



HUAWEI HG655b Home Gateway

User Guide



HUAWEI HG655b Home Gateway
V100R001

User Guide

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1 Warnings and Precautions

To use the device properly and safely, read these warnings and precautions carefully and strictly observe them during operation. Unless otherwise specified, the term "device" refers to the device and its accessories.

Basic Requirements

- During storage, transportation, and operation of the device, keep it dry and prevent it from colliding with other objects.
- Do not dismantle the device. In case of any fault, contact an authorized service center for assistance or repair.
- Without authorization, no organization or individual can change the mechanical, safety, or performance design of the device.
- When using the device, observe all applicable laws and regulations and respect the legal rights of other people.

Environmental Requirements for Using the Device

- Before connecting and disconnecting cables, stop using the device, and then disconnect it from the power supply. Ensure that your hands are dry during operation.
- Keep the device far from sources of heat and fire, such as a heater or a candle.
- Keep the device far from electronic appliances that generate strong magnetic or electric fields, such as a microwave oven or a refrigerator.
- Place the device on a stable surface.
- Place the device in a cool and well-ventilated indoor area. Do not expose the device to direct sunlight. Use the device in an area with a temperature ranging from 0°C to 40°C.
- Do not block the openings on the device with any object. Reserve a minimum space of 10 cm around the device for heat dissipation.
- Do not place any object (such as a candle or a water container) on the device. If any foreign object or liquid enters the device, stop using the device immediately, power it off, remove all the cables connected to it, and then contact an authorized service center.
- During thunderstorms, power off the device, and then remove all the cables connected to it to prevent it from getting damaged due to lightning strikes.

Areas with Inflammables and Explosives

- Do not use the device where inflammables or explosives are stored, for example, in a gas station, oil depot, or chemical plant. Otherwise, explosions or fires may occur. In addition, follow the instructions indicated in text or symbols.
- Do not store or transport the device in the same box as inflammable liquids, gases, or explosives.

Accessory Requirements

- Use only the accessories supplied or authorized by the device manufacturer. Otherwise, the performance of the device may get affected, the warranty for the device or the laws and regulations related to telecommunications terminals may become null and void, or an injury may occur.
- Do not use the power adapter if its cable is damaged. Otherwise, electric shocks or fires may occur.
- Ensure that the power adapter meets the specifications indicated on the device nameplate.
- Ensure that the power adapter meets the requirements of Clause 2.5 in IEC60950-1/EN60950-1 and it is tested and approved according to national or local standards.

Safety of Children

Keep the device and its accessories out of the reach of children. Otherwise, they may damage the device and its accessories by mistake, or they may swallow the small components of the device, causing suffocation or other dangerous situations.

Maintenance

- If the device is not used for a long time, power it off, and then remove all the cables connected to it.
- If any exception occurs, for example, if the device emits any smoke or unusual sound or smell, stop using the device immediately, power it off, remove all the cables connected to it, and then contact an authorized service center.
- Do not trample, pull, or overbend any cable. Otherwise, the cable may get damaged, causing malfunction of the device.
- Before cleaning the device, stop using it, power it off, and then remove all the cables connected to it.
- Use a clean, soft, and dry cloth to clean the device shell. Do not use any cleaning agent or spray to clean the device shell.

Disposal and Recycling Information



This symbol on the device (and any included batteries) indicates that the device (and any included batteries) should not be disposed of as normal household garbage. Do not dispose of your device or batteries as unsorted municipal waste. The device (and any batteries) should be handed over to a certified collection point for recycling or proper disposal at the end of its life.

For more detailed information about the recycling of the device or batteries, contact your local city office, the household waste disposal service, or the retail store where you purchased this device.

The disposal of this device is subject to the Waste from Electrical and Electronic Equipment (WEEE) Directive of the European Union. The purpose for separating WEEE and batteries from other waste is to minimize any environmental impact and health hazard due to the presence of hazardous substances.

Reduction of Hazardous Substances

This device is compliant with the EU Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation (Regulation No 1907/2006/EC of the European Parliament and of the Council) and the EU Restriction of Hazardous Substances (RoHS) Directive (Directive 2002/95/EC of the European Parliament and of the Council). For more information about the REACH compliance of the device, visit the Web site www.huaweidevice.com/certification. You are recommended to visit the Web site regularly for up-to-date information.

EU Regulatory Conformance

This device should be installed and operated with a minimum distance of 20 cm between the antenna and all persons.

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Notice: This device can be operated in all European countries.

France: Outdoor use limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz.

Italy: For private use, a general authorisation is required if WAS/RLAN's are used outside own premises. For public use, a general authorisation is required.

Luxembourg: General authorisation required for network and service supply.

