Revision History

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1. INTRODUCTION

1.1 Purpose

This guide provides the information necessary to install, operate, and maintain LG-Nortel 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 LG-Nortel.

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 LG-Nortel 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-Nortel. 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 ipLDK system over a broadband xDSL or Cable modem which is provided by an ISP (Internet Service Provider). The remote services of the ipLDK system are implemented by the LDK Remote Services Application Server, which is an integral part of the ipLDK 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 ipLDK 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.

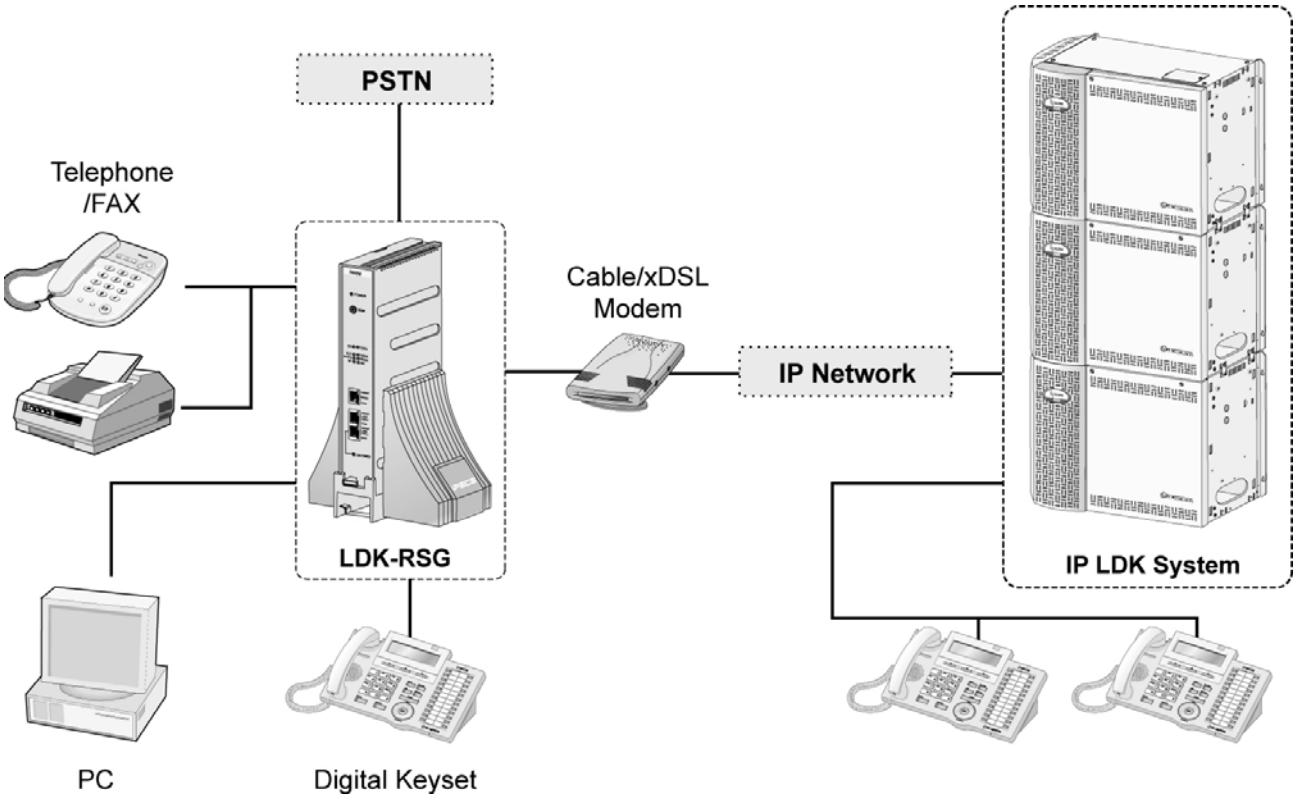


Figure 2-1 LDK-RSG Structure

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.

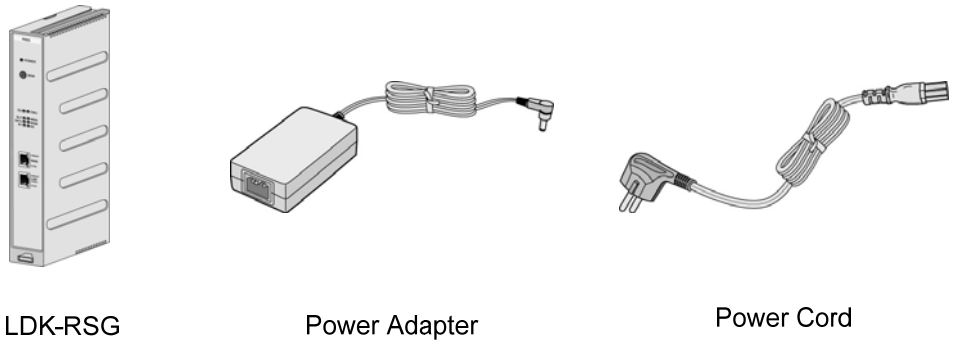
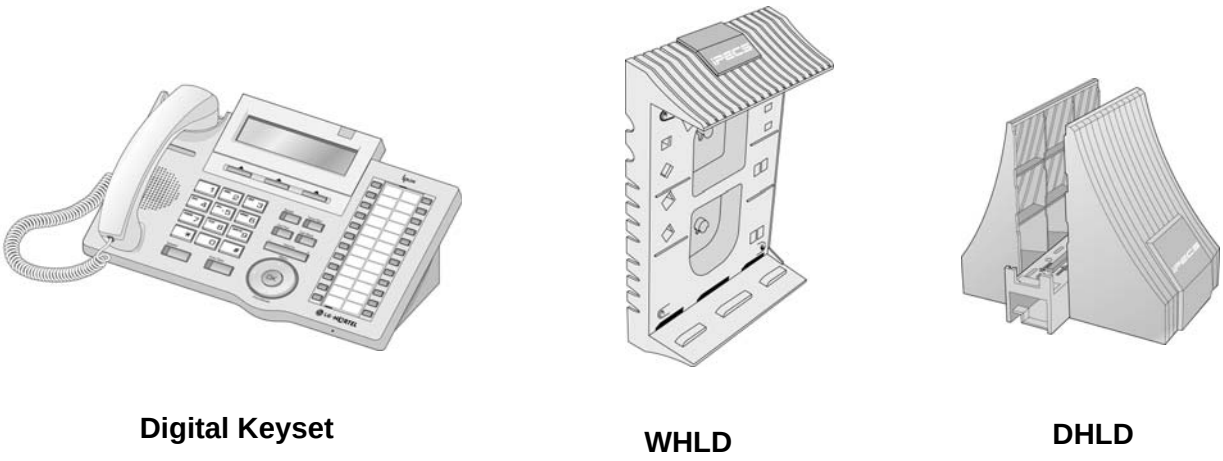


Figure 2.1-1 Components in LDK-RSG package

Figure 2.1-2 shows the optional components that can be used with the LDK-RSG. These LG-Nortel 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.



Digital Keyset **WHLD** **DHLD**

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-Nortel.

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 Keyset	Refer to Table 2.1-2 Digital Keysets	Option
8	CMU	Call Metering Unit	Option

Table 2.1-2 Digital Keysets

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.

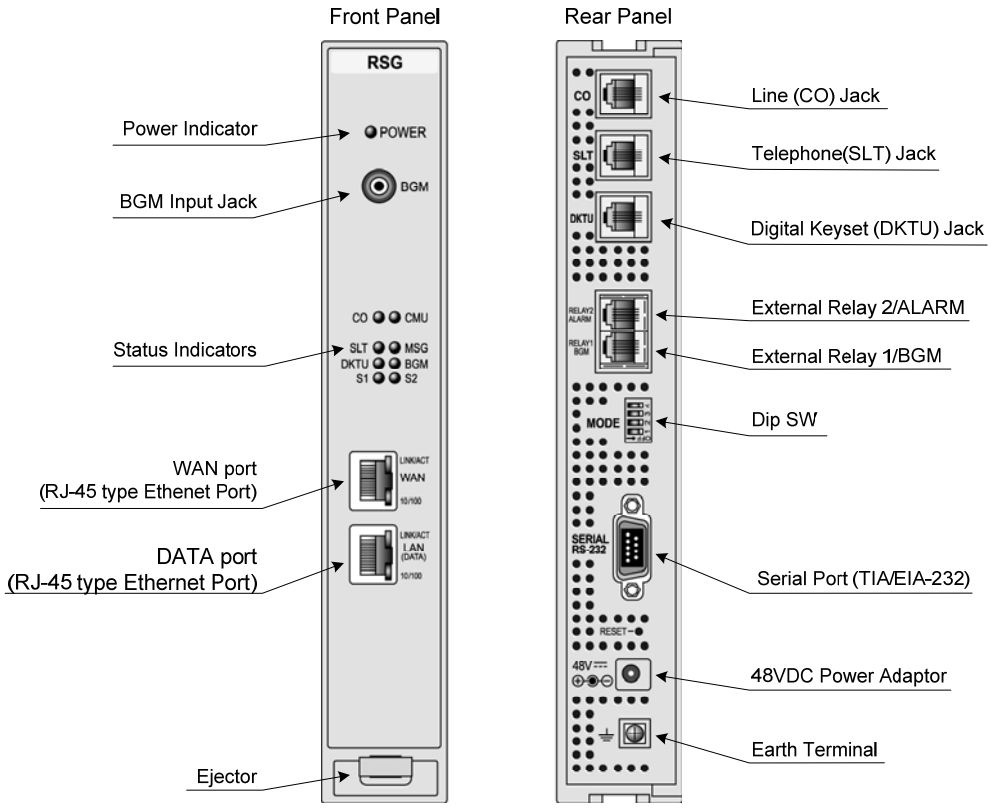


Figure 2.2-1 Front and Rear Panels of LDK-RSG

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 Keyset “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 Keyset in Use
		OFF	Digital Keyset Idle
		FLASH	Digital Keyset 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-Nortel. An example of the basic installation is shown in Figure 3.1-1 below.

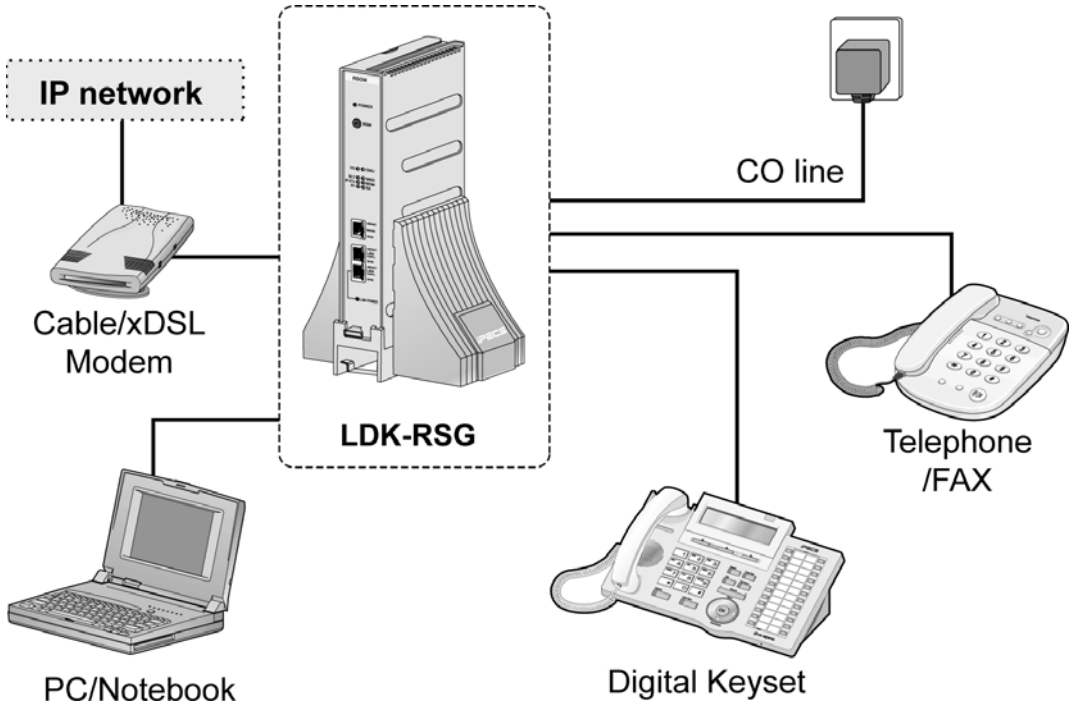


Figure 3.1-1 Installation example of LDK-RSG

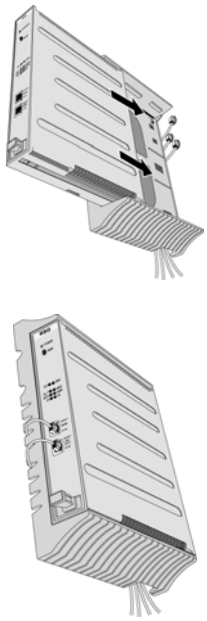
The basic procedure for installation is as follows.

1) Program the host ipLDK system, refer to the " ipLDK-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 (⏚) 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 Keyset.
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

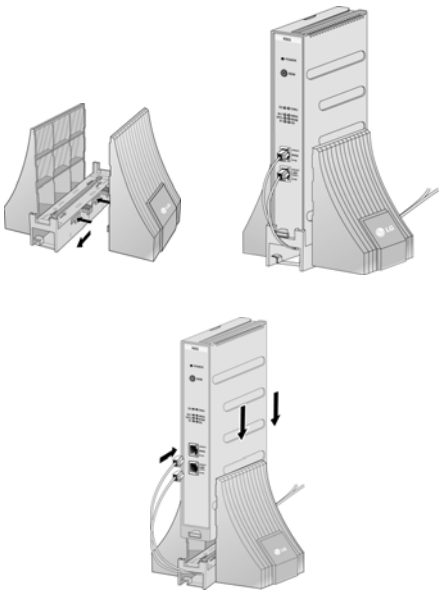


Figure 3.2-1 WHLD/DHLD Installation

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.

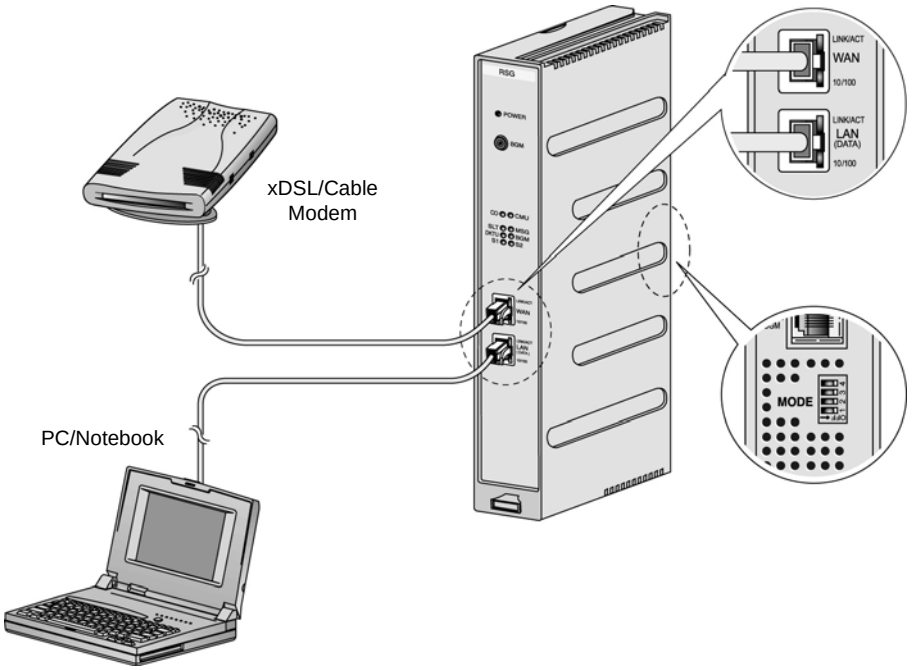


Figure 3.3-1 WAN/LAN connection

The pin diagram of two Ethernet Jacks is as shown in the Figure 3.3-2 below.

