been identified as a major nationwide problem.

Music on Hold Warning

In accordance with US copyright laws, a license may be required from the American Society of Composers, Authors and Publishers (ASCAP) or other similar organizations if copyright music is transmitted through the **Music on Hold** feature.
SAMSUNG ELECTRONICS, CO., LTD. hereby disclaims any liability arising out of failure to obtain such a license.

Direct Inward System Access (DISA) Warning

The lines used for the DISA feature must have the disconnected Supervision option provided by the telephone company.

As it is impossible to control who may access your DISA line it is suggested that you do not turn this feature on unless you intend to use it. If you do use this feature, it is good practice to frequently change pass codes and periodically review your telephone records for unauthorized use.

Safety Warnings

High touch current earth connection is essential before making telecommunication network connection.

Energy Hazard-careful treatment is needed.

Every wire for communication should be larger than 26 AWG.

Double pole/neutral fusing.

Underwriters Laboratories

The Ubigate iBG1003 system has been tested to comply with Safety Standards in the United States and Canada. This system is listed with Underwriters Laboratories. The cUL Mark is separately shown on the label.

Installation Safety Guidelines and Warnings

Safety Recommendations

The Safety Warnings that appear in this document (such as the one below) indicate a procedure that can harm you if not done correctly.

Electric hazard exists. Verify the power is turned off. Do not work on energized equipment. Working on energized equipment can result in serious electrical shock.

To avoid electric shock, do not connect Safety Extra-Low Voltage (SELV) circuits (found in LAN ports) to Telephone-Network Voltage (TNV) circuits (found in WAN ports).

This equipment must be installed and maintained by properly trained service personnel. Make sure the proper electrical service is available before plugging the unit and turning it on. Disconnect the telecommunication lines before unplugging the main power connector.

Cover Panels

Do not operate the Ubigate iBG1003 with missing blank faceplates and cover panels. These covers prevent exposure to hazardous voltages and currents inside the chassis. They are important to maintaining proper air flow through the chassis. They also prevent electromagnetic interference (EMI) that might disrupt other equipment.

Laser radiation and EMI are present when the router cover panel is open.

Electrostatic Discharge (ESD) Warning

Observe the following guidelines to minimize the potential for Electrostatic Discharge (ESD) damage, which can cause intermittent or complete component failures.

When handling Ubigate iBG1003 or its components, wear grounding wrist straps to avoid ESD damage to the equipment. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

1. Always use an ESD wrist strap or ankle strap, and verify that it is in direct contact with your skin. Avoid contact between the component and your clothing as it causes ESD damage.

2. When handling any component that is removed from the chassis, verify that the equipment end of your ESD strap is attached to one of the ESD points on the chassis.

3. Use care when installing or uninstalling modules or interface cards. Tighten the captive installation screws to ensure a proper connection when inserting modules or interface cards.

4. When removing or installing a component, always place it component-side up on an antistatic surface, in an antistatic card rack. If you are returning a component, place it in an electrostatic bag before packing it.

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INTRODUCTION

Purpose

This document provides instructions on installing the Ubigate iBG1003™, along with hardware descriptions, safety information, and pre-installation requirements.

Document Content and Organization

This manual is composed of five Chapters and two Annexes.

CHAPTER 1. Ubigate iBG1003 Overview

Describes Ubigate iBG1003 characteristics.

CHAPTER 2. Pre-Installation Requirements

Describes the safety regulation and how to prepare for installation.

CHAPTER 3. Ubigate iBG1003 Installation

Describes how to install Ubigate iBG1003.

CHAPTER 4. Connecting the Ubigate iBG1003

Describes how to connect various interfaces of Ubigate iBG1003.

CHAPTER 5. Option Module Installation

Describes how to install option modules.

ANNEX A. System Specifications

Describes system specifications.

ANNEX B. Cable Specifications

Describes cable specifications.

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.

WARNING

Provides information or instructions that the reader should follow in order to avoid personal injury or fatality.

CAUTION

Provides information or instructions that the reader should follow in order to avoid a service failure or damage to the system.

NOTE

Indicates additional information as a reference.

Information for Product and Technical Support

For questions regarding the product and technical supports:

http://www.samsungnetwork.com

Revision History

EDITION	DATE OF ISSUE	REMARKS
00	04. 2009.	First Edition
01	06. 2009.	Modified voice connector description
02	09. 2009.	Added VOM-4P
03	12. 2009.	Added VOM-2T4
04	07. 2010.	Added LMF-4M

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SAFETY CONCERNS

The purpose of the Safety Concerns section is to ensure the safety of users and prevent property damage. Please read this document carefully for proper use.

Symbols

Caution

Indication of a general caution.

Restriction

Indication for prohibiting an action for a product.

Instruction

Indication for commanding a specifically required action.

WARNING

Electric hazard exists. Verify the power is turned off. Do not work on energized equipment. Working on energized equipment can result in serious electrical shock.

Laser radiation and EMI are present when the router cover panel is open.

- External grounding is required to prevent human injuries or system damages caused by lightning, static electricity, or voltage surge.
- The power plug of iBG1004 system should be connected to an outlet with a protective ground.

When handling Ubigate iBG1003 components, wear grounding wrist straps to avoid ESD damage to the card.

To avoid electric shock, do not connect Safety Extra-Low Voltage (SELV) circuits (as found in LAN ports) to Telephone-Network Voltage (TNV) circuits (as found in WAN ports).

AC power to the Ubigate iBG1003 is double fused. Fuses are installed on both line and neutral conductors.
A neutral fuse failure may present a hazard to service personnel. Disconnect the AC Line Cord or remove both AC fuses before servicing the unit.

CAUTION

Do not place any items that weigh more than 4.5 kg on top of the chassis, and do not stack routers on a desktop.

Practice good safety habits. Use two people to mount the Ubigate iBG1003 into a rack.

This equipment must be installed and maintained by properly trained service personnel. Make sure the proper electrical service is available before plugging this unit in and turning it on.
Disconnect the telecommunications lines before unplugging the main power connector.

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CHAPTER 1. Ubigate iBG1003 Overview

Chapter1 provides an overview of the Ubigate iBG1003.

This chapter provides an overview of the Ubigate iBG1003. It provides information about front and rear panels, and cable connection ports.
The Ubigate iBG1003 is a voice-centric WAN router. It is a desktop unit and has four T1/E1 ports and two Ethernet ports by default. Depending on the sub models, it has two sets of voice ports consisting of FXO, FXS, and T1/E1 PRI ports to provide voice services. In addition, it has one mini-module slot into which an ADSL module can be plugged. The Ubigate iBG1003 supports routing, firewall, VPN, VLAN trunking and voice gateway feature.
The Ubigate iBG1003 is a true voice/data convergence product and can be used for SIP trunking service while supporting data service simultaneously.

Overview of Ubigate iBG1003 Router

This section describes front and rear side components of the Ubigate iBG1003. Additional information is also provided about external cables, wiring, and connection points.

Ubigate iBG1003 Front Side

The front side of the Ubigate iBG1003 has LEDs to indicate the iBG1003 router's performance and operation status, as shown in figure below.

Figure 1.1 Ubigate iBG1003 Front View

Proper LED status is shown in the following table.

