

RSG Installation Manual

IPLDK-50/100/300/600

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1. INTRODUCTION

1.1 Purpose

This guide provides the information necessary to install, operate, and maintain LGE's LDK-RSG (LDK-Remote Services Gateway).

1.2 Regulatory Information

1.2.1 Telephone Company Notification

Before connecting the LDK-RSG to the telephone network, you may be required to notify your local serving telephone company of your intention to use "customer provided equipment". You may further be required to provide any or all of the following information:

- PSTN line Telephone numbers to be connected to the system
- Model name LDK-RSG
- Local regulatory agency registration number locally provided
- Ringer equivalence 0.7B
- Registered jack RJ-11

The necessary information is available from your local representative of LGE.

1.2.2 Regulatory Compliance

This equipment complies with the following standards, FCC Part 15 & 68, IC (Industry Canada) CS03, TBR21, TBR03, TBR04
National standards country by country.

Also, this equipment complies with the safety requirements of the following standards, UL60950, CSA60950, EN60950, EN55022, EN55024
National standards country by country.

For the local regulatory agency registration numbers, contact your local LGE distributor.

1.2.3 Incidence of Harm

If the telephone company determines that customer provided equipment is faulty and may possibly cause harm or interruption in service to the telephone network, it should be disconnected until repair can be affected. If this is not done, the telephone company may temporarily disconnect service.

1.2.4 Changes in Service

The local telephone company may make changes in its communications facilities or procedures. If these changes could reasonably be expected to affect the use of the LDK-RSG or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

1.2.5 Maintenance Limitation

Maintenance of the LDK-RSG must be performed only by an authorized agent of LG Electronics, Inc. The user may not make any changes and/or repairs except as specifically noted in this manual. Unauthorized alternations or repairs may affect the regulatory status of the system and will void any remaining warranty.

1.2.6 Notice of Radiated Emission

The LDK-RSG complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

WARNING:

"This equipment generates and uses R.F. energy, and if not installed and used in accordance with the Instruction Manual, it may cause interference to radio communications. It has been tested and found to comply with the appropriate limits for a telecommunication device. The limits are designed to provide reasonable protection against such interference, when operated in a commercial environment.

Operation of this equipment in a residential area could cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference."

1.2.7 Notice of Replacement of Lithium Battery



CAUTION

- If the battery is incorrectly replaced, the system will not function properly.
- Replace only with the same or equivalent type as recommended by the manufacturer.
- Dispose of used batteries accordance with the manufacturer's instructions.

2. GENERAL

The LDK-RSG (LDK-Remote Services Gateway) is a remote gateway that provides a fully transparent connection to the host IP LDK system over a broadband xDSL or Cable modem which is provided by an ISP (Internet Service Provider). The remote services of the IP LDK system are implemented by the IP LDK Remote Services Application Server, which is an integral part of the IP LDK system(VoIB) software. The broadband connection employs the system's VOIP channels to communicate with the LDK-RSG. The LDK-RSG transparently extends the host IP LDK system services and resources to users digital terminal and/or Single Line Telephone interfaces over the broadband IP network.

Figure 2.1 shows an example of the LDK-RSG connection.

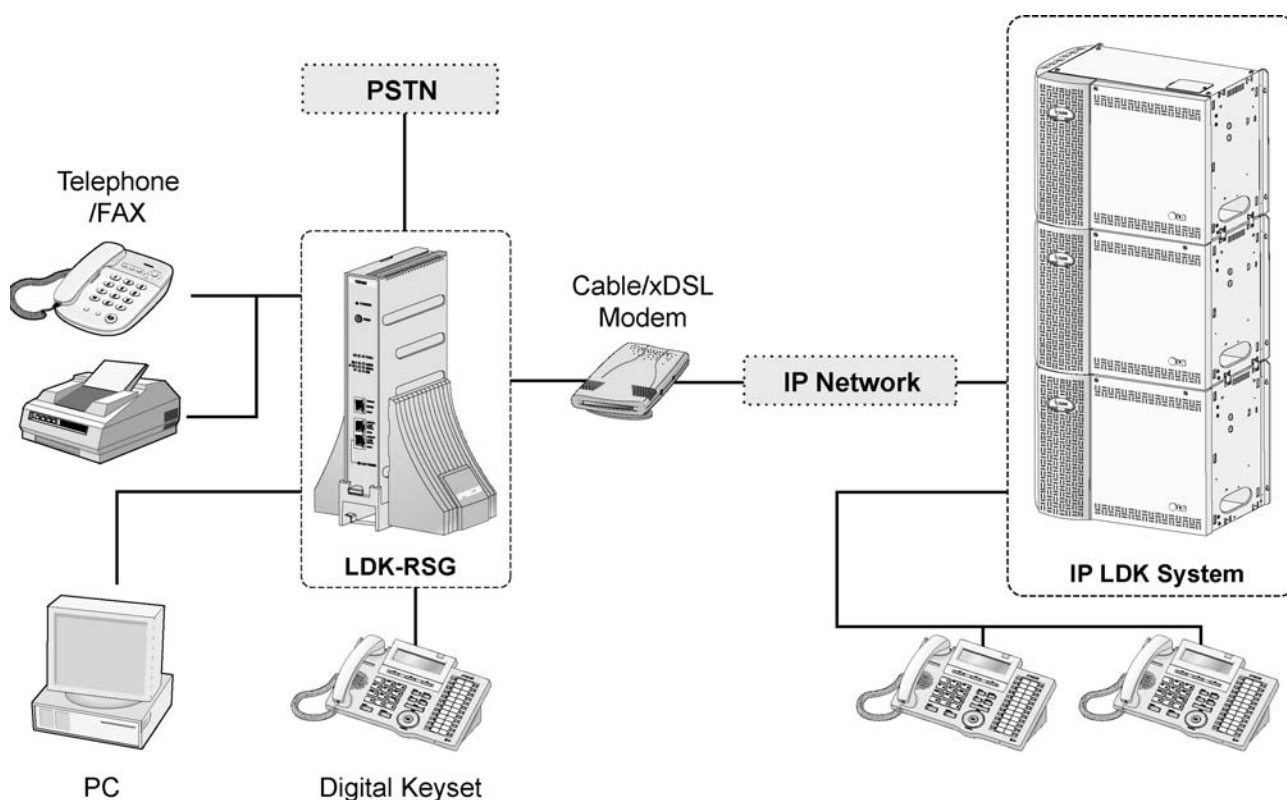


Figure 2.1 LDK-RSG Structure

2.1 Product Contents

The LDK-RSG is shipped with the LDK-RSG module, a power adaptor and a power cord as shown in Figure 2.1.1.

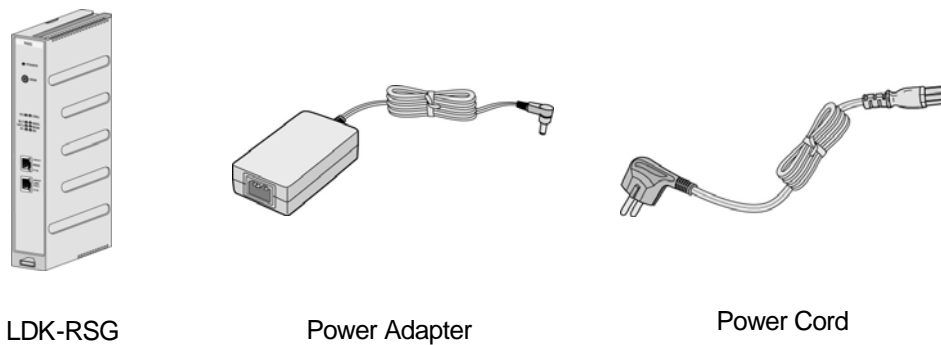


Figure 2.1.1 Components in LDK-RSG package

Figure 2.1.2 shows the optional components that can be used with the LDK-RSG. These LG proprietary equipments include the digital keyset and the Desk/Wall mount holders.

Various types of digital terminals are used with the LDK-RSG as the user's telephone. The DHLD (Desk Mount Holder) and the WHLD (Wall Mount Holder) are used for mounting the LDK-RSG. See the following Figure 2.1.2 and Table 2.1.1~2.

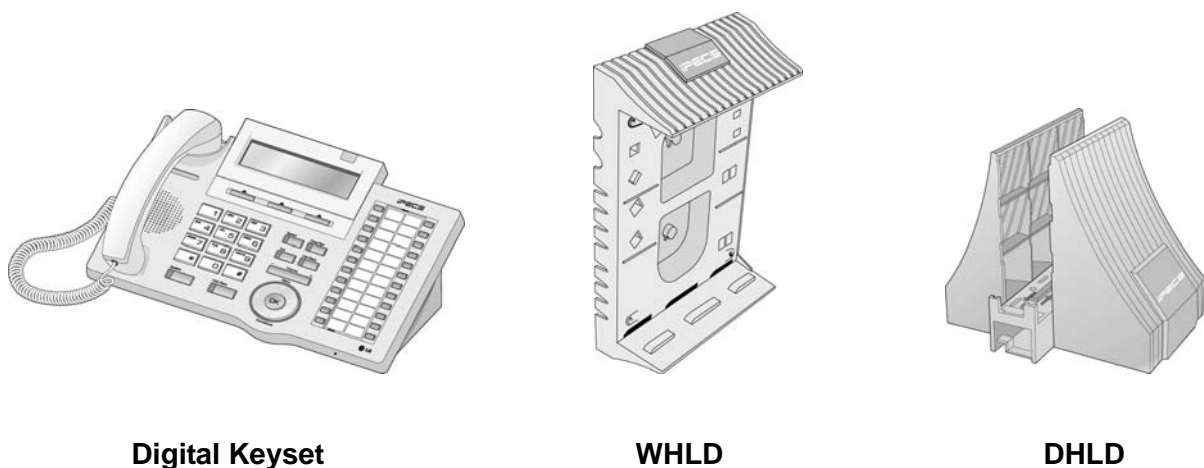


Figure 2.1.2 Components using with the LDK-RSG

The LDK-RSG is available with an optional CMU, which will provide CO Line usage statistics based on Call Metering signals from the PSTN. To obtain the LDK-RSG with this option, contact an authorized agent of LG Electronics.

Table 2.1.1 LDK-RSG products

No.	Product	Description	Remark
1	LDK-RSG	Remote Services Gateway Module	Basic
2	AC/DC Adaptor –G-	AC/DC Adaptor for module, (48VDC, 0.8A)	Basic
3	AC Power Cord	AC power cord for an Adaptor	Basic
4	DHLD	Desk mount Holder for module	Option
5	WHLD	Wall mount Holder for module	Option
6	Digital Keypad	Refer to Table 2.1.2 Digital Keypads	Option
8	CMU	Call Metering Unit	Option

Table 2.1.2 Digital Keypads

Model	Description	Model	Description
KD-36EXE	24 Flexible Button Display	KD/E-36EXE	24 Flexible Button Display
KD-36ENH	24 Flexible Button Normal	KD/E-36ENH	24 Flexible Button Normal
KD-24EXE	12 Flexible Button Display	KD/E-24EXE	12 Flexible Button Display
KD-24ENH	12 Flexible Button Normal	KD/E-24ENH	12 Flexible Button Normal
KD-33LD	8 Flexible Button Large Display	KD/E-8BTN	8 Flexible Button Normal
LKD-30DS	30 Flexible Button Display		
LKD-8DS	8 Flexible Button Display	LDP-7004N	4 Flexible Button Normal
LKD-2NS	2 Flexible Button Normal	LDP-7004D	4 Flexible Button Display
LKD-30LD	30 Flexible Button Large Display	LDP-7008D	8 Flexible Button Display
		LDP-7016D	16 Flexible Button Display
		LDP-7024D	24 Flexible Button Display
		LDP-7024LD	24 Flexible Button Large Display

2.2 Hardware Description

The LDK-RSG can be mounted on any flat surface with the DHLD or mounted to the wall with the WHLD. The external AC/DC adaptor feeds power to the LDK-RSG. The connectors and indicators on the front and rear panel are shown in Figure 2.2.1.

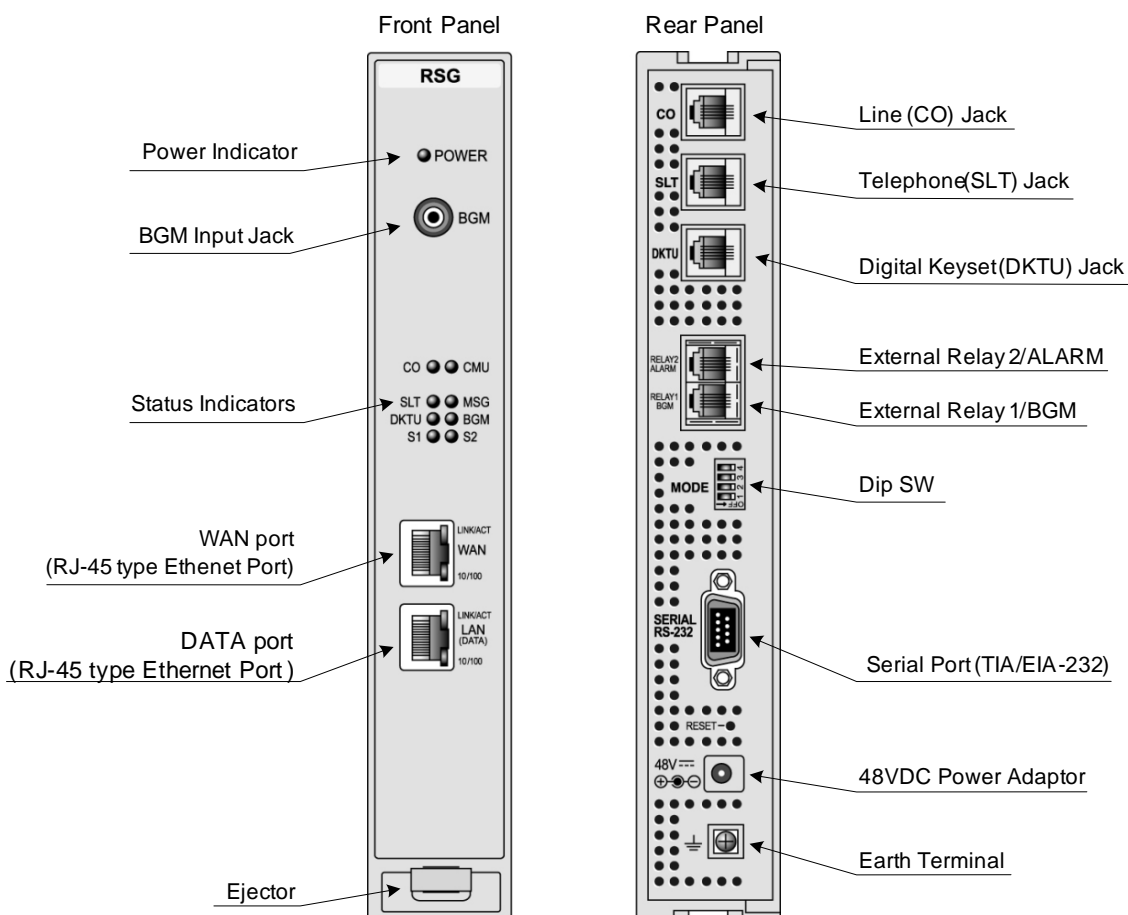


Figure 2.2.1 Front and Rear Panels of LDK-RSG

Connection ports

- One WAN connection port (RJ-45: 10/100 Base T Ethernet port)
- One PC connection port (RJ-45: 10/100 Base T Ethernet port)
- One Digital Keypad "DKTU" port (RJ-11)
- One Analog "CO" port (RJ-11, Loop Start)
- One Analog "SLT" port (RJ-11)
- One "BGM" port (RCA Jack, RJ-11)
- One Alarm/Doorbell Contact Input
- Two Dry Relay Contacts
- One TIA/EIA-232(RS-232) Serial Port
- 48VDC Power Input Jack

Indicators

The following LEDs provide visual representation of the LDK-RSG activities and status in normal state.

Table 2.2.1 LDK-RSG activities and status

Name	LED Color	Status	Description
POWER	RED	ON	Power On
		OFF	No Power
LINK/ACT	GREEN	ON	Valid LAN Link
		OFF	Link Fail
		FLASH	TX/RX Activity
10/100	YELLOW	ON	100 MBPS
		OFF	10 MBPS

Status LEDs on the front panel indicate operation states of the LDK-RSG as shown in below Table 2.2.2.

Table 2.2.2 LDK-RSG operation states

Name	LED Color	Status	Description
CO	RED	ON	CO Line in Use
		OFF	CO Line Idle
		FLASH	CO Line Ringing
CMU	RED	ON	CMU Installed
		OFF	CMU Not Installed
SLT	RED	ON	SLT in Use
		OFF	SLT Idle
		FLASH	SLT Ringing
MSG	RED	ON	SLT Message Waiting Message
		OFF	Message Idle
DKTU	RED	ON	Digital Keypad in Use
		OFF	Digital Keypad Idle
		FLASH	Digital Keypad Ringing
BGM	RED	ON	BGM Activity
		OFF	BGM Idle
S1	RED	Future Use	
S2	RED	ON	WAN DISCONNECTED Mode
		FLASH	LDK-RSG WAN connected

DIP Switches

The LDK-RSG has a switch (“**MODE**”) on the rear panel. The “**MODE**” switch has four (4) contact positions. It is used to control several options of LDK-RSG only when it is under WAN DISCONNECTED mode. The function of each switch and contact position is given in Table 2.2.3, below.