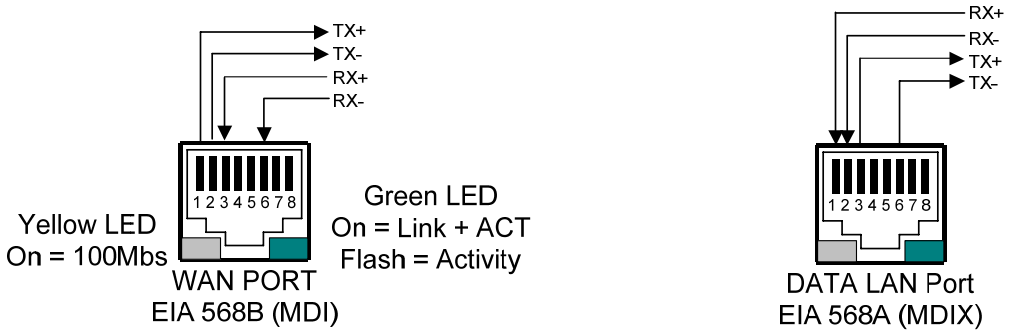


Figure 3.3-2 Pin Assignment of Ethernet ports

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.

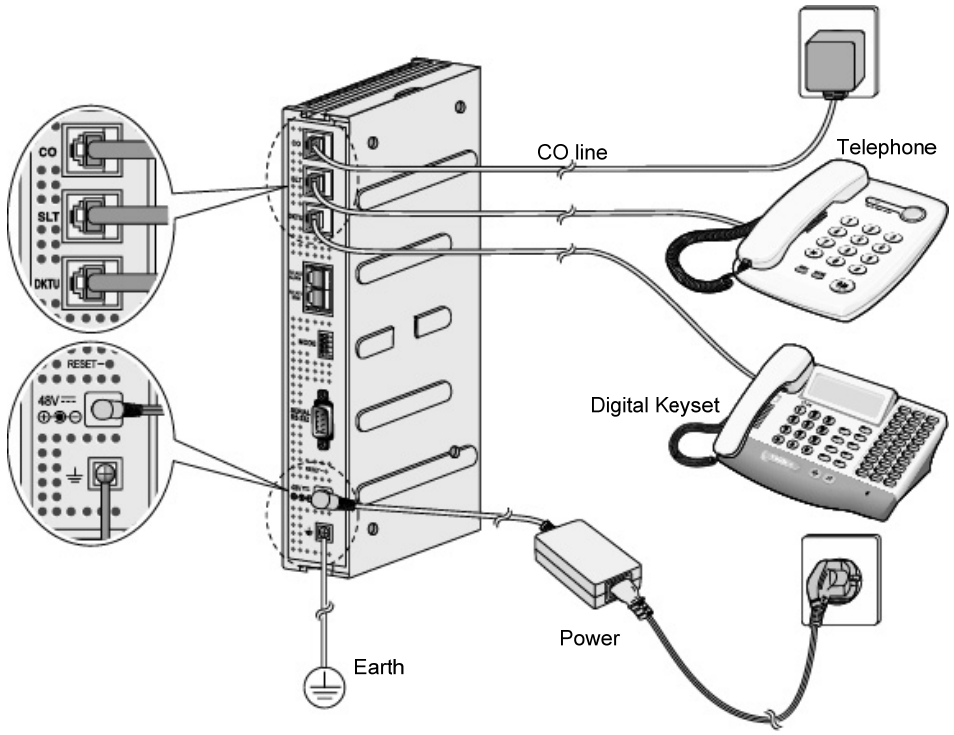


Figure 3.4-1 CO and SLT connection

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.

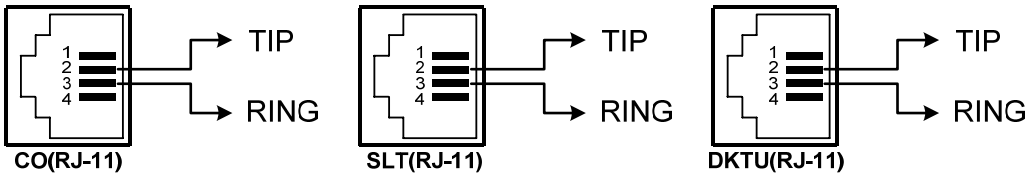


Figure 3.4-2 Pin Assignment of CO and SLT ports

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.

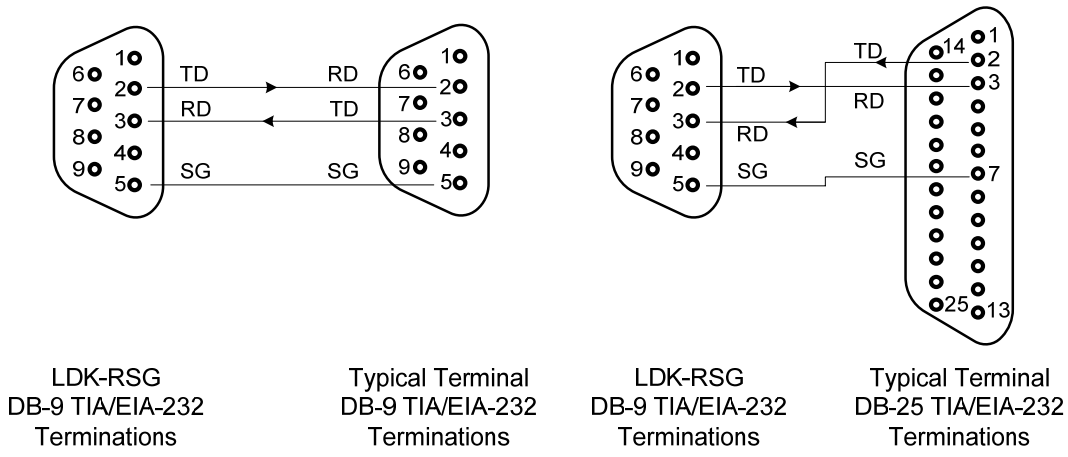


Figure 3.5-1 Pin Assignments of TIA/EIA-232

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.

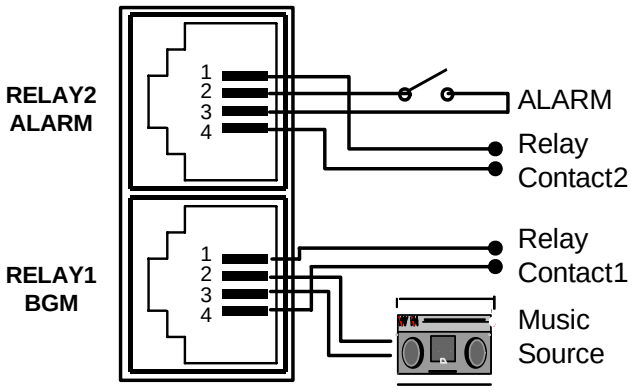


Figure 3.5-2 Pin Assignments of BGM/ALARM/Relay Contacts

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.*

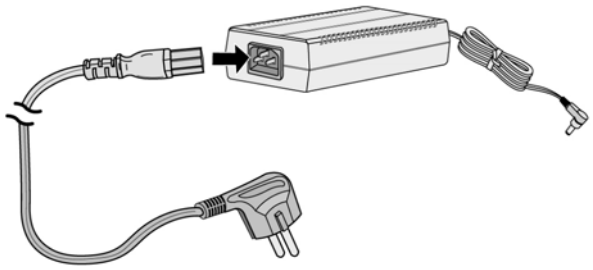


Figure 3.5-3 Power Adaptor

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 ipLDK host system.

3.5.6 RSG Power-Up

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 ipLDK system, refer to section 6. In addition, for successful registration, the host 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 LDK IP address,
2) LDK-RSG Network configuration improper,
3) “WAN” connection improper or physically disconnected,
4) Host LDK system not assigned with LDK-RSG MAC address,
5) ISP connection not operational, or
6) Host LDK system not operational.

In the “WAN DISCONNECTED” mode, communication between the LDK-RSG and the host 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 ipLDK 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",

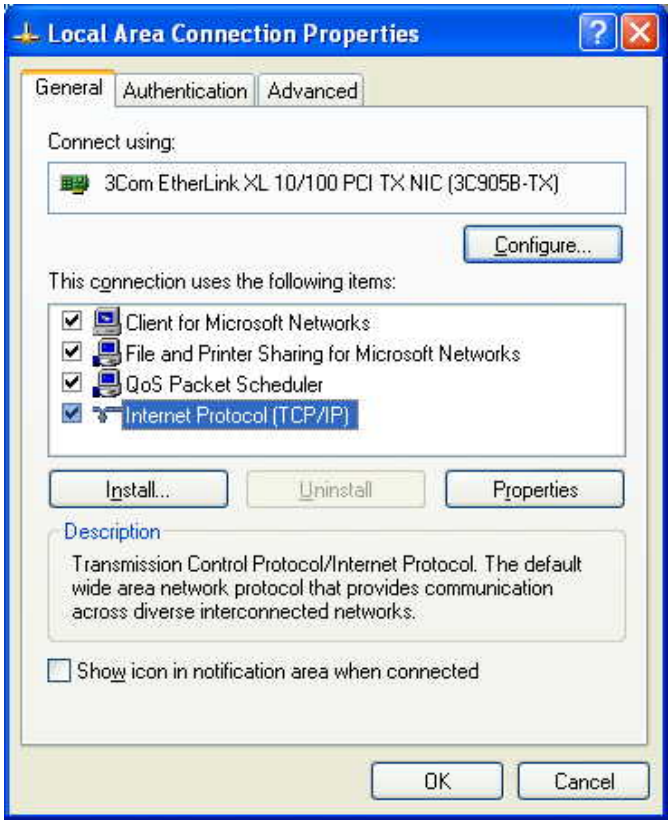


Figure 5.1-1 Local Area Connection Properties

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.

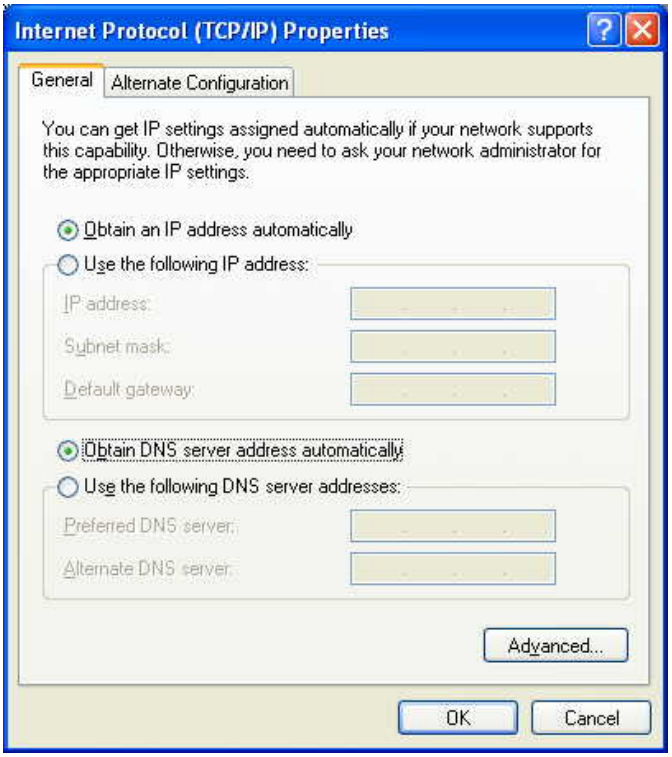


Figure 5.1-2 DHCP Setting

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.

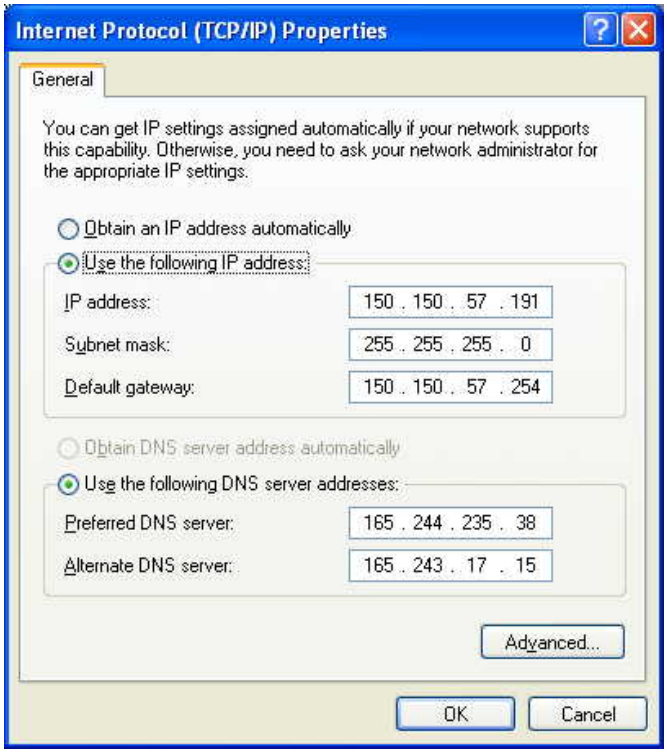


Figure 5.1-3 Fixed Address Setting

5.2 RSG Configuration via Web Browser

Web Configuration is an easy way to configure LDK-RSG's network parameters using Web Browser software. A Web browser is an easy method for access the LDK-RSG Web Admin pages and may be employed over LAN or WAN connections. The LAN Connection method is intended for first time configuration while the WAN connection method is intended for remote access after the LDK-RSG has successfully registered with the host ipLDK system

5.2.1 General Information

After changing PC's network settings to Dynamic Address Assignment mode, the LDK-RSG Web Admin can be accessed with a Web browser by "pointing" to the LDK-RSG LAN side default address, "10.10.50.50". This will return the LDK-RSG Admin Home page see Figure 5.2-1. On the left side of the window is the Admin Menu screen and in the center is the Admin main screen. The LDK-RSG Admin Home page displays general information on the LDK-RSG settings.