LED	Indication & Color	Description
⏻ (Power)	Solid blue	Power supply installed and operating normally.
	Amber	Power supply installed but power fault condition detected.
	Off	Power supply not present or Power supply malfunctioning.
SYS	Solid green	System is operating normally.
	Solid red	System is not operating normally.
	Amber	System diagnostic mode.
	Off	Router is not receiving power.
IOM	Solid green	IOM (Internal Option Module) card present and operational.
	Solid red	IOM card present but not operational.
	Off	IOM card not present.

(Continued)

LED	Indication & Color	Description
FAN	Solid green	Fan is operating properly.
	Solid red	Fan present but malfunctioning.
	Off	Fan has been stopped by user configuration.
P0~P3 (T1/E1)	Solid green	T1/E1 port is operating normally.
	Solid red	T1/E1 port cable is not connected properly or critical alarm detected.
	Amber	User alarm detected.
	Off	System is not operating normally or port is disabled.
Link0, 1 (Ethernet)	Solid green	Ethernet port link is detected.
	Off	Ethernet port link is not detected.
Act0, 1 (Ethernet)	Blinking Amber	Blinking Amber indicates transmit/receive activity with speed 10/100 Mbps.
	Off	No activity.

Ubigate iBG1003 Rear Side

Ubigate iBG1003 rear side has several interface ports and slots as shown in figure below. Power connector, power switch, and ground stud are also located in the rear side.

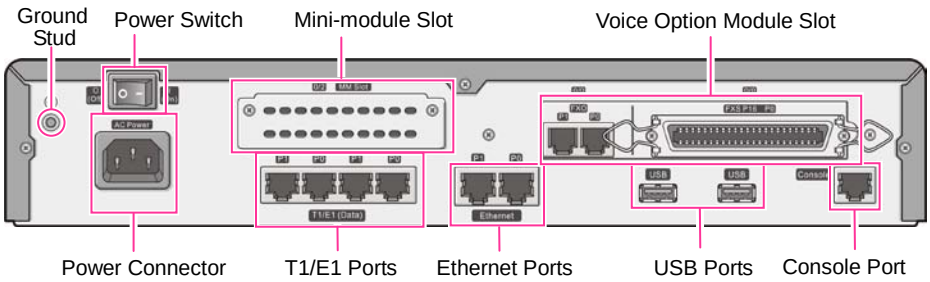

Figure 1.2 Ubigate iBG1003 Rear View

Connector	Description
Ground stud	A screw hole for grounding lug
Power switch	Switch to turn on or off the power supply
Power connector	AC power connector
Mini-module slot	An optional ADSL module can be plugged into this slot.
Voice option module slot	A voice option module can be plugged into this slot. One is pre-assembled in the factory in order to meet different deployment needs. The following voice option modules are present: - 2 FXO + 4 FXS - 2 FXO + 8 FXS - 2 FXO + 16 FXS - 2 FXO + 2 T1/E1 - 2 T1/E1 + 4 FXS
T1/E1 ports	T1/E1 WAN connection
Ethernet ports	Fast Ethernet LAN connection
USB ports	Supports USB2.0 interface
Console port	Serial port for local monitoring and configuring

Ubigate iBG1003 Hardware

Modules and Internal Option Modules

Ubigate iBG1003 has one mini-module slot to accommodate an ADSL2+ module and one internal option module slot to accommodate an internal option module, as shown in table below. (Currently, no IOM is supported. IOMs will be released in the future.)

Name		Description
WAN & LAN Interface Modules	ATOP-1	1 port ADSL over POTS mini-module
	ATOI-1	1 port ADSL over ISDN mini-module
	LMF-4M	4-port Fast Ethernet switch mini-module
Internal Option Modules	-	Currently, no IOM is supported. IOMs will be released in the future.

Voice Option Modules

Ubigate iBG1003 can accommodate a voice option module using a voice option module slot. One is pre-assembled and shipped from the factory in order to meet different deployment needs. The following voice option modules are present:

- 2 FXO + 4 FXS
- 2 FXO + 8 FXS
- 2 FXO + 16 FXS
- 2 FXO + 2 T1/E1
- 2 T1/E1 + 4 FXS

Power Supply

Ubigate iBG1003's Power Supply Module provides +12 VDC with an AC input between 100 and 240 VAC.

For more information on power supply specification, see Annex A.

Ventilation

There is a cooling fan on the right side of the system which pushes internal air out, so that the air goes through the system out to the right side.
On both sides, there are grids of holes where air comes in and goes out.
When installing Ubigate iBG1003, ensure to make room around the system in order not to block air flow.

Figure 1.3 Ventilation

Real-Time Clock

Ubigate iBG1003 provides a real-time clock so that Ubigate iBG1003 can maintain the correct date and time.

CHAPTER 2. Pre-Installation Requirements

This chapter describes site requirements and equipment needed to install your Ubigate iBG1003 router

Before you install Ubigate iBG1003, familiarize yourself with the network interface, power, and ground connections as described in the next sections.

General Site Requirements

Site Preparation

This section describes how to prepare your site for installation of the Ubigate iBG1003 router. Ensure that the site is properly prepared before you start installation. If you are experiencing shutdowns or unusually high errors with your existing equipment, this section can also help you isolate the cause of failures and prevent future problems.

Install the router only in restricted areas, such as dedicated equipment rooms and equipment closets. In addition, the site should be as dust-free as possible

Environment

When preparing the installation site, you need to allow sufficient clearance around the rack.
For the cooling system to function properly, the airflow around the chassis must be unrestricted.
For a service personnel to remove and install hardware components, there must be adequate space at the front and back of the router.
Allow at least 30-inch (76.2 cm) both in front of and behind the router.

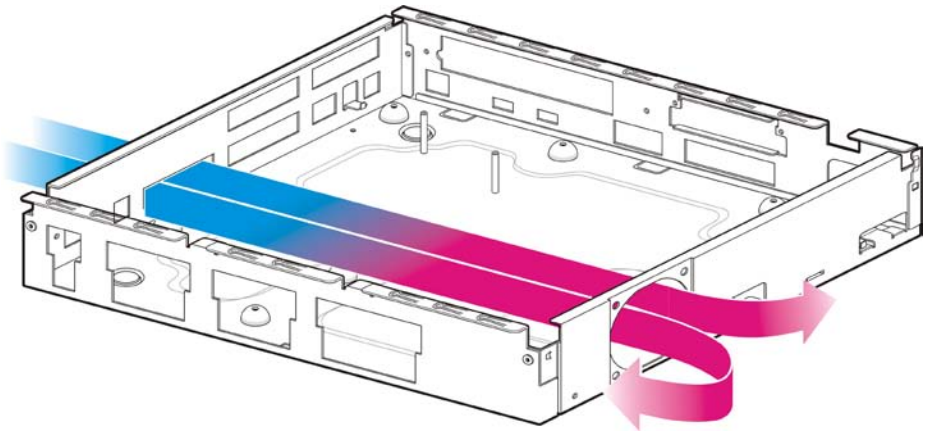

Figure 2.1 Top view of the cooling air path through the chassis

Inspecting the Ubigate iBG1003

Remove all the packing material and boxes from the shipping crate very carefully.

The router is maximally protected inside the shipping crate.
Do not unpack it until you are ready to begin installation.