Table 2.2.3 Switch functions

Name	SWITCH	FUNCTION	ON	OFF
MODE	1	CO Dialing Type	Pulse	DTMF
	2	Alarm Set	Set	Not set
	3	Relay1 Set	Set	Not set
	4	Relay2 Set	Set	Not set

2.3 Specifications

Environmental Specification		
	Degrees (°)	Degrees (°)
Operation Temperature	0 ~ 40	32 ~ 104
Optimum Operation Temperature	20 ~ 26	68 ~ 78
Storage Temperature	0 ~ 70	32 ~ 158
Relative Humidity	0~80% RH non-condensing	

Power Adaptor Specification	
AC Input	AC100-240V. 50/60Hz. 1A max.
DC Output	DC48V, 0.8A max

*. A Power adaptor is supplied with the LDK-RSG.

Line (CO) Interface Specification		
Ring Equivalence Number(REN)	0.7B	
DTMF Dialing	Min. 70ms,/ Min. 70 ms	Burst time / Inter-digit time
Pulse Dialing	10 pps, 60:40% or 67:33%	Rate, Ratio

Telephony (SLT) Interface Specification		
Connector	RJ-11	
Loop Distance	1Km	AWG #24 (0.5mm)
Ring Capacity	2 US REN	
Ring Frequency	25Hz	

Digital Keyset (DKTU) Interface Specification		
Connector	RJ-11	
Loop Distance	800m	AWG #24 (0.5mm)

LAN Interface Specification	
Connector	2 x RJ-45 shielded
Ethernet	10/100 BASE T
Maximum Wiring Distance	100m / 0.328Kft

Miscellaneous interface Specification		
BGM	RCA jack or RJ-11	0 dBm @ 600 ohm
Dry Relay Contact	RJ-11	2A @ 30VDC
Alarm	RJ-11	

TIA/EIA-232 (RS-232) Interface Specification	
Connector	DB-9
Configuration/Port Settings	38400 BPS, 8 Data Bits, No parity, 1 Stop Bit, No Flow Control

Physical Specification		
W x D x H	38.3 x 181 x 230 mm	1.5 x 7.125 x 9.05 in
Weight	0.7 Kg	1.54 lbs
W x D x H with DHLD	149 x 128 x 260 mm	5.87 x 5.04 x 10.24 in
Weight with DHLD	1.1 Kg	2.42 lbs
W x D x H with WHLD	60 x 188.3 x 280 mm	2.36 x 7.41 x 11.02 in
Weight with WHLD	1.0 Kg	2.20 lbs

3. INSTALLATION

3.1 Installation Procedure

The installation and configuration of the LDK-RSG should be conducted only by an authorized agent of LG Electronics. An example of the basic installation is shown in Figure 3.1.1 below.

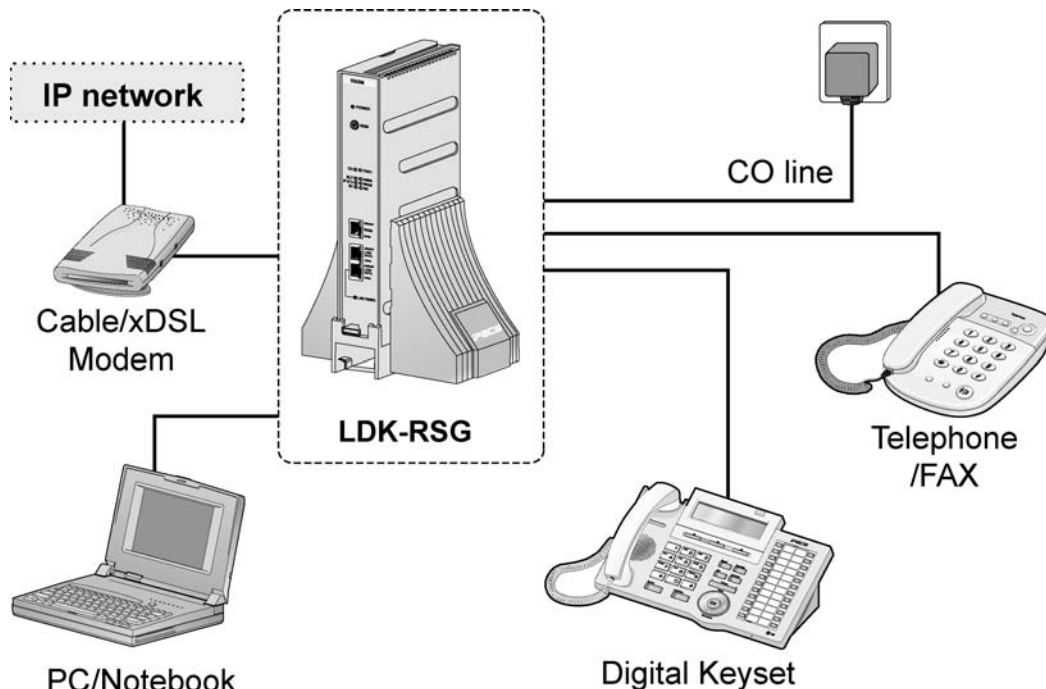


Figure 3.1.1 Installation example of LDK-RSG

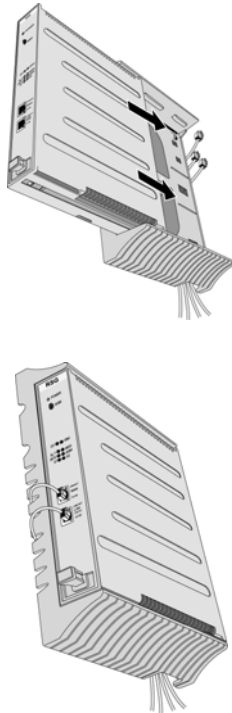
The basic procedure for installation is as follows.

- 1) Program the host IP LDK system, refer to the "IP LDK-100/300/300E Programming manual".
- 2) Assemble the WHLD or DHLD, refer to Figure 3.2.1, and mount the LDK-RSG in the holder mounting kit.
- 3) Connect the protective earth (\oplus) terminal on the rear of the LDK-RSG to a known earth ground.
- 4) Connect the "WAN" port (RJ-45) on the front panel of the LDK-RSG to the LAN port (RJ-45) of the xDSL/Cable modem.
- 5) Connect the "DATA" port (RJ-45) on the front panel of the LDK-RSG to the PC.
- 6) Connect the "DKTU" port (RJ-41) on the rear panel to a Digital Keypad.
- 7) Connect the SLT port (RJ-11) on the rear panel of the LDK-RSG to a Single Line Telephone.
- 8) Connect the "CO" port (RJ-11) on the rear panel of the LDK-RSG to the CO (Central Office) line.
- 9) Complete the Miscellaneous connections as required.
- 10) Plug the AC/DC adaptor into an AC outlet and to the DC input on the front panel of the LDK-RSG.
- 11) Configure network parameters of the LDK-RSG through the Web administration or the TIA/EIA-232(RS-232) Port. Refer to section 5. Network Configuration.

3.2 WHLD/DHLD Assembly & LDK-RSG Mounting

As depicted in Figure 3.2.1, assemble the WHLD/DHLD and mount the LDK-RSG in the WHLD or DHLD.

(a). LDK-RSG installation on the WHLD



(b). LDK-RSG installation on the DHLD

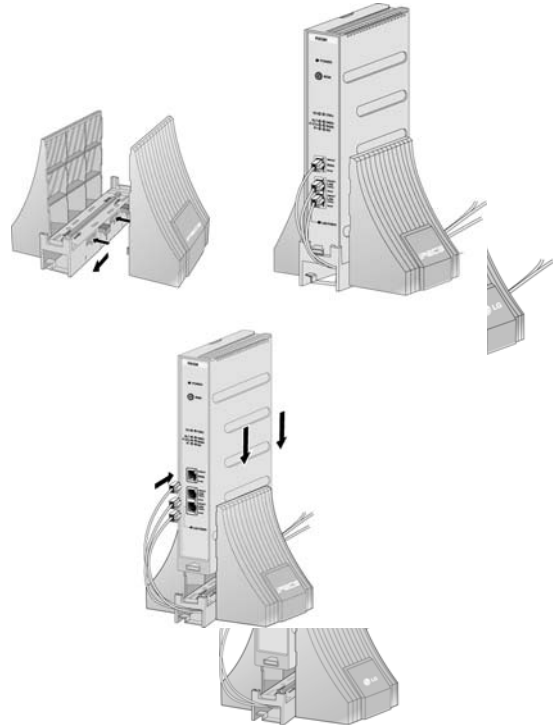


Figure 3.2.1 WHLD/DHLD Installation

To mount the LDK-RSG on the WHLD, push the LDK-RSG in the direction of the arrow as shown in Figure 3.2.1(a). When you remove the LDK-RSG from the WHLD, pull the Ejector on the bottom of the front panel.

In case of the DHLD, combine the pieces of the DHLD as shown Figure 3.2.1(b), and then insert the LDK-RSG from top position.

3.3 Connect the “WAN” and “DATA” ports.

The WAN and DATA ports on the front panel require Category 5 UTP cables terminated with RJ-45, 10/100 Base T Ethernet connections. A category 5 UTP, straight cable is required. The two LAN ports of LDK-RSG are wired as shown Figure 3.3.1.

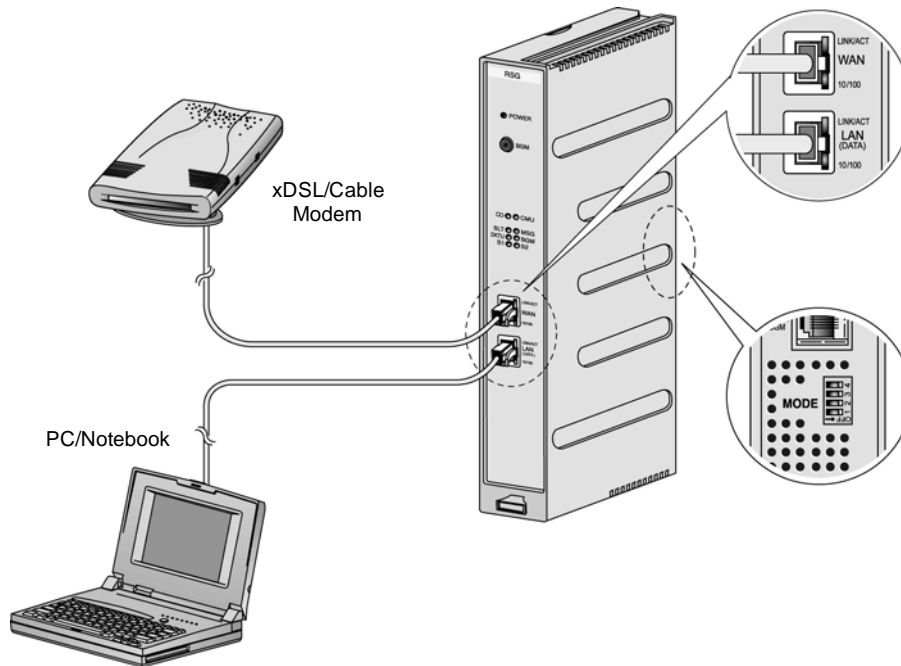


Figure 3.3.1 WAN/LAN connection

The pin diagram of two Ethernet Jacks is as shown in the Figure 3.3.2 below.

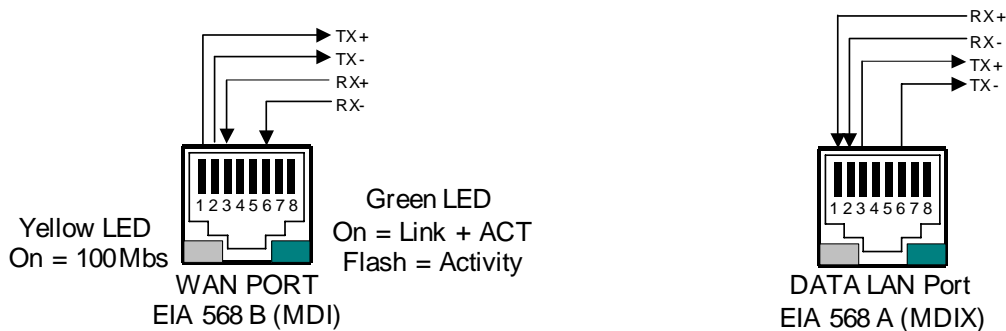


Figure 3.3.2 Pin Assignment of Ethernet ports

The “WAN” connector is connected to an xDSL/Cable Modem.

The “DATA LAN” port can be connected to a PC or a notebook.

3.4 Connect the “CO”, “SLT” and “DKTU” ports

The “CO” port on the rear panel is connected to the CO terminal from Public Exchange. The “SLT” port allows a telephone or a FAX machine to be connected. The subscriber loop lengths of the “SLT” port can be extended up to 1 Km. The “DKTU” port is used for a digital keyset.

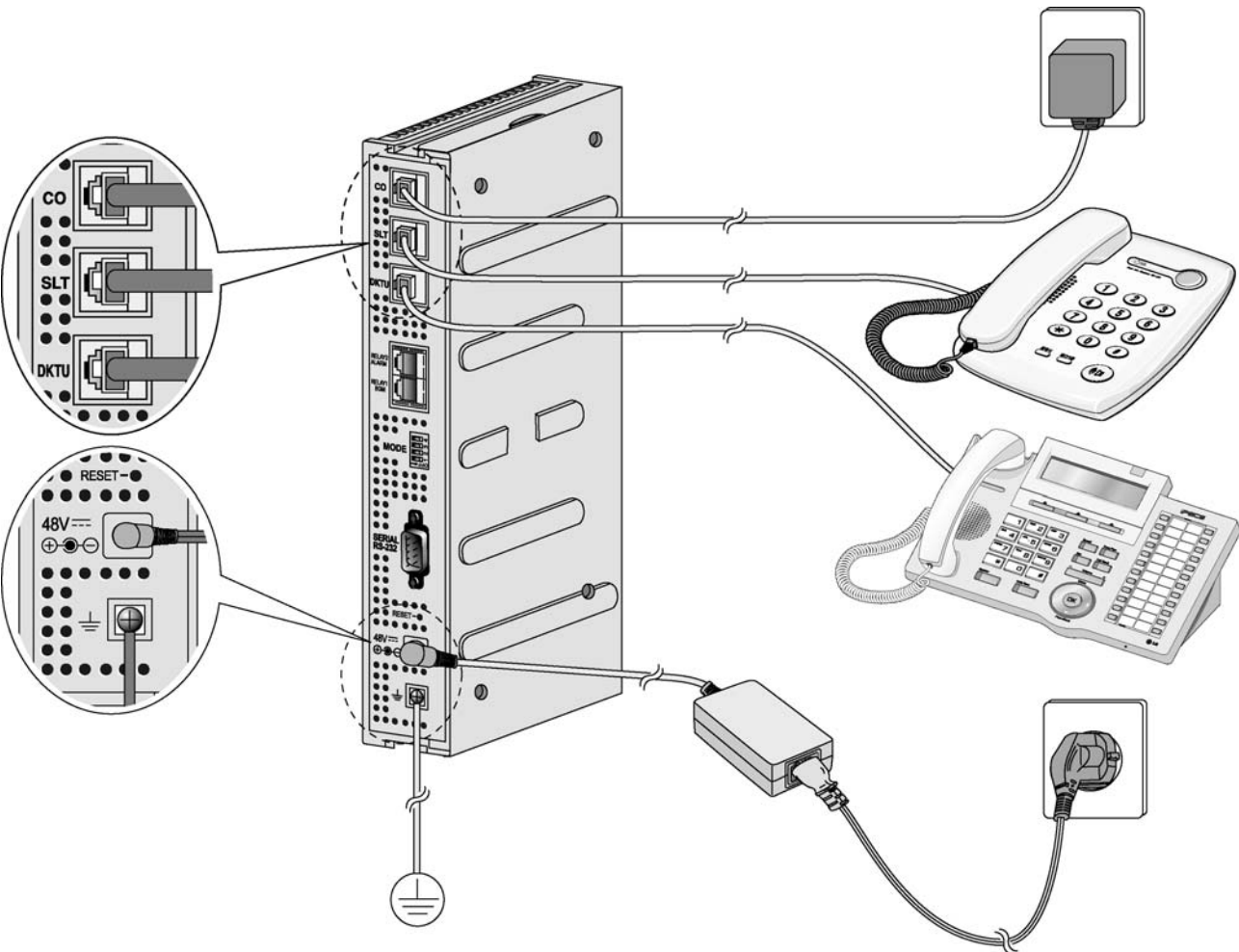


Figure 3.4.1 CO and SLT connection

As shown in Figure 3.4.2, the RJ-11 jack of the “CO”, “SLT” and “DKTU” ports assigns Tip and Ring for the telephony interface.