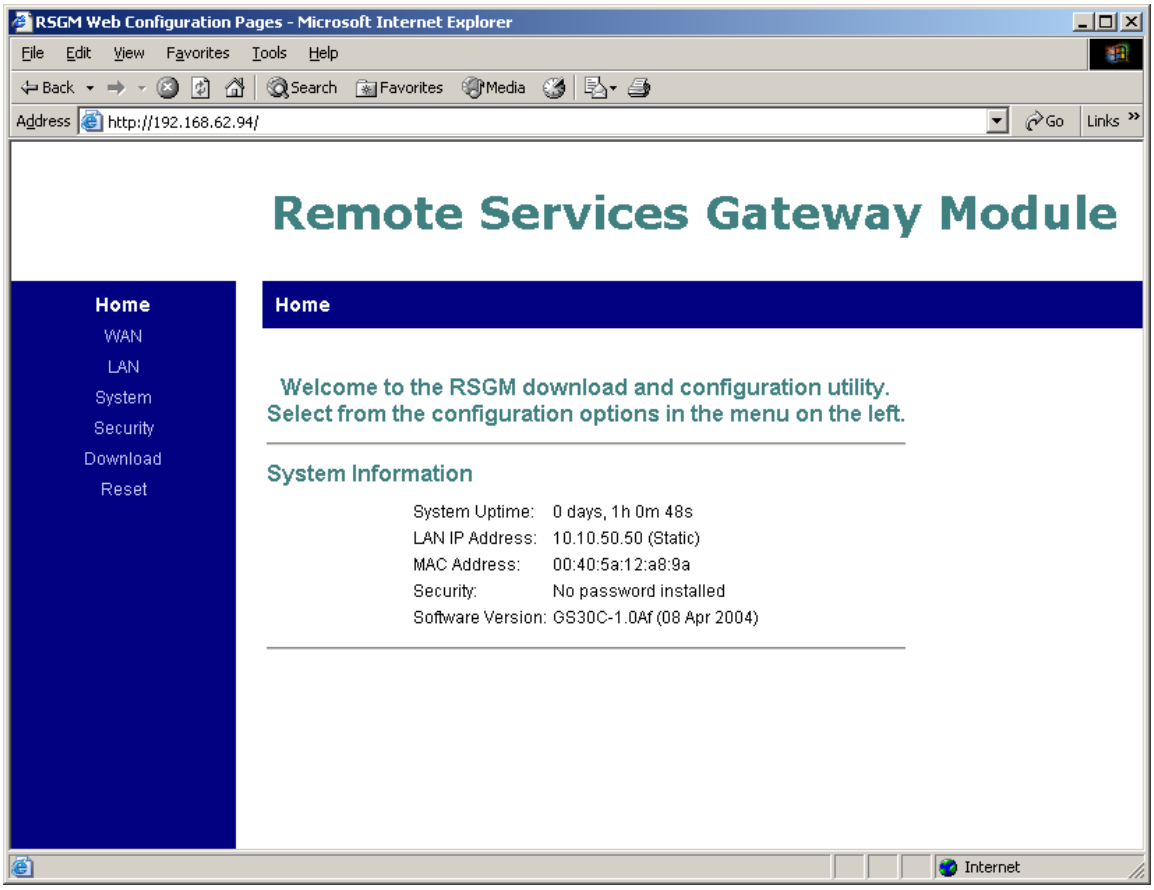


Figure 5.2-1 Web Admin Home

5.2.2 WAN Configuration

When “WAN” on the left menu or “WAN Status” on the top menu is selected, the WAN Status page appears. This page shows the WAN port network parameters and status.

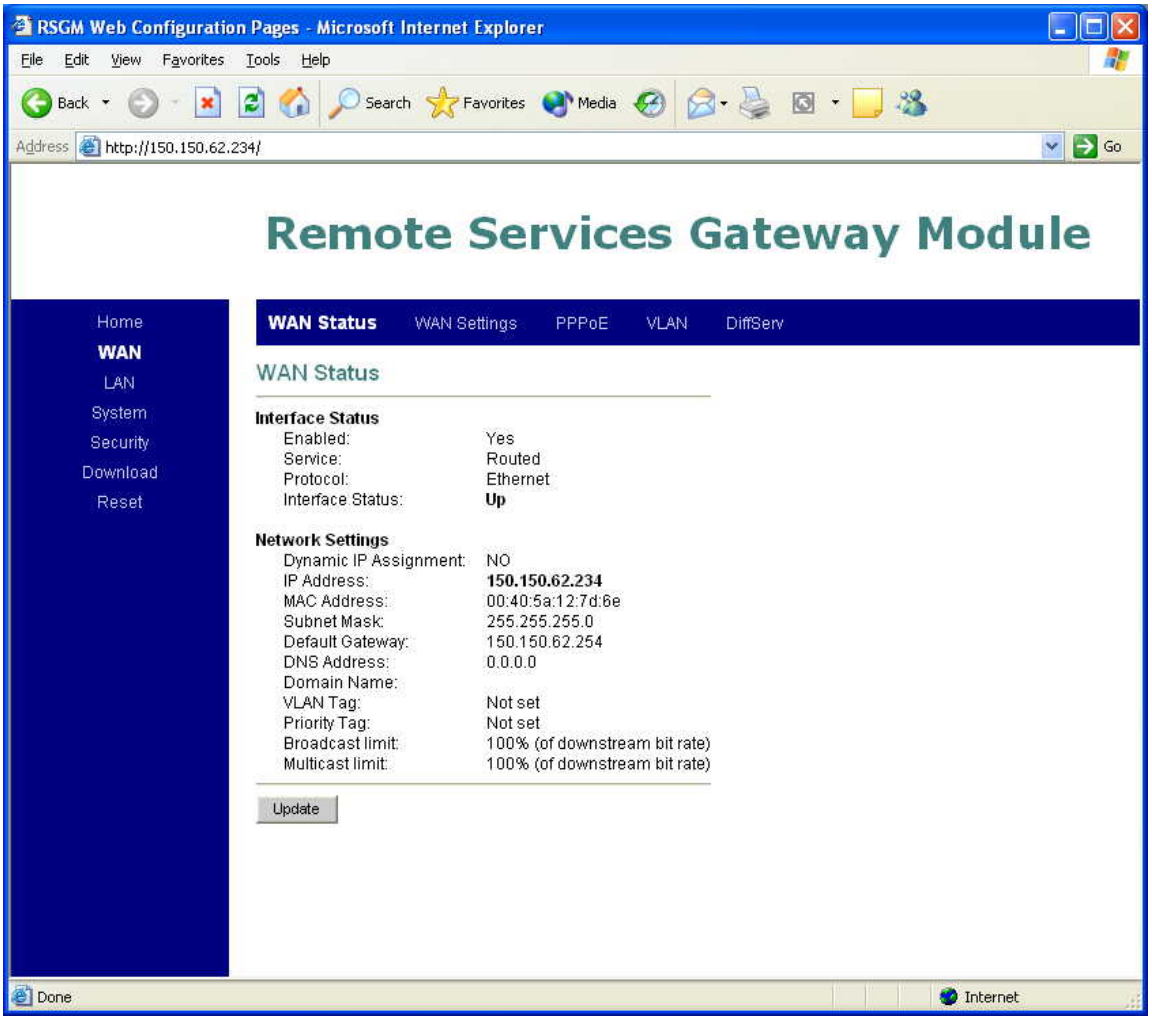


Figure 5.2-2 WAN Status

Selecting “WAN Settings” on the top menu bar of the main screen returns the WAN Settings page. If changes are made, click the “Save WAN Settings” button to store the changes.

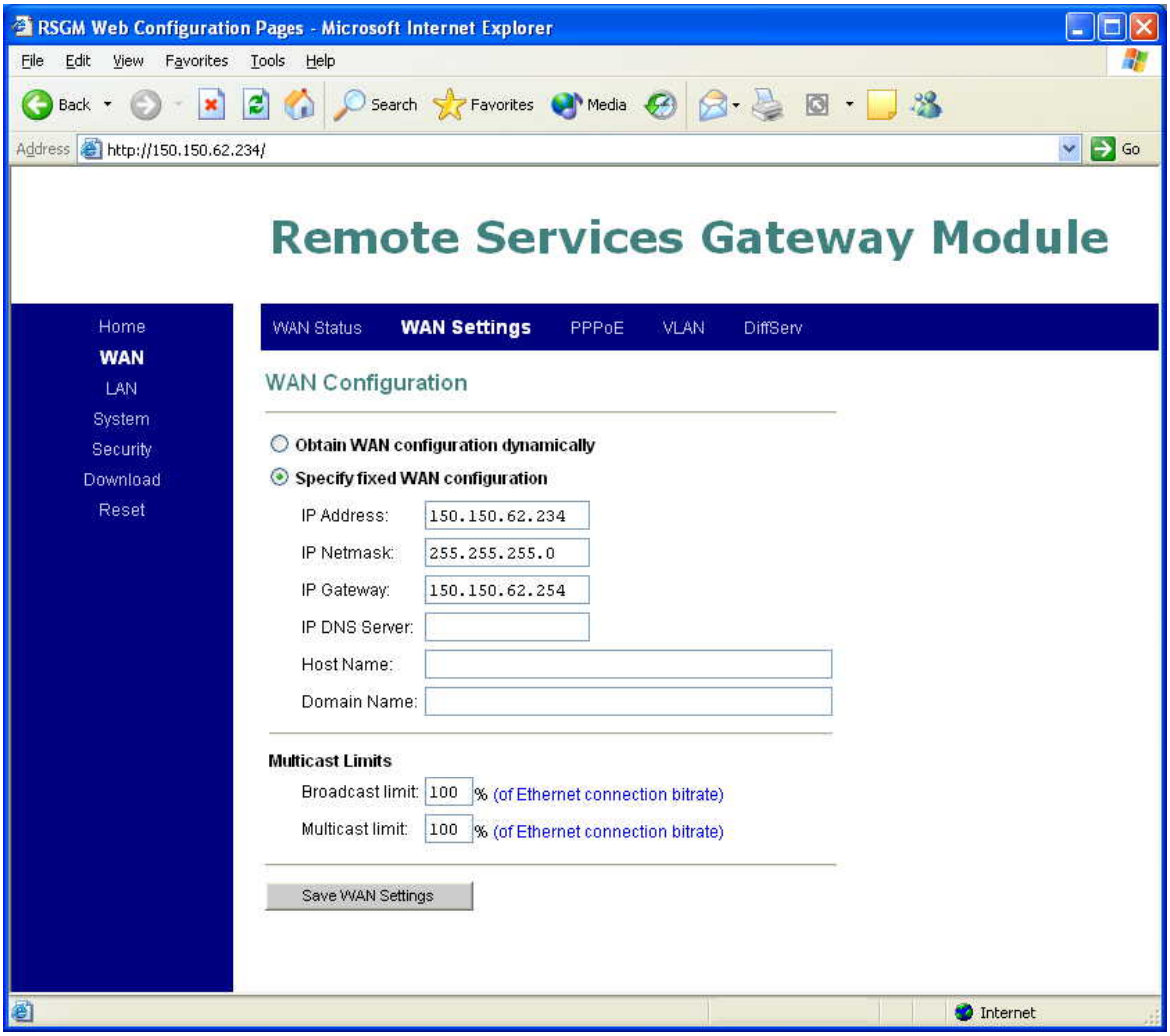


Figure 5.2-3 WAN Setting

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 of the LDK-RSG. In addition, if connected to xDSL/Cable modem and a fixed address is not assigned, this mode should be selected.

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.

Selecting PPPoE from the top menu bar returns the PPPoE page Figure 5.2-4, which is for used configuring PPPoE parameters when “User Name” and “Password” are required to log in to the ISP’s service. If changes are made, click the “Save PPPoE Settings” button to store the changes.

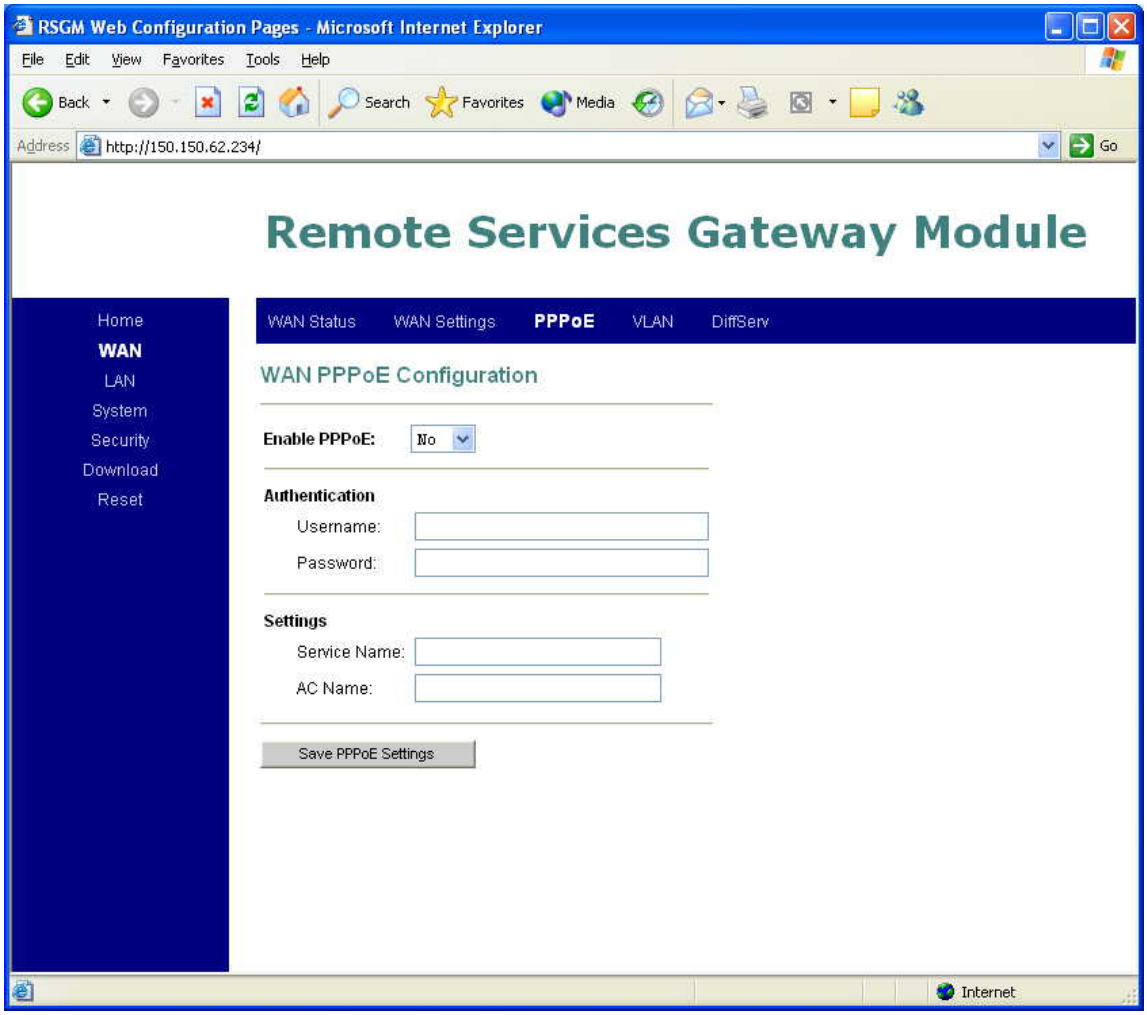


Figure 5.2-4 WAN PPPoE Configuration

If the ISP does not require entry of a “User Name and “password to log in, the “Enable PPPoE” combo box should be set to “No”.

If the ISP requires entry of User Name and Password, set “Enable PPPoE” combo box to “Yes”, and enter the appropriate “User name” and “Password”. “Service Name” and “AC Name” (Account Name) are optional entries, enter these values only if provided by the ISP and they required for proper modem operation.

Note, when PPPoE is used, the IP address is generally assigned by ISP thus, “Obtain WAN configurations dynamically” should be selected in previous “WAN Settings” page.