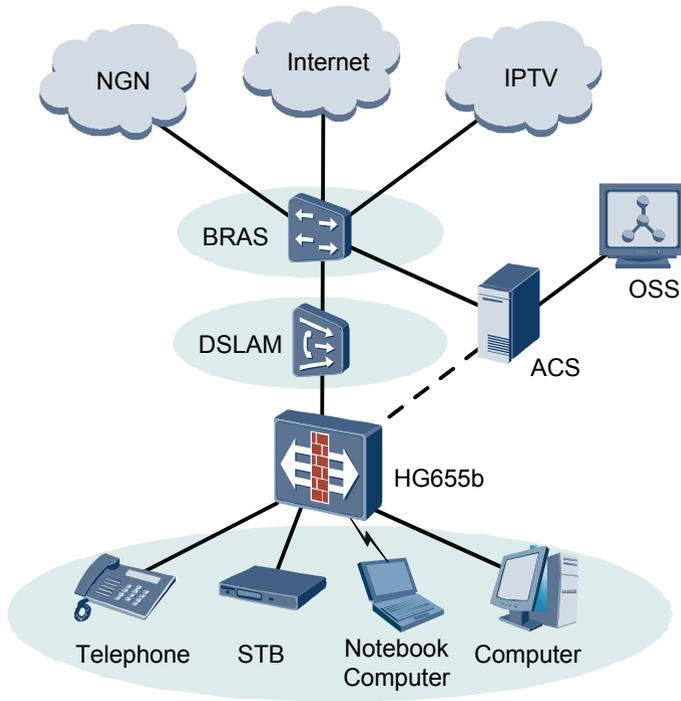
Norway: This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund.

2 Product Overview

2.1 Network Application

Figure 2-1 shows the network application of the HG655b.

Figure 2-1 Network application of the HG655b



 **NOTE**

— : indicates an actual network connection.

- - - : indicates a logical management channel.

Table 2-1 Description of the elements for the network application diagram

Name	Full Spelling
NGN	Next Generation Network
IPTV	Internet Protocol Television
BRAS	Broadband Remote Access Server
DSLAM	Digital Subscriber Line Access Multiplexer
OSS	Operations Support System
ACS	Auto Configuration Server
STB	Set-Top Box

2.2 Indicators, Interfaces and Buttons

2.2.1 Indicators

The indicators of the HG655b are located on the front panel, as shown in Figure 2-2.

Figure 2-2 Indicators

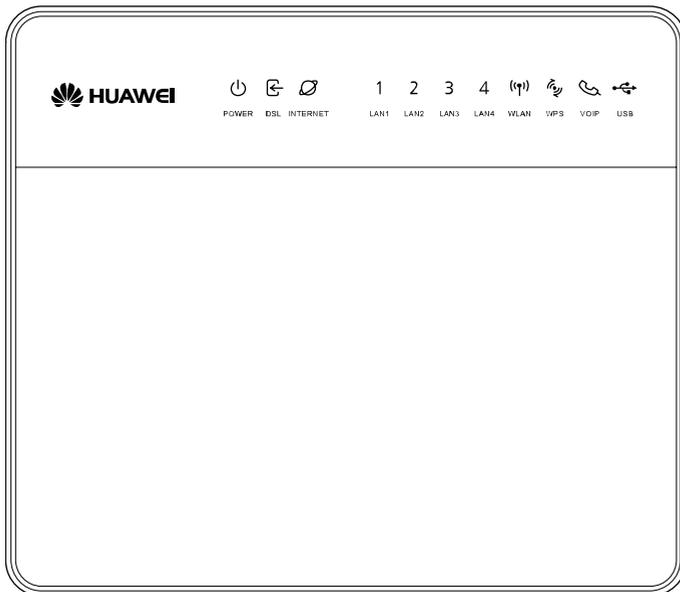


Table 2-2 Description of the indicators

Indicator	Status	Description
POWER	On	The HG655b is powered on.
	Off	The HG655b is powered off.
DSL	On	The DSL connection is established and activated.
	Blinking	The DSL connection is being activated.
	Off	The HG655b is powered off or faulty.
INTERNET	On	The WAN connection is successfully established but no data is being transmitted.
	Blinking	The WAN connection is successfully established and data is being transmitted.
	Off	The HG655b is powered off or the WAN connection is not yet established.
LAN1, LAN2, LAN3, LAN4	On	The LAN connection is successfully established but no data is being transmitted.
	Blinking	The LAN connection is successfully established and data is being transmitted.
	Off	The HG655b is powered off or the LAN connection is not yet established.
WLAN	On	The WLAN connection is successfully established but no data is being transmitted.
	Blinking	The WLAN connection is successfully established and data is being transmitted.
	Off	The HG655b is powered off or the WLAN connection is not yet established.
WPS	Solid On 300s	The WPS password has switched successfully.
	Blinking	The WPS password is being switched.
	Off	The HG655b is powered off.
VOIP	On	The softswitch has logged in successfully.
	Off	The HG655b is powered off or no softswitch connection.
USB	On	The USB connection is successfully established at USB host mode but no data is being transmitted.
	Blinking	The USB connection is successfully established at USB host mode and data is being transmitted.
	Off	The HG655b is powered off or the USB connection is not yet established.