A packing list is included in each shipment. The packing list specifies the part numbers and descriptions of each part in the shipment. Verify the parts received against the list.
Your package contains the following items:

- Ubigate iBG1003 Router
- Console cable DB-9 to RJ-45 cable adapter
- One UTP Ethernet cable
- Rack-mount package (optional), including.
  - two 19-inch rack-mount brackets
  - eight bracket screws
- Ground screw (including lug and washer)
- Ubigate iBG1003 Quick Start Guide
- Ubigate iBG1003 Manual CD

If any part is missing or damaged, contact Samsung Technical Support:

http://www.samsung.com/global/business/telecomm/footer/Footer_ContactUs.html

Save the shipping crate cover, pallet, and packing materials in case you need to move or ship the router at a later time.

Required Tools and Materials

You need the following tools and equipments to install and upgrade the router and its components.

Cables

To prepare for router or component installation, ensure that you have all required cables and wires. The console port cable is provided with the router.

For more information on cable specifications, see Annex B.

- Console port cable (for a terminal connection)
- Ethernet 10/100Base-T CAT-5 UTP cable (for a LAN connection)

Tools

To unpack the router and prepare for installation, you need the following tools:

- Number 2 Phillips screwdriver-to attach the rack-mounting brackets to Ubigate iBG1003.
- Number 3 Phillips screwdriver-to attach the Ubigate iBG1003 to the equipment rack.
- Small flat-blade screwdrivers-to install ground and an external alarm.

Materials

The following additional materials are required to install the router:

- 18-22 AWG wire (for alarm and ground connections)
- Fasteners (for rack mounting)

CHAPTER 3. Ubigate iBG1003 Installation

Chapter3 describes how to install Ubigate iBG1003 for operation in a network facility.

Installing the Ubigate iBG1003

This section describes how to prepare the Ubigate iBG1003 for operation either as a desktop or a rack-mounted unit.

Read ‘Installation Safety Guidelines and Warnings’ before you start installing the router.

Desktop Installation

For installing chassis, you must secure unrestricted airflow for chassis cooling. Place the Ubigate iBG1003 router on a clean flat stable surface with at least 18 by 19 inch of clear space to allow sufficient room for interface cabling, power cord clearance, and adequate ventilation.

Do not place anything on top of the router that weighs more than 10 pounds (4.5 kg), and do not stack routers on a desktop.

Rack Mount Installation

Attaching Rack-Mount Brackets

Before installing the router on a rack, you need to attach brackets to the router. The brackets can be ordered separately.

Attach the mounting brackets to the router as shown in figure below, using the 4 of M4xL8 screws included. Use a number 2 Phillip screwdriver to tighten the bracket screws.

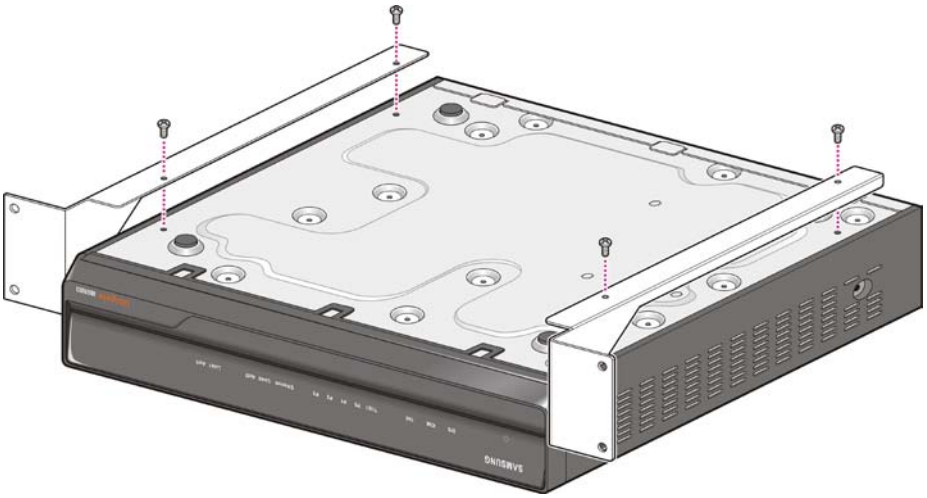

Figure 3.1 Bracket installation for front mounting

Installing in a Rack

Attach the Ubigate iBG1003 to the rack as shown in figure below, using 4 screws provided with the rack.

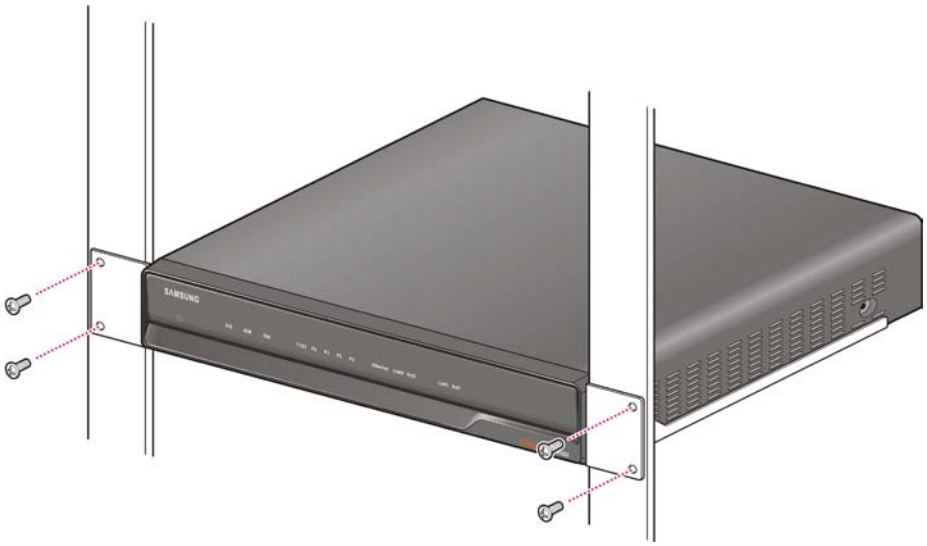

Figure 3.2 Rack Mounting the Router

Grounding the Ubigate iBG1003

You must connect the chassis to a reliable earth ground as shown in below figure. Verify the following:

- The grounding cable is correctly installed.
- It does not touch or block access to router components.
- It does not drape when people accidentally trip on it.

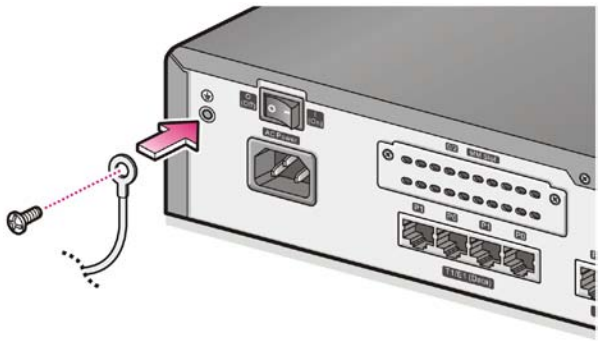

Figure 3.3 Ground Connection on Ubigate iBG1003

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CHAPTER 4. Connecting the Ubigate iBG1003

When handling Ubigate iBG1003 or its components, wear grounding wrist straps to avoid ESD damage to the equipment.
Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

Connecting the Ubigate iBG1003

This section describes procedures to connect various interfaces and console port of the Ubigate iBG1003. Follow the procedures for interfaces appropriate for your network facility environment.