Selecting VLAN from the top menu bar returns the VLAN settings page Figure 5.2-5. If changes are made, click the “Save VLAN Settings” button to store the changes.

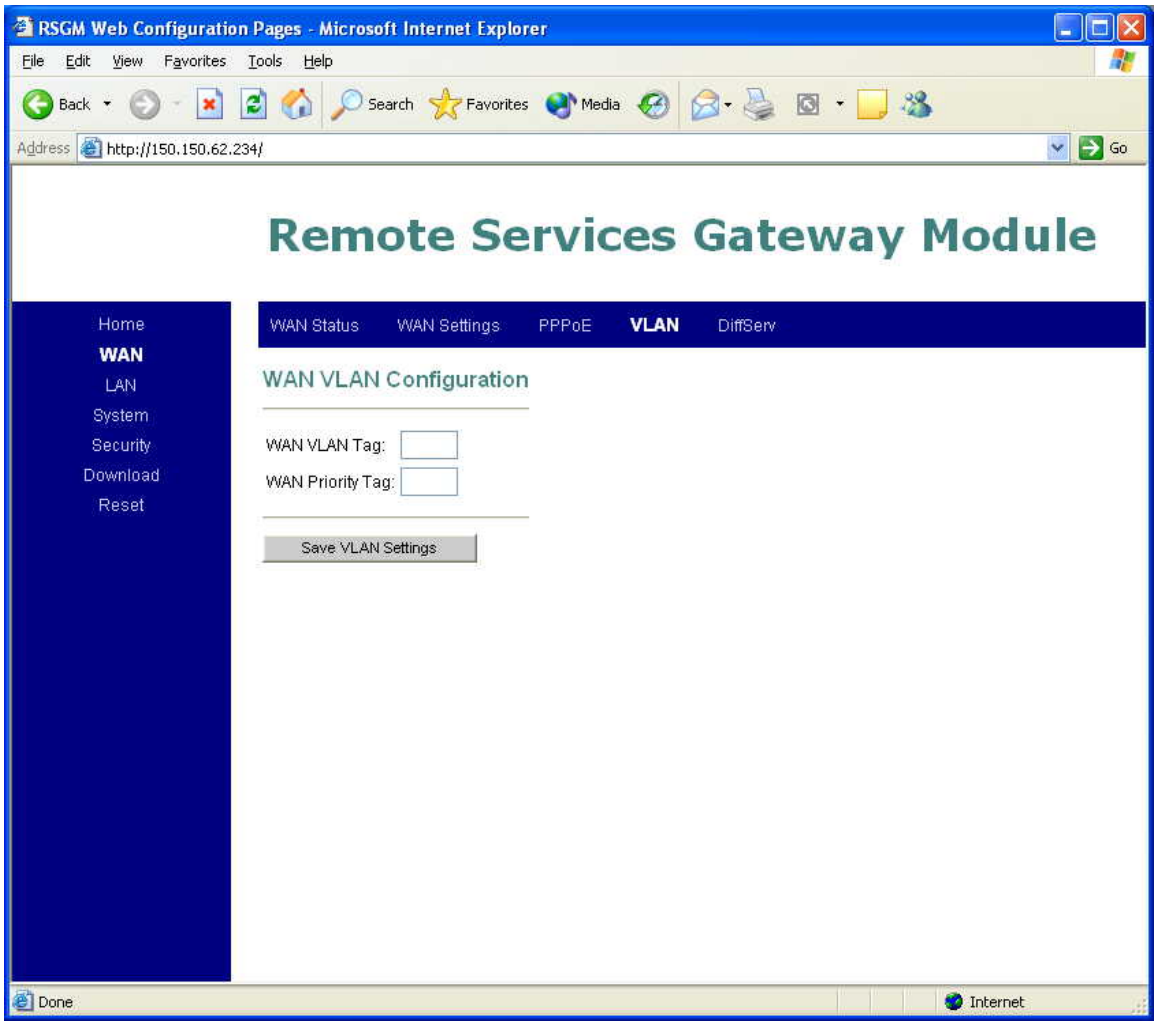


Figure 5.2-5 VLAN/Priority Configuration

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.

Selecting DiffServ from the top menu bar returns the DiffServ settings page Figure 5.2-6. If changes are made, click the “Save DiffServ Settings” button to store the changes.

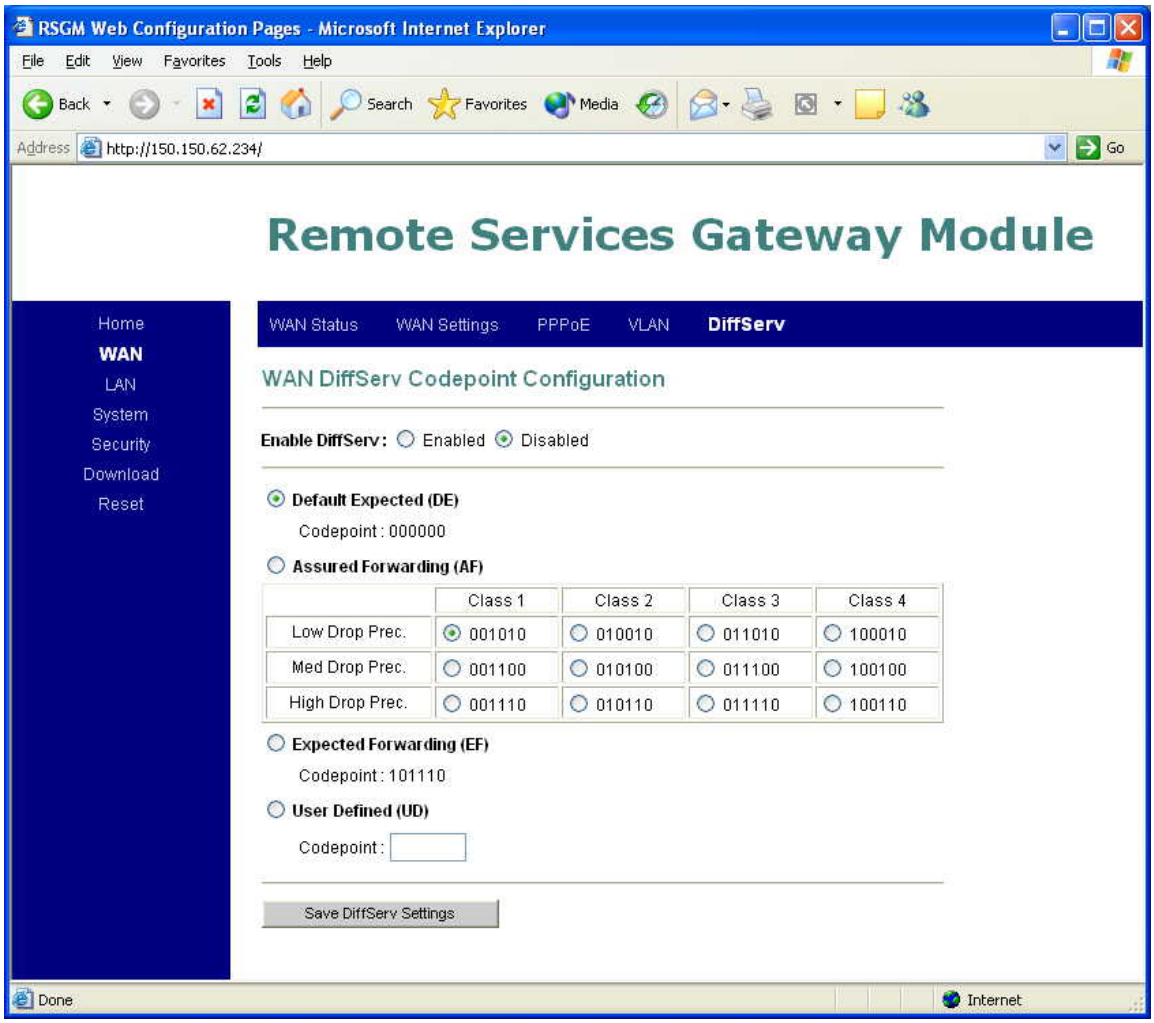


Figure 5.2-6 DiffServ Configuration

ISPs that support DiffServ (Differentiated Services) may require end-devices to preset the DiffServ Code Point (DSCP) to give priority to specific types of packets. In this case, the DiffServ 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

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. If changes are made, select the “Save LAN Settings” button to store the changes.

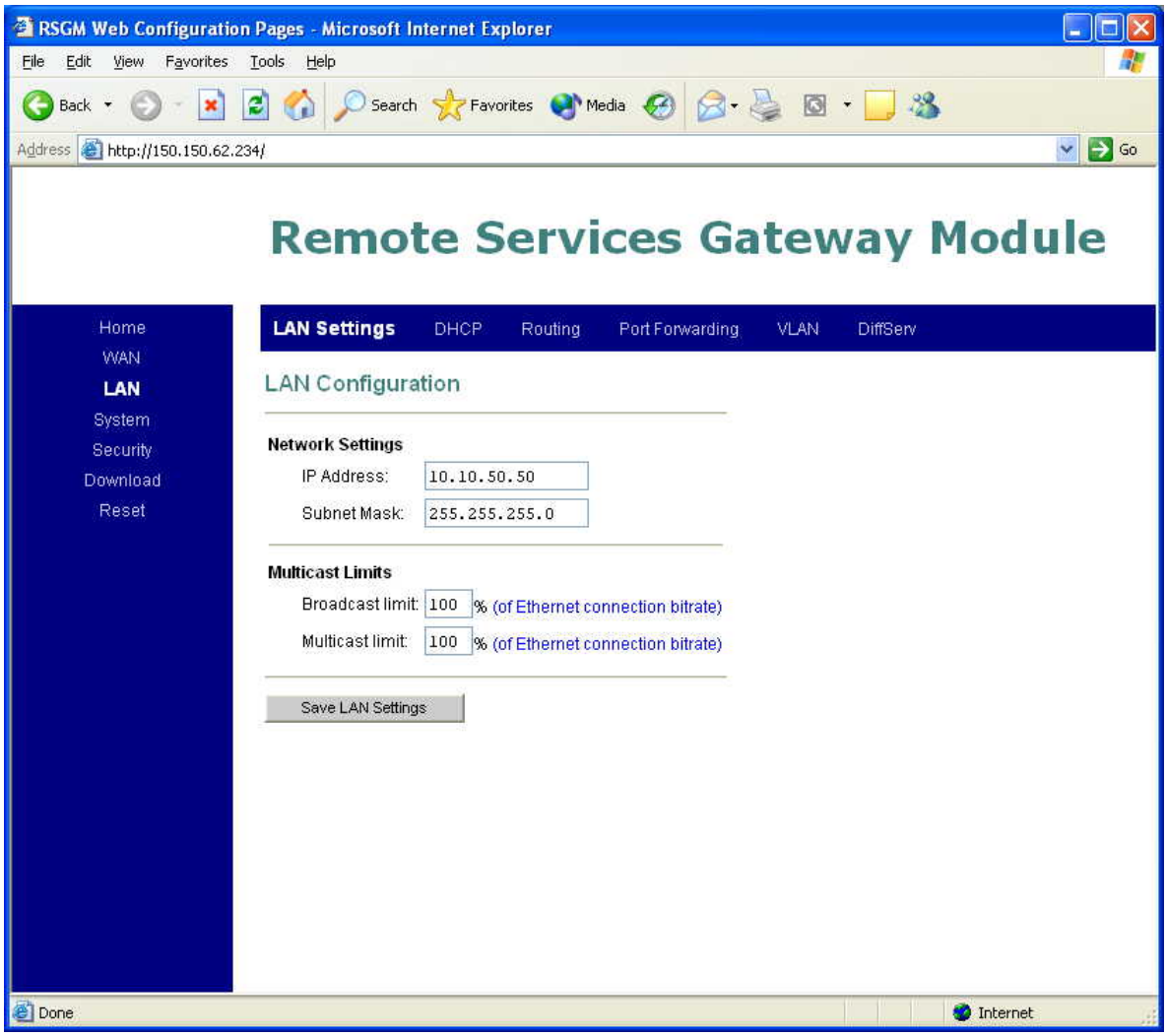


Figure 5.2-7 LAN Configuration

The IP address and subnet mask of LAN side interface can be changed on this page by entering new values and clicking “Save LAN Settings” button.

Selecting DHCP from the top menu bar returns the DHCP Server Configuration page Figure 5.2-8. If changes are made, click the “Save DHCP Settings” button to store the changes. To view the DHCP assignment table, click the “View DHCP Table” button.

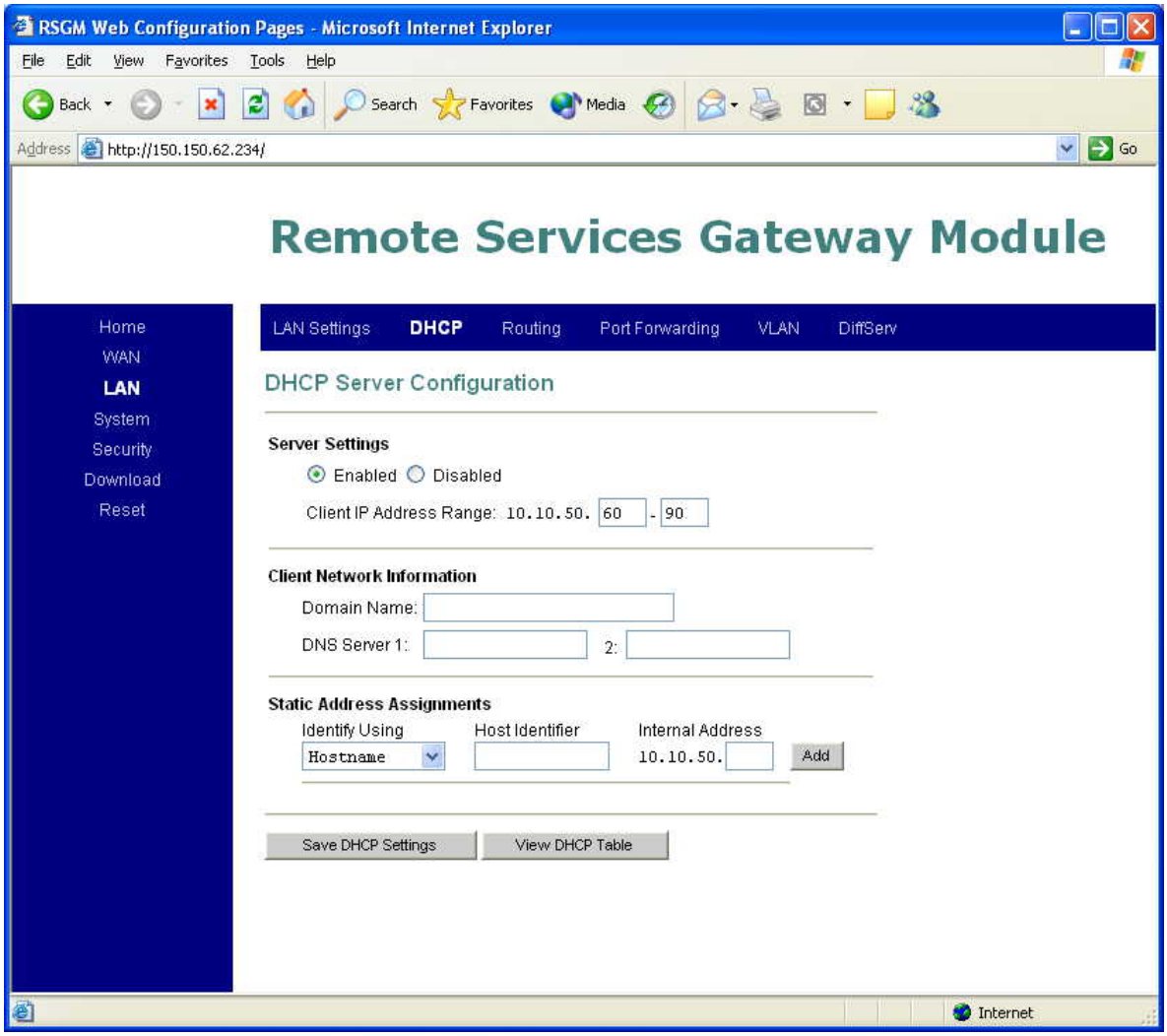


Figure 5.2-8 DHCP Server Configuration

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 other configuration parameters available under the LAN page are discussed in the last section of this chapter.

