HG531 V1 300Mbps Wireless ADSL2+ Router

Product Description

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1 Overview

1.1 Introduction to the HG531 V1

Figure 1-1 Appearance of the HG531 V1

HG531 V1 300Mbps Wireless ADSL2+ Router (hereinafter referred to as the HG531 V1) is a type of Asymmetrical Digital Subscriber Line (ADSL) terminal. At the network side, it provides ADSL2+ for rapid Internet access and high-speed broadband access.

For users, it provides an 802.11b/g/n interface and four Ethernet interfaces. After connecting to a PC, STB, notebook computer, or another terminal, users can enjoy data, voice, and a range of other services.

The HG531 V1 boasts powerful routing and bridging functions and supports NAT/firewall technology, with flexible network configuration and QoS policies. Moreover, the unit provides quality guarantees for latency-sensitive voice services and for video services susceptible to packet loss. Using the HG531 V1, users can enjoy high-speed and high-quality broadband services at home.

As a broadband network terminal, the HG531 V1 is an extension of an operator's broadband network. HG531 V1 provides powerful remote maintenance and administration functions. It supports the latest TR-069 terminal management standards and remote upgrades, thus facilitating large-scale deployment and maintenance.

1.2 Hardware Features

1.2.1 Interfaces and Buttons

Figure 1-2 Interfaces and buttons on the HG531 V1
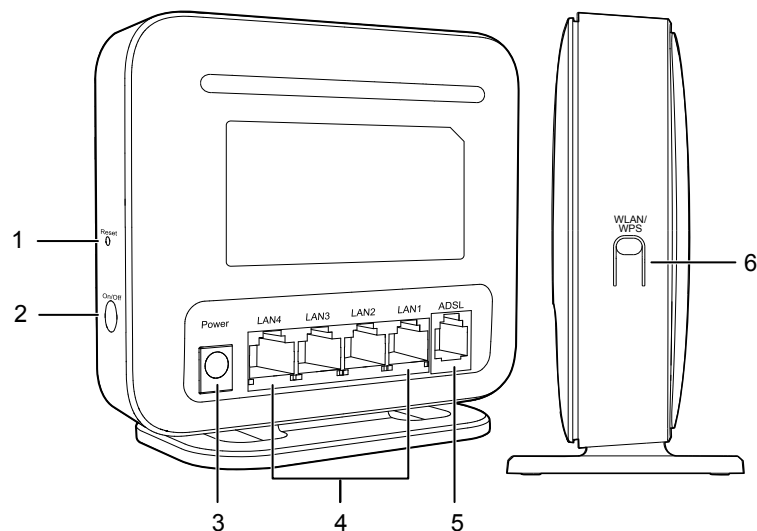
Table 1-1 Interfaces and buttons on the HG531 V1

No.	Description
1	Reset button, which is used to restore the factory settings of the HG531 V1.
2	On/Off button, which is used to power on or off the HG531 V1.
3	Power interface, which is used to connect the HG531 V1 to the power adapter.
4	LAN interfaces, which are used to connect the HG531 V1 to the Ethernet interface on the computer.
5	ADSL interface, which is used to connect HG531 V1 to the MODEM interface on the splitter or to the telephone jack on the wall.
6 ~ 9	• WLAN button, which is used to enable or disable wireless network function quickly. • WPS button, which is used to enable the WPS negotiation function.