Console Port

A terminal (VT-100 or equivalent) or workstation with terminal emulation software can be used for the operator console. To use a system console to configure and manage the router, connect it to the console port of the Ubigate iBG1003. One RJ-45-to-DB-9 adapter cable is provided with the router.
To connect the console cable:

1. Plug the RJ-45 end of the cable into the console port on the Ubigate iBG1003 as shown in below figure.

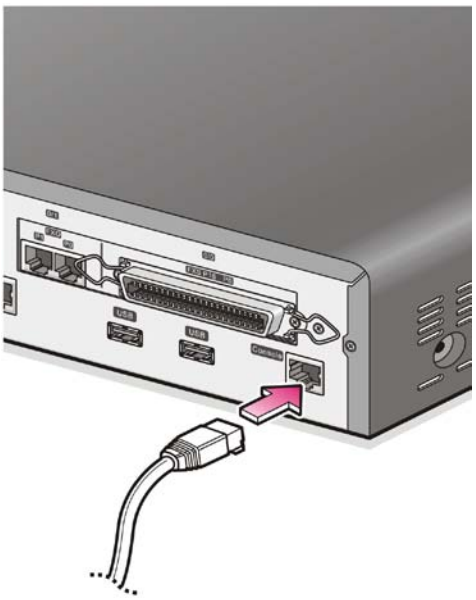

Figure 4.1 Connecting Console Cable

2. Plug the other end of the cable which has the adapter with the female DB-9 connector to the communication port on the workstation or terminal.

3. Configure the workstation or the terminal for 9,600 bps, 8 data bits, 1 stop bit, no parity, and no flow control.

Ethernet Port

The Ubigate iBG1003 has two 10/100 Mbps Ethernet ports.
Use a Category 5 (minimum) Ethernet cable with RJ-45 connectors to connect to the network via an Ethernet port.

1. Plug one end of the Ethernet cable into the appropriate Ethernet port on the target router.

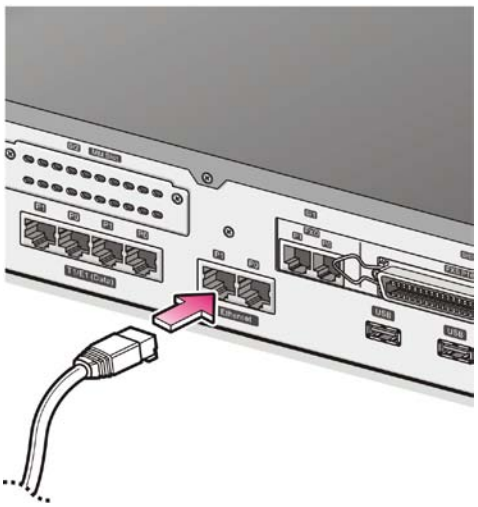

Figure 4.2 Connecting LAN Cable

2. Plug the other end of the cable into the network device.
Make sure that the cable connectors are locked and secure in the ports.

T1/E1 Port

The Ubigate iBG1003 has four built-in T1/E1 ports for data and two optional T1/E1 ports for voice.
To connect a T/1E1 cable:

1. Plug one end of the T1/E1 cable into an appropriate T1/E1 port on the target router.

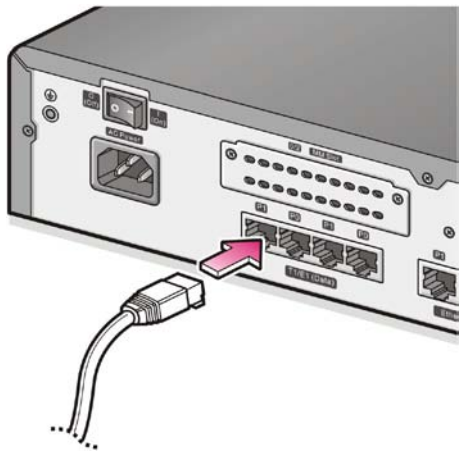

Figure 4.3 Connecting T1/E1 Cable

2. Plug the other end of the cable into the network device.
Make sure that the cable connectors are locked and secure in the ports.

FXO Port

The Ubigate iBG1003 has built-in two FXO ports, depending on sub-models. These ports provide two analog voice channel ports for connections to PBX station lines or FXS/DID lines from a Central Office of the Public Switched Telephone Network (PSTN).
To connect an FXO cable:

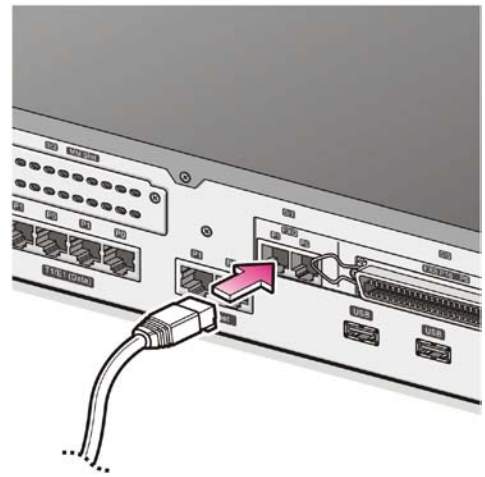

Figure 4.4 Connecting FXO Cable

1. Plug one end of the FXO cable into an appropriate FXO port on the target router.

2. Connect the other end of the cable with an FXS/DID line from a Central Office of the Public Switched Telephone Network (PSTN).
Make sure that the cable connectors are locked and secure in the ports.

FXS Port

The Ubigate iBG1003 has four FXS ports, depending on sub-models. These ports provide 4 analog voice channel ports which connect with Plain Old Telephone Services (POTS) telephones.
To connect an FXS cable:

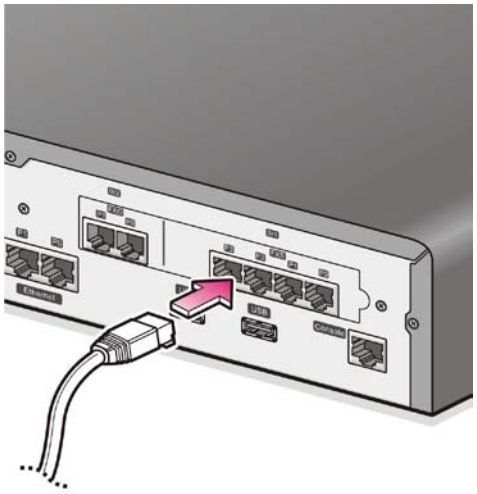

Figure 4.5 Connecting an FXS Cable

1. Plug one end of the FXS cable into an appropriate FXS port on the target router.

2. Connect the other end of the cable with a PBX station, a Plain Old Telephone Services (POTS) telephone or a FAX machine.
Make sure that the cable connectors are locked and secure in the ports.

50-Pin Champ Connector Port

The Ubigate iBG1003 has a 50-pin Champ connector port to support eight or sixteen FXS ports, depending on sub-modles. The port is connected as shown below:

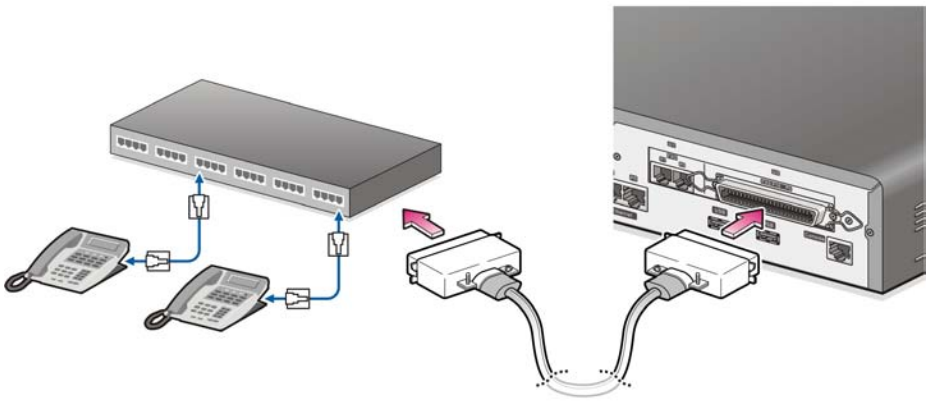

Figure 4.6 Connecting 50-pin Champ Connector Port

NOTE

For more information on cable specification, see 50-pin Champ Connector Cable in Annex B.

