

# HG658 V2 Home Gateway Product Description

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# 1 Overview

## 1.1 Introduction to the HG658 V2

**Figure 1-1** Appearance of the HG658 V2



HG658 V2 Home Gateway (hereinafter referred to as the HG658 V2) is a high performance gateway that supports very-high-data-rate digital subscriber line 2 (VDSL2). It is designed for voice over broadband (VoBB) or Voice over IP (VoIP) users and IPTV service users.

The HG658 V2 comes with high performance chipset, compatible with VDSL2 17a/30a all profiles. Besides, the VDSL Vectoring solution solves the VDSL2 crosstalk in copper lines. For typical triple-play services (HD video, high-speed Internet, and VoIP), The HG658 V2 effectively reduces the cost for operators and guarantees high quality HD video services.

With the 802.11n and 2T3R smart antennas multiple-input and multiple-output (MIMO), the wireless transmission rates of HG658 V2 can be up to 300 Mbit/s, which has better Wi-Fi coverage capacity, making it an ideal choice for HD video streaming, VoIP calls, and online gaming. With the DLNA function enabled, you can built your own network-attached storage (NAS) by connecting USB storage to USB port.

## 1.2 Hardware Features

### 1.2.1 Interfaces and Buttons

Figure 1-2 Interfaces and buttons on the HG658 V2

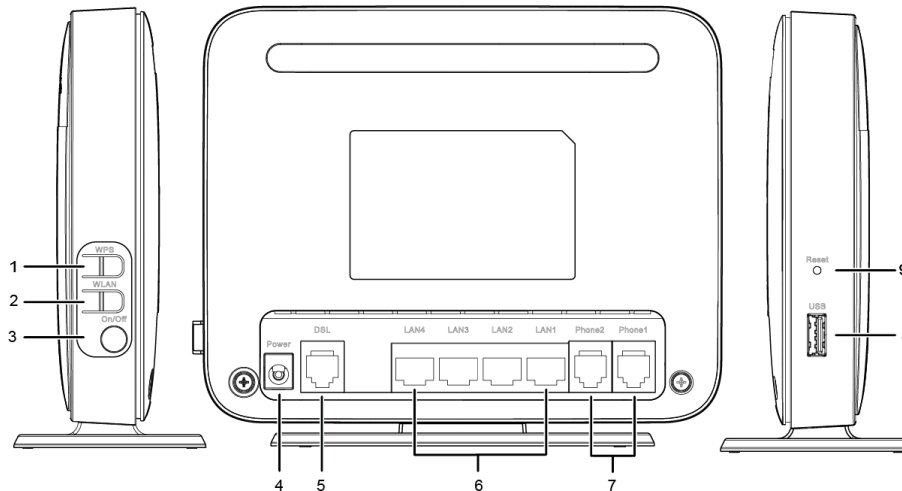


Table 1-1 Interfaces and buttons on the HG658 V2

No.	Interfaces and buttons	Description
1	WPS button	Used to enable the WPS negotiation function.
2	WLAN button	Used to enable or disable wireless network function quickly.
3	On/Off button	Used to power on or off the HG658 V2.
4	Power interface	Used to connect the HG658 V2 to the power adapter.
5	DSL interface	Used to connect HG658 V2 to the MODEM interface on the splitter or to the telephone jack on the wall.
6	LAN interfaces	Used to connect the HG658 V2 to the Ethernet interface on the computer.
7	Phone interfaces	Used to connect the HG658 V2 to the telephone.
8	USB interface	Used to connect a USB device, such as a USB storage device or a USB printer.
9	Reset button	Used to restore the factory settings of the HG658 V2.