2.2.2 Interfaces and Buttons

Figure 2-3 Interfaces and buttons

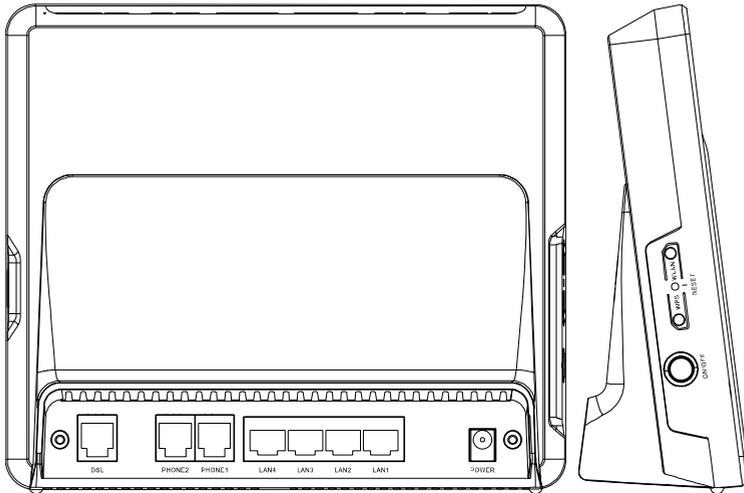


Table 2-3 Functions of the interfaces and buttons

Interface or Button	Function
DSL	Connects a splitter.
PHONE1, PHONE2	Connects a phone.
LAN1–LAN4	Connect PCs, switches, or other equipment.
RESET	Restarts the equipment if this button is pressed and held for three to six seconds, restores the factory settings of the equipment if held for more than six seconds. NOTE After you restore the default settings, the customized data will be lost. Therefore, press the RESET button with caution.
WPS	It is used to enable or disable the WPS function.
WLAN	It is used to enable or disable the WLAN function.
ON/OFF	It is used to power on or off the HG655b.
POWER	Connects a power adapter.

3 Product Installation and Getting Started

3.1 Connecting the Cables

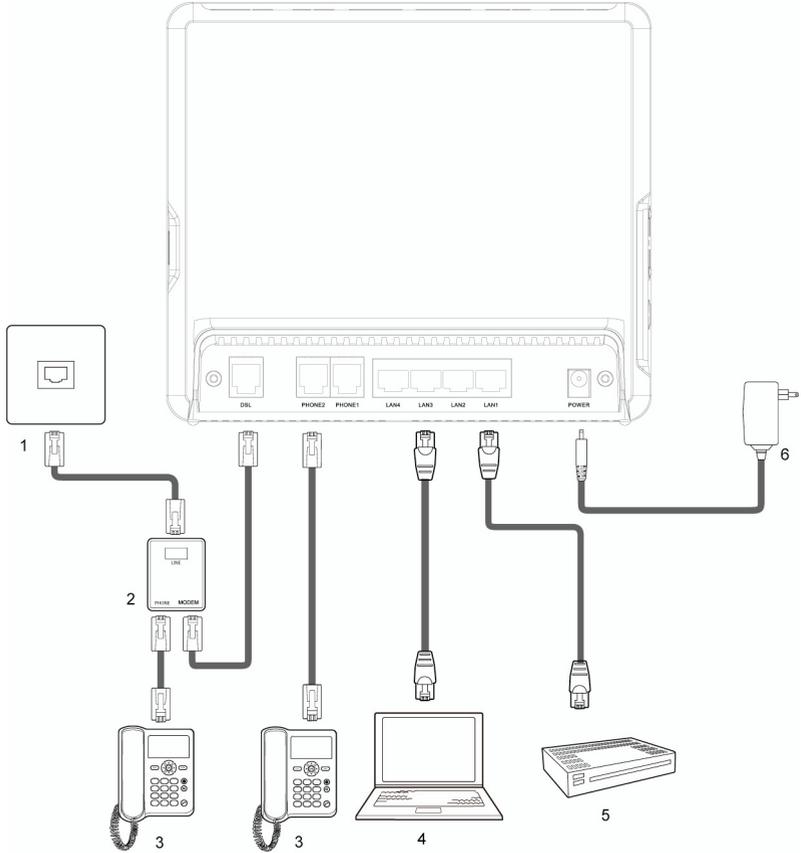


CAUTION

Before connecting the cables, power off all equipment connected to it including the HG655b, the PC, and the switch.

Connect the cables according to Figure 3-1.

Figure 3-1 Connecting the HG655b



- | | | | | | |
|---|-----------------|---|-------------|---|---------------|
| 1 | Phone interface | 2 | Splitter | 3 | Phone |
| 4 | PC | 5 | Set-top box | 6 | Power adapter |

3.2 Getting Started

To power on the HG655b, press the **ON/OFF** button on the rear panel of the HG655b.

After you power on the HG655b, the **DSL** indicator blinks (for less than three minutes), which indicates that the HG655b is being activated. Later, the **DSL** indicator turns solid on. The **POWER** indicator is also solid on, which indicates that the HG655b is working properly.

4 Configuring the HG655b

4.1 Accessing the Web Configuration Page

The HG655b provides simple and easy-to-use Web configuration page, through which you can check and configure the working parameters of the HG655b.

To log in to the Web configuration page, do as follows:

Step 1 Start the Internet Explorer on the PC.

Step 2 Enter **http://192.168.1.1** in the address bar of the Internet Explorer, and then press **Enter**.

The **Login** dialog box is displayed.

Enter the administrator name (**admin** by default) and password (**admin** by default) in the **Login** dialog box, and then click **Login**.