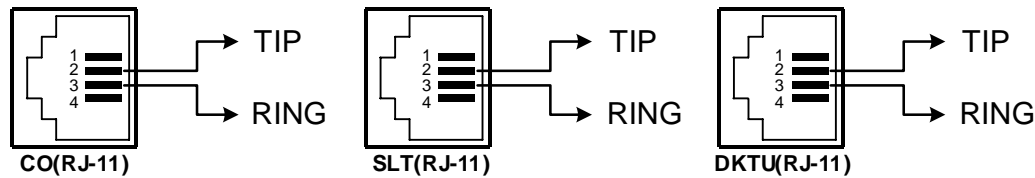


Figure 3.4.2 Pin Assignment of CO and SLT ports

3.5 Miscellaneous Connections

3.5.1 TIA/EIA-232 (RS-232) Connection

The DB-9 connector located on the rear panel of the LDK-RSG is used for TIA/EIA-232(RS-232) connection. This connector is employed to provide terminal access to the network configuration or system diagnostics of the LDK-RSG. The serial configuration of the LDK-RSG is 38400bps, 8 bits, no parity, and one stop bit.

This TIA/EIA-232 (RS-232) does not support hardware flow control signals. Only three wires are needed (TD, RD, and SG). See the Figure 3.5.1.

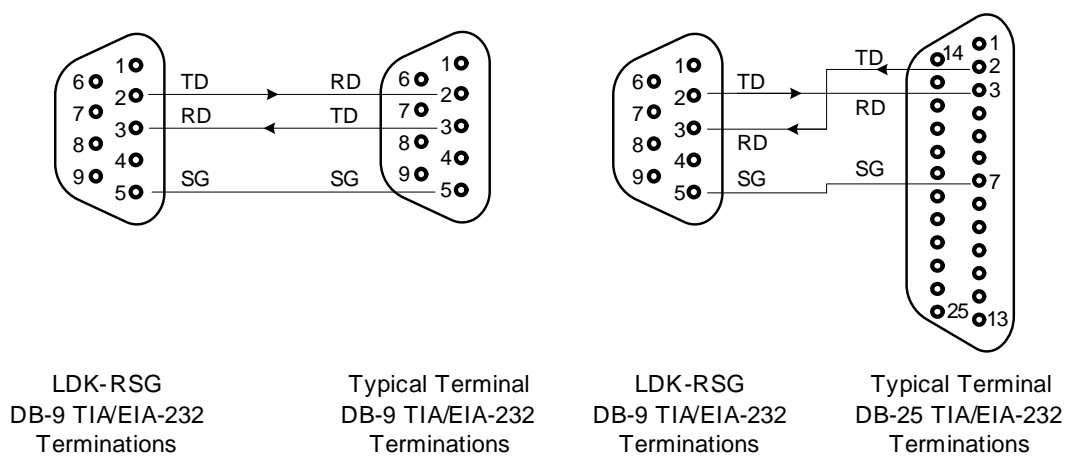



Figure 3.5.1 Pin Assignments of TIA/EIA-232

Table 3.5.1 Pin Description of TIA/EIA-232

Designation	Function
TD	Transmitted Data
RD	Received Data
SG	Signal Ground

3.5.2 External BGM

The BGM jack is used to connect to an external music source. If you want to use the external music, connect the music source to the BGM RCA jack on the front panel using an audio cable or with the BGM RJ-11 jack on the rear panel. See Figure 2.2.1 or Figure 3.5.2.

 The "BGM" connection on the rear panel is common with BGM RCA jack of the front panel.

3.5.3 Alarm Port

The LDK-RSG has an alarm port. The Alarm port is used for sensing the status of the external switch, e.g. door open/close. See Figure 3.5.2.

3.5.4 External Relay1, 2

The LDK-RSG has two dry relay contacts with 2A @30VDC. See Figure 3.5.2.

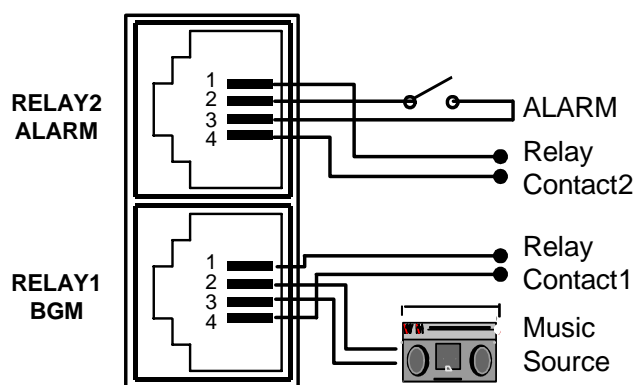



Figure 3.5.2 Pin Assignments of BGM/ALARM/Relay Contacts

3.5.5 Connect AC/DC Power Adaptor & Power-Up

An AC/DC adaptor is packaged with the LDK-RSG. The adaptor is supplied with a two (2) meter (six (6) foot) AC cord terminated with the nationally relevant AC blade type. The adaptor supports AC input power systems with rated voltage range of 100-240 VAC @ 50/60 Hz. The adaptor provides 48 VDC, 0.8 amps. The DC output connector is cabled to the adaptor with a two (2) meter (six (6) foot) cable. Figure 3.5.3 shows the AC/DC Adaptor for the LDK-RSG.

 *Assure the AC Power connection is within the rated voltage, frequency and current ratings of the AC/DC adaptor.*

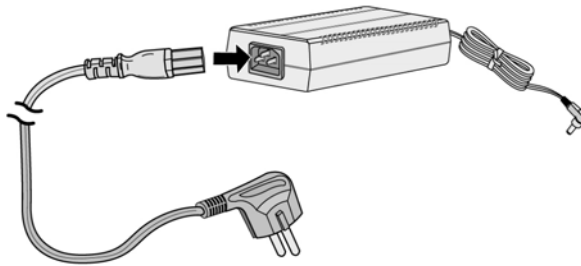


Figure 3.5.3 Power Adaptor

Connect the AC power cord to the Adaptor and plug in to the AC power source. Plug the DC output connector into the corresponding connector on the lower rear panel of the RSG.

Upon connection of the AC/DC Adaptor, the LDK-RSG will power-up. The LDK-RSG will attempt to register with the remote IP LDK host system.

To properly register, the “WAN” port must be connected to an operational broadband connection and the LDK-RSG must be properly programmed with the public IP address of the host IP LDK system, refer to section 6. In addition, for successful registration, the host IP LDK must be programmed with the Ethernet MAC address of the LDK-RSG, refer to section 5.

During the initial power-up, since the LDK-RSG programming has not been accomplished, the LDK-RSG will enter the “WAN DISCONNECTED” mode. The “WAN DISCONNECTED” mode will occur should any of the following conditions exist:

- 1) LDK-RSG not assigned with proper host IP LDK IP address,
- 2) LDK-RSG Network configuration improper,
- 3) “WAN” connection improper or physically disconnected,
- 4) Host IP LDK system not assigned with LDK-RSG MAC address,
- 5) ISP connection not operational, or
- 6) Host IP LDK system not operational.

In the “WAN DISCONNECTED” mode, communication between the LDK-RSG and the host IP LDK is not possible and thus the LDK-RSG and the digital keyset or SLT will not have access to services and resources of the IP LDK system. The ‘S2’ LED on the front panel of the LDK-RSG will light steadily and, if a digital keyset is connected to the LDK-RSG, the LCD will display the “WAN DISCONNECTED” message. The digital keyset will be capable of placing/receiving a call from the locally connected CO Line. Also, the telephone connected to the “SLT” port is directly connected to “CO” port by the internal PFT (Power Fail Transfer) relay, refer to section 4. Power Fail Transfer.

4. Power Fail Transfer

Should power to the LDK-RSG fail, the external SLT port is directly connected to the CO port through the internal Power Fail Transfer relay. In this case, only the telephone connected to “SLT” port can place/receive a call through locally connected CO facility. If a digital keyset is connected to the LDK-RSG, the loss of power to the LDK-RSG also removes power to the digital keyset and it is thus non-operational. Normal operation of the LDK-RSG will return upon return of power to the LDK-RSG.

5. Network Configuration

Network configuration consists of RSG WAN, LAN, and System configurations. These are explained in the following three sections of General, Web Configuration, and Serial Configuration. The last two sub-sections of this section describe typical network configuration examples and the detailed explanation of network parameters.

5.1 General

The LDK-RSG has two network interfaces. One is WAN interface that is to be connected to the Internet side, and the others are LAN interfaces used to connect a local PC.

5.1.1 WAN Port Related Settings

In order to send/receive data packets through the Internet, LDK-RSG's WAN side IP address, subnet mask, gateway (router) address must be configured properly. The address information can be set manually or automatically by DHCP (Dynamic Host Configuration Protocol). The LDK -RSG also supports connections to an xDSL/Cable modem as well as Ethernet switch (Hub).

5.1.2 LAN Port Related Settings

LDK-RSG's LAN ports can be used to connect a local PC.

For PC LAN port, the RSG provides a DHCP server, thus the PC's network setting has to be changed to Dynamic Address Assignment mode. This setting can be changed by using "Control Panel" of MS-Windows. For example, after opening "Local Area Connection Properties",

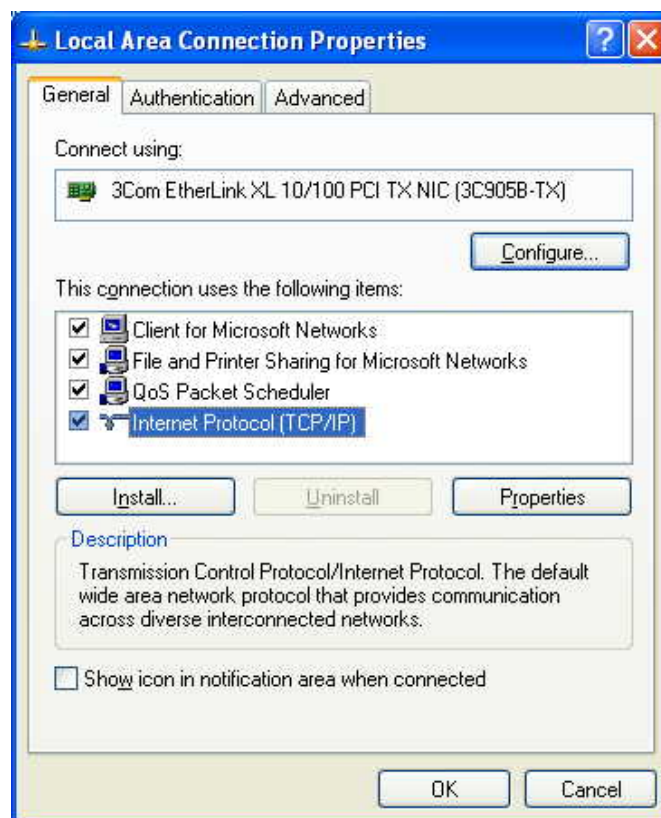


Figure 5.1.1 Local Area Connection Properties

Select “Internet Protocol (TCP/IP)” and then click “Properties” button, then “Internet Protocol (TCP/IP) Properties” window will show up. If the PC has already been set to use DHCP as shown below, the settings need not be changed.

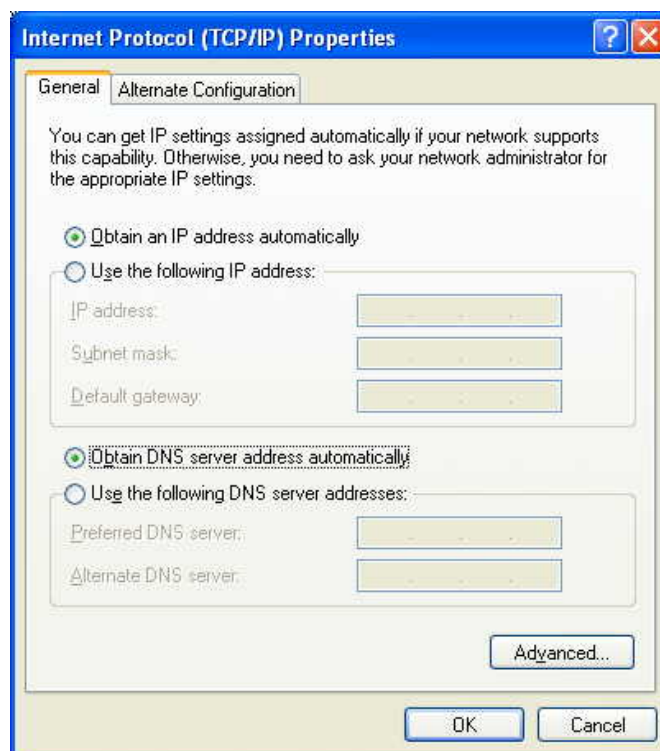


Figure 5.1.2 DHCP Setting

However, if the PC is set to use a 'fixed IP address' as shown below, the settings must be changed to obtain an IP address automatically as shown in Figure 5.1.2 above.

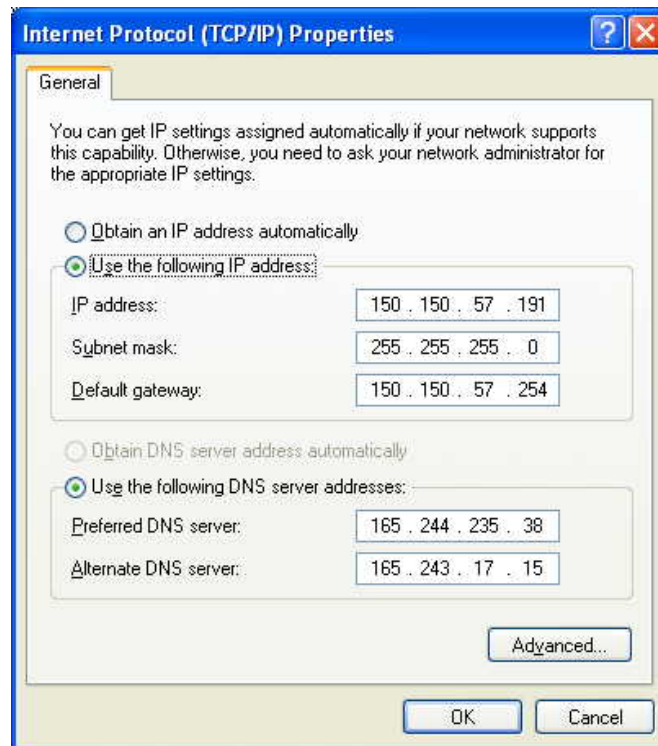


Figure 5.1.3 Fixed Address Setting

5.2 Web Configuration

Web Configuration is an easy way to configure LDK-RSG's network parameters by using Web Browser software. A Web Browser may access LDK-RSG's Web Admin pages through the WAN or LAN connections.

Connection from WAN side

This way is not supposed to be used for first-time configuration even though it is not impossible. It is rather to be used to change the LDK-RSG's network parameters from remote sites (e.g. IP LDK system administrator or installer) after successful installation and configuration.

Connection from LAN side

This way may be used for changing LDK-RSG's network parameters from the local PC and also for first-time configuration. After changing PC's network settings to Dynamic Address Assignment mode, LDK-RSG's Web Admin pages can be accessed by local Web Browser with the RSG's LAN side default address, "10.10.50.50".

5.2.1 General Information

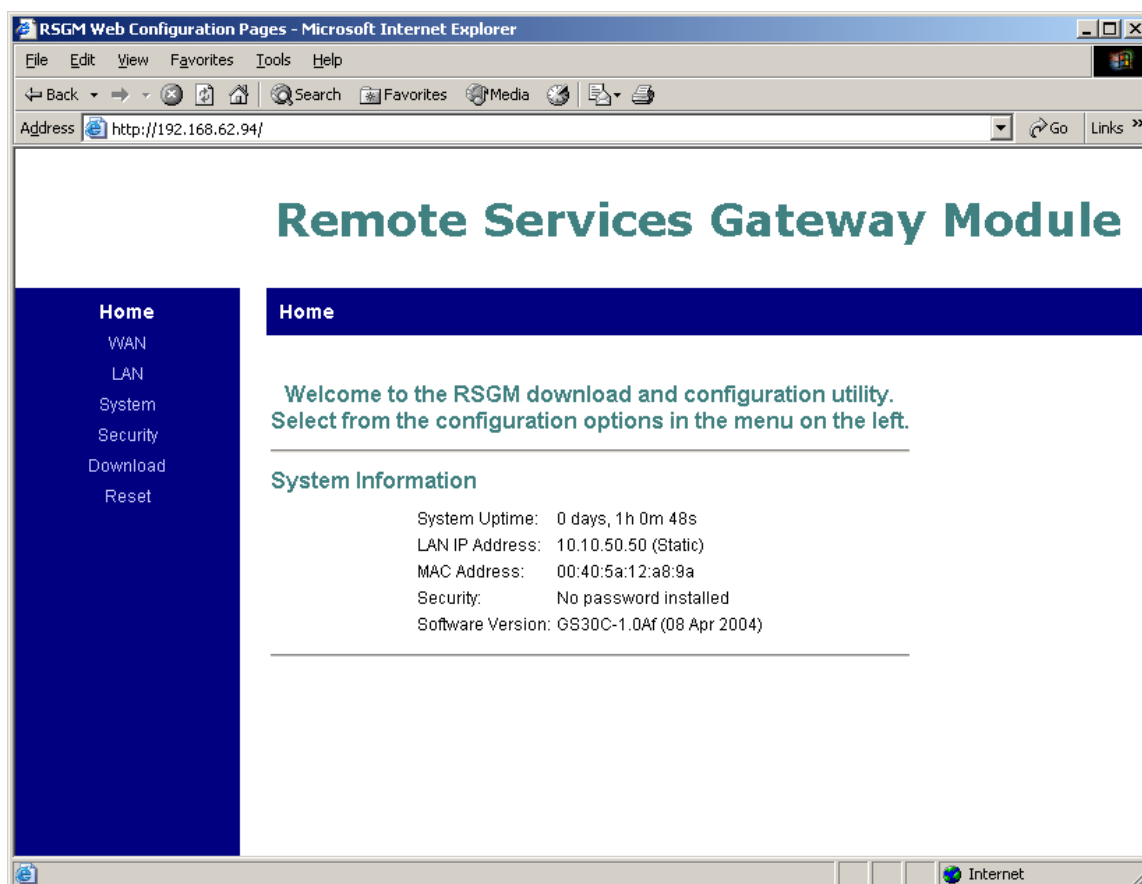


Figure 5.2.1 Web Admin Home

This page is the first shown when accessing LDK-RSG's Web Admin with its IP address. It shows general information such as IP address, MAC address, and the S/W version, etc.