Selecting Routing from the top menu bar returns the Routing Configuration page Figure 5.2-9. If changes are made, click the “Save Router Settings” button to store the changes. To view the Routing table, click the “View Routing Table” button.

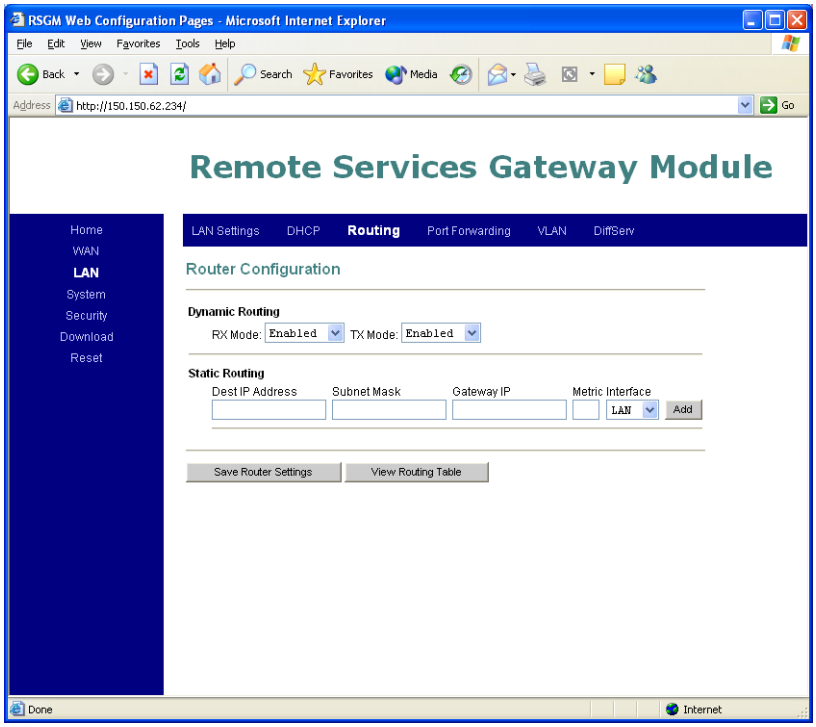


Figure 5.2-9 Routing Configuration

If you wish for the router to update its routing tables dynamically, 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.

Selecting Port Forwarding from the top menu bar returns the Port Forwarding settings page Figure 5.2-10. If changes are made, click the “Save NAPT Settings” button to store the changes.

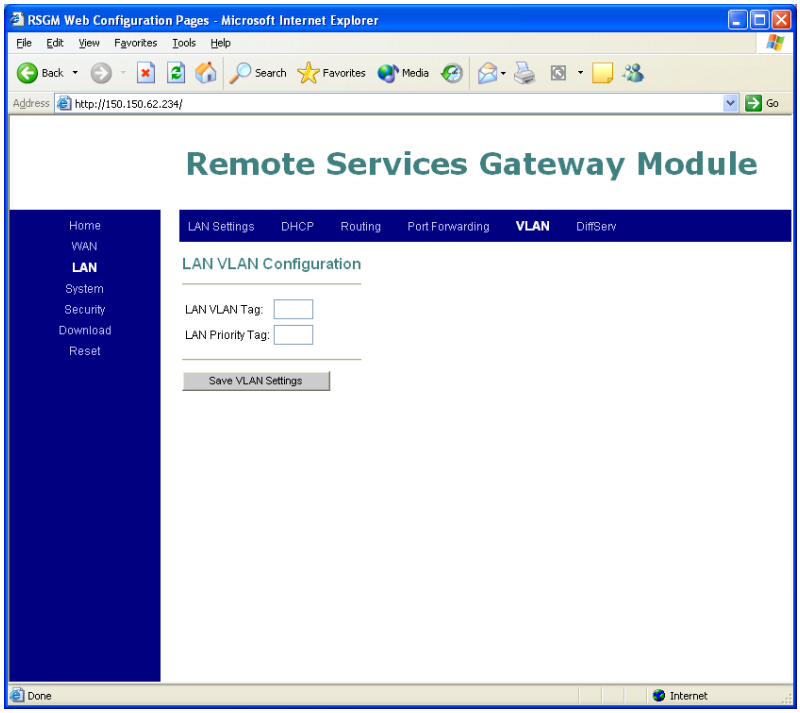


Figure 5.2-10 Port Forwarding Configuration

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 port 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 are reserved by the CPE include those used by RTP packets, HTTP, etc. All reserved (unavailable) ports will be displayed on this page.

Selecting VLAN from the top menu bar returns the VLAN settings page Figure 5.2-11. If changes are made, click the “Save VLAN Settings” button to store the changes.

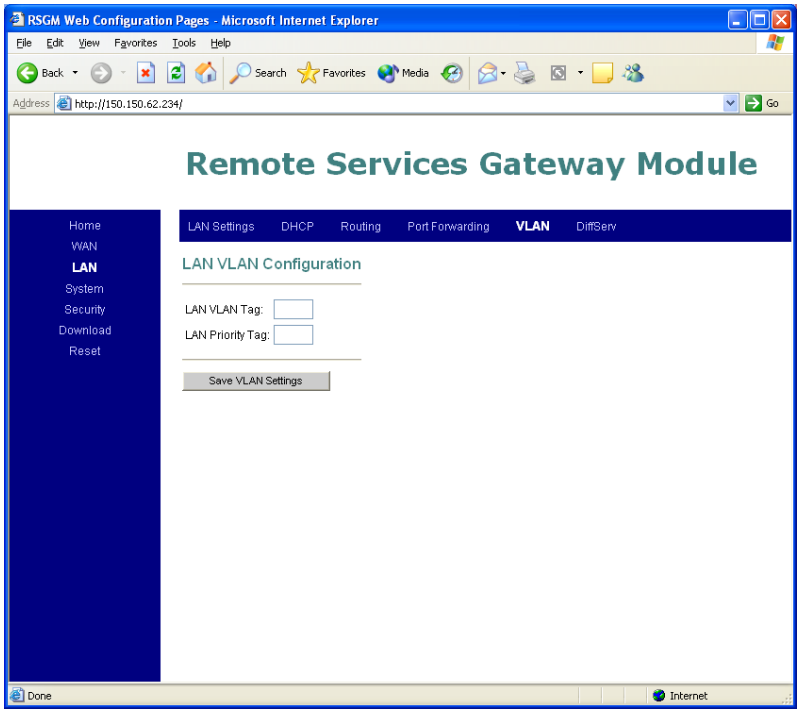


Figure 5.2-11 VLAN/Priority Configuration

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

Selecting DiffServ from the top menu bar returns the DiffServ settings page Figure 5.2-12. If changes are made, click the “Save DiffServ Settings” button to store the changes.

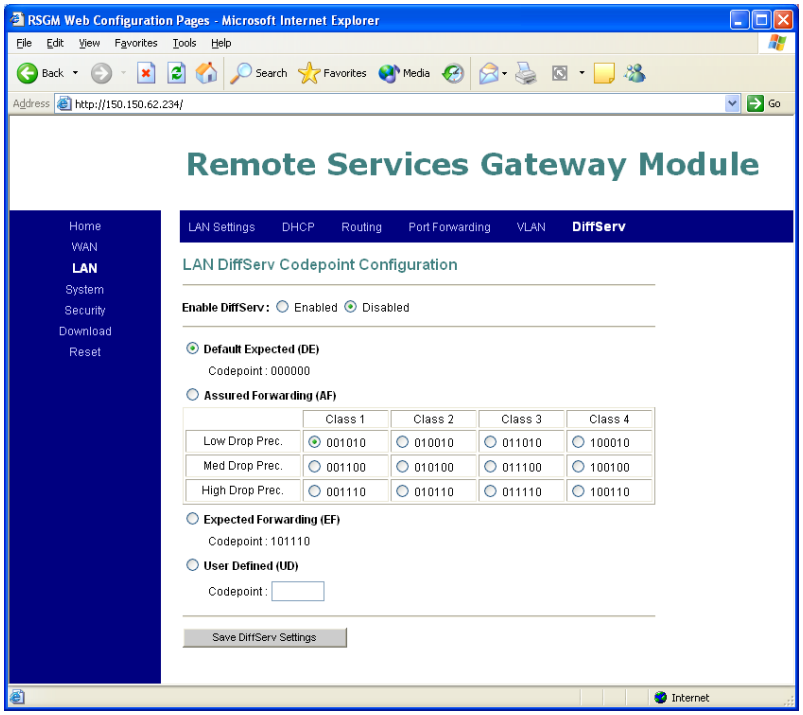


Figure 5.2-12 DiffServ Configuration

ISPs that support DiffServ (Differentiated Services) may require end-devices to preset the DiffServ Code Point (DSCP) to give priority to specific types of packets. In this case, the DiffServ 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.

5.2.4 System Configuration

When “System” on the left menu or “System Settings” on the top menu is clicked, System Settings page will display. This page shows the IP address of the host ipLDK system. If changes are made, select the “Save LAN Settings” button to store the changes. In order for the RSG to register with the host LDK, the IP address of the LDK must be set. The ipLDK system administrator should have the LDK host system IP address.

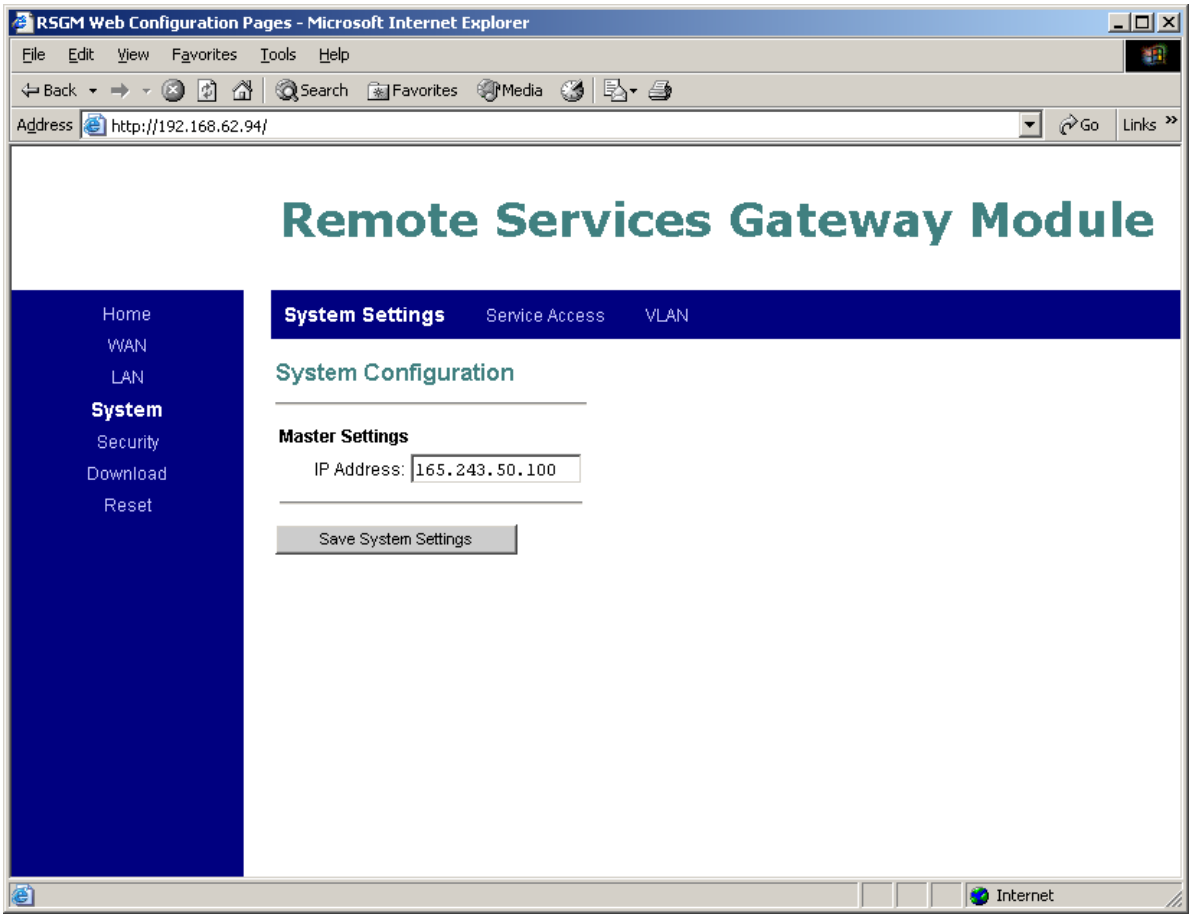


Figure 5.2-13 System Configuration

Selecting Service Access from the top menu bar returns the Service Access settings page Figure 5.2-14. If changes are made, click the “Save Service Access Settings” button to store the changes.

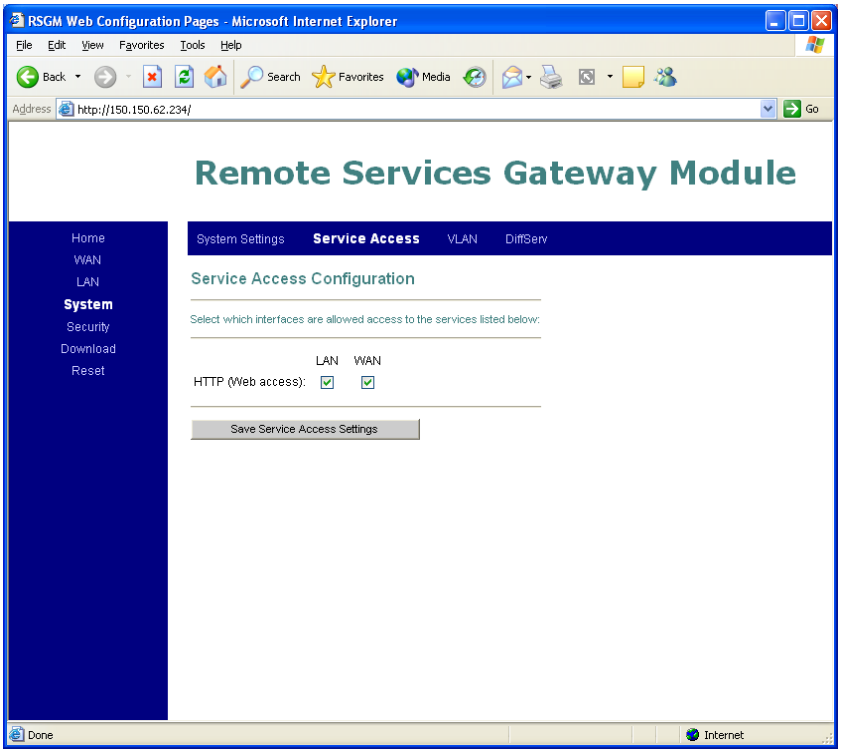


Figure 5.2-14 Service Access Configuration

Service access allows access to HTTP services (Web Server) on the network interfaces to be enabled or disabled. Specifically, HTTP access from devices on the LAN / WAN or both can be allowed or denied.