4.2 Changing the Administrator Password

For safety reasons or to make the password easy to remember, you can change the administrator password for login after logging in to the Web-based configuration utility.

To change the password, do as follows:

Step 1 Log in to the Web-based configuration utility.

Step 2 Choose **Maintenance > Account** in the navigation tree to display the account page.

Step 3 Enter the current password and the new password. Then enter the new password again in the **Confirm Password** text box for confirmation.

Step 4 Click **Submit** to save the settings.

After you change the password successfully, next time log in to the Web-based configuration utility, enter the new password, and then click **Login**.

NOTE

If you forget the user name or password that has been changed, you can restore the default settings of the HG655b by pressing and holding the **RESET** button for over six seconds. After you restore the default settings, however, your customized data is lost. Therefore, use this function with caution.

4.3 Changing the IP Address

To make the login IP address easy to remember, you can change the IP address after logging in to the Web-based configuration utility.

To change the IP address, do as follows:

- Step 1** Choose **Basic** > **LAN** in the navigation tree to display the LAN settings page.
- Step 2** Enter a new IP address as desired in the **IP address** text box. Then, enter a subnet mask in the **Subnet mask** text box.
- Step 3** Click **Submit** to save the settings.



NOTE

To log in to the Web-based configuration utility after you change the IP address successfully, you need to launch the Internet Explorer, and then enter the new IP address in the address bar. Ensure that the IP address of the computer is in the same network segment as that of the HG655b so that the computer can access the Web-based configuration utility.

4.4 Restoring Default Settings

You can quickly restore the default settings of the HG655b by pressing the **RESET** button on the rear panel. To restore the default settings, press and hold the **RESET** button for over six seconds after the HG655b is powered on, and then release the button. In addition, you can restore the default settings of the HG655b through the Web-based configuration utility. To restore the default settings through the Web-based configuration utility, do as follows:

- Step 1** Log in to the Web-based configuration utility, and then choose **Maintenance** > **Device** in the navigation tree to display the reboot page.
- Step 2** Select **Reset**.
- Step 3** Click **Restore Default Settings** button.

After the preceding operations, the page jumps to the login page. You can log in to the Web-based configuration utility by entering the default user name and password that are **admin**.

5 Setting the Network-Access Parameters

By configuring the HG655b and your computer, you can choose any of the following methods to surf the Internet:

- Accessing the Network by the Embedded PPP Dial-Up Software on the HG655b
- Accessing the Network by the PPP Dial-Up Software on Your Computer

5.1 Accessing the Network by the Embedded PPP Dial-Up Software on the HG655b

If you select this method for accessing the network, the HG655b starts to set up a dial-up connection automatically after the startup. You can access the network after you power on your computer. To configure the HG655b and your computer for the network access, do as follows:

Step 1 Log in to the Web-based configuration utility of the HG655b. More details, see "4.1 Accessing the Web Configuration Page".

Step 2 Configure the PTM PVC and ATM PVC.

1. In the navigation tree, choose **Basic > ATM**.
2. Click **New**.
3. Enter VPI and VCI in the **VPI/VCI** text box provided by the Internet Service Provider.
4. Select **EoA** from the **DSL link type** option button, and keep the default settings of other parameters.
5. Click **Submit**.



NOTE

Just keep the default settings for PTM.

Step 3 Enable the embedded dial-up function.

1. In the navigation tree on the left of the Web-based configuration utility, choose **Basic > WAN**.
2. Click **New**.
3. Select a PVC from the **Layer2 interface** drop-down combo box.



NOTE

The HG655b supports ADSL/VDSL compliance uplink. When choose the ADSL uplink mode, the name of PVC should be composed by the value of VPI and VCI. When choose the VDSL uplink mode, the name of PVC should begin with ptm.

4. Select **Enable** check box for **WAN connection**.

5. Select **VOICE_TR069_INTERNET** from the **Service list** drop-down combo box.
6. Select **Route** from the **Connection mode** drop-down combo box.
7. Select **PPPoE** option button for **Connection type**.
8. Select **Enable** check box for **NAT**.
9. Enter the user name and password that are provided by the network operator in the **User name** and **Password** text boxes, and keep the default settings of other parameters.
10. Click **Submit** to save the settings.

After you complete the preceding settings, you can surf the Internet.

5.2 Accessing the Network by the PPP Dial-Up Software on Your Computer

If you select this method for accessing the network, you need to install and configure the dial-up software on your computer. In addition, you need to perform dial-up operations on your computer upon each startup. To configure the HG655b and your computer for the network access, do as follows:

Step 1 Set the working mode of the HG655b to **Bridge**.

For details, refer to the procedure for enabling the embedded dial-up function described in Step 3 in section "5.1 Accessing the Network by the Embedded PPP Dial-Up Software on the HG655b." Note that **Bridge** is selected from the **Connection mode** drop-down combo box.

Step 2 Configure the PPP dial-up software on your computer.