5.2.2 WAN Configuration

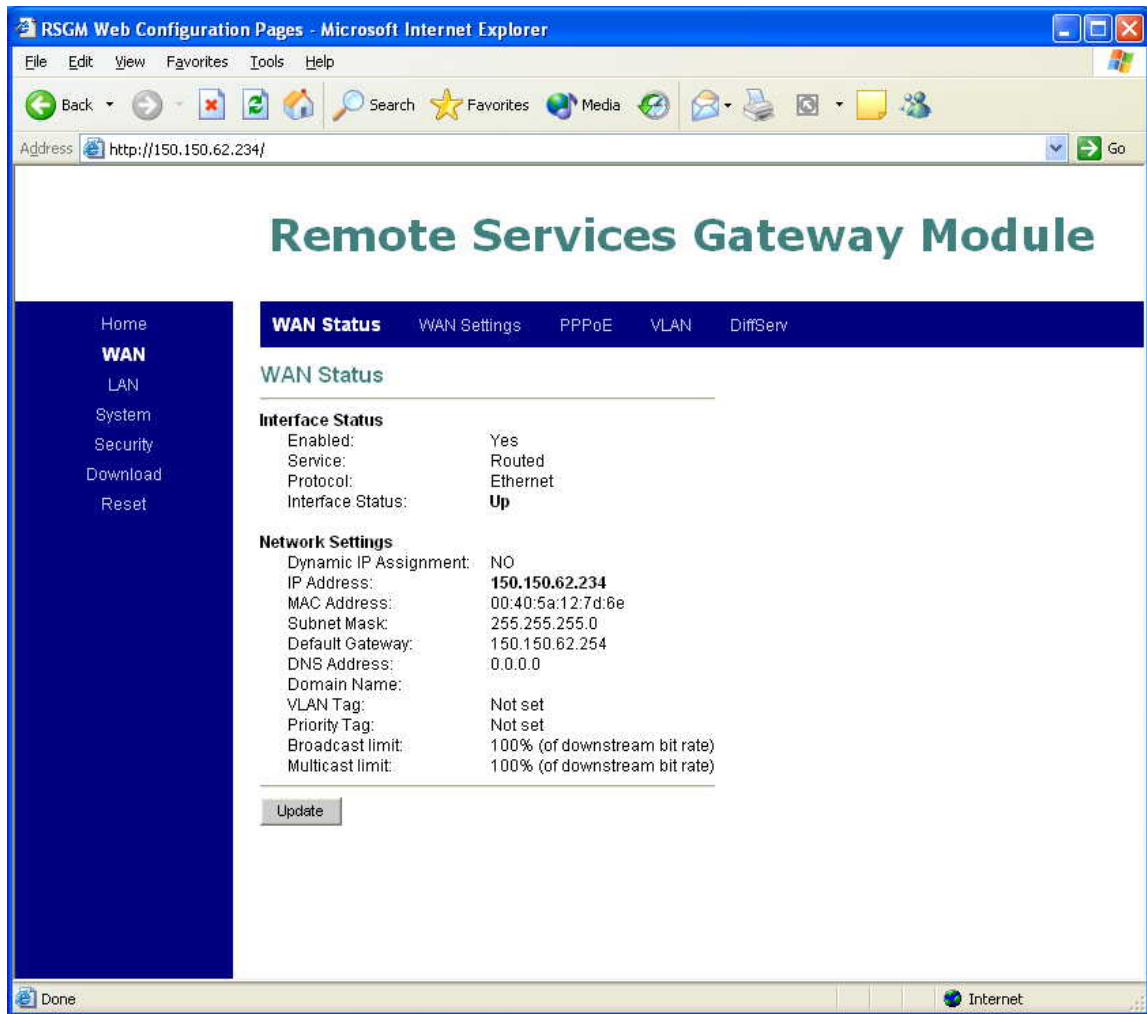


Figure 5.2.2 WAN Status

When "WAN" on the left menu or "WAN Status" on the top menu is clicked, the WAN Status page will display. This page shows the WAN port network parameters and status.

RSGM Web Configuration Pages - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://150.150.62.234/ Go

Remote Services Gateway Module

Home
WAN
LAN
System
Security
Download
Reset

WAN Status **WAN Settings** PPPoE VLAN DiffServ

WAN Configuration

☐ Obtain WAN configuration dynamically
☒ Specify fixed WAN configuration

IP Address: 150.150.62.234
IP Netmask: 255.255.255.0
IP Gateway: 150.150.62.254
IP DNS Server:
Host Name:
Domain Name:

Multicast Limits
Broadcast limit: 100 % (of Ethernet connection bitrate)
Multicast limit: 100 % (of Ethernet connection bitrate)

Save WAN Settings

Figure 5.2.3 WAN Setting

This page shows up by clicking “WAN Settings” on the top menu.

If fixed IP address is to be used, click “Specify fixed WAN configuration” radio button, and then enter the IP Address, IP Netmask and IP Gateway information. Other information is optional and need not be entered if unavailable.

If dynamic address assignment is to be used, just click “Obtain WAN configuration dynamically” radio button. Other information need not be entered in this case. This mode can be utilized when DHCP server exists in the same network segment where LDK-RSG is placed. Also, if connected to xDSL/Cable modem and a fixed address is not assigned, this mode should be selected.

Figure 5.2.4 shows the WAN PPPoE Configuration page in the RSGM Web Configuration Pages. The page is displayed in Microsoft Internet Explorer. The left sidebar contains a navigation menu with links: Home, WAN (selected), LAN, System, Security, Download, and Reset. The top navigation bar includes links: WAN Status, WAN Settings, PPPoE (selected), VLAN, and DiffServ. The main content area is titled "WAN PPPoE Configuration". It contains the following fields:

- Enable PPPoE:** A dropdown menu set to "No".
- Authentication:** Fields for Username and Password.
- Settings:** Fields for Service Name and AC Name.

A "Save PPPoE Settings" button is located at the bottom of the configuration area.

Figure 5.2.4 WAN PPPoE Configuration

This page is for used configuring PPPoE parameters that are needed when xDSL/Cable modem is used and also entering "User name" and "Password" is required.

If xDSL/Cable service is not used, "Enable PPPoE" combo box should be set to "No". Also, even though xDSL/Cable service is used, if it is not required to enter user name and password, this combo box should be set to "No" in general.

If xDSL/Cable modem is used and it is required to enter user name and password, set "Enable PPPoE" combo box to "Yes", and then enter "User name" and "Password". "Service Name" and "AC Name" (Account Name) is optional, and enter values into those fields only if those values are provided by the ISP and required for proper modem operation.

When PPPoE is used and the addresses are to be dynamically assigned by ISP, "Obtain WAN configurations dynamically" should be selected in "WAN Settings" page.

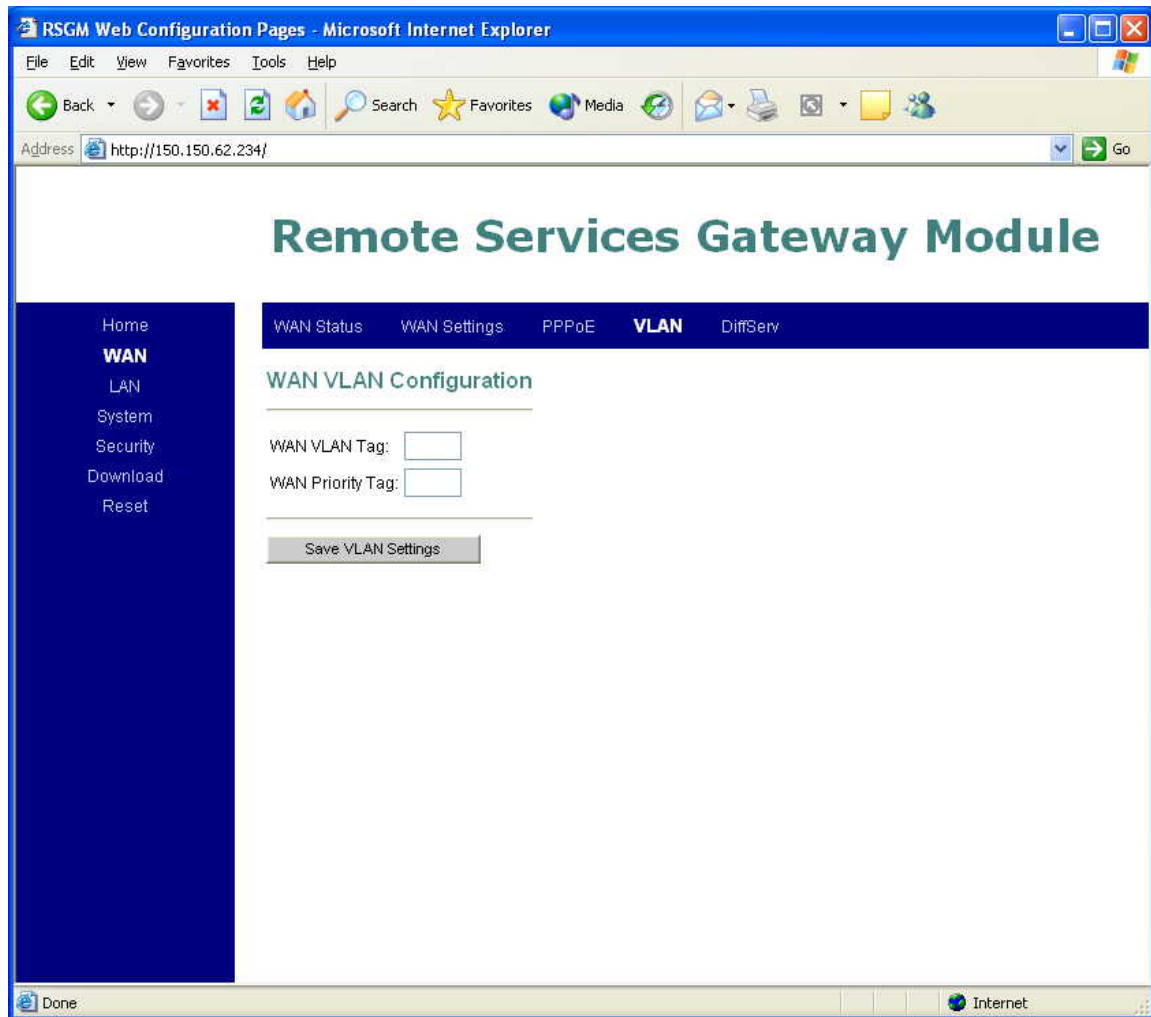
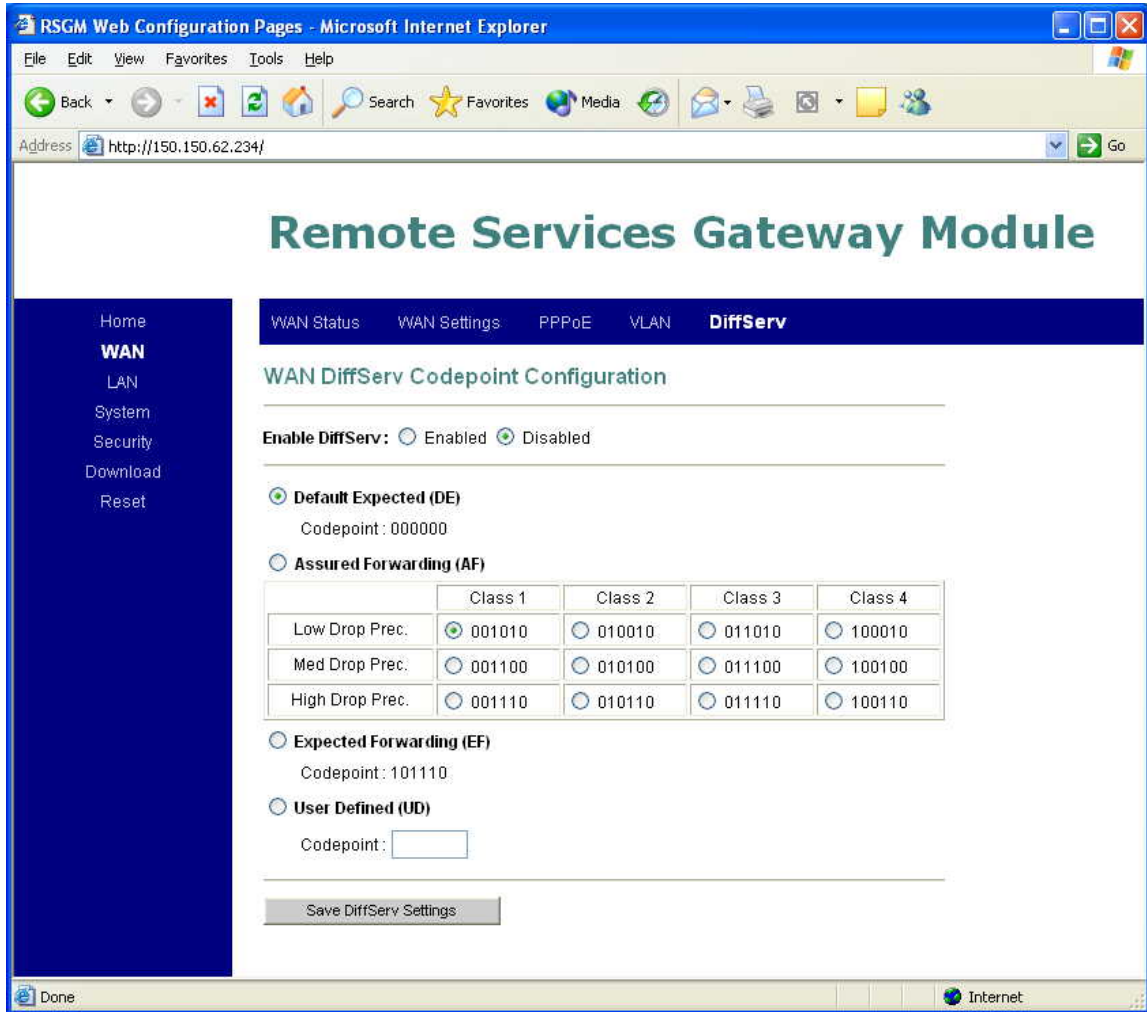


Figure 5.2.5 VLAN/Priority Configuration

VLAN packets are not compatible with normal Ethernet packets, and so these settings should be configured only if LDK-RSG's local network is using VLAN/Priority. If these are set by mistake, they can be recovered only by using Serial Configuration.



Some ISPs that support DiffServ (Differentiated Services) may require end-devices to preset the DiffServ Code Point (DSCP) to give priority to the packets from specific devices. In this case, the value can be assigned on this page. When setting the value, click “Enabled” radio button on “Enable DiffServ” item, then select or enter the assigned value.