Selecting VLAN from the top menu bar returns the RTP VLAN settings page Figure 5.2-15. If changes are made, click the “Save RTP VLAN Settings” button to store the changes.

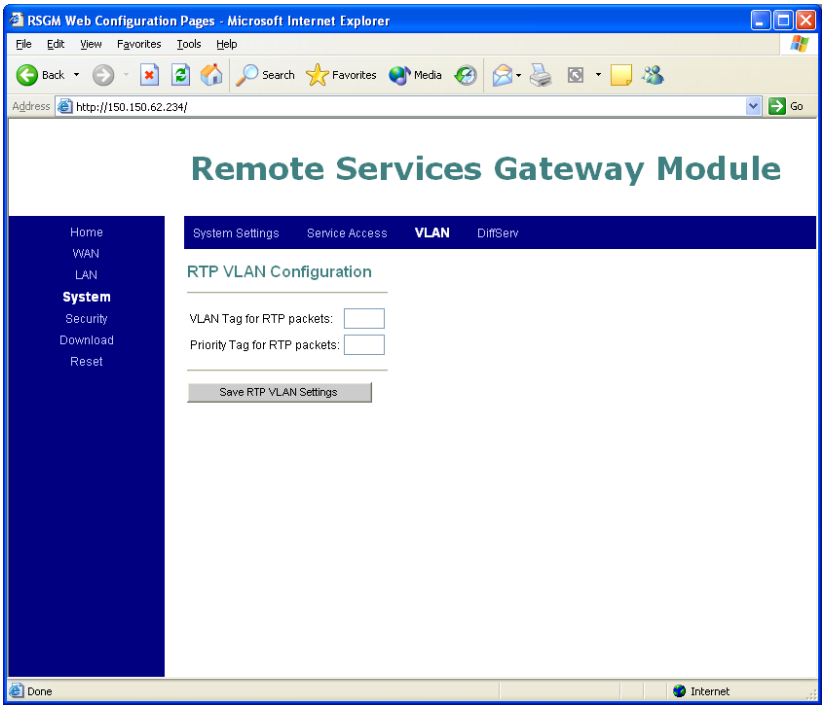


Figure 5.2-15 RTP VLAN/Priority Configuration

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 RTP VLAN settings are applied, then RTP packets will use the general VLAN settings entered in WAN or LAN settings.

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

Selecting DiffServ from the top menu bar returns the RTP DiffServ settings page Figure 5.2-16. If changes are made, click the “Save RTP DiffServ Settings” button to store the changes.

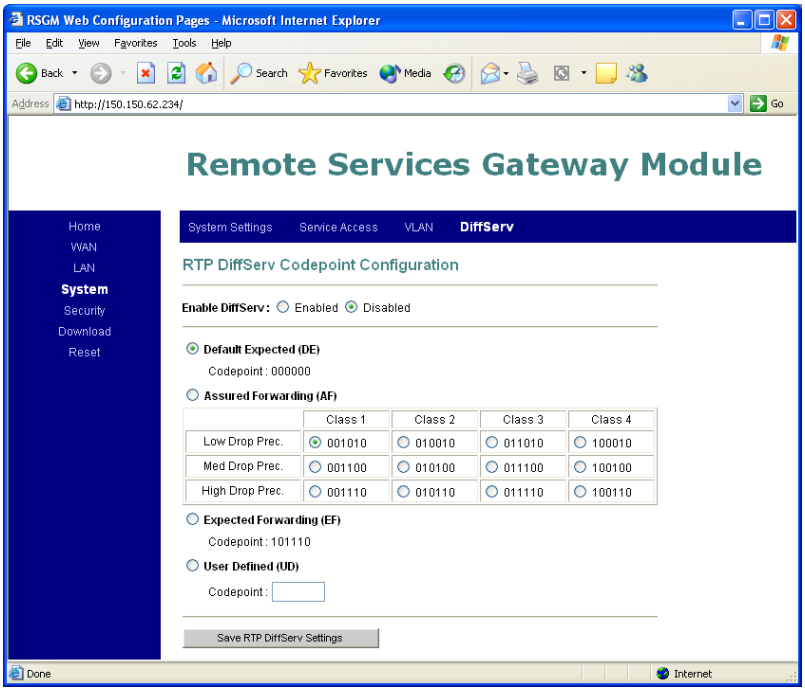


Figure 5.2-16 RTP DiffServ Configuration

DiffServ (Differentiated Services) settings allow configuration of DSCP (DiffServ Code Point) value for RTP packets. This feature is called DiffServ Pretagging and it allows end-user device to preset DSCP value before sending packets to Edge or Code routers. Specific DiffServ settings for RTP packets are separately applied, which will override the general values set in WAN or LAN settings. If no RTP DiffServ settings are applied, then RTP packets will use the general DiffServ settings entered in WAN or LAN settings.

5.2.5 Security Configuration

When “Security” on the left menu is clicked, Security Settings page will display. This page allows end-user to change Web Authentication Password. If changes are made, select the “Save Password” button to store the changes.

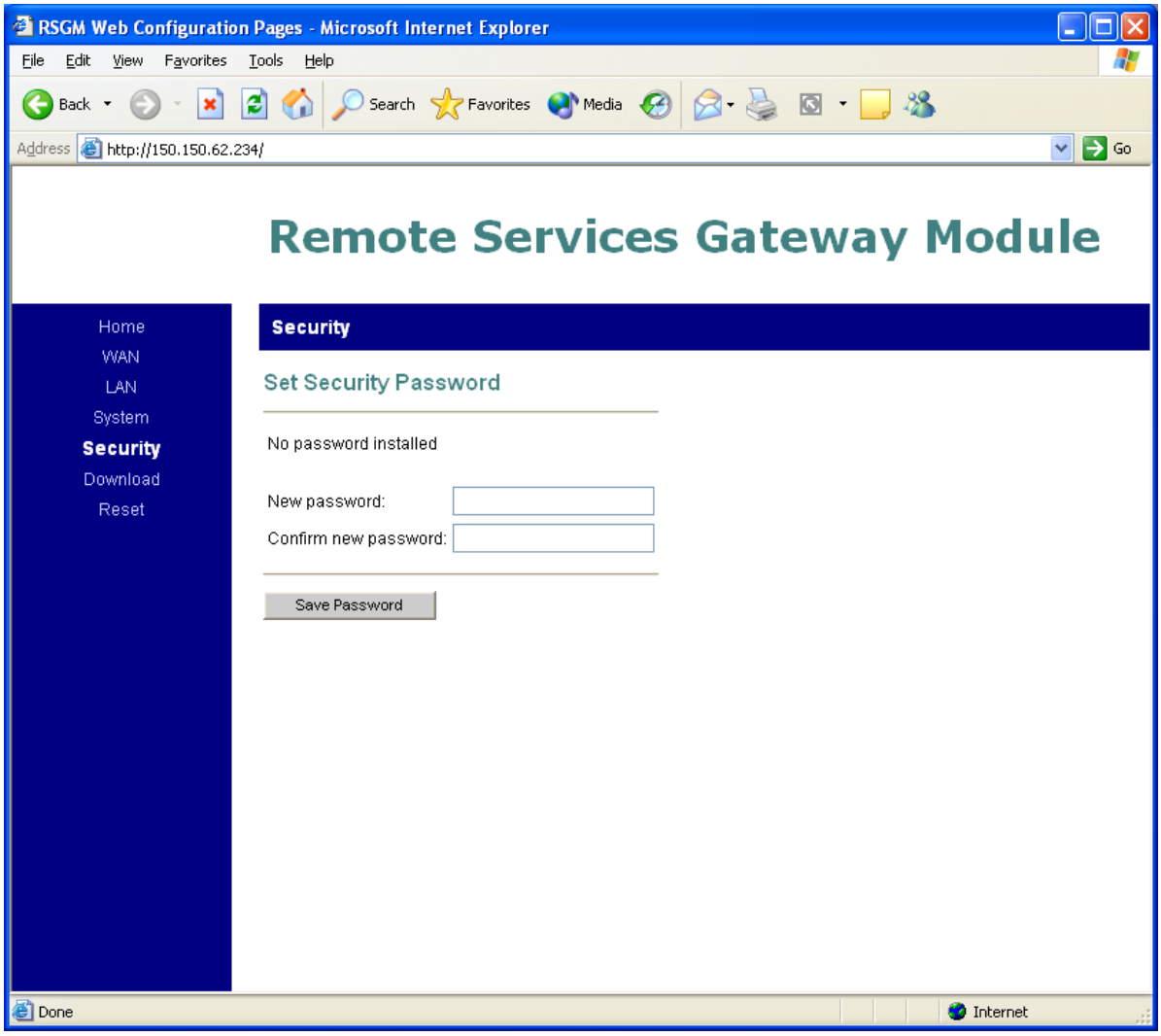


Figure 5.2 -17 Security Configuration

5.2.6 Firmware Download

When “Download” on the left menu is clicked, Firmware Download page will display. This page allows end-user to upgrade LDK-RSG firmware to a newer version.

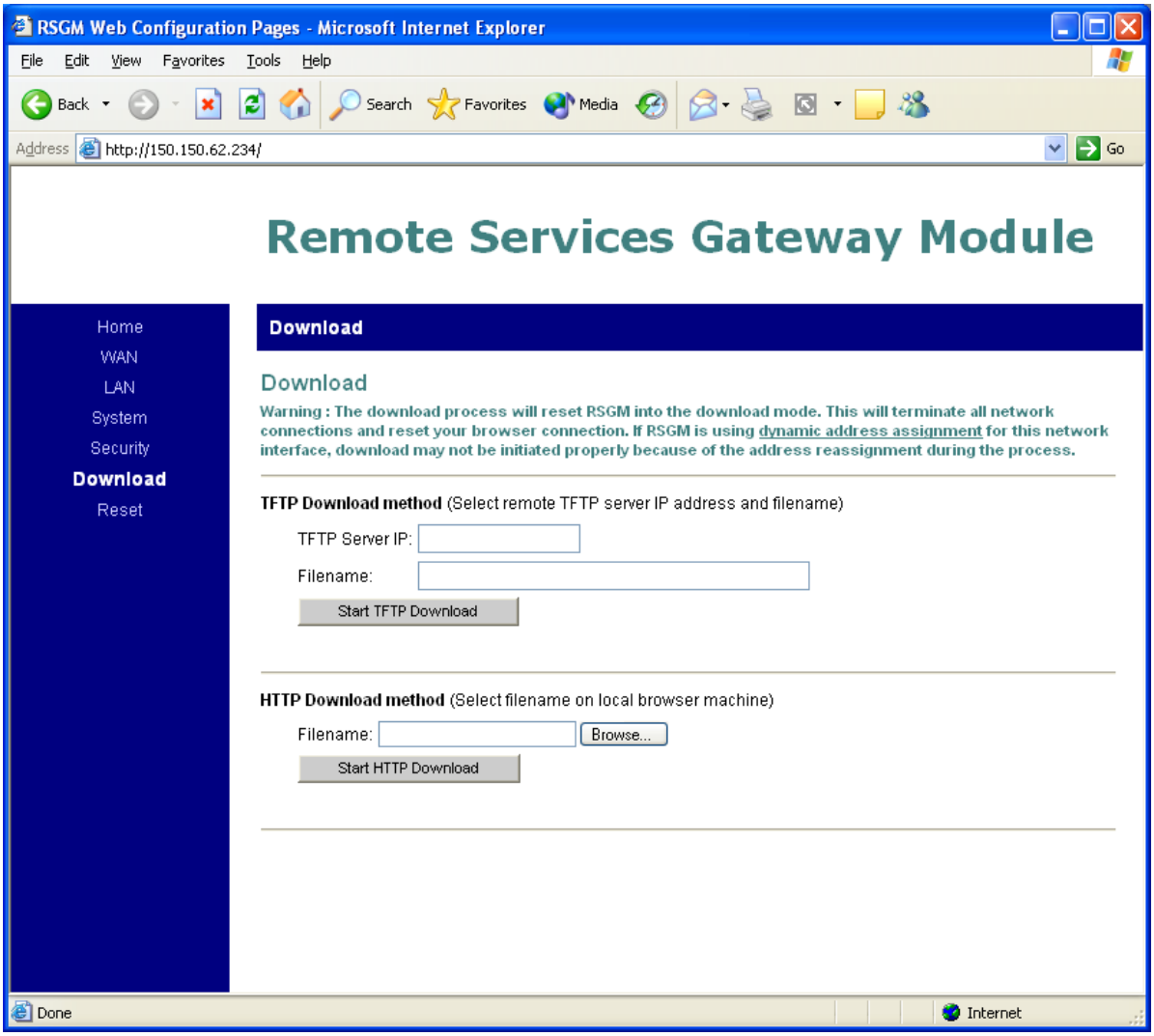


Figure 5.2-18 Firmware Download

There are two ways that can be used for sending (downloading) LDK-RSG firmware from PC to LDK-RSG.

TFTP Download method utilizes UDP based TFTP protocol. This method provides fast firmware upgrade speed, but because UDP does not provide reliability, this should be used only in local network segment. TFTP also needs TFTP server software to be running on a PC, and LDK-RSG firmware should be placed and configured properly in the TFTP server.

HTTP Download method is more convenient and reliable way to upgrade LDK-RSG firmware. You may click “Browse…” button, select LDK-RSG firmware file, and then click “Start HTTP Download” to start upgrading LDK-RSG firmware. It normally takes less than 5 minutes to complete.

5.2.7 Module Reset

When “Reset” on the left menu is clicked, Module Reset page will display. This page allows LDK-RSG to be restarted in either of Main Application or Downloader Application mode.