The PPP dial-up software is pre-installed on certain computer operating systems. To create a dial-up connection, do as follows (taking the Windows XP operating system as an example):

1. Choose **Start > All Programs > Accessories > Communications > Network Connections**.
2. Click **Create a new connection** in **Network Tasks** to display the **New Connection Wizard** window, and then click **Next**.
3. Select **Connect to the Internet**, and then click **Next**.
4. Select **Set up my connection manually**, and then click **Next**.
5. Select **Connect using a broadband connection that requires a user name and password**, and then click **Next**.
6. Enter the name (as desired) of the dial-up connection in **ISP Name**, and then click **Next**.
7. Select **Anyone's use** or **My use only**, and then click **Next**.
8. Enter the user name and password provided by the network operator and used for the dial-up connection, and then click **Next**.
9. Select **Add a shortcut to this connection to my desktop**, and then click **Finish**.

An icon for the dial-up connection is displayed on the desktop of your computer.

You need to perform the preceding operations only once for creating a network connection. After the network connection is created, to access the network, double-click the icon for the dial-up connection, and then click **Connect** in the displayed dialog box.

6 Configuring the wireless network

If a wireless network adapter is installed on your computer, you can connect your computer to the HG655b through a wireless connection.

There are two methods to configure the wireless network connection to enable the Wi-Fi function of the HG655b:

6.1 Configuring the Wireless Connection by the Web Page

To configure the wireless network connection by configuring the web page, do as follows:

Step 1 Set the wireless network name and access password of the HG655b (taking the authentication type WPA-PSK as an example):

1. Log in to the Web-based configuration utility.
2. In the navigation tree on the left, choose **Basic > LAN**.
3. Select **WLAN**.
4. Select the **Enable WLAN** option button.
5. Enter a wireless network name in the **SSID** text box.
6. Select **WPA-PSK** from the **Security** drop-down combo box.
7. Enter an access password in the **WPA pre-shared Key** text box.
8. Select **TKIP** from the **WPA encryption** drop-down combo box, and keep the default settings of other parameters.
9. Click **Submit** to save the settings.

Step 2 Configure the wireless network connection on your computer (taking the Windows XP operating system as an example):

1. Choose **Start > All Programs > Accessories > Communications > Network Connections**.
2. In the **Network Connections** window, right-click **Wireless Network Connection** to display a shortcut menu, and then select **View Available Wireless Networks** from the shortcut menu.
3. Select the wireless network that is configured in Step 1 from the wireless network list, and then click **Connect** in the lower right corner of the window.
4. In the displayed dialog box, enter the access password that is preset in Step 1, and then click **Connect**.

After the password is verified, **Connected** appears on the icon of the wireless network in the wireless network list, which indicates that your computer is connected to the HG655b through wireless connection.

6.2 Configuring the Wireless Connection by the button

If the wireless network adapter on your computer can support the WPS function, you can connect your computer to the HG655b wirelessly as follows:

- Step 1** Press the WLAN button on the side panel of the HG655b and hold it for more than two seconds.
- Step 2** Press the WPS button on the side panel. The WPS negotiation function is then enabled.
- Step 3** Enable the WPS negotiation function of the wireless network adapter within 2 minutes.



NOTE

After you install a wireless network adapter on your PC and enable the WPS negotiation function of the wireless network adapter, the wireless data card automatically searches for an available wireless network.

Wait for a few seconds, and then you can see the Wi-Fi indicator  turning red permanently on the front panel of the HG655b and the wireless icon on the corner to the right of the task bar of the PC. Then you can access the Internet through WLAN and do not need to connect any Ethernet cable.

7 Configuring the Voice Services

7.1 Introduction

The HG655b supports voice services based on the Session Initiation Protocol (SIP).

The SIP is an application layer protocol used to create, modify, or end multimedia sessions. Based on text coding, the SIP references the Hyper Text Transport Protocol (HTTP) and the Simple Mail Transfer Protocol (SMTP), and can cooperate with other protocols, such as the Real-time Transport Protocol (RTP), the Real-time Transport Control Protocol (RTCP), the Session Description Protocol (SDP), and the Domain Name Server (DNS) protocol to implement voice services and the facsimile service.

The HG655b enables voice service interworking between the Internet and the Public Switched Telephone Network (PSTN).

7.2 Configuration Procedure

To configure voice services, do as follows:

- Step 1** Configure the WAN interface. For details, see section "5 Setting the Network-Access Parameters".
- Step 2** Configure the SIP user.
1. Choose **Basic > VoIP** in the navigation tree to display the **VoIP** page.
 2. Click **New**.
 3. Enter the SIP account number of the gateway provided by the Internet Service Provider in the **SIP account number** text box.
 4. Enable the **SIP user**.
 5. Enter the user name and the password of the SIP account provided by the Internet Service Provider in the **User name** and the **Password** text boxes.
 6. Enter the port of the SIP account provided by the Internet Service Provider in the **Local SIP port** text box, and keep the default settings of other parameters.
- Step 3** Click **Submit** to save the settings.

8 FAQs

8.1 How can I configure a computer to use a static IP address?

Take a computer that runs Windows XP as an example. To configure the computer to use a static IP address, do as follows:

- Step 1** In the **Control Panel** window, double-click **Network Connections** to display the **Network Connections** window.
- Step 2** In the **Network Connections** window, right-click the working **Local Area Connection** and choose **Properties**.
- Step 3** In the **This connection uses the following items** group box of the Local Area Connection Properties dialog box, select **Internet Protocol (TCP/IP)**. Click **Properties**.
- Step 4** Select **Use the following IP address**.
- Step 5** Set the IP address of the computer and ensure that the IP address is in the same network segment as the local area network (LAN) IP address of the terminal.