5.2.3 LAN Configuration

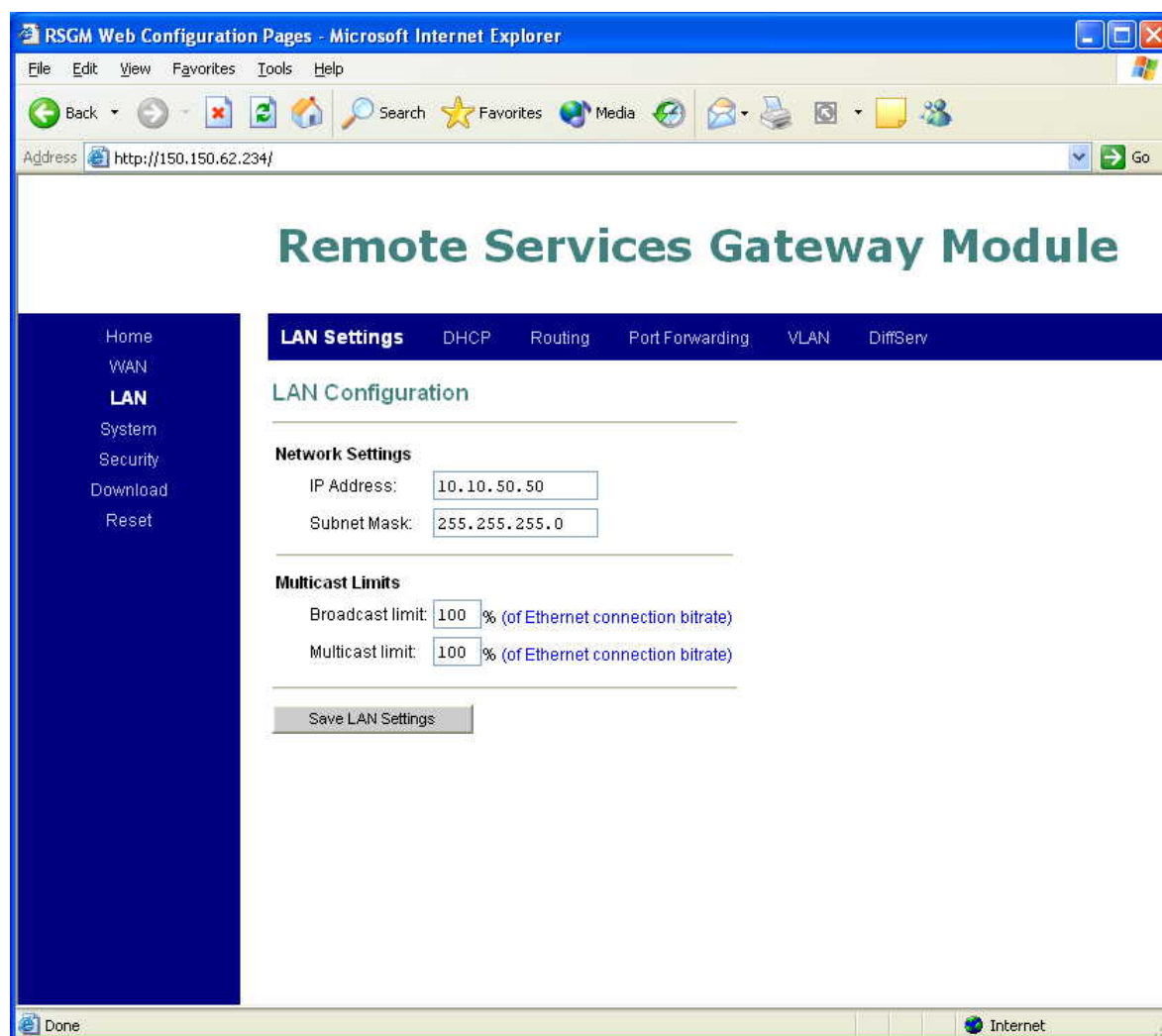


Figure 5.2.7 LAN Configuration

When “LAN” on the left menu or “LAN Settings” on the top menu is clicked, LAN Settings page will display. This page shows LAN side network parameters. The IP address and subnet mask of LAN side interface changed on this page by entering new values and clicking “Save LAN Settings” button.

The screenshot shows a web browser window titled "RSGM Web Configuration Pages - Microsoft Internet Explorer". The address bar shows "http://150.150.62.234/". The main heading is "Remote Services Gateway Module". A left sidebar contains links: Home, WAN, LAN (selected), System, Security, Download, and Reset. The top navigation bar includes: LAN Settings, DHCP (selected), Routing, Port Forwarding, VLAN, and DiffServ. The page title is "DHCP Server Configuration".

Server Settings

☒ Enabled ☐ Disabled

Client IP Address Range: 10.10.50. 60 - 90

Client Network Information

Domain Name:

DNS Server 1: 2:

Static Address Assignments

Identify Using	Host Identifier	Internal Address	
Hostname	<input type="text"/>	10.10.50.	<input type="text"/> <input type="button" value="Add"/>

Figure 5.2.8 DHCP Server Configuration

By using this page, DHCP can be enabled or disabled by clicking either "Enabled" or "Disabled" radio button on "Server Settings" item, and client IP address range can also be changed. In addition, the DNS server for the local client can be configured, and it is also possible to assign specific IP addresses statically to designated clients.

Detailed description of configuration parameters will be shown in the last section of this chapter.

5.2.4 System Configuration

The main purpose of System Configuration is to set the IP address of IP LDK system (e.g. MPB) that controls all the activities of LDK-RSG. In order for IP LDK to register with the host IP LDK system properly, the IP address of the IP LDK system should be set correctly. The IP LDK system administrator should have the IP LDK host system IP address.

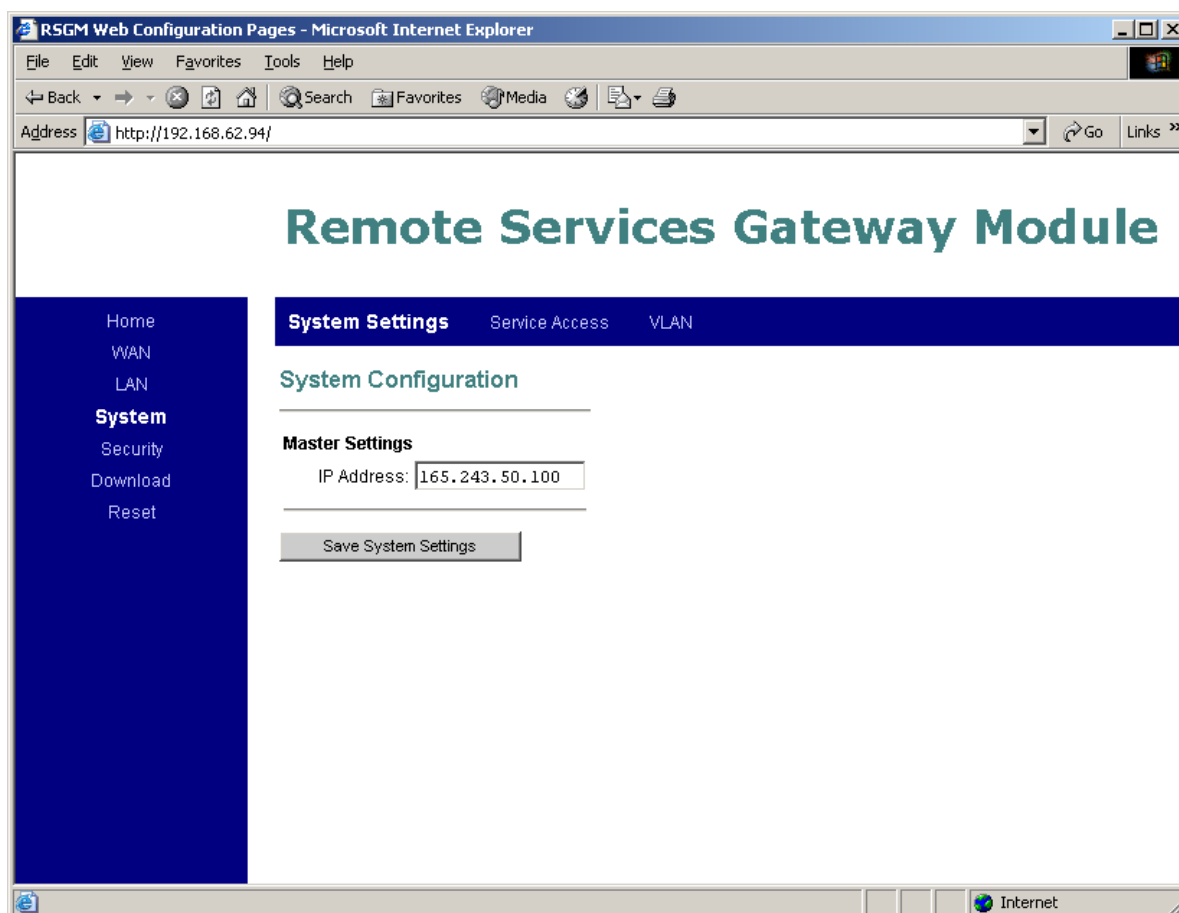


Figure 5.2.9 System Configuration

Detailed description of the configuration parameters will be shown in the last section of this chapter.

5.3 Serial Configuration

Serial Configuration is a simple way to configure LDK-RSG's network parameters using Terminal Emulator software (e.g. Hyper Terminal) via TIA/EIA232 serial connection. It provides access to most of the Web Configuration functions, and is suitable for first-time installation because it does not need network protocols and services to communicate.

The serial communication settings for terminal emulators are as follows;

Bits per Second (bps) : 38400
 Data Bit : 8
 Parity : None
 Stop Bit : 1
 Flow Control : None

Because Serial Configuration is conceptually the same thing as Web Configuration, this section will concentrate on how to use Serial Configuration to change network parameters. Please refer to the previous section, Web Configuration, before you proceed.

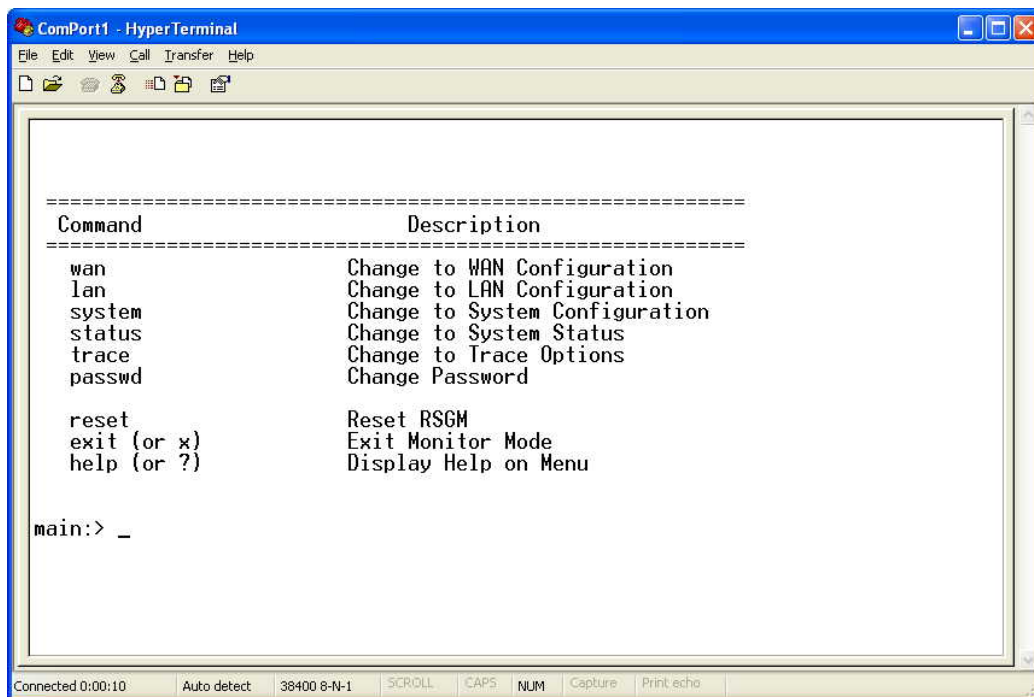


Figure 5.3.1 Initial Serial Configuration Screen

After connecting the PC and LDK-RSG with TIA/EIA-232 serial cable, launch the terminal emulator (e.g. Hyper Terminal), and then press "Enter" key, you will see the menu above.

The Serial Configuration has a directory structure. To enter the WAN Configuration sub-directory, type “wan” and then press “Enter” key, the WAN Configuration menu as in.

Figure 5.3.2 will be displayed. Here there are sub-directories and/or operation commands. To return to higher level directory, type “..” and then press “Enter” key.

```

ComPort1 - HyperTerminal
File Edit View Call Transfer Help

lan          Change to LAN Configuration
system      Change to System Configuration
status      Change to System Status
trace       Change to Trace Options
passwd      Change Password

reset       Reset RSGM
exit (or x) Exit Monitor Mode
help (or ?) Display Help on Menu

main:> wan

=====
Command          Description
=====
/                Change to Root Catalog
..              Change to Parent Catalog
wanset          Change to WAN Settings Catalog
pppoe           Change to PPPoE Catalog
wanvlan         Change to VLAN Catalog

main:/wan>

```

Connected 0:01:50 Auto detect 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

Figure 5.3.2 Entering WAN Configuration

The “wan” directory has three sub-directories. “wanset” sub-directory, which contains address settings related operation commands, “pppoe” sub-directory, which contains PPPoE related settings that may be needed when using xDSL/Cable modem and “wanvaln” sub-directory, which contains WAN side VLAN related operation commands.

```

ComPort1 - HyperTerminal
File Edit View Call Transfer Help

main:/wan> wanset

=====
Command                Description                Mode
=====
/                        Change to Root Catalog
..                       Change to Parent Catalog
mode                    Toggle Address Config Mode : FIXED
get all                 Read All Parameters
get [arg]               Read [arg] Parameter
                        {ip|subnet|gateway|dns|host|domain|
                        mac|blimit|mlimit}
set ip [ipaddr]         Write (Fixed Mode) IP Address
set subnet [ipaddr]     Write (Fixed Mode) Subnet Mask
set gateway [ipaddr]    Write (Fixed Mode) Gateway Address
set dns [ipaddr]        Write (Fixed Mode) DNS Address (..|del)
set host [string]       Write (Fixed Mode) Host Name (..|del)
set domain [domain]     Write (Fixed Mode) Doamin Name (..|del)
set blimit [digit]      Write Broadcast Limit(%) (1-100)
set mlimit [digit]      Write Multicast Limit(%) (1-100)

main:/wan/wanset>

```

Connected 0:02:58 Auto detect 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

Figure 5.3.3 WAN Settings Menu

By typing “wanset” in “wan” sub-directory, you will see the menu shown in Figure 5.3.3. Note, the “mode” command on third line works as a toggle; each time “mode” is typed, the right side Mode string will be toggled between “FIXED” and “DYNAMIC”.

```

ComPort1 - HyperTerminal
File Edit View Call Transfer Help

=====
Command                Description                Mode
=====
/                        Change to Root Catalog
..                       Change to Parent Catalog
mode                    Toggle Address Config Mode : FIXED
get all                 Read All Parameters
get [arg]               Read [arg] Parameter
                        {ip|subnet|gateway|dns|host|domain|
                        mac|blimit|mlimit}
set ip [ipaddr]         Write (Fixed Mode) IP Address
set subnet [ipaddr]     Write (Fixed Mode) Subnet Mask
set gateway [ipaddr]    Write (Fixed Mode) Gateway Address
set dns [ipaddr]        Write (Fixed Mode) DNS Address (..|del)
set host [string]       Write (Fixed Mode) Host Name (..|del)
set domain [domain]     Write (Fixed Mode) Doamin Name (..|del)
set blimit [digit]      Write Broadcast Limit(%) (1-100)
set mlimit [digit]      Write Multicast Limit(%) (1-100)

main:/wan/wanset> mode

Address Config Mode Changed to DYNAMIC

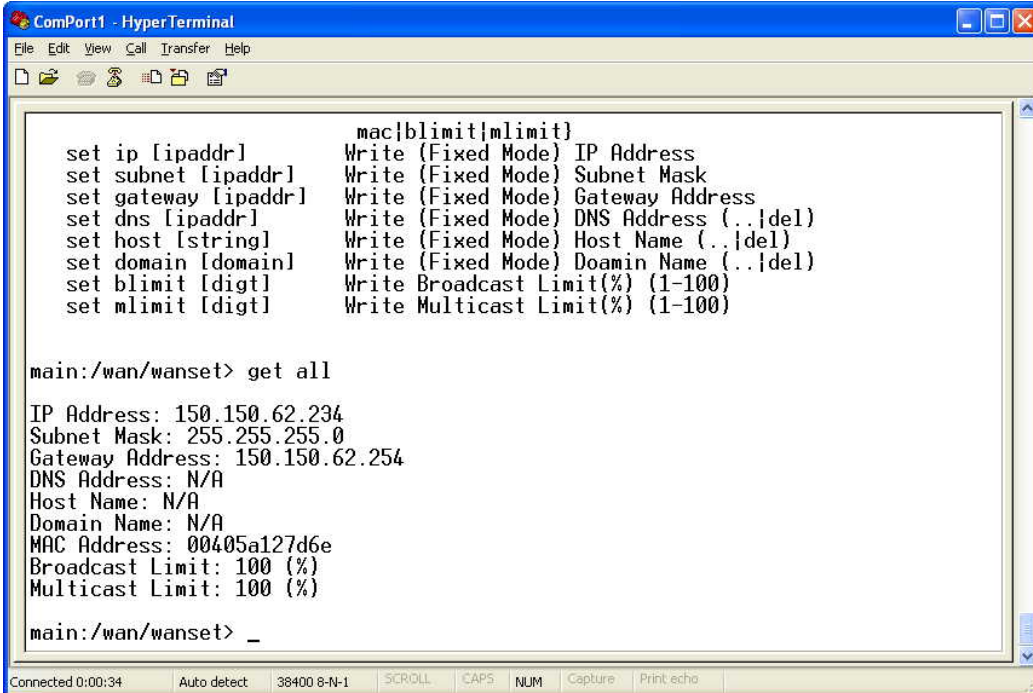
main:/wan/wanset> _