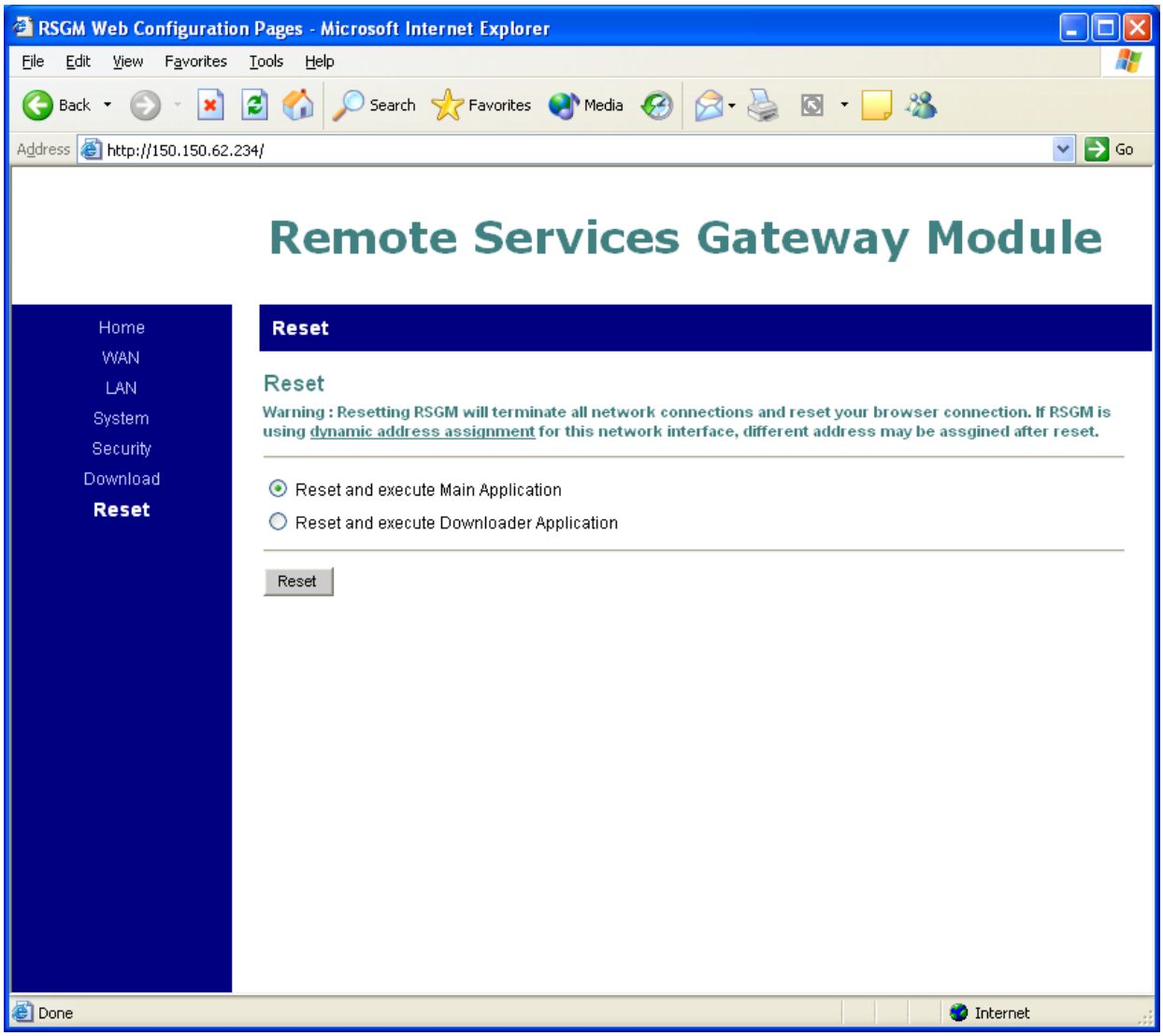


Figure 5.2-19 Module Reset

LDK-RSG has actually two firmware images that are executed for their own purposes.
Main Application is the firmware that makes LDK-RSG work as a remote device of ipLDK system.

Downloader Application is another type of firmware that is executed only when upgrading Main Application firmware. When you try to upgrade LDK-RSG firmware (e.g. by using HTTP Download method), LDK-RSG is automatically restarted to Downloader mode and then executes Downloader Application for proceeding firmware upgrade. But, if problem happens with this automatic procedure for some reason, you may manually restart LDK-RSG into Downloader mode and then proceed firmware upgrade directly using Downloader Application firmware. Main Application and Downloader Application share the same user interface for upgrading LDK-RSG firmware.

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.

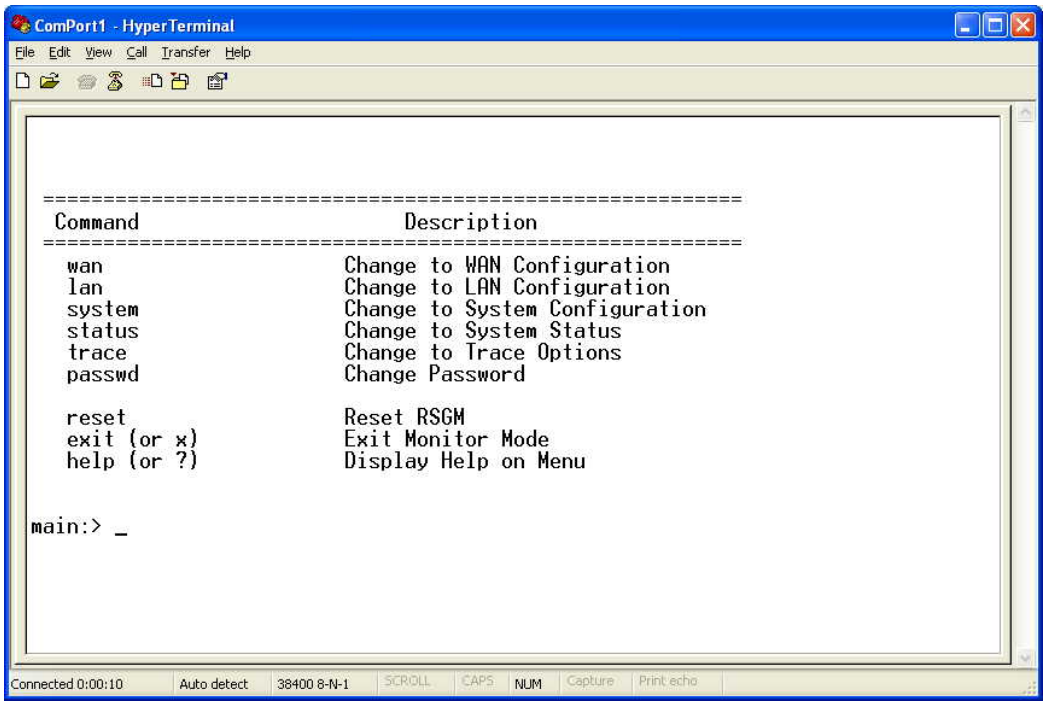


Figure 5.3-1 Initial Serial Configuration Screen

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.

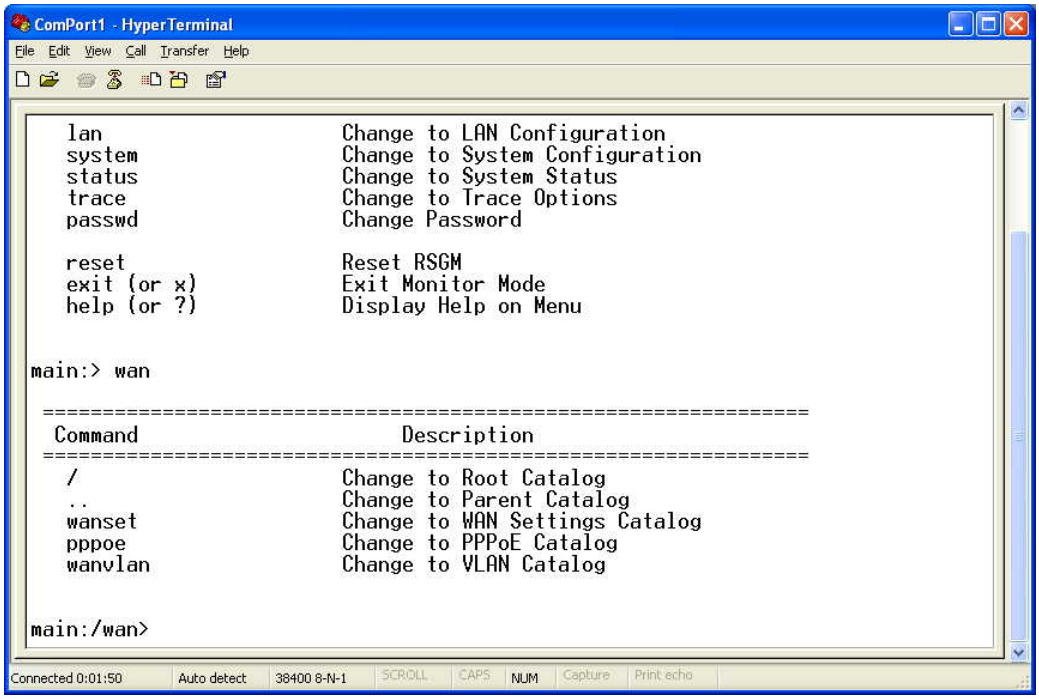


Figure 5.3-2 Entering WAN Configuration

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.

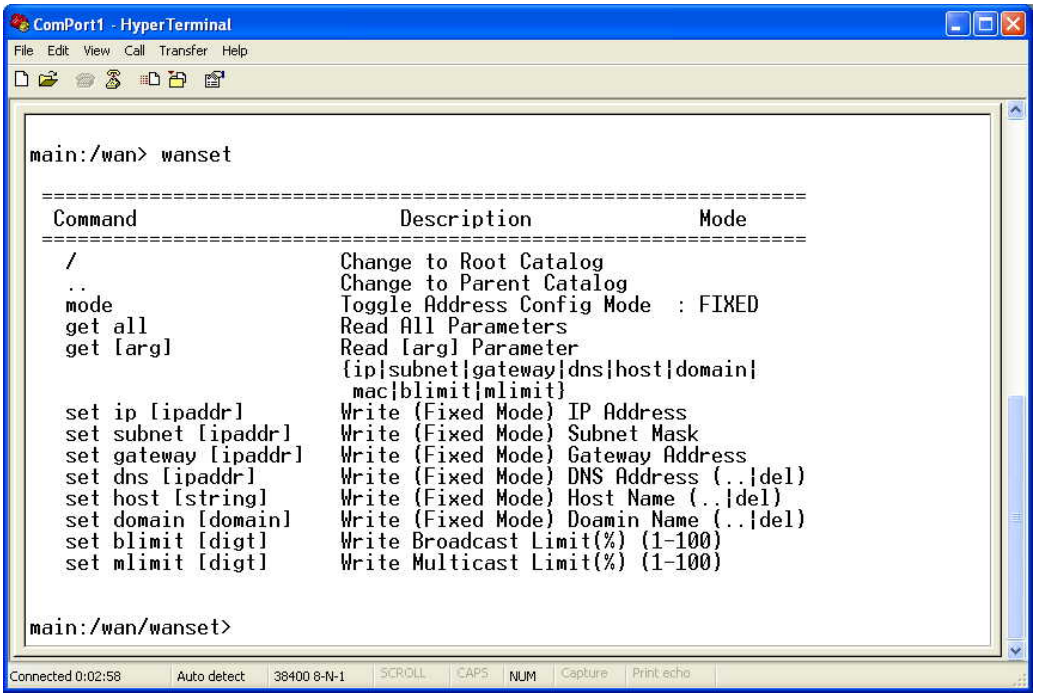


Figure 5.3-3 WAN Settings Menu

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”.

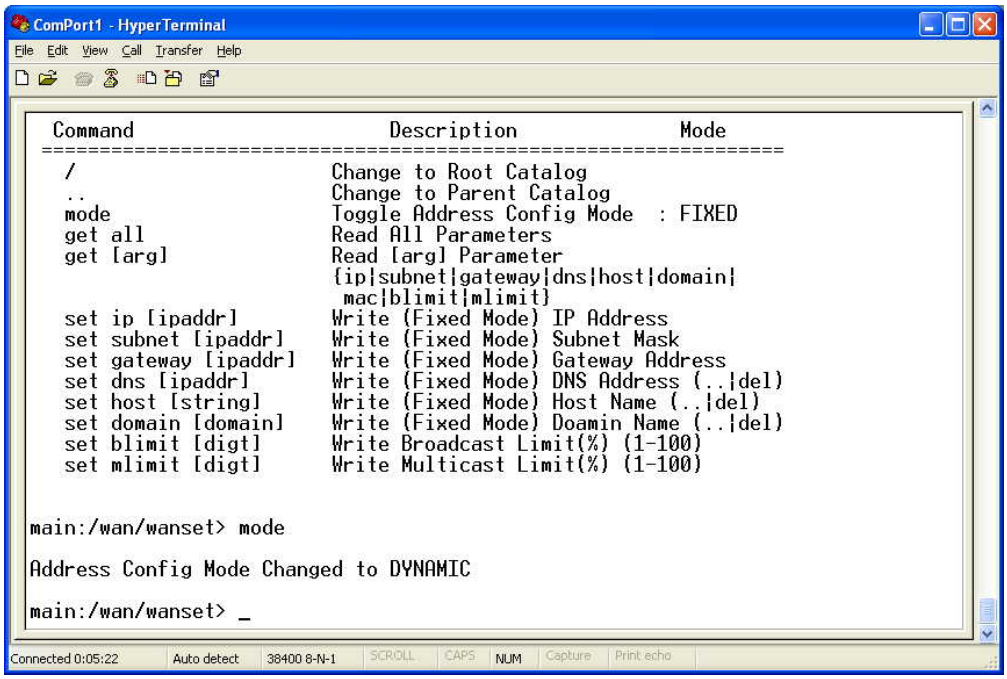


Figure 5.3-4 Setting WAN DHCP Mode

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.

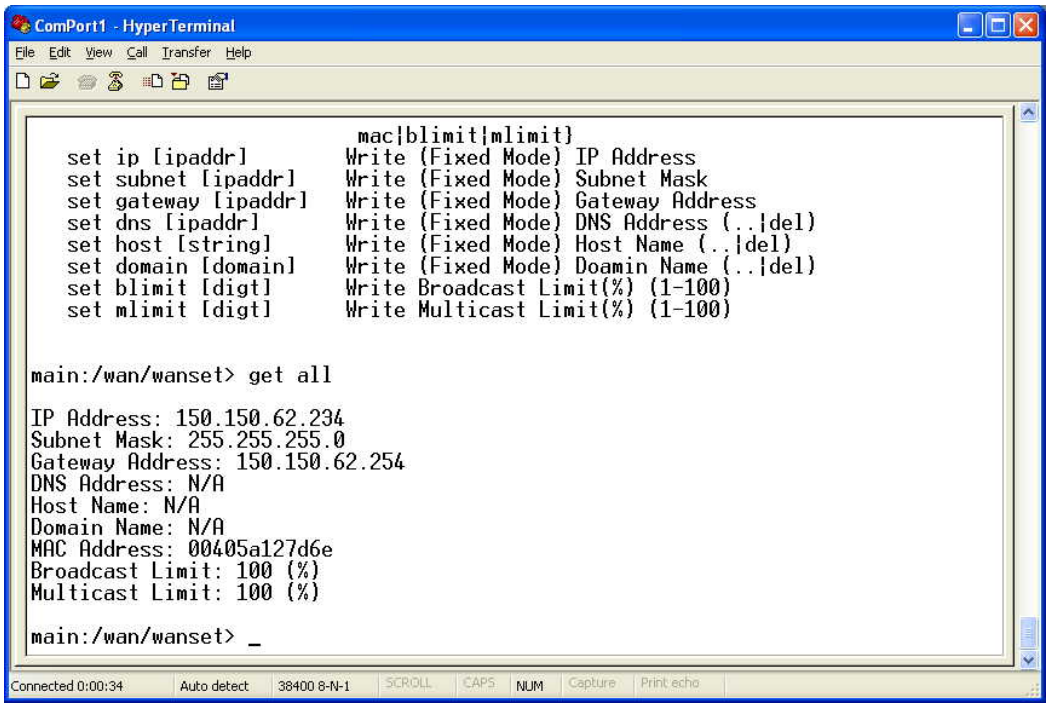


Figure 5.3-5 Displaying WAN Address Information

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.