Assume that the default LAN IP address of the terminal is 192.168.1.1. To set the IP address of the computer, do as follows:

1. In **IP address**, enter **192.168.1.100**. Ensure that this IP address is unique and not used by other computers.



NOTE

The configurable static IP address ranges from 192.168.1.2 to 192.168.1.254.

2. In **Subnet mask**, enter **255.255.255.0**.
 3. In **Default gateway**, enter **192.168.1.1**.
- Step 6** Consult your Internet Service Provider about the IP address of the domain name server (DNS). In **Preferred DNS server** and **Alternate DNS server**, enter the IP address.
- If you configure the static IP address for the purposes of accessing the Web configuration page of the terminal, you can skip this step.
- Step 7** In the **Internet Protocol (TCP/IP) Properties** dialog box, click **OK**. Then in the **Local Area Connection Properties** dialog box, click **OK**.

8.2 What can I do if I cannot visit Web sites through the terminal?

Step 1 Check whether the POWER indicator of the terminal is on.

If the POWER indicator is off, perform further checks as follows:

1. Ensure that the power switch of the terminal is turned on.
2. Ensure that electricity comes from the socket and that the input power of the socket meets the requirements described on the label of the terminal power adapter. If the voltage is unsteady, for example, if the voltage is too high or too low, do not use the terminal. Wait until the voltage restores to its normal level, and then use the terminal.
3. Ensure that the terminal is properly connected to the socket through the power adapter.

If the POWER indicator is still off, contact an authorized maintenance center.

Step 2 After powering on the terminal, wait for about three minutes. Then check whether the DSL indicator of the terminal is on.

If the DSL indicator blinks for a long time, perform further checks as follows:

1. Ensure that telephone lines are properly connected. Especially ensure that the telephone line connecting to the splitter is properly connected.
2. Ensure that terminal cables or telephone lines are far from the electric appliances that generate strong magnetic or electric fields.
3. Replace telephone lines.

If the DSL indicator still blinks, contact your Internet Service Provider.

Step 3 Check whether the LAN indicator of the terminal is on.

If the LAN indicator is off, perform further checks as follows:

1. Ensure that the network adapter of the computer is enabled.
2. Ensure that the network cable between the terminal and the computer is properly connected.
3. Remove and then insert the network cable or replace the network cable.

If the LAN indicator is still off, contact an authorized maintenance center.

Step 4 Check whether the driver for the network adapter is properly installed.

Take a computer that runs Windows XP as an example. To check whether the driver for the network adapter is installed, do as follows:

1. On the desktop, right-click **My Computer** and choose **Manage**.
2. In the navigation tree of the **Computer Management** window, choose **Device Manager**.
3. In the right pane of the **Computer Management** window, click **Network adapters** to view the information about the network adapter of the computer.

If no network adapter is detected or if a question mark (?) or an exclamation mark (!) is displayed next to the icon of the network adapter, you can infer that the driver for the

network adapter is not properly installed. In this case, re-install the driver for the network adapter of the computer.

For details about how to set the parameters, see the description of the PPP dialing software.

Step 5 Ensure that you have entered the correct user name and user password that are required by the PPP dialing software.

The user name and the user password are provided by your Internet Service Provider.

Step 6 Check whether you can use the PPP dialing software to dial successfully.

If you cannot use the PPP dialing software to dial successfully, perform further checks as follows:

1. Stop the PPP dialing software and then power off the terminal. After five minutes, power on the terminal and use the PPP dialing software to dial again.
2. Restore the default settings of the terminal.

If the problem persists, contact your Internet Service Provider.

Step 7 Check whether the proxy server of the Web browser is correctly configured. Take the Internet Explorer installed on a computer that runs Windows XP as an example. To check whether the proxy server of the Web browser is correctly configured, do as follows:

1. Start the Internet Explorer.
2. Choose **Tools > Internet Options**.
3. In the **Internet Options** dialog box, click the **Connections** tab.
4. In the **Local Area Network (LAN) settings** group box, click **LAN settings**.
5. In the **Proxy server** group box of the **Local Area Network (LAN) Settings** dialog box, ensure that **Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections)** is not selected.

Step 8 Try to access multiple other Web sites to check whether the terminal can access.

If the terminal still cannot access other Web sites, contact your Internet Service Provider.

8.3 What can I do if I cannot access the terminal configuration page?

Step 1 See the answer to 8.2 "What can I do if I cannot visit Web sites through the terminal?" and ensure that the power supply of the terminal works properly and that the telephone lines and network cables of the terminal are properly connected.

Step 2 Check the IP address of your computer and ensure that this IP address is in the same network segment as the LAN IP address of the terminal.

Step 3 Ensure that your Web browser does not use a proxy server.

Step 4 Ensure that you have entered the correct user name and user password that are used for accessing the terminal configuration page.

If the problem persists, restore the default settings of the terminal.

8.4 What can I do if Web pages often cannot be displayed during Web page browsing and can be displayed after the terminal is restarted?