```

Connected 0:05:22 Auto detect 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

Figure 5.3.4 Setting WAN DHCP Mode

If the RSG “WAN” port will operate in DHCP mode, setting the Mode to “DYNAMIC” will be the only required setting in the “wanset” sub-directory. However, to use fixed addressing, set the Mode to “FIXED” and the addressing data must be configured manually as described in the following paragraphs.



```

ComPort1 - HyperTerminal
File Edit View Call Transfer Help

set ip [ipaddr]      Write (Fixed Mode) IP Address
set subnet [ipaddr]  Write (Fixed Mode) Subnet Mask
set gateway [ipaddr] Write (Fixed Mode) Gateway Address
set dns [ipaddr]     Write (Fixed Mode) DNS Address (..)del
set host [string]    Write (Fixed Mode) Host Name (..)del
set domain [domain]  Write (Fixed Mode) Doamin Name (..)del
set blimit [digit]   Write Broadcast Limit(%) (1-100)
set mlimit [digit]   Write Multicast Limit(%) (1-100)

main:/wan/wanset> get all

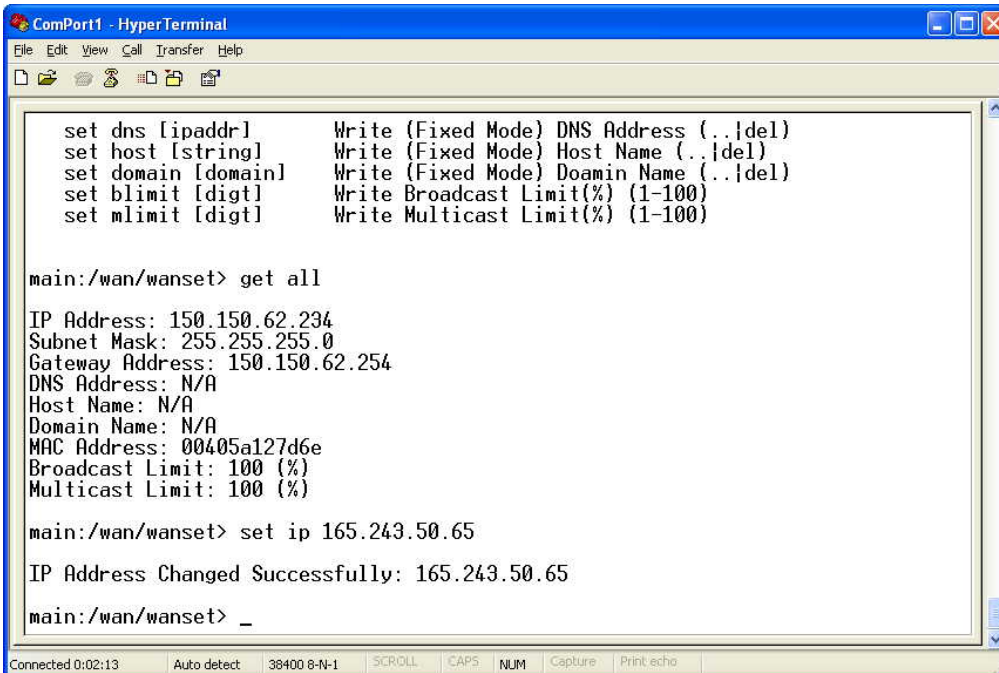
IP Address: 150.150.62.234
Subnet Mask: 255.255.255.0
Gateway Address: 150.150.62.254
DNS Address: N/A
Host Name: N/A
Domain Name: N/A
MAC Address: 00405a127d6e
Broadcast Limit: 100 (%)
Multicast Limit: 100 (%)

main:/wan/wanset> _

```

Figure 5.3.5 Displaying WAN Address Information

At first, by typing “get all” and pressing “Enter” key, you may check current address settings. IP Address, Subnet Mask, and Gateway Address are mandatory address information that should be configured.



```

ComPort1 - HyperTerminal
File Edit View Call Transfer Help

set dns [ipaddr]      Write (Fixed Mode) DNS Address (..)del
set host [string]    Write (Fixed Mode) Host Name (..)del
set domain [domain]  Write (Fixed Mode) Doamin Name (..)del
set blimit [digit]   Write Broadcast Limit(%) (1-100)
set mlimit [digit]   Write Multicast Limit(%) (1-100)

main:/wan/wanset> get all

IP Address: 150.150.62.234
Subnet Mask: 255.255.255.0
Gateway Address: 150.150.62.254
DNS Address: N/A
Host Name: N/A
Domain Name: N/A
MAC Address: 00405a127d6e
Broadcast Limit: 100 (%)
Multicast Limit: 100 (%)

main:/wan/wanset> set ip 165.243.50.65

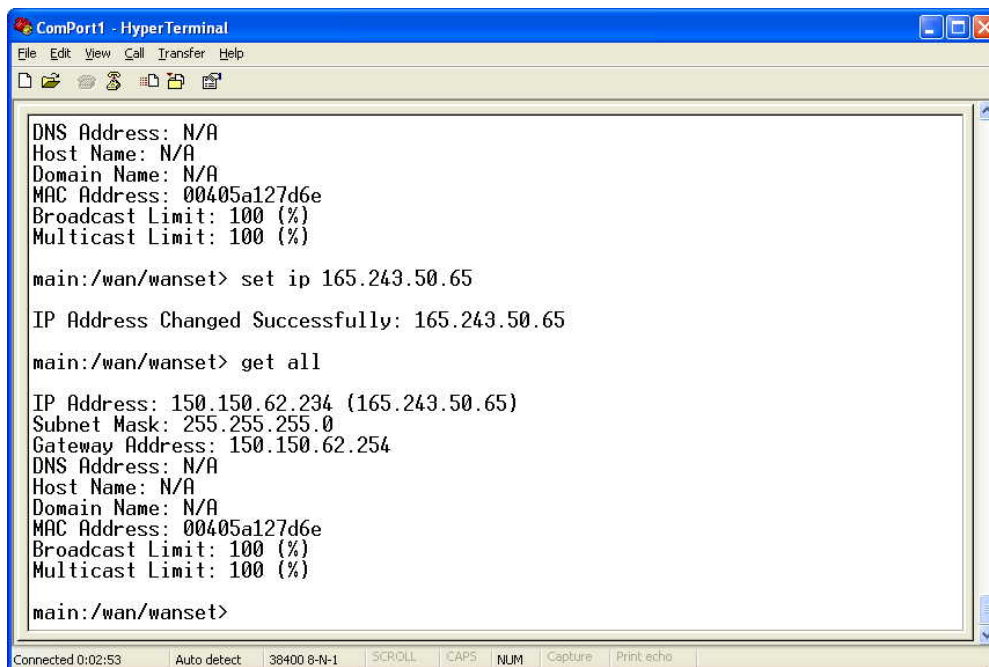
IP Address Changed Successfully: 165.243.50.65

main:/wan/wanset> _

```

Figure 5.3.6 Setting WAN IP Address

As an example, by typing “set ip 165.243.50.65”, you can change the LDK-RSG’s “WAN” port IP address. Other address information can be changed in a similar manner. For example, in order to change the gateway address to “165.243.50.254”, you type “set gateway 165.243.50.254” and press “Enter” key.



```

ComPort1 - HyperTerminal
File Edit View Call Transfer Help

DNS Address: N/A
Host Name: N/A
Domain Name: N/A
MAC Address: 00405a127d6e
Broadcast Limit: 100 (%)
Multicast Limit: 100 (%)

main:/wan/wanset> set ip 165.243.50.65

IP Address Changed Successfully: 165.243.50.65

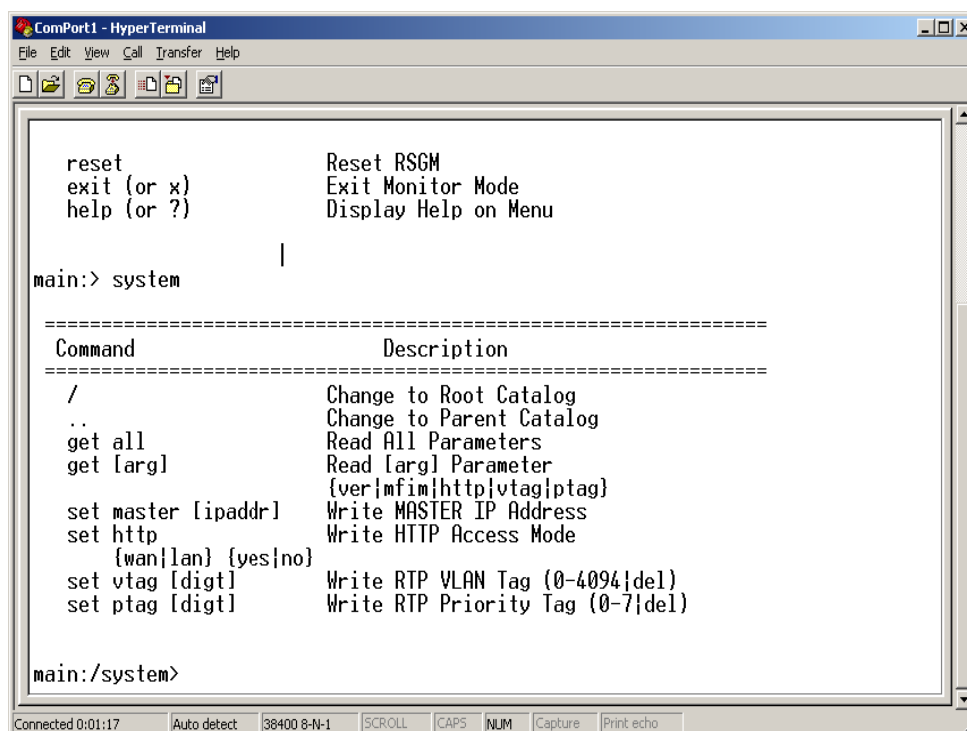
main:/wan/wanset> get all

IP Address: 150.150.62.234 (165.243.50.65)
Subnet Mask: 255.255.255.0
Gateway Address: 150.150.62.254
DNS Address: N/A
Host Name: N/A
Domain Name: N/A
MAC Address: 00405a127d6e
Broadcast Limit: 100 (%)
Multicast Limit: 100 (%)

main:/wan/wanset>
  
```

Figure 5.3.7 Displaying WAN Address Information

If you type “get all” again, you will see “165.243.50.65” inside the braces. This means that the “WAN” port address will be changed to this address after restarting LDK-RSG.



```

ComPort1 - HyperTerminal
File Edit View Call Transfer Help

reset          Reset RSGM
exit (or x)    Exit Monitor Mode
help (or ?)    Display Help on Menu

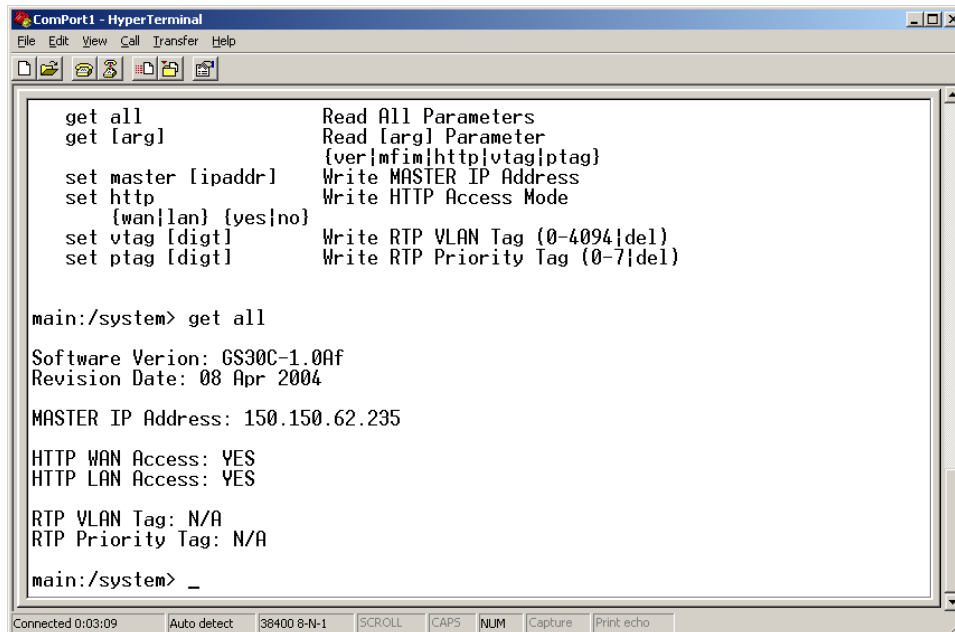
main:> system

=====
Command          Description
=====
/                Change to Root Catalog
..              Change to Parent Catalog
get all          Read All Parameters
get [arg]        Read [arg] Parameter
                 {ver|mfim|http|vtag|ptag}
set master [ipaddr] Write MASTER IP Address
set http         Write HTTP Access Mode
                 {wan|lan} {yes|no}
set vtag [digt]  Write RTP VLAN Tag (0-4094|del)
set ptag [digt]  Write RTP Priority Tag (0-7|del)

main:/system>
  
```

Figure 5.3.8 Entering System Configuration

To return to the root directory, type, “/” and then press “Enter” key. Then, by typing “system” in root directory, you can enter the System Configuration sub-directory.



```
ComPort1 - HyperTerminal
File Edit View Call Transfer Help

get all          Read All Parameters
get [arg]        Read [arg] Parameter
                  {ver|mfim|http|vtag|ptag}
set master [ipaddr] Write MASTER IP Address
set http         Write HTTP Access Mode
                  {wan|lan} {yes|no}
set vtag [digit] Write RTP VLAN Tag (0-4094|del)
set ptag [digit] Write RTP Priority Tag (0-7|del)

main:/system> get all

Software Verion: GS30C-1.0Af
Revision Date: 08 Apr 2004

MASTER IP Address: 150.150.62.235

HTTP WAN Access: YES
HTTP LAN Access: YES

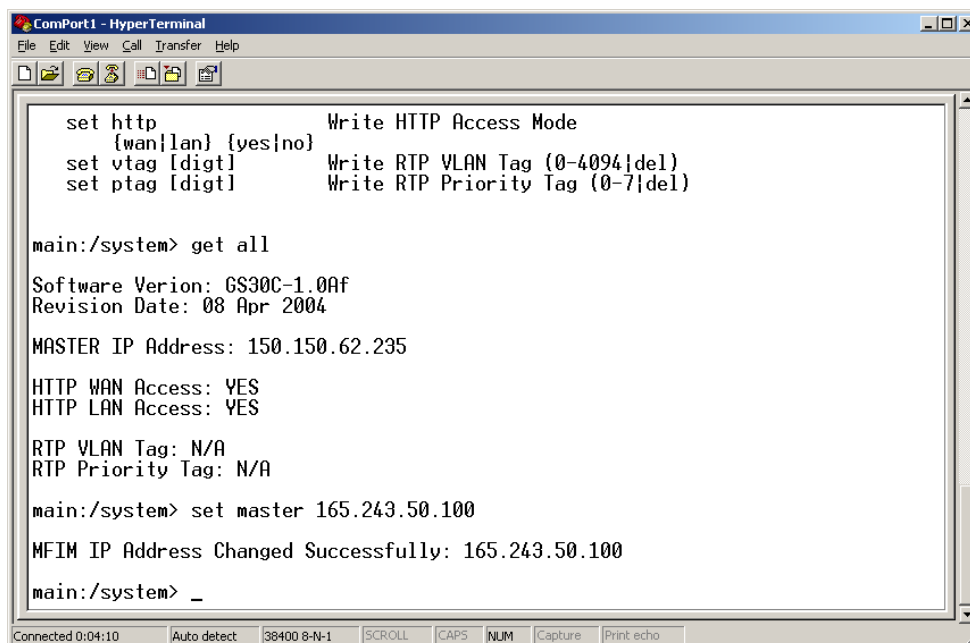
RTP VLAN Tag: N/A
RTP Priority Tag: N/A

main:/system> _
```

Connected 0:03:09 Auto detect 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

Figure 5.3.9 Displaying System Information

Again, you may check current System Configuration settings by typing “get all” in “system” directory. Here, you may also check LDK-RSG S/W version and revision date information.



```
ComPort1 - HyperTerminal
File Edit View Call Transfer Help

set http         Write HTTP Access Mode
                  {wan|lan} {yes|no}
set vtag [digit] Write RTP VLAN Tag (0-4094|del)
set ptag [digit] Write RTP Priority Tag (0-7|del)

main:/system> get all

Software Verion: GS30C-1.0Af
Revision Date: 08 Apr 2004

MASTER IP Address: 150.150.62.235

HTTP WAN Access: YES
HTTP LAN Access: YES

RTP VLAN Tag: N/A
RTP Priority Tag: N/A

main:/system> set master 165.243.50.100

MFIM IP Address Changed Successfully: 165.243.50.100

main:/system> _
```

Connected 0:04:10 Auto detect 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

Figure 5.3.10 Setting System IP Address

By typing “set master xxx.xxx.xx.xxx”, you can change the IP address of IP LDK system. And after restarting LDK-RSG, the new IP address entered will be used.