PRI Port

The Ubigate iBG1003 has two PRI ports, depending on sub-models. These ports provide two generic T1 or E1 trunk interfaces for voice. These module provide

- 2 T1 ports, running at 1.544 Mbps and supporting 24 voice timeslots.
  or
- 2 E1 ports, running at 2.048 Mbps and supporting 30 voice timeslots.

To connect a cable:

1. Plug one end of the cable into an appropriate T1/E1 PRI port on the target router.

2. Plug the other end of the cable into the network device. Make sure that the cable connectors are locked and secure in the ports.

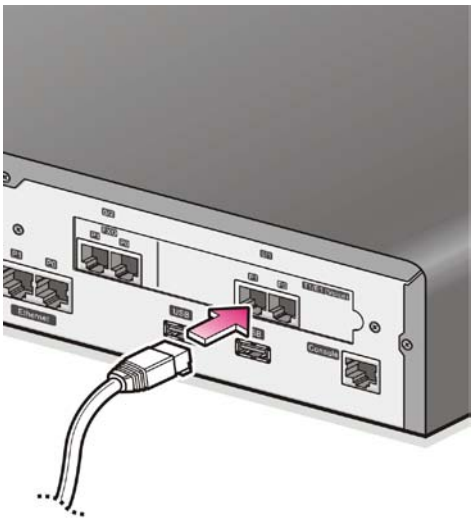

Figure 4.7 Connecting a PRI Cable

Powering Up the Ubigate iBG1003

The Ubigate iBG1003 has a 72 Watts AC power supply module.

Connecting AC Power

To connect the AC power cord to the router:

1. Connect the AC power connector to the power supply.

2. Connect the other end to a grounded power receptacle rated for the Ubigate iBG1003.

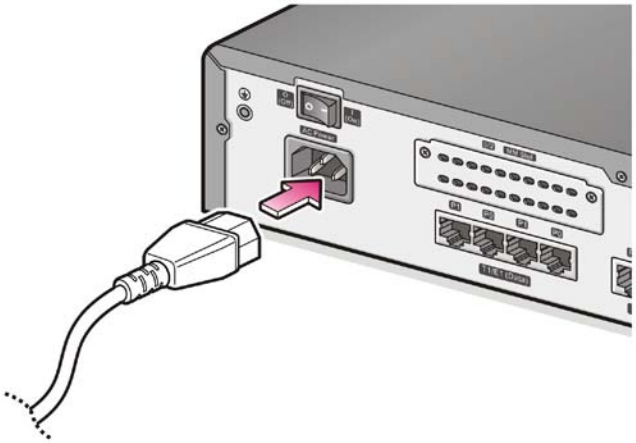

Figure 4.8 AC Power Connection

WARNING

- External grounding is required to prevent human injuries or system damages caused by lightning, static electricity, or voltage surge.
- The power plug of iBG1003 system should be connected to an outlet with a protective ground

Applying Power

Before applying power to an Ubigate iBG1003 router, make sure that the appropriate procedures have been completed and that an operator console has been connected to the router.
To apply power to the Ubigate iBG1003:

1. Ensure that the Ubigate iBG1003 is connected to a power source.

2. Switch the rocker switch on the Ubigate iBG1003 back panel to the on position (I).

Then, the fan starts, the LEDs start to blink in different colors, and the Ubigate iBG1003 performs a self test. On successful completion of the self test, the system (SYS) LED will indicate **Green** and the other LEDs will be in various states.


NOTE

This is a normal condition when the router is not configured for specific network line conditions.

The login prompt is displayed on the console screen.

CHAPTER 5. Option Module Installation

Read 'Installation Safety Guidelines and Warnings' before you start installing the option modules.

General Maintenance Guidelines

Keep all Ubigate iBG1003 option modules dry and dust-free, and store them in electrical-equipment-friendly environments.

Mini-Module Overview

Ubigate iBG1003 has one mini-module slot to accommodate optional WAN or LAN interface module. Currently, the following ADSL modules are supported in iBG1003: ATOP-1 and ATOI-1.

ATOP-1 (1-Port ADSL over POTS Mini-Module)

This module provides an ADSL interface connecting to the Central Office through a POTS line.

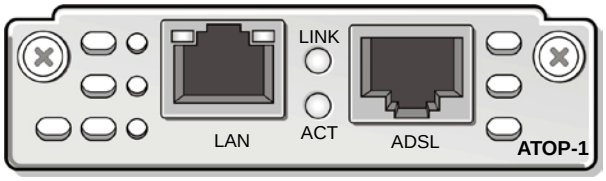

Figure 5.1 ATOP-1 Mini-Module

ADSL Port LEDs

LED	Indication & Color	Description
LINK	GREEN	Link is connected.
	Blinking Green	Link is not connected.
	OFF	Port is not connected.
ACT	GREEN	Transmit/Receive is OFF.
	Blinking Green	Transmit/Receive is ON.
	OFF	Port is not connected.

The module has one ADSL port and one Ethernet port. The ADSL port should be connected with POTS network. However, the Ethernet port is for use in other iBG models. Therefore, the Ethernet port should not be connected to any other device or port.

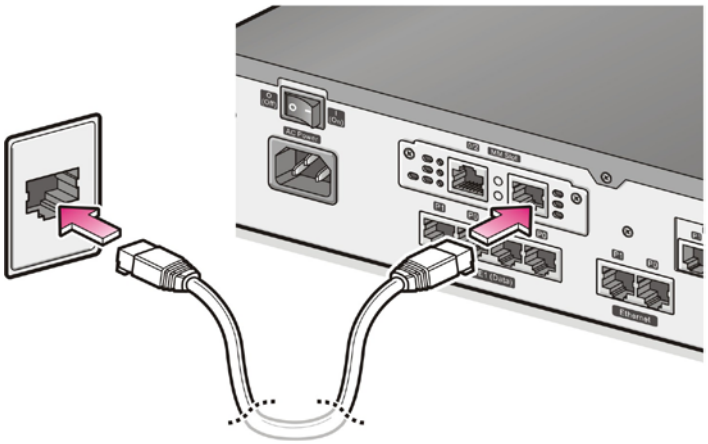

Figure 5.2 Connecting the ATOP-1 Mini-Module

ATOI-1 (1-Port ADSL over ISDN Mini-Module)

This module provides an ADSL interface connecting to the Central Office through an ISDN line.

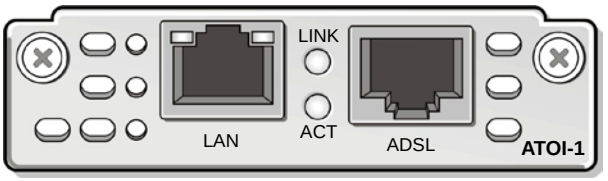

Figure 5.3 ATOI-1 Mini-Module

ADSL Port LEDs

LED	Indication & Color	Description
LINK	GREEN	Link is connected.
	Blinking Green	Link is not connected.
	OFF	Port is not connected.
ACT	GREEN	Transmit/Receive is OFF.
	Blinking Green	Transmit/Receive is ON.
	OFF	Port is not connected.