Step 1 Ensure that the terminal and other devices such as telephones or fax machines are connected to the telephone line through a splitter.

For details about how to install a splitter, see the related description in the manual.

Step 2 Ensure that telephone lines are properly connected.

If the telephone lines are improperly connected, the stability of the network connection is affected.

Step 3 Check the positions of your terminal and computer. Ensure that they are far from the electric appliances such as microwave ovens, refrigerators, or cordless telephones that generate strong magnetic or electric fields.

If the problem persists, contact your Internet Service Provider.

8.5 What can I do if noises exist during telephone calls?

Step 1 Ensure that a splitter is installed.

A splitter helps to protect the call quality of the asymmetric digital subscriber line (ADSL) from being affected due to the interference of other type of signals.

Step 2 Ensure that telephone lines are properly connected. Especially ensure that the telephone line connecting to the splitter is properly connected.

Step 3 Replace telephone lines and ensure that the telephone lines are not faulty.

8.6 After a broadband terminal is installed, does Internet access degrade call quality or do telephone calls lower the Internet access rate?

No. The terminal uses the frequency division multiplexing (FDM) and splitter technologies to separate voice signals from data signals. Although the two types of signals are transmitted through one telephone line, they are carried by different frequency bands. Therefore, they do not interfere with each other. In this case, you can make a telephone call and access the Internet at the same time, without degrading call quality or lowering the Internet access rate.

9 Appendix

9.1 Default Settings

Parameter	Setting
IP address of the LAN interface	192.168.1.1
Subnet mask of the LAN interface	255.255.255.0
User name / Password used for logging in to the Web-based configuration utility	admin / admin
DHCP server function	Enable

9.2 Technical Specifications

Item	Specification	
Entire-device power supply	12 V DC, 1.5 A	
Entire-device power consumption	< 16 W	
Ambient temperature for operation	0°C to 40°C (32°F to 104°F)	
Relative humidity for operation	5% to 95%, non-condensing	
Dimensions (L × W × H)	194 mm × 60 mm × 165 mm	
Weight	<1 kg	
Standards	ADSL standards	<ul style="list-style-type: none"> ITU G.992.1 (G.dmt) Annex A ITU G.994.1 (G.hs), ANSI T1.413 Issue 2
	ADSL2 standard	ITU G.992.3 (G.dmt.bis) Annex A
	ADSL2+ standard	ITU G.992.5 Annex A
	VDSL2 standard	ITU G.993.2 Annex B, ITU G.994.1
DSL transmission rates	G.dmt T1.413	<ul style="list-style-type: none"> Maximum downlink rate: 8 Mbit/s Maximum uplink rate: 896 kbit/s
	G.992.5 (ADSL2+)	<ul style="list-style-type: none"> Maximum downlink rate: 24 Mbit/s Maximum uplink rate: 1024 kbit/s
	G.993.2 (VDSL2)	<ul style="list-style-type: none"> Maximum downlink rate: 88 Mbit/s Maximum uplink rate: 45 Mbit/s

9.3 Glossary

ACS

Automatic Configuration Server

A Web-based management system encompassing configuration and administration of an end-to-end IP communications solution. On your automatic-configuration server, create global groups that correspond to your .ins file name (without the extension)—for example, IE_groupname.

ADSL

Asymmetric Digital Subscriber Line

ADSL is a technology for transmitting digital information at a high bandwidth on existing phone lines to homes and businesses. Unlike regular dial-up phone service, ADSL provides continuously-available, "always on" connection. ADSL is asymmetric in that it uses most of the channel to transmit downstream to the user and only a small part to receive information from the user. ADSL simultaneously accommodates analog (voice) information on the same line. ADSL is generally offered at downstream data rates from 512 kbit/s to about 6 Mbit/s.

ADSL2+

Asymmetric Digital Subscriber Line 2+

ADSL2plus doubles the bandwidth used for downstream data transmission, effectively doubling the maximum downstream data rates, and achieving rates of 20 Mbit/s on phone lines as long as 5,000 feet. ADSL2plus solutions will most commonly be multimode, interoperating with ADSL and ADSL2, as well as with ADSL2plus chipsets.

ATM

Asynchronous Transfer Mode

Asynchronous transfer mode is a high-performance, cell-oriented switching and multiplexing technology that utilizes fixed-length packets to carry different types of traffic. ATM was originally conceived as a high-speed transfer technology for voice, video, and data over public networks.

Browser

A computer program that allows users to view information from the Internet. To use a browser, you type in the URL of a website, the browser then connects your computer to the website, and displays the information on your screen.

DHCP

Dynamic Host Configuration Protocol

DHCP is a client-server networking protocol. Most organizations use DHCP. A DHCP server provides configuration parameters specific to the DHCP client host requesting, generally, information required by the host to participate on the Internet network. DHCP also provides a mechanism for allocation of IP addresses to hosts.

DNS

Domain Name System

A hierarchical way of tracking domain names and their addresses, devised in the mid-1980s. The DNS database does not rely on one file or even one server, but rather is distributed over several key computers across the Internet to prevent catastrophic failure if one or a few computers crash. DNS is a TCP/IP service that belongs to the Application layer of the OSI model.