Detailed description of configuration parameters will be shown in the last section of this chapter.

5.4 Typical Network Configuration Examples

Even though there are many parameters that can be configured, only a few parameters need to be configured for the first-time configuration. There can be some variations in configuring LDK-RSG, but the main procedure is simple.

- 1) Change the PC's network settings to Dynamic Address Assignment mode. If PC is not to be connected to LDK-RSG's Data (PC) port, skip this step.
- 2) By Web or Serial Configuration, configure WAN side addresses in WAN Configuration.
- 3) Configure IP address of IP LDK system in System Configuration.

Remember the LDK-RSG's "LAN" port default IP address is 10.10.50.50, so you may access LDK-RSG's Web Admin pages from local PC with this IP address.

5.4.1 Normal LAN Environment with Fixed IP Address

- 1) WAN Settings
Set Address Configuration mode to "FIXED"
Enter fixed address information (IP address, Subnet Mask, Gateway address)
- 2) PPPoE Settings
Set PPPoE mode to Inactive (No)
- 3) System Settings
Set IP address of IP LDK system (e.g. voib)

5.4.2 Normal LAN Environment with DHCP Server

- 1) WAN Setting
Set Address Configuration mode to "DYNAMIC"
- 2) PPPoE Settings
Set PPPoE mode to Inactive (No)
- 3) System Settings
Set IP address of IP LDK system (e.g. voib)

5.4.3 xDSL/Cable Modem with User Name and Password Required

- 1) WAN Settings
If fixed (static) IP address was assigned by ISP, set Address Configuration mode to "FIXED", otherwise set this mode to "DYNAMIC".
- 2) PPPoE Settings
Set PPPoE mode to Active (Yes)
Enter User name and Password (Mandatory). Enter Service name and AC name if needed/available (Optional).
- 3) System Settings
Set IP address of IP LDK system (e.g. voib)

5.4.4 xDSL/Cable Modem without User Name and Password

- 1) WAN Settings
If fixed (static) IP address was assigned by ISP, set Address Configuration mode to "FIXED", otherwise set this mode to "DYNAMIC".
- 2) PPPoE Settings
Set PPPoE mode to Inactive (No)
- 3) System Settings
Set IP address of IP LDK system (e.g. voib)

5.5 Detailed Description about Network Configuration

5.5.1 WAN Configuration

The WAN connection is used for the communication with the IP LDK system as well as other network devices beyond the local network.

WAN Settings

These settings allow configuration of the Ethernet WAN interface. First, select whether you wish the WAN interface to be configured for dynamic (via a DHCP server on the network if Ethernet, or via PPP if using PPPoE), or static IP addressing. If you wish to statically assign the WAN interface settings, enter the IP address, subnet mask, default gateway IP address and DNS server IP address. It is also recommended that the network domain name be provided as well, to ensure correct DNS operation.

PPPoE Settings

First, select whether PPPoE is enabled or disabled. If enabled, enter the username and password required for the login (authentication) process. If the PPPoE server (service provider) requires any special Service Name or AC (Access Concentrator) Name to be set, you can specify the tags here.

VLAN Settings

VLAN settings allow configuration of VLAN tag and/or Priority tag for all outgoing packets.

5.5.2 LAN Configuration

The LAN connections are used for communicating with a PC connected to the LAN ports of LDK-RSG.

LAN Settings

Assign an IP address to the LAN Ethernet port. This IP address is also the default router address for the devices on the private (local) LAN. The default LAN interface IP address is set to 10.10.50.50. Enter the subnet mask for the private LAN. If you wish to set the broadcast and multicast limits, enter these values as percentages of the LAN interface Ethernet bit rate. Leaving these values blank will imply values of 100%.

DHCP Settings

DHCP settings allow configuration of the private LAN DHCP server. Specify whether the device's internal DHCP server feature is enabled or disabled. Also indicate the IP address range to use for DHCP assignments to the LAN. Specify the domain name (optional) that is provided to LAN clients via DHCP. Two optional static DNS server IP addresses can be entered that will be provided to LAN clients via DHCP. These are in addition to the DNS servers automatically provided by WAN connections.

Via the Web configuration, up to eight static DHCP addresses can be configured. User can add or remove static assignment entries, and view the current active DHCP client binding table. The device's internal DHCP client binding table cleared, but be aware that doing this will destroy the DHCP server's knowledge of the LAN clients it has provisioned, and may result in client problems when a client tries to renew its lease.

Port Forwarding Settings

Port Forwarding allows configuration of the device's port forwarding feature. Port forwarding provides WAN access to the internal LAN, by specifying that traffic over certain ports are to be directed at particular LAN hosts. Up to eight ports forwarding entries ("Pinholes") can be configured. To add a port forwarding entry configure the Port Range to be forwarded, the Protocol to be forward (TCP, UDP or both), and destination LAN IP Address to be used. User may also remove specific entries. Note that certain port numbers may be reserved by the CPE for its own internal use. These ports may not be used for port forwarding to the LAN. Ports which may be reserved by the CPE include those used by IP KTS signaling, RTP packets, HTTP, etc. All reserved (unavailable) ports will be displayed on this page.

Routing Settings

Router settings allow configuration of the device's core router functionality. If you wish for the router to dynamically update its routing tables, specify whether RIPv2 dynamic routing information is to be received or transmitted (or both). In addition, up to eight static route entries can be assigned via Web configuration. To add a static route, enter the static route Destination IP address, subnet Mask, gateway IP Address, metric, and interface. Metric is a number from 1 to 15 inclusive. Users may also remove specific entries or view current internal routing table.

VLAN Settings

VLAN settings allow configuration of VLAN tag and/or Priority tag for all outgoing packets.

5.5.3 System Configuration

System configuration contains the items that do not specifically belong to WAN or LAN categories.

System Settings

System settings allow configuration of IP LDK host system IP address (e.g. voib) so that LDK-RSG can register with IP LDK system.

Service Access Settings

Service access allows access to certain system level network services on the device's interfaces to be enabled/disabled. Specifically, HTTP access from devices on the LAN or WAN or both can be allowed or denied.

VLAN Settings

VLAN settings allows configuration of the VLAN settings for RTP packets. Specific VLAN settings for RTP packets are separately applied, which will override the general values set in WAN or LAN settings. If no special RTP VLAN settings are applied, then RTP packets will also use the general VLAN settings entered in WAN or LAN settings.

6. RSG Admin Programming

6.1 VOIB SLOT ASSIGNMENT for RSG (PGM 380)

The VOIB slot and VOIB channel for RSG/IP Phone can be assigned.

Enter the '99' on STA/COL Board in PGM 103/BTN 1 & 2. And reset the system for board configuration.

('99' means virtual slot for RSG/IP Phone)

PROCEDURE

VOIB SLOT FOR RSG/IP
PRESS FLEX_KEY (1-2)

(1) [TRANS/PGM] + 380

05 06
..

(2) For VOIB slot assignment, Press Flex_1.
Dial slot numbers.

RSG/IP CHANNEL ASSIGN
ENTER VOIB SLOT NO:

(3) For VOIB slot assignment, Press Flex_2.
Dial slot numbers.

SLOT 05 RSG/IP CHANNEL
(00-24) : 00

(4) Enter VOIB Channel number for RSG/IP

VOIB SLOT FOR RSG/IP
PRESS FLEX_BTN (1-2)

(5) Press the [HOLD/SAVE] button for saving database permanently.

(6) Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

BTN	ITEM	RANGE	DEFAULT	REMARK
1	VOIB SLOT for RSG/IP Phone		-	VOIB slot assignment for RSG/IP Phone
2	VOIB Channel Number for RSG/IP Phone	00-24	-	VOIB Channel number used for RSG/IP Phone

TABLE 6.1.1 VOIB Slot Assignment for RSG/IP Phone (PGM 380)

6.2 RSG Port Number ASSIGNMENT (PGM 381)

The port number for RSG can be assigned.

PROCEDURE

RSG/IP NO ASSIGN [TRANS/PGM] + 381
F1:RSG F2:IP PHONE

RSG NO To program the number of to be serviced RSG number,
008 (00 ~ 96) press FLEX BTN 1 and dial RSG number.

IP PHONE NO To program the number of to be serviced IP Phone
000 (00 ~ 96) number, press FLEX BTN 2 and dial IP Phone number.
RSG/IP NO ASSIGN Press the [HOLD/SAVE] button for saving database
F1:RSG F2:IP PHONE permanently.

BTN	ITEM	RANGE	DEFAULT	REMARK
F1	RSG NO	00~96 (00-32)	08 (08)	The RSG number to be serviced from system
F2	IP PHONE NO	00~96 (00-64)	00 (00)	The IP Phone number to be serviced from system

TABLE 6.2.1 Port Number Assignment for RSG/ IP Phone

6.3 RSG ATTRIBUTE (PGM 382)

The following is the attributes of RSG.

PROCEDURE

RSG/IP ATTR1 [TRANS/PGM] + 382.
PRESS FLEX KEY (1-7)

TRANSFER MODE To program, press Flex BTN 1-5 for setting each value.
(1:IP/0:MAC): IP After pressing a Flex BTN, the revised value can be set by
entered digit.

CASTING MODE
(1:MULTI/0:UNI): UNI

tone SOURCE
(1:REMOTE/0:LDK): REMOTE

PEER TO PEER
(1:ON/0:OFF): ON

RSG/IP ATTR1 Press the [HOLD/SAVE] button for updating database
PRESS FLEX KEY (1-7) permanently.

BTN	ITEM	RANGE	DEFAULT	REMARK
F1	Transfer Mode	IP or MAC	IP	
F2	Casting Mode	Unicast or Multicast	Unicast	
F3	Tone Generation	LDK or Remote(RSG/IP Phone)	Remote	
F4	Peer to Peer	ON/OFF	ON	If this value is set ON, RSG/IP phone converses each other without accessing VOIB channel when STUN is not enabled.
F5	Codec Type	G.711_ALAW(0)/G.711_ULAW(1)/G.723.1(2)	G.711_ALAW(0)	
F6	First Access RSG CO	ON/OFF	ON	If the field is set, the station on RSG can access a CO line on his RSG by dialing CO Line access code in the 1 st available CO group (ex> 9).
F7	RING w/o CO Ring Assign	ON/OFF	ON	If the field is set, stations on RSG will receive the incoming CO ring even though the CO ring is not assigned.

TABLE 6.3.1 RSG/IP Phone Attributes 1 (PGM 382)

6.4 RSG ATTRIBUTE 1 (PGM 383)

The following is the attributes of RSG.

PROCEDURE

RSG ATTR1
ENTER NO (01-96)

[TRANS/PGM] + 383. Enter the RSG number

01 RSG ATTR1
PRESS FLEX (1-7)

01 SET MAC ADDR
xx-xx-xx-xx-xx-xx

To program MAC address, press Flex BTN 1, enter the MAC address and press the [HOLD/SAVE] button for updating database permanently.

01 IP ADDR DISP
xx.xxx.xxx.xxx

Press Flex BTN 2 to check the IP address. Then IP address will be displayed.

01 PORT VIEW
D(xxxx) S(xxxx) C(xxxx)

Press Flex BTN 3 to check Station and CO number.

BTN	ITEM	RANGE	DEFAULT	REMARK
F1	MAC ID		0.0.0.0.0.0-	[*] : A / [#] : B [CB] : C / [MUTE] : D [DND] : E / [FLASH] : F at LDP-7000 series Nevi Key, [Left] : C / [Right] : D [Up] : E / [Down] : F
F2	IP Address View			
F3	RSG Port View			D(xxxx) S(xxxx) C(xxx)
F4	Port Number View			IP Port number when system communicates with RSG.
F5	NAT IP Address View			
F6	NAT Port Number View			NAT Port number when system communicates with RSG.
F7	STUN Enabled View			None, PAT, NAT, NAT/PAT

TABLE 6.4.1 RSG Attributes (PGM 383)

6.5 RSG ATTRIBUTE 2 (PGM 384)

The following is the attributes of RSG.

PROCEDURE

RSG ATTR2	[TRANS/PGM] + 384. Enter the RSG range
ENTER RANGE(01-96)	

01-01 RSG ATTR2	To program, press Flex BTN 1-10 for setting each value.
PRESS FLEX (1-13)	After pressing a Flex BTN, the revised value can be set by entered digit.

01-01 I-MOH RTP PORT
8186

01-01 E-MOH RTP PORT
8188

01-01 MOH TYPE
(1:MUSIC/0:H-TN):MUSIC

01-01 MUSIC SOURCE
(1:/EXT1/0:INT): INT

01-01 EXT CONTACT 1
....

01-01 EXT CONTACT 2
....

01-01 ALARM ENABLE
(1:ON/0:OFF) OFF

01-01 ALARM CONTACT
(1:CLOSE/0:OPEN): CLOSE

01-01 ALARM MODE
(1:ALARM/0:BELL): ALARM

01-01 ALARM SIGNAL
(1:RPT/0:ONCE): RPT

01-01 CTI PORT
NOT_USED (0-2)

RSG ATTR2	Press the [HOLD/SAVE] button for updating database
ENTER RANGE (01-96)	permanently.

BTN	ITEM	RANGE	DEFAULT	REMARK
F1	RTP Port number of Internal MOH		8186	
F2	RTP Port number of External MOH		8188	
F3	MOH Type	MUSIC/Hold Tone	Hole Tone	
F4	Music Source	EXT1/INT	INT	
F5	External Contact 1	LBC/Door Open	Not Assigned	
F6	External Contact 2	LBC/Door Open	Not Assigned	
F7	Alarm Enable	ON/OFF	OFF	
F8	Alarm Contact Type	Close/Open	Close	
F9	Alarm/Door Bell Mode	Alarm/Door Bell	Alarm	
F10	Alarm Signal	RPT/ONCE	RPT	
F11	CTI Port	0-2	0	CTI port to be assigned in RSG (0 – Not Used 1 – DKTU in RSG 2 – SLT in RSG)
F12	RSG NATION CODE		System Nation	
F13	IPSEC	ON/OFF	OFF	If this value is set to ON, the IP security is supported.

TABLE 6.5.1 RSG Attributes (PGM 384)

6.6 RSG ALARM ASSIGNMENT (PGM 385)

The station can receive the alarm ring when the alarm on RSG is detected.

PROCEDURE

RSG ALARM ATT
ENTER STA RANGE

[TRANS/PGM] + 385. Enter the station range

SELECT RSG ALARM ZONE
F1~F4 (4*24)

Press FLEX btn to select RSG Alarm Zone.
Then LEDs of BTN show currently assigned RSG alarm zone of the first station in range. To assign alarm, press the BTN for toggle setting.

100-100 (RSG 01-24)
PRESS FLEX KEY (01-24)

RSG ALARM ATT
ENTER STA RANGE

Press the [HOLD/SAVE] button for updating database permanently.

BTN	RANGE	DEFAULT	REMARK
F1	RSG 01~24	None	
F2	RSG 25~48	None	
F3	RSG 49~72	None	
F4	RSG 73~96	None	

TABLE 6.6.1 RSG Attributes (PGM 385)

6.7 LOGICAL SLOT ASSIGNMENT (PGM 103)

Logical slot assignment can be performed automatically and manually. If the DIP switch of the manual board detection is ON, system will detect the logical slot assign in sequence as increase order automatically. If the DIP switch is OFF, the logical slot assignment should be entered at each board type. After manual logical slot assignment, user must reset the system manually. In case of WTIB it is detected as one board by logical slot assignment. So you must assign just one slot number regardless of the number of installed WTIBs.

In case of the VOIB for RSG/IP, the virtual slot number (99) should be entered to STA or COL logical slot.

PROCEDURE

LOGICAL SLOT ASSIGN
COL STA VMIB

(1) [TRANS/PGM] + 103

02 03 99
..

(2) Press BTN regarding the slot type and dial slot numbers with increasing order for logical slot numbers.

02 03 05 99 07
..

(3) Press the [HOLD/SAVE] button for saving database permanently.

(4) Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

BTN	ITEM	DEFAULT	Range	REMARK
1	COL Board	-	1 – No. of Slot, 99 (RSG/IP Phone Slot)	DIP Switch OFF: Manual slot assignment DIP Switch ON: Automatic slot assignment
2	STA Board	-	1 – No. of Slot, 99 (RSG/IP Phone Slot)	DIP Switch OFF: Manual slot assignment DIP Switch ON: Automatic slot assignment
3	VMIB	-		Should be programmed manually

TABLE 6.7.1 Button Configuration for Slot Assignment (PGM 103)

6.8 EXPANDED FLEXIBLE NUMBERING PLAN (PGM 109)

To serve the expanded flexible numbering plan from PGM106 & 107, PGM 109 is added.