The module has one ADSL port and one Ethernet port. The ADSL port should be connected with ISDN network. However, the Ethernet port is for use in other iBG models. Therefore, the Ethernet port should not be connected to any other device or port.

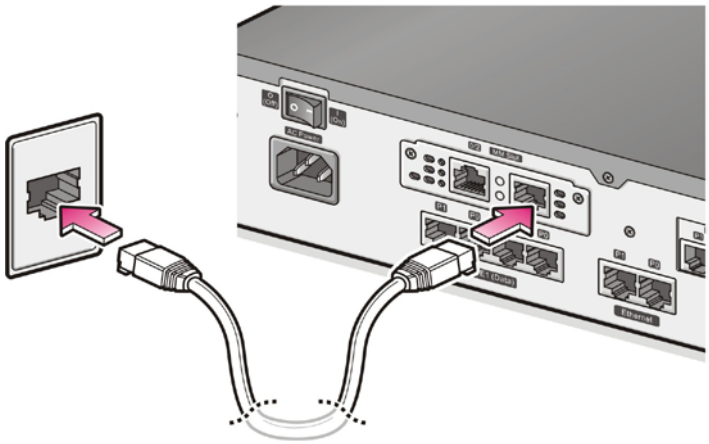

Figure 5.4 Connecting the ATOI-1 Mini-Module

NOTE

For more information on cable specification, see ATOP-1, ATOI-1 Port Cable in Annex B.

LMF-4M (4-Port Fast Ethernet Mini-Module)

This module provides four 10/100 Base-T Ethernet ports.

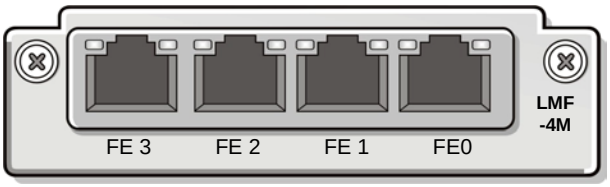

Figure 5.5 LMF-4M Mini-Module

The following table explains the LEDs states in detail.

LED	Indication & Color	Description
Link	Solid Green	Link is established with speed 10/100 Mbps.
	Off	Link failure or no connection.
Activity	Blinking Orange	Blinking orange indicates transmit/receive activity with speed 10/100 Mbps.
	Off	No activities.

This module is typically connected as shown below:

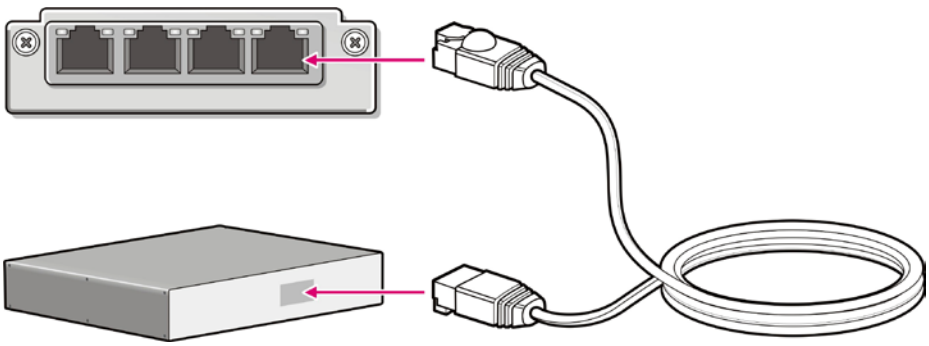

Figure 5.6 Connecting the LMF-4M Mini-Module

Installing Mini-Modules

This section provides a procedure to install mini-modules. Be sure to follow safe ESD (Electrostatic Discharge) handling practices to avoid damage to module components.

> **WARNING**
>
> When handling Ubigate iBG1003 or its components, wear grounding wrist straps to avoid ESD damage to the equipment. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

To add a mini-module:

1. Loosen the 2 retention screws on the back module panel or remove the existing module from the slot.

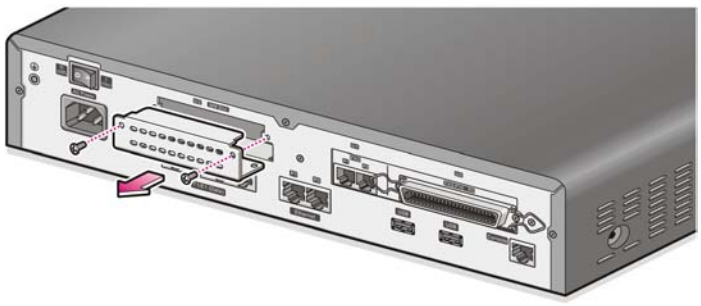

Figure 5.7 Preparing a mini-module slot for module insertion

2. Insert the new module retainer screws into the screw holes on the mini-module slot until it is fully seated.

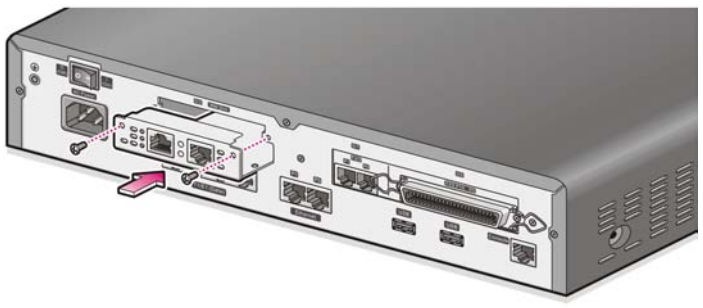

Figure 5.8 Aligning a new mini-module

3. Tighten all the screws completely.

To remove an existing mini-module:

1. Loosen the 2 retention screws on the back module panel.

2. Pull the module out of the slot.

> NOTE
>
> In case, if the slot has to remain empty, cover the hole with a slot cover by aligning the slot cover's screws with the screw holes on the slot bay.

3. Tighten all the screws completely.

Port Numbering

This section describes the port number conventions used by Ubigate iBG routers.

Ports on a network module are numbered in a format: *network module slot-number/port-number*, and ports on a mini-module are numbered in a format: *network module slot-number/mini-module slot number/port-number*.

Network modules are numbered from right to left, starting with slot number one. If there is more than one row, the bottom row is numbered first, from right to left, starting at slot one, then the next row up is numbered, from right to left, starting with the next slot number based on the lower rows last (left most) numbered slot. The main board is considered as network module slot 0.

Mini-modules are numbered from right to left, starting with slot number zero. If there is more than one row, the bottom row is numbered first, from right to left, starting at slot zero, then the next row up is numbered, from right to left, starting with the next slot number based on the lower rows last (left most) numbered slot.

Ports on any mini-module or network module are numbered from right to left, starting with port number zero. If there is more than one row of ports on a given module, the bottom row is numbered first, from right to left, starting at port zero, then the next row up is numbered, from right to left, starting with the next port number based on the lower rows last (left most) numbered port.

iBG1003 Port Numbering

The main system of an iBG1003 is considered as network module slot 0. Thus, built-in ports on the system such as 4 T1/E1 ports and Ethernet ports are numbered in *0/x* format. Specifically, the Fast Ethernet ports are numbered 0/0 and 0/1, starting from right to left. Likewise, the T1/E1 ports are numbered 0/0, 0/1, 0/2, and 0/3, starting from right to left.