1.2.2 Indicators

Figure 1-3 Indicators on the HG531 V1
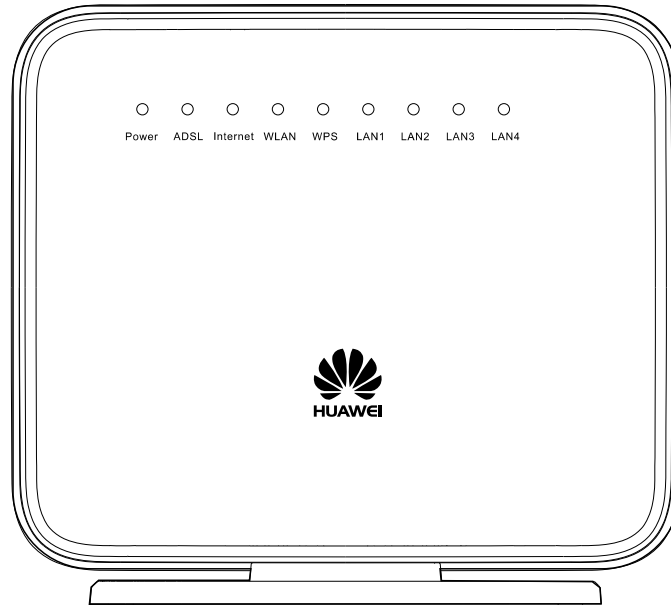
Table 1-2 Indicators on the HG531 V1

Indicator		Used to…
Power	Steady on	The HG531 V1 is powered on.
	Off	The HG531 V1 is powered off or faulty.
ADSL	Blinking	The HG531 V1 is being activated through ADSL.
	Steady on	The HG531 V1 is activated through ADSL.
	Off	The HG531 V1 is powered off.
Internet	Steady on	• The HG531 V1 is working in routing mode. • The WAN connection is set up. • No data is being transmitted.
	Blinking	• The HG531 V1 is working in routing mode. • The WAN connection is set up. • Data is being transmitted.
	Off	• The HG531 V1 is working in bridging mode. • The HG531 V1 is working in routing mode, but the connection to the WAN has not been set up. • The HG531 V1 is powered off.
WLAN	Steady on	The WLAN connection is set up, but no data is being transmitted.

	Blinking	The WLAN connection is set up, and data is being transmitted.	
	Off	The WLAN function is disabled.	
WPS	Blinking	A wireless client, such as a computer installed with a wireless network adapter, is connecting to the HG531 V1 using the WPS function. This process lasts for no longer than 120 seconds.	
	Off	The WPS function is disabled or faulty.	
LAN1 ~ LAN4	Steady on	The HG531 V1 is connected to a device properly.	
	Blinking	Data is being transmitted between the HG531 V1 and the device connected.	
	Off	No connection is set up on the port.	

1.3 Network Architecture

Figure 1-4 shows the location of the HG531 V1 in the network.

Figure 1-4 Networking diagram of the HG531 V1
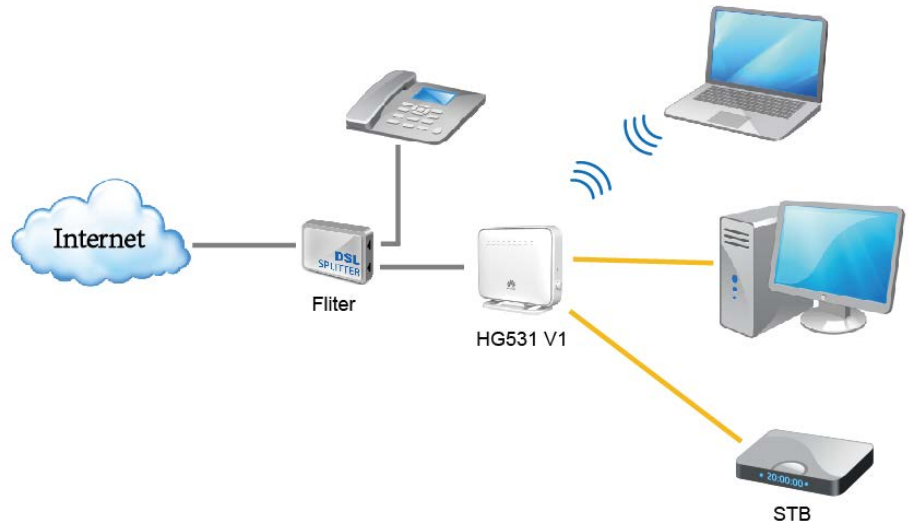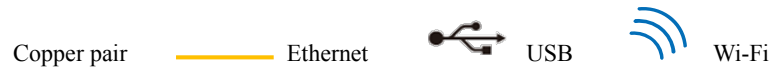
2 Functional Features

2.1 High-bandwidth ADSL2+ Upstream Link

With an embedded high-performance ADSL2+ network processor, the HG531 V1 can bring more abundant service experiences to users.