PROCEDURE

FLEX NUMBERING PLAN C
PRESS FLEX KEY (1-6)

[TRANS/PGM] + 109. You can program the 1 Flex. Numbers. Table 2.9.1 illustrates the programmable list of the 1 flexible Numbering plan used by PGM 109.

MCID REQUEST
ENTER NEW #(*0)

To change a numbering plan, press the related flexible button. If you press other Flex. BTN, you can assign other numbering plan.

MCID REQUEST
ENTER NEW #(*0)

If you want to save all changed flexible numbers to system memory, press the [HOLD/SAVE] button. There are no errors in the Flexible Numbers, then confirmation tone will be heard.

If some errors are detected, then error tone will be heard without updating system memory.

BTN	ITEM	DEFAULT	REMARK
F1	MCID REQUEST	*0	ISDN supplementary service -Malicious Caller ID request.
F2	RSG Door Open 1	*1	This can be activated from RSG stations on his RSG.
F3	RSG Door Open 2	*2	

TABLE 6.8.1 Expanded Flexible Numbering Plan (PGM 109)

6.9 RSG DKT RX GAIN CONTROL (PGM 390)

The RX gain of DKT on RSG can be adjusted.

PROCEDURE

RSG_DKT RX GAIN PRESS FLEX KEY (01-16)	[TRANS/PGM] + 390.
RSG_DKT RX FROM DKTU (00-63) : 25	Press one of Flex. BTNs (1~16) to select a device type to change the gain. (Ex. Press Flex. BTN 1.) The LCD shows RX gain of the device from other devices.
RSG_DKT RX FROM DKTU (00-63) : 45	To change the gain dial new gain (00-63) and LCD shows the changed value. (Ex. dial 45.)
RSG_DKT RX GAIN PRESS FLEX KEY (01-16)	Press the [HOLD/SAVE] button for updating database permanently.
RSG_DKT RX GAIN PRESS FLEX KEY (01-16)	Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

FLEX	ITEM	RANGE	DEFAULT	REMARK
1	RSG_DKT RX from DKTU	00 – 63		
2	RSG_DKT RX from SLT	00 – 63		
3	RSG_DKT RX from CTR_SLT	00 – 63		
4	RSG_DKT RX from WKT	00 – 63		
5	RSG_DKT RX from ACO	00 – 63		
6	RSG_DKT RX from CTR_ACO	00 – 63		
7	RSG_DKT RX from DCO	00 – 63		
8	RSG_DKT RX from VMIB	00 – 63		
9	RSG_DKT RX from DTMF	00 – 63		
10	RSG_DKT RX from TONE	00 – 63		
11	RSG_DKT RX from MUSIC 1	00 – 63		
12	RSG_DKT RX from MUSIC 2	00 – 63		
13	RSG_DKT RX from RSG_DKT	00 – 63		
14	RSG_DKT RX from RSG_SLT	00 – 63		
15	RSG_DKT RX from RSG_LCO	00 – 63		
16	RSG_DKT RX from IP Phone	00 – 63		

TABLE 6.9.1 RSG_DKT RX Gain (PGM 390)

6.10 RSG DKT TX GAIN CONTROL (PGM 391)

The TX gain of DKT on RSG can be adjusted.

PROCEDURE

RSG_DKT TX GAIN PRESS FLEX KEY (1-8)	[TRANS/PGM] + 391.
RSG_DKT TX TO DKTU (00-63) : 25	Press one of Flex. BTNs (1~8) to select a device type to change the gain. (Ex. Press Flex. BTN 1.) The LCD shows TX gain of the device from other devices.
RSG_DKT TX TO DKTU (00-63) : 25	To change the gain dial new gain (00-63) and LCD shows the changed value. (Ex. dial 45.)
RSG_DKT TX GAIN PRESS FLEX KEY (1-8)	Press the [HOLD/SAVE] button for updating database permanently.
RSG_DKT TX GAIN PRESS FLEX KEY (1-8)	Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

FLEX	ITEM	RANGE	DEFAULT	REMARK
1	RSG_DKT TX to DKTU	00 – 63		
2	RSG_DKT TX to SLT	00 – 63		
3	RSG_DKT TX to CTR_SLT	00 – 63		
4	RSG_DKT TX to WKT	00 – 63		
5	RSG_DKT TX to ACO	00 – 63		
6	RSG_DKT TX to CTR_ACO	00 – 63		
7	RSG_DKT TX to DCO	00 – 63		
8	RSG_DKT TX to DVU	00 – 63		

TABLE 6.10.1 RSG_DKT TX Gain (PGM 391)

6.11 RSG SLT RX GAIN CONTROL (PGM 392)

The RX gain of SLT on RSG can be adjusted.

PROCEDURE

RSG_SLT RX GAIN PRESS FLEX KEY (01-16)	[TRANS/PGM] + 390.
RSG_SLT RX FROM DKTU (00-63) : 25	Press one of Flex. BTNs (1~16) to select a device type to change the gain. (Ex. Press Flex. BTN 1.) The LCD shows RX gain of the device from other devices.
RSG_SLT RX FROM DKTU (00-63) : 45	To change the gain dial new gain (00-63) and LCD shows the changed value. (Ex. dial 45.)
RSG_SLT RX GAIN PRESS FLEX KEY (01-16)	Press the [HOLD/SAVE] button for updating database permanently.
RSG_SLT RX GAIN PRESS FLEX KEY (01-16)	Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

FLEX	ITEM	RANGE	DEFAULT	REMARK
1	RSG_SLT RX from DKTU	00 – 63		
2	RSG_SLT RX from SLT	00 – 63		
3	RSG_SLT RX from CTR_SLT	00 – 63		
4	RSG_SLT RX from WKT	00 – 63		
5	RSG_SLT RX from ACO	00 – 63		
6	RSG_SLT RX from CTR_ACO	00 – 63		
7	RSG_SLT RX from DCO	00 – 63		
8	RSG_SLT RX from VMIB	00 – 63		
9	RSG_SLT RX from DTMF	00 – 63		
10	RSG_SLT RX from TONE	00 – 63		
11	RSG_SLT RX from MUSIC 1	00 – 63		
12	RSG_SLT RX from MUSIC 2	00 – 63		
13	RSG_SLT RX from RSG_DKT	00 – 63		
14	RSG_SLT RX from RSG_SLT	00 – 63		
15	RSG_SLT RX from RSG_LCO	00 – 63		
16	RSG_SLT RX from IP Phone	00 – 63		

TABLE 6.11.1 RSG_DKT RX Gain (PGM 392)

6.12 RSG SLT TX GAIN CONTROL (PGM 393)

The TX gain of SLT on RSG can be adjusted.

PROCEDURE

RSG_SLT TX GAIN PRESS FLEX KEY (1-8)	[TRANS/PGM] + 391.
RSG_SLT TX TO DKTU (00-63) : 25	Press one of Flex. BTNs (1~8) to select a device type to change the gain. (Ex. Press Flex. BTN 1.) The LCD shows TX gain of the device from other devices.
RSG_SLT TX TO DKTU (00-63) : 25	To change the gain dial new gain (00-63) and LCD shows the changed value. (Ex. dial 45.)
RSG_SLT TX GAIN PRESS FLEX KEY (1-8)	Press the [HOLD/SAVE] button for updating database permanently.
RSG_SLT TX GAIN PRESS FLEX KEY (1-8)	Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

FLEX	ITEM	RANGE	DEFAULT	REMARK
1	RSG_SLT TX to DKTU	00 – 63		
2	RSG_SLT TX to SLT	00 – 63		
3	RSG_SLT TX to CTR_SLT	00 – 63		
4	RSG_SLT TX to WKT	00 – 63		
5	RSG_SLT TX to ACO	00 – 63		
6	RSG_SLT TX to CTR_ACO	00 – 63		
7	RSG_SLT TX to DCO	00 – 63		
8	RSG_SLT TX to DVU	00 – 63		

TABLE 6.12.1 RSG_SLT TX Gain (PGM 393)

6.13 RSG LCO RX GAIN CONTROL (PGM 394)

The RX gain of LCO on RSG can be adjusted.

PROCEDURE

RSG_LCO RX GAIN PRESS FLEX KEY (01-16)	[TRANS/PGM] + 394.
RSG_LCO RX FROM DKTU (00-63) : 25	Press one of Flex. BTNs (1~16) to select a device type to change the gain. (Ex. Press Flex. BTN 1.) The LCD shows RX gain of the device from other devices.
RSG_LCO RX FROM DKTU (00-63) : 45	To change the gain dial new gain (00-63) and LCD shows the changed value. (Ex. dial 45.)
RSG_LCO RX GAIN PRESS FLEX KEY (01-16)	Press the [HOLD/SAVE] button for updating database permanently.
RSG_LCO RX GAIN PRESS FLEX KEY (01-16)	Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

FLEX	ITEM	RANGE	DEFAULT	REMARK
1	RSG_LCO RX from DKTU	00 – 63		
2	RSG_LCO RX from SLT	00 – 63		
3	RSG_LCO RX from CTR_SLT	00 – 63		
4	RSG_LCO RX from WKT	00 – 63		
5	RSG_LCO RX from ACO	00 – 63		
6	RSG_LCO RX from CTR_ACO	00 – 63		
7	RSG_LCO RX from DCO	00 – 63		
8	RSG_LCO RX from VMIB	00 – 63		
9	RSG_LCO RX from DTMF	00 – 63		
10	RSG_LCO RX from TONE	00 – 63		
11	RSG_LCO RX from MUSIC 1	00 – 63		
12	RSG_LCO RX from MUSIC 2	00 – 63		
13	RSG_LCO RX from RSG_DKT	00 – 63		
14	RSG_LCO RX from RSG_SLT	00 – 63		
15	RSG_LCO RX from RSG_LCO	00 – 63		
16	RSG_LCO RX from IP Phone	00 – 63		

TABLE 6.13.1 RSG_LCO RX Gain (PGM 394)

6.14 RSG LCO TX GAIN CONTROL (PGM 395)

The TX gain of LCO on RSG can be adjusted.

PROCEDURE

RSG_LCO TX GAIN PRESS FLEX KEY (1-8)	[TRANS/PGM] + 391.
RSG_LCO TX TO DKTU (00-63) : 25	Press one of Flex. BTN (1~8) to select a device type to change the gain. (Ex. Press Flex. BTN 1.) The LCD shows TX gain of the device from other devices.
RSG_LCO TX TO DKTU (00-63) : 25	To change the gain dial new gain (00-63) and LCD shows the changed value. (Ex. dial 45.)
RSG_LCO TX GAIN PRESS FLEX KEY (1-8)	Press the [HOLD/SAVE] button for updating database permanently.
RSG_LCO TX GAIN PRESS FLEX KEY (1-8)	Press the [CONF] button instead of the [HOLD/SAVE] button, then system goes to step (1) without updating system memory.

FLEX	ITEM	RANGE	DEFAULT	REMARK
1	RSG_LCO TX to DKTU	00 – 63		
2	RSG_LCO TX to SLT	00 – 63		
3	RSG_LCO TX to CTR_SLT	00 – 63		
4	RSG_LCO TX to WKT	00 – 63		
5	RSG_LCO TX to ACO	00 – 63		
6	RSG_LCO TX to CTR_ACO	00 – 63		
7	RSG_LCO TX to DCO	00 – 63		
8	RSG_LCO TX to DVU	00 – 63		

TABLE 6.14.1 RSG_LCO TX Gain (PGM 395)

6.15 INIT BY MPB VERSION (PGM 452)

To initialize database, PGM 452 is added.

PROCEDURE

INIT BY MPB VERSION
PRESS FLEX KEY (1-5)

[TRANS/PGM] + 452. You can initialize the database.

INIT BY MPB VERSION
VERSION 2.5

To initialize database with version2.5, press the third flexible button.

If you want to initialize the database related to the version 2.5, press the [HOLD/SAVE] button.

BTN	ITEM	DEFAULT	REMARK
F1	INIT VERSION 2.2		
F2	INIT STATION NAME		
F3	INIT VERSION 2.3		
F4	INIT VERSION 2.5		
F5	INIT VERSION 3.0		

7. Troubleshooting Guide

Problem	Reason	Solution
LED of LAN jack is not operated	LAN cable connection is physically failed	Check cable connection.
LKD phone's power is off	LAN POWER switch is off	Switch "LAN POWER" on.
WAN DISCONNECTED mode	1) Physically, WAN connection failed 2) The LDK-RSG is not registered in the IP LDK system 3) The network configuration of the LDK-RSG has some problem 4) An ISP has some problem	1) Check LAN cable, and re-connect 2) Register the LDK RSG in the IP LDK system 3) Check the LDK-RSG network configuration 4) Ask the ISP Firstly contact the agent of LG Electronics.
On the PC behind LDK-RSG, network application (e.g Web Browser) does not work properly	PC is not assigned IP address properly from LDK-RSG's DHCP server after restarting LDK RSG. Some PC (OS) may not detect the DHCP server restarted.	Restart network adaptor by using "ipconfig /renew_all" (Win95/98) command or "ipconfig /renew" (Win2000/XP) command on Command Prompt, or restart the network adaptor in other available way. For Win95/98, the PC may have to be restarted.
LDK-RSG seems to stop packet communication after setting VLAN/ Priority	End-user's local network environment may not be configured or does not support VLAN/ Priority.	By using Serial Configuration, disable VALN/ Priority settings.
Packet communication does not seem to work properly with xDSL/ Cable modem.	1) WAN side address settings and PPPoE settings are not correct 2) Other network devices (e.g. PC) are connected together with LDK-RSG to the same xDSL/ Cable modem even though only single IP address was assigned from ISP	1) Check WAN side address settings together with PPPoE settings. (Refer to Chapter 6 for details) 2) Disconnect all other network devices from the modem, and restart LDK-RSG
Packet routing between WAN and LAN ports does not work properly.	WAN and LAN side network address should be different because LDK-RSG itself is a layer 3 (IP level) routing device.	If LAN side IP address is 10.10.50.50, WAN side IP address should be other than 10.10.50.X LDK 123.123.10.10. If LDK-RSG has to use 10.10.50.X for WAN side, LAN side address should be changed.

8. Appendix A. RSG Installation Procedure on MPB

1. Insert the following boards into the IP LDK-System
 - 1) MPB
 - 2) Station Boards
 - 3) CO Boards
 - 4) VOIB
 2. Power on the system (All switches of MPB are set to ON.)
 3. Set the 8th DIP-switch to OFF to preserve the programming data.
 4. At the admin station (100)
 - 1) Enter the VOI Slot to be used for RSG/IP Phone in PGM 380/Btn1
 - 2) Enter the VOI Channel to be used for RSG/IP Phone in PGM 380/Btn2
 - 3) Enter the RSG No. in PGM 381
 - 4) Enter the '99' on STA/COL Board in PGM 103/BTN 1 & 2.
('99' means virtual slot for RSG/IP Phone)
 - 5) Assign the VOIB IP Address in PGM 340.
 5. Reset the system for board configuration
 6. Re-enter the admin programming mode
 - 1) Enter the MAC ID in PGM 383
 - 2) Enter the IP Address and Gateway of VOIB in PGM 340.
 7. Reset the RSG
- * If the RSG No. in PGM 381 or VOIB Channel No in PGM 380/Btn 2 is changed, the system should be reset for board reconfiguration

9. Appendix B. RSG Setting Procedure on RSG

1. baud rate : 38400
2. Set Master's IP Address :
 - 1) Press 'Enter' Key, the 'main:>' is out after menu list
 - 2) Type 'system' and enter.
 - 3) Type 'set master xxx.xxx.xxx.xxx'. The 'xxx.xxx.xxx.xxx.' is IP address.
Ex) main:/system> set master xxx.xxx.xxx.xxx
 - 4) Return to 'main:>' mode by typing '..' and entering twice.
3. Set the WAN and get information (When setting Fixed IP address)
 - 1) At 'main:>', type 'wan' and confirm to display the help menu.
 - 2) At 'main:/wan', type 'wanset' and it displays the help menu and the current value of mode.
 - 3) As the help menu says, type the value of IP address and Gateway address as well as other setting value.
Ex) main:/wan/wanset> set ip xxx.xxx.xxx.xxx
Ex) main:/wan/wanset> set gateway xxx.xxx.xxx.xxx
 - 4) If you want to verify the changed value, please type 'get all'.
 - 5) The mode of wan has to be FIXED. Verify the mode by typing 'mode' or 'get all'.
Ex) main:/wan/wanset> get all
4. Set the PPPoE and get information (When setting Dynamic IP address)
 - 1) Change the mode of WAN from FIXED into DYNAMIC by typing 'mode' at 'main:/wan/wanset'.
Ex) main:/wan/wanset> mode
 - 2) Change the mode of PPPoE from INACTIVE into ACTIVE by typing 'mode' at 'main:/wan/pppoe'.
Ex) main:/wan/pppoe> mode
 - 3) As the help menu says, type the value of ID and password.
Ex) main:/wan/pppoe> set user xxxxx
Ex) main:/wan/pppoe> set passwd xxxxx
 - 4) If you want to verify the changed value, please type 'get all'.
 - 5) The ID and password are dedicated value by ADSL provider.
5. Select trace of call traffic
 - 1) The board trace mode is toggled whenever typing 'bt'.