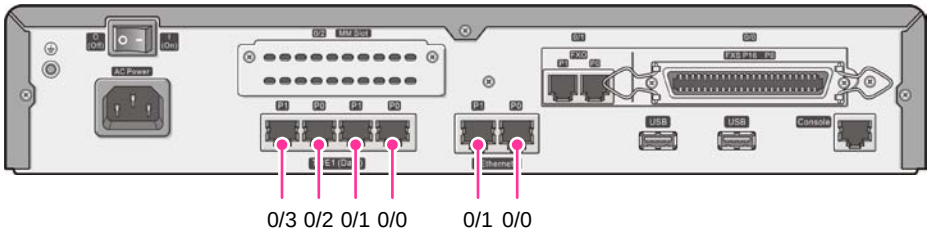

Figure 5.9 iBG1003 Port Numbering

iBG1003's voice option modules are considered to consist of two mini-modules according to the iBG1003 design concept. For instance, in Figure 5.9, two T1/E1 PRI ports and two FXO ports are considered two mini-modules. Therefore, iBG1003 has three mini-module slots for the purpose of port numbering. Thus, FXS or voice T1/E1 ports are numbered in *0/0/x* format. FXO ports are numbered in *0/1/x* format. The ADSL port in the ADSL module is numbered *0/2/0*.

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ANNEX A. System Specifications

Product Specifications

Item			Specification
System Memory			- Typical: 512 MB - Maximum: 1 GB
u-SD Flash Memory			- Typical: 1 GB - Maximum: 2 GB * For normal operation, only Samsung certified u-SD should be used.
Boot Flash Memory			2 MB
AC Power Supply			- Input Voltage: 100~240 V - Frequency: 50~60 Hz - Power Consumption: 72 W
Temperature	Operating	High	113°F (+45°C)
		Low	32°F (0°C)
	Non-Operating	High	158°F (+70°C)
		Low	-13°F (-25°C)
Humidity (Operating)			5 to 90%, non-condensing
Dimension			- Height: 2.56-inch (65 mm) - Width: 14.17-inch (360 mm) - Depth: 11.81-inch (300 mm)
Weight			3 kg
Altitude			0 to 13,123 ft (0 to 4, 018 m)

(Continued)

Item	Specification
Regulatory & Safety Compliance	- KCC Type Approval/EMC Registration - IEC 60950-1/EN 60950-1/UL 60950-1 - EN 55022/EN 55024/EN 61003-3-2/ EN 61003-3-3 - FCC Part 15 Class A - FCC Part 68

Interface Specifications

The below section provides specifications for T1/E1 WAN interface and Ethernet interface.

T1 WAN Interface

Item	Specification
Receive line rate	1.544 Mbps ± 32 ppm
Line code	B8ZS or AMI
Framing	D4 or ESF
Interface ESF FDL	- AT & T TR-54016-1986 - AT & T TR-54016-1989 - ANSI T1.403-1989
Input signal	DSX-1, 0 to -24 dB
Output signal build out	0, -7.5 dB, -5 dB
Equalization	0 to 655 ft. (DSX-1)
Impedance	100 Ω
Connectors	RJ-48C
Timing	Internal or network
Pulse density	AT & T TR-62411: HDLC Inversion, forced

E1 WAN Interface

Item	Specification
Receive line rate	2.048 Mbps ± 50 ppm (payload = 1.984 Mbps)
Line code	HDB3
Framing CRC	non-CRC (ITU G.704), and unframed
Input signal	DSX-1, 0 to -24 dB
Output signal build out	long-haul or short-haul
Impedance	75 or 120 ohm
Connectors	RJ-48C
Timing	Internal or network
Pulse density	ITU G.703

Ethernet Interface

Item	Specification
Data flow	Full-duplex or half-duplex
Connectors	RJ-45
Data speed	10/100 Mbps, auto negotiating

ANNEX B. Cable Specifications

Console Port Cable

Cable Shape

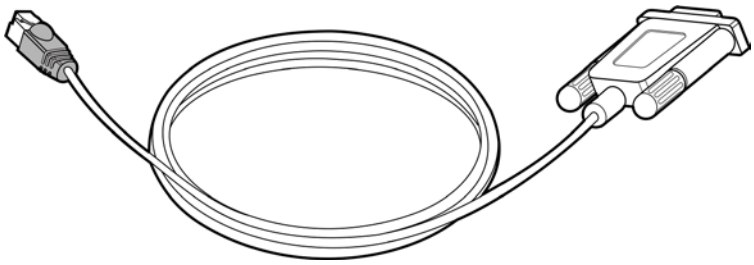


Figure B.1 Console Port Cable

Cable Signaling and Pinout

Console Port (DTE)	RJ-45 to RJ-45 Rollover Cable	RJ-45 to DB-9 Terminal Adapter (connected to Rollover Cable)	Console Device
Signal	**RJ-45 Pin**	**DB-9 Pin**	**Signal**
RTS	1	8	CTS
DTR	2	6	DSR
TxD	3	2	RxD
GND	4	5	GND
GND	5	5	GND
RxD	6	3	TxD
DSR	7	4	DTR
CTS	8	7	RTS

Ethernet Cable

Cable Shape

- Cable Length: 6 feet
- Standard, Straight-Through Wiring (both ends are the same)
- 10/100/1000 Base-T interfaces

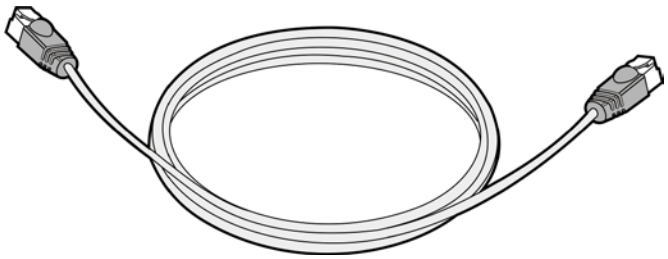


Figure B.2 Ethernet LAN Interface Cable

Cable Signaling and Pinout

RJ45 Pin #	Wire Color (T568A)	1000Base-T Signal
1	White/Green	BI_DA+
2	Green	BI_DA-
3	White/Orange	BI_DB+
4	Blue	BI_DC+
5	White/Blue	BI_DC-
6	Orange	BI_DB-
7	White/Brown	BI_DD+
8	Brown	BI_DD-

T1/E1 Cable

Cable Shape

- RJ-48C to RJ-48C Cable

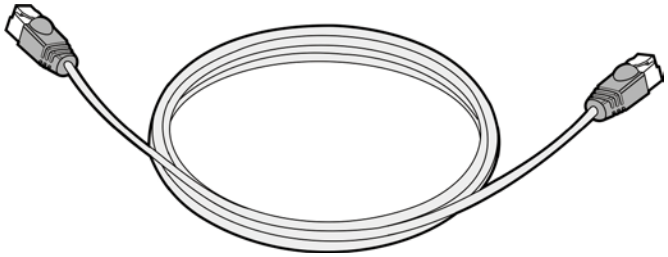


Figure B.3 T1/E1 WAN Interface Cable

Cable Signaling and Pinout

Pin	Signal		Pin	Signal
1	RXRING	←	4	TXRING
2	RXTIP	←	5	TXTIP
4	TXRING	→	1	RXRING
5	TXTIP	→	2	RXTIP