2.2 WLAN Function

The HG531 V1 provides high-speed, secure, and convenient wireless network access, and supports 802.11n (2.4 GHz), 802.11b, 802.11g. It can implement the network access at a high speed by using a powerful built-in antenna. The IEEE 802.11n supports the MIMO 2*2 technology and the access rate can reach 300Mbit/s.

2.3 WPS Function

The HG531 V1 provides the WPS2.0 function. A wireless connection can be set up between the computer and the HG531 V1 conveniently and securely.

2.4 Routing Function

The HG531 V1 provides the Routing function. An address can be obtained by embedded PPP dialer and DHCP of the home gateway.

2.5 IPv6 Function

The HG531 V1 provides the IPv6 function. It supports the IPv4 & IPv6 dual stack mode and the DS-Lite mode. Other modes can be customized.

2.6 Flexible QoS Policies

The HG531 V1 supports multiple methods of traffic classification, and supports the PQ and WFQ queue scheduling. thus ensuring that the data transmission of various services using different policies and that end users can enjoy quality video and audio services.

2.7 Standardized TR-069 Management

The HG531 V1 is completely compatible with the TR-069 standard defined by the Digital Subscriber Line (DSL) Forum. Providing complete remote management and diagnostic functions, it can implement the zero configuration solution. In addition, the HG531 V1 can carry out customized service provisioning conveniently through automatic upgrade based on the service provisioning process. Hence operation and maintenance cost can be greatly reduced.

2.8 Convenient and Secure Configuration and Management

The HG531 V1 supports the TR-069 remote management, provides a Web-based configuration interface, and ensures secure use of the Web-based configuration utility through password verification.

3 Technical Specifications

3.1 Interface Features

3.1.1 DSL Interface

Multiple DSL Standards

- ADSL2+

  Supports G.992.5 (G.dmt.bitplus) Annex A

  Supports G.992.5 (G.dmt.bitplus) Annex M

- ADSL2

  Supports G.992.3 (G.dmt.bis) Annex A

  Supports G.992.3 (G.dmt.bis) Annex L

  Supports G.992.3 (G.dmt.bis) Annex M

- ADSL

  – Supports G.992.1 (G.dmt)

  – Supports G.994.1 (G.hs)

  – Supports ANSI T1.413 Issue 2

Other Features

- Supports multiple permanent virtual channels (most 8 PVCs)
- Supports manual configuration of PVC parameters

3.1.2 Ethernet Interface

- Provision of four 10/100 M adaptive Ethernet interfaces
- Supports IEEE 802.3 and IEEE 802.3u standard
- Supports line Auto MDI and MDIX Auto-sensing

3.1.3 WLAN Interface

- Supports 802.11g, 802.11b, 802.11n (2.4 GHz)
- Supports WPS2.0 (PBC mode and PIN mode)

- Supports SSID hiding
- Supports multiple SSIDs (4 SSIDs)
- Supports Open System, WPA-PSK and WPA2-PSK security
- Supports 64/128 digits WEP encryption
- Supports TKIP encryption
- Supports AES encryption
- Supports WMM (Wi-Fi Multimedia)
- Supports enable or disable the WLAN function by press WLAN button or config the Web-based utility
- WLAN Rates:
    - 802.11b: Up to 11 Mbit/s
    - 802.11g: Up to 54 Mbit/s
    - 802.11n (with 2T2R antenna used) : Up to 300.0 Mbit/s