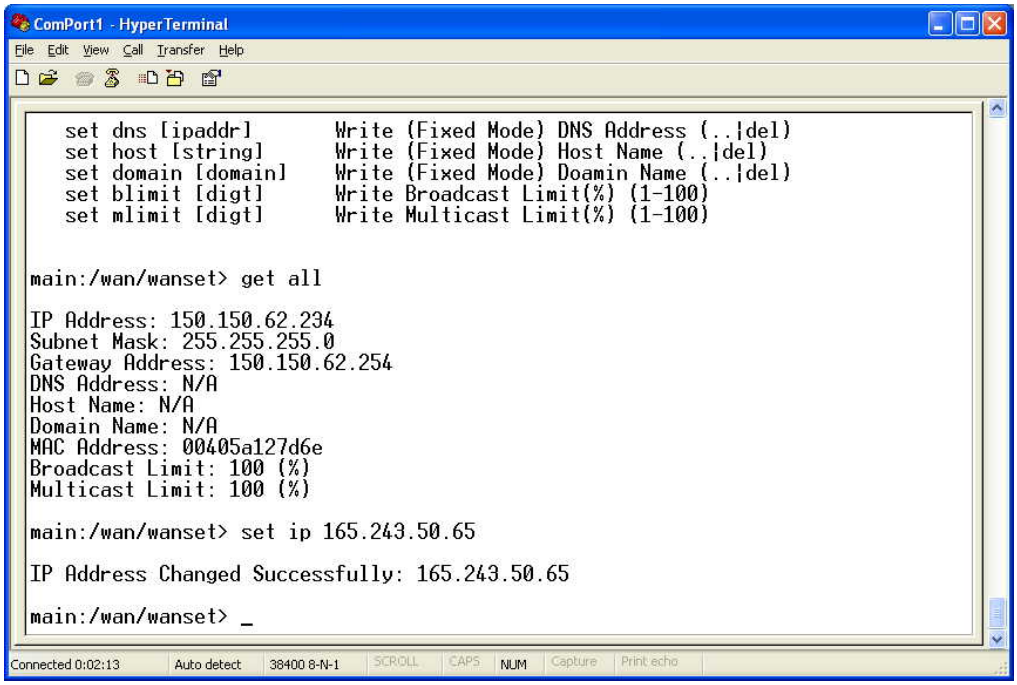


Figure 5.3-6 Setting WAN IP Address

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.

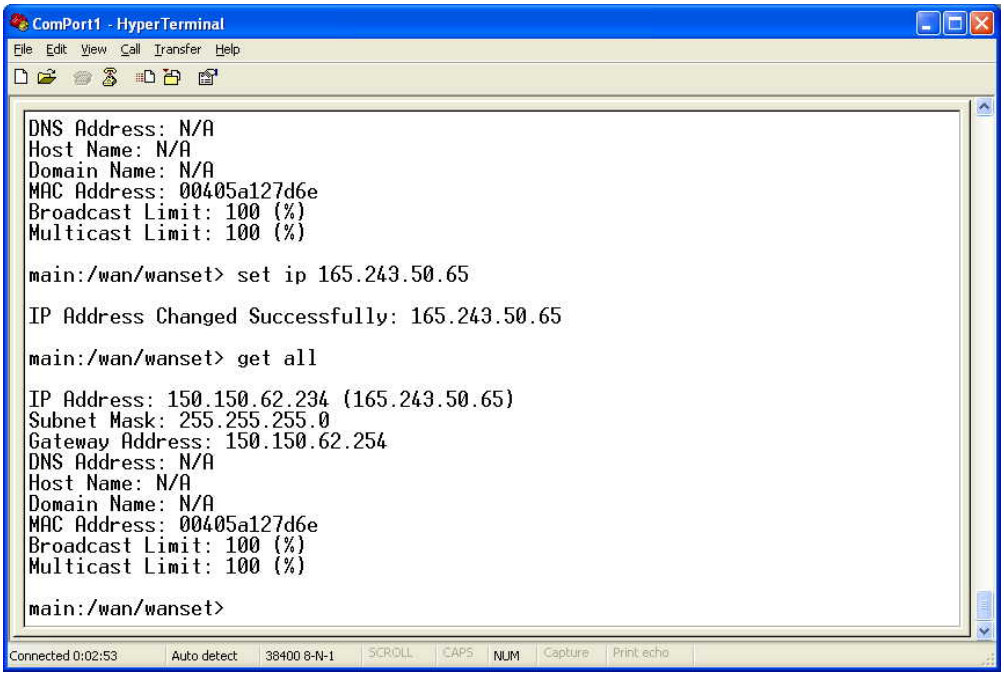


Figure 5.3-7 Displaying WAN Address Information

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.

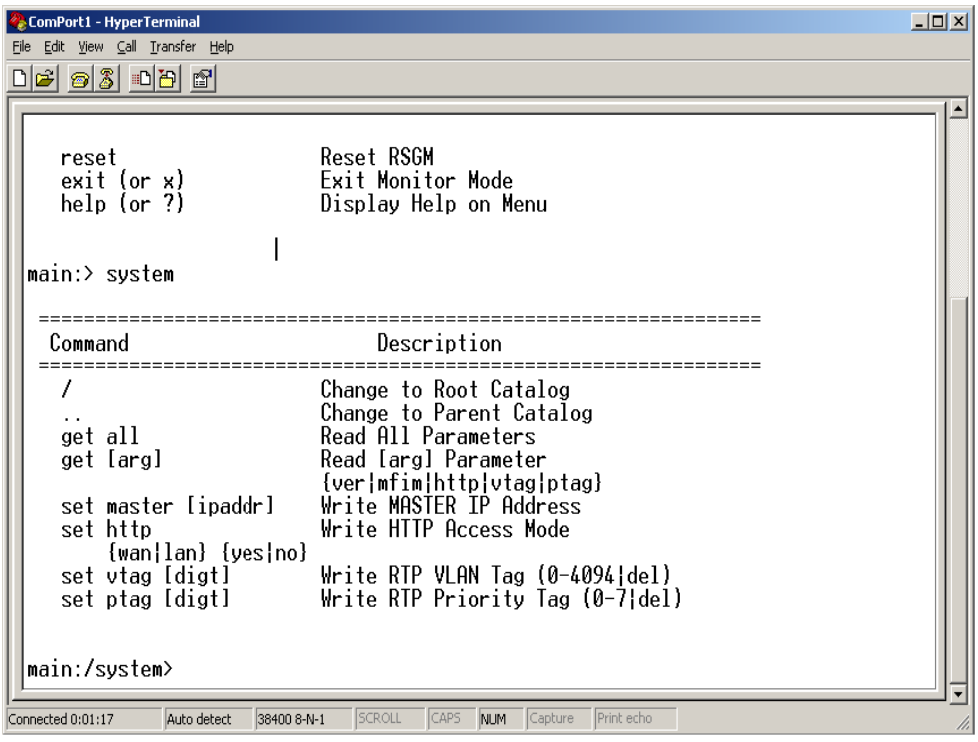


Figure 5.3-8 Entering System Configuration

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.

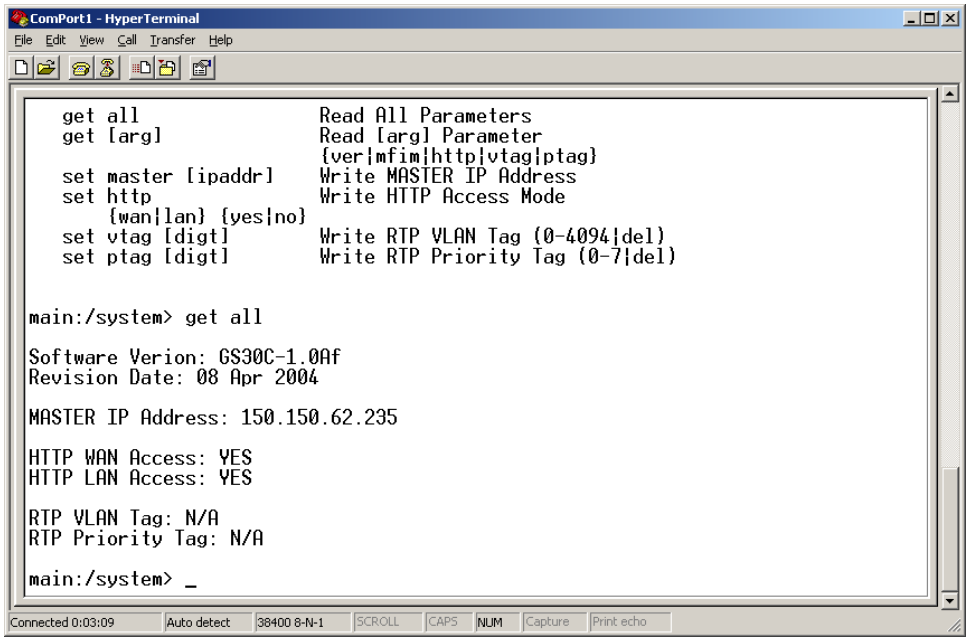


Figure 5.3-9 Displaying System Information

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.

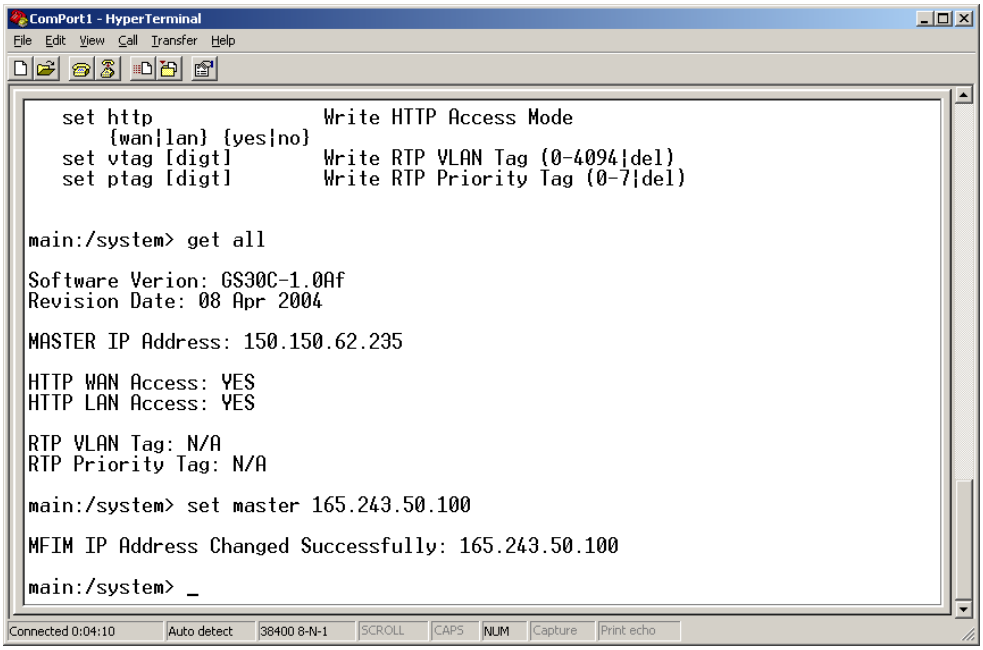


Figure 5.3-10 Setting System IP Address

By typing “set master xxx.xxx.xx.xxx”, you can change the IP address of ipLDK 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 ipLDK 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 ipLDK 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 ipLDK 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 ipLDK 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 ipLDK 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 ipLDK 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 ipLDK host system IP address (e.g. voib) so that LDK-RSG can register with ipLDK 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 RSG receives call service through VOIB.
Then the VOIB for RSG can be assigned.

If several boards are assigned, please assign the first VOIB slot on STA/COL Board in PGM 103/BTN 1 & 2.
ipLDK-300 has same structure to install RSG and IP phone, so sometimes IP phone would be noticed with RSG.

PROCEDURE

VOIB SLOT FOR RSG/IP F1:SLOT	**[TRANS/PGM]** + 380
05 06	For VOIB slot assignment, Press Flex_1. Dial slot numbers.
RSG/IP CHANNEL ASSIGN ENTER VOIB SLOT NO:	For VOIB slot assignment, Press Flex_2. Dial slot numbers.
SLOT 05 RSG/IP CHANNEL (00-08) : 00	Enter VOIB Channel number for RSG/IP
VOIB SLOT FOR RSG/IP PRESS FLEX_BTN (1-2)	Press the **[HOLD/SAVE]** button for saving database permanently. 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		-	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 F1:RSG F2:IP PHONE	**[TRANS/PGM]** + 381
RSG NO 008 (00 ~ 96)	To program the number of to be serviced RSG number, press FLEX BTN 1 and dial RSG number.
IP PHONE NO 000 (00 ~ 96)	To program the number of to be serviced IP Phone number, press FLEX BTN 2 and dial IP Phone number.
RSG/IP NO ASSIGN F1:RSG F2:IP PHONE	Press the **[HOLD/SAVE]** button for saving database 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

* Note) The remote station port number (RSG NO * 2 + IP Phone NO) should be assigned less than 255.

6.3 RSG ATTRIBUTE (PGM 382)

The following is the attributes of RSG.

PROCEDURE

RSG/IP ATTR1 PRESS FLEX KEY (1-7)	**[TRANS/PGM]** + 382.
TRANSFER MODE (1:IP/0:MAC): IP	To program, press Flex BTN 1-5 for setting each value. 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 FLEX KEY (1-7)	Press the **[HOLD/SAVE]** button for updating database 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	
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 1st 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
F2	IP Address View			
F3	RSG Port View			D(xxxx) S(xxxx) C(xxx)
F4	Port Number View			
F5	NAT IP Address View			
F6	NAT Port Number View			
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 ENTER RANGE(01-96)	**[TRANS/PGM]** + 384. Enter the RSG range
01-01 RSG ATTR2 PRESS FLEX (1-12)	To program, press Flex BTN 1-10 for setting each value. 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 ENTER RANGE (01-96)	Press the **[HOLD/SAVE]** button for updating database 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	

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 BTNs show currently assigned RSG alarm zone of the first station in range. To assign alarm, press the BTNs 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 RSG ATTRIBUTE 1 (PGM 386)

The following is the attributes of IP Phone Attribute.

PROCEDURE

IP PHONE ATTR ENTER NO (01-96)	**[TRANS/PGM]** + 383. Enter the RSG number
01 IP PHONE ATTR PRESS FLEX (1-8)	
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.

BTN	ITEM	RANGE	DEFAULT	REMARK
F1	MAC ID		0.0.0.0.0.0-	[*] : A / [#] : B [CB] : C / [MUTE] : D [DND] : E / [FLASH] : F
F2	IP Address View			
F3	IP Phone Station Number View			STA (xxxx)
F4	Port Number View			
F5	NAT IP Address View			
F6	NAT Port Number View			
F7	STUN Enabled View			None, PAT, NAT, NAT/PAT
F8	CTI IP Address			CTI IP Address to support the first party CTI

TABLE 6.7.1 IP Phone Attributes (PGM 386)

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 (1-3)	**[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.

BTN	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.

BTN	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.

BTN	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.

BTN	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.

BTN	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. 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_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.

BTN	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 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 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 LDKe 123.123.10.10. If LDK-RSG has to use 10.10.50.X for WAN side, LAN side address should be changed.