LMF-4M Port Cable

Cable Shape

- Cable Length: 6/10 feet
- Standard, Straight-Through Wiring (both ends are the same)
- 10/100Base-T interfaces

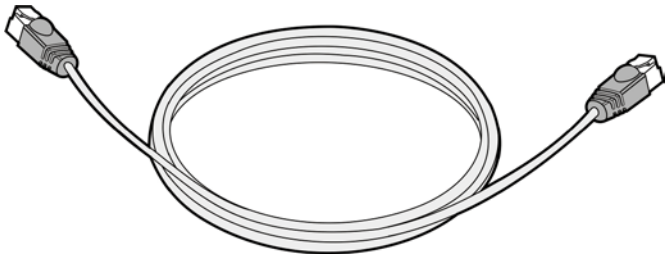


Figure B.4 LMF-4M Port Cable

Cable Signaling and Pinout

RJ45 Pin #	Wire Color (T568A)	1000Base-T Signal
1	White/Green	BI_DA+
2	Green	BI_DA-
3	White/Orange	BI_DB+
4	Blue	BI_DC+
5	White/Blue	BI_DC-
6	Orange	BI_DB-
7	White/Brown	BI_DD+
8	Brown	BI_DD-

ATOP-1, ATOI-1 Port Cable

Cable Shape

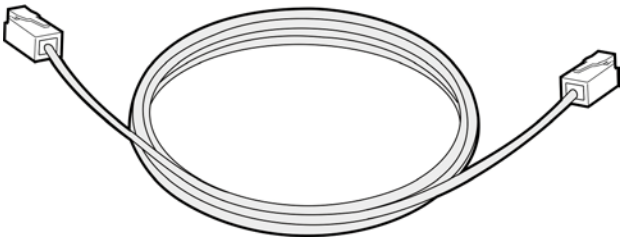


Figure B.5 ATOP-1, ATOI-1 Port Cable

Cable Signaling and Pinout

RJ-11 connector		RJ-11 connector	
Pin	**Signal**	**Signal**	**Pin**
1	-	-	1
2	-	-	2
3	Ring	Ring	3
4	Tip	Tip	4
5	-	-	5
6	-	-	6

RJ-21 Champ Connector Cable

Cable Shape

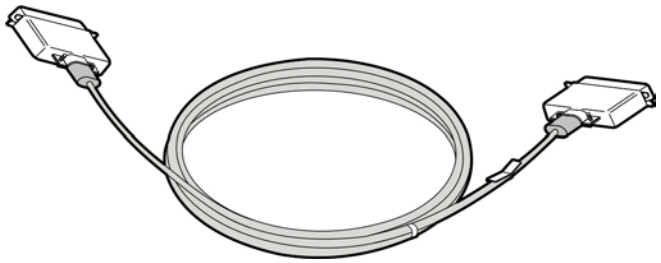


Figure B.6 RJ-21 Champ Connector Cable

Cable Signaling and Pinout

RJ-21 (Left)	RJ-21 (Right)	Signal name	RJ-21 (Left)	RJ-21 (Right)	Signal name
1 26	1 26	TIP 1 RING 1	14 39	14 39	TIP 14 RING 14
2 27	2 27	TIP 2 RING 2	15 40	15 40	TIP 15 RING 15
3 28	3 28	TIP 3 RING 3	16 41	16 41	TIP 16 RING 16
4 29	4 29	TIP 4 RING 4	17 42	17 42	-
5 30	5 30	TIP 5 RING 5	18 43	18 43	-
6 31	6 31	TIP 6 RING 6	19 44	19 44	-
7 32	7 32	TIP 7 RING 7	20 45	20 45	-
8 33	8 33	TIP 8 RING 8	21 46	21 46	-
9 34	9 34	TIP 9 RING 9	22 47	22 47	-
10 35	10 35	TIP 10 RING 10	23 48	23 48	-

(Continued)

RJ-21 (Left)	RJ-21 (Right)	Signal name	RJ-21 (Left)	RJ-21 (Right)	Signal name
11 36	11 36	TIP 11 RING 11	24 49	24 49	-
12 37	12 37	TIP 12 RING 12	25 50	25 50	-
13 38	13 38	TIP 13 RING 13	-	-	-

FXO, FXS Port Cable

Cable Shape

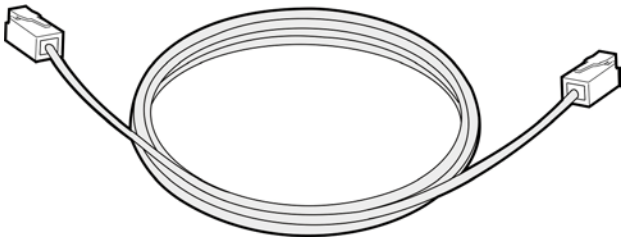


Figure B.7 FXO, FXS Port Cable

Cable Signaling and Pinout

RJ-11 connector		RJ-11 connector	
Pin	**Signal**	**Signal**	**Pin**
1	-	-	1
2	-	-	2
3	Ring	Ring	3
4	Tip	Tip	4
5	-	-	5
6	-	-	6

WEEE SYMBOL INFORMATION

Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

BATTERY SYMBOL INFORMATION

Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66.
If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

Ubigate iBG1003™

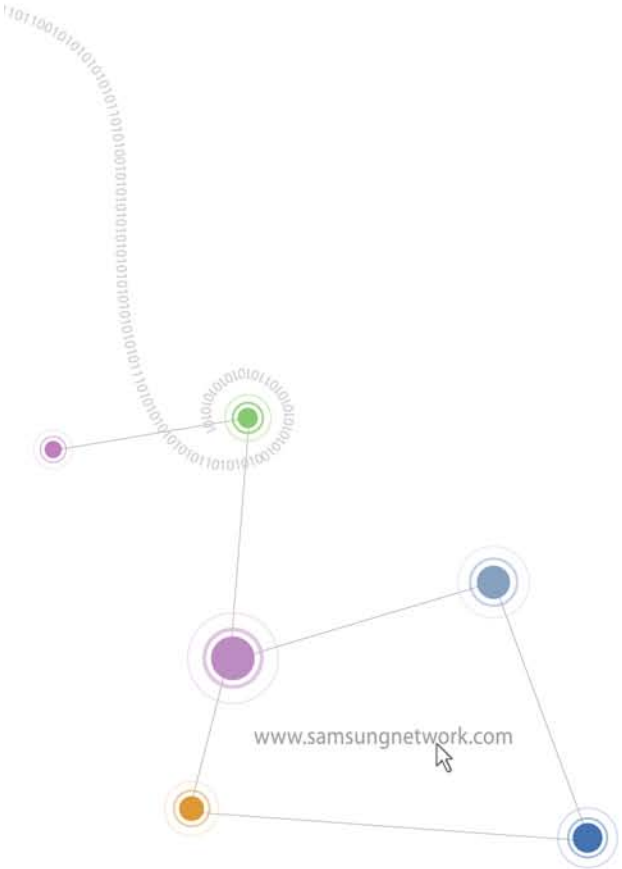
Installation Manual

SAMSUNG ELECTRONICS

SAMSUNG DIGITall
everyone's invited™

Experience the power of one
Ubigate iBG1003™

Installation Manual



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