Ethernet

A local area network (LAN) architecture developed by Xerox Corporation in cooperation with DEC and Intel in 1976. Ethernet uses a bus or star topology and supports data transfer rates of 10 Mbit/s. The Ethernet specification serves as the basis for the IEEE 802.3 standard, which specifies the physical and lower software layers. Ethernet uses the CSMA/CD access method to handle simultaneous demands. It is one of the most widely implemented LAN standards.

IEEE

Institute of Electrical and Electronics Engineers

Institute of Electrical and Electronics Engineers (IEEE) is a standards organization for computer and electronic devices. Its senior members are IEEE fellows.

Internet

Largest global internet work, connecting tens of thousands of networks worldwide and having a "culture" that focuses on research and standardization based on real-life use. Many leading-edge network technologies come from the Internet community.

The most important uses of Internet are:

- Email
- World Wide Web (WWW)
- Data transfer
- Forum of discussion
- Peer-to-peer data transfer
- Chat
- Audio/video streaming

IP

Internet Protocol

The set of standards responsible for ensuring that data packets transmitted over the Internet are routed to their intended destinations.

IP address

An IP address is the logical address of a network adapter. The IP address uniquely identifies computers on a network. An IP address can be private, for use on a LAN, or public, for use on the Internet or other WAN.

ISP

Internet Service Provider

An ISP (Internet Service Provider) is a commercial enterprise, which allows users, companies, and organizations to access the Internet.

LAN

Local Area Network

A computer network covering a small local area, like a home, office, or small group of buildings such as a home, office, or college. Current LANs are most likely to be based on switched Ethernet or Wi-Fi technology running at 10, 100 or 1,000 Mbit/s (1,000 Mbit/s is also known as 1 Gbit/s).

MAC address

It is a hardware address that uniquely identifies each node of a network.

Mbit/s

Megabit per second

A unit used to express the speed of a network.

NAPT

Network Address Port Translation

NAPT enables a LAN to use one set of IP addresses for internal traffic and a second set of addresses for external traffic.

PPPoE

Point-to-Point Protocol over Ethernet

PPPoE is a network protocol for encapsulating PPP frames in Ethernet frames. It is used mainly with DSL services. It offers standard PPP features such as authentication, encryption, and compression.

Protocol

On the Internet, "protocol" usually refers to a set of rules that define an exact format for communication between systems.

PSTN

Public Switched Telephone Network

Refers generally to the variety of telephone networks and services in place worldwide and is sometimes called POTS.

In United States, PSTN refers to the entire interconnected collection of local, long distance and international phone companies, which could be thousands.

PTM

Packet Transfer Mode

In this model, IP packets directly encapsulated in HDLC frame format for transmission.

Server

A computer or program that responds to commands from a client. For example, a file server may contain an archive of data or program files. When a client submits a request for a file, the server transfers a copy of the file to the client.

Subnet mask

The technique used by the IP protocol to determine the network segment to which packets are sent. The subnet mask is a binary pattern that is stored in the client machine, server or router, and is matched with the IP address.

TCP

Transmission Control Protocol

A reliable transport protocol within the TCP/IP protocol suite. TCP ensures that all data reaches the other end accurately and data is 100% intact. TCP's unreliable counterpart is UDP, which is used for streaming media, VoIP and videoconferencing.

TCP/IP

A suite of communications protocols used to connect hosts on the Internet. TCP/IP uses several protocols, the two main ones being TCP and IP.

UDP

User Datagram Protocol

One of the TCP/IP suite of protocols for data transfer, which allows an application program on one machine to send a datagram to an application program on another machine.

VDSL

Very high-bit-rate Digital Subscriber Line

VDSL is a DSL technology providing faster data transmission over a single flat untwisted or twisted pair of copper wires. These fast speeds mean that VDSL is capable of supporting high bandwidth applications such as HDTV, as well as telephone services (Voice over IP) and general Internet access, over a single connection. VDSL is deployed over existing wiring used for POTS and lower-speed DSL connections. This standard was approved by ITU in November 2001.

VDSL2

Very High Speed Digital Subscriber Line 2

VDSL2 is an access technology that exploits the existing infrastructure of copper wires that were originally deployed for POTS. It can be deployed from central offices, from fibre-fed cabinets located near the customer premises, or within buildings. In theory, VDSL2 can achieve the highest transmission rates of 100 Mbit/s, and more perfectly using the high-speed performance of short distance.

Virtual server

A virtual server allows you to direct incoming traffic from the Internet (identified by protocol and external port) to an internal server with a private IP address on the LAN.

WAN

Wide Area Network

WAN usually refers to a network which covers a large geographical area, and uses communications circuits to connect the intermediate nodes. A major factor impacting WAN design and performance is a requirement that allows communications circuits to be leased from telephone companies or other communications carriers.

WPA-PSK

Wi-Fi Protected Access-Pre Shared Key

WPA is an industry standard based on a subset of an early draft of 802.11i. WPA replaces WEP's keying mechanism with a more robust system, called Temporal Key Integrity Protocol (although TKIP is still based on RC4 encryption). WPA adds a strong message integrity check and allows for authentication using 802.1X.

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