3.2 Security Features

- Supports powerful wireless network security
- Supports IP/MAC address filtering
- Supports port/URL filtering
- Supports ACL
- Supports DMZ
- Supports the PAP (RFC 1334) ,CHAP (RFC 1994) and the default PAP/CHAP adaptive
- Prevents DoS attacks such as the SYN flooding, ICMP flooding and ARP attack

3.3 Routing & Bridged Features

- Supports NAT, NAPT (RFC1631, RFC2663, RFC2766, RFC3022, RFC3489) and ALG expansion
- Supports RIP v1 (RFC1058), RIP v2 (RFC1389, RFC1723, RFC2453)
- Supports multiple PVC working mode:
    - IPOA (RFC2684 Routed)
    - IPOE (RFC2684 Bridged Static IP, RFC2684 Bridged DHCP Client)
    - PPPoE (RFC1661, RFC2516)
    - PPPoA (RFC1661, RFC2364)
- Supports DHCP server, DHCP client, DHCPv6 Server, DHCPv6 Client and DHCP relay
- Supports DNS client and DNS relay
- Supports IGMP proxy and IGMP snooping
- Supports IPv6
    - Supports IPv4 and IPv6 dual-stack

– Supports DS-Lite

3.4 QoS Features

- Support multiple methods of traffic classification based on:
  – LAN interface and WLAN SSID
  – IP address (source and destination address)
  – Ports (source ports and destination ports) at the fourth layer
  – Mac address (source and destination address)
  – 802.1p
  – VLAN and 802.1q
  – Differentiated Services Code Point (DSCP)
  – Protocol (TCP, UDP, ICMP)
- Support for re-marking the result of traffic classification based on:
  – 802.1p
  – DSCP
  – TOS/IPP
- Support for queuing methods based on priorities (up to four queues):
  – Priority queuing (6 PQs)
  – Weighted Fair Queuing (4 WFQs)

3.5 ATM Features

- Supports LLC-SNAP and VC-MUX
- Supports OAM F5
- Supports ATM OAM F5 loop
- Supports multiple ATM QoS service levels (CBR, rt-VBR, nrt-VBR, UBR with PCR, UBR without PCR)

3.6 Network Management

- Supports TR-069 and upgrading through TR-069
- Supports Views system logs
- Supports remote and local web configuration and management

3.7 Power Supply Specifications

- Product power supply: 12 V DC, 0.5 A
- Product power consumption: < 5 W

3.8 Physical Specifications

- Dimensions (W × L × H): 31.5 mm × 118 mm × 100 mm
- Product weight: about 360 g

3.9 Environmental Specifications

- Ambient temperature for operation: 0°C to 40°C (32°F to 104°F)
- Relative humidity for operation: 5% to 95%, non-condensing

4 Acronyms and Abbreviations

ADSL	Asymmetrical Digital Subscriber Line
ADSL2+	Asymmetrical Digital Subscriber Line 2 plus
AES	Advanced Encryption Standard
ATM	Asynchronous Transfer Mode
CBR	Constant Bit Rate
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
DoS	Denial of Service
DSCP	Differentiated Services Code Point
DSL	Digital Subscriber Line
HTTP	Hyper Text Transport Protocol
IP	Internet Protocol
IPTV	Internet Protocol Television
LAN	Local Area Network
MAC	Media Access Control
NAPT	Network Address and Port Translation
NAT	Network Address Translation
nrt-VBR	non-real-time Variable Bit Rate
OSS	Operations Support System
PC	Personal Computer
PPPoA	Point-to-Point Protocol over ATM
PPPoE	Point-to-Point Protocol over Ethernet
PQ	Priority Queue

PVC	Permanent Virtual Channel
QoS	Quality of Service
RIP	Routing Information Protocol
rt-VBR	real-time Variable Bit Rate
SSID	Service Set Identifier
STB	set-top box
TKIP	Temporal Key Integrity Protocol
ToS	Type of Service
WAN	Wide Area Network
WEP	Wired Equivalent Privacy
WLAN	Wireless Local Area Network
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup
WFQ	Weighted Fair Queue