## 1.2.2 Indicators

Figure 1-3 Indicators on the HG658 V2

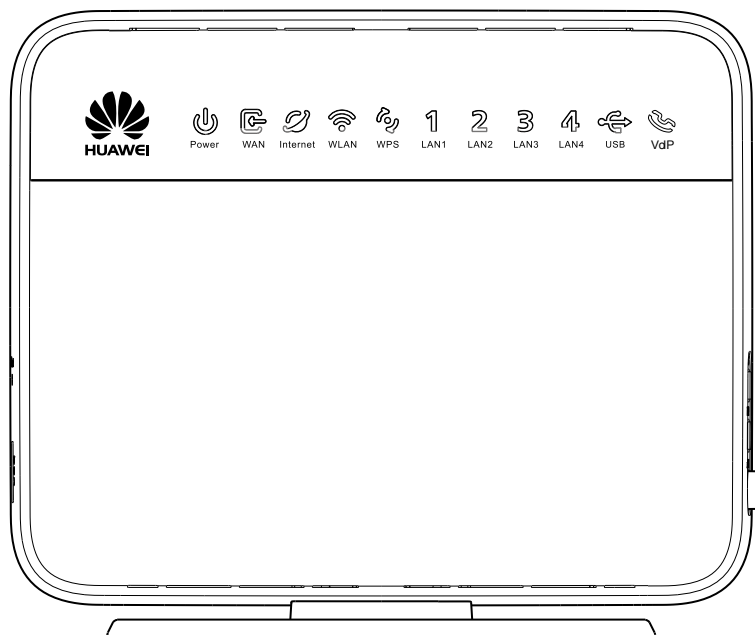


Table 1-2 Indicators on the HG658 V2

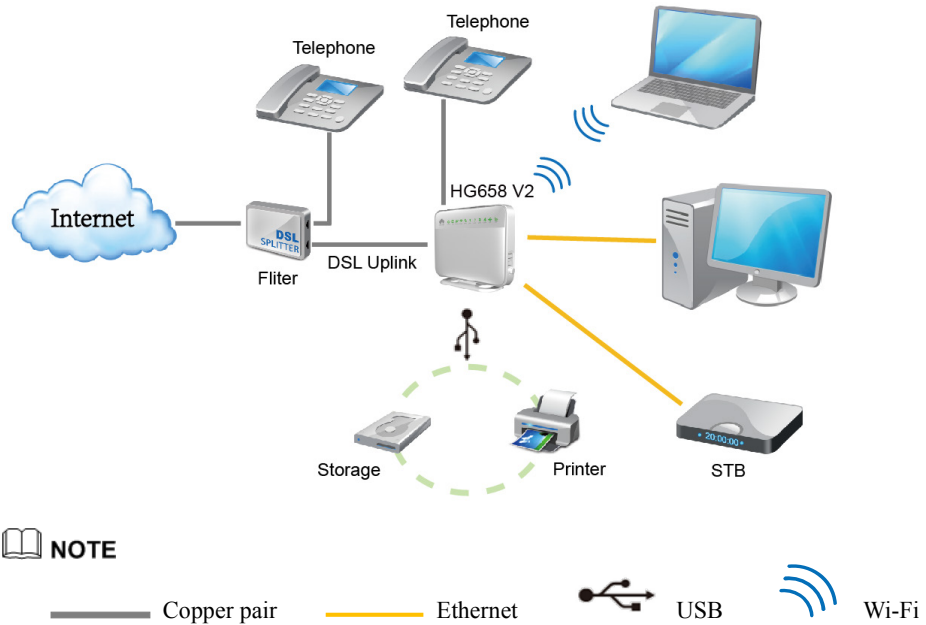
Indicator	Status	Description
Power	Steady on	The HG658 V2 is powered on.
	Off	The HG658 V2 is powered off or faulty.
WAN	Steady on	The HG658 V2 is activated through DSL.
	Blinking	The HG658 V2 is being activated through DSL.
	Off	<ul style="list-style-type: none"> <li>No connection is set up on the port.</li> <li>The HG658 V2 is powered off.</li> </ul>
Internet	Steady on	<ul style="list-style-type: none"> <li>The HG658 V2 is working in routing mode.</li> <li>No data is being transmitted.</li> </ul>
	Blinking	The HG658 V2 is connected to the Internet, and data is being transmitted.
	Off	<ul style="list-style-type: none"> <li>The HG658 V2 is working in bridging mode.</li> <li>The HG658 V2 is working in routing mode, but the connection to the WAN has not been set up.</li> <li>The HG658 V2 is powered off.</li> </ul>
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	<ul style="list-style-type: none"> <li>The WLAN function is disabled.</li> <li>The HG658 V2 is powered off.</li> </ul>
WPS	Blinking	A wireless client, such as a computer installed with a wireless network adapter, is connecting to the HG658 V2 using the WPS function. This process lasts for no longer than 120 seconds.
	Off	<ul style="list-style-type: none"> <li>The WPS function is disabled or faulty.</li> <li>The HG658 V2 is powered off.</li> </ul>
LAN1 ~ LAN4	Steady on	The HG658 V2 is connected to a device properly.
	Blinking	Data is being transmitted between the HG658 V2 and the device connected.
	Off	<ul style="list-style-type: none"> <li>No connection is set up on the port.</li> <li>The HG658 V2 is powered off.</li> </ul>
USB	Blinking	Data is being transmitted on the USB port.
	Steady on	<ul style="list-style-type: none"> <li>A portable storage device is connected to the USB port.</li> <li>No data is being transmitted.</li> </ul>
	Off	<ul style="list-style-type: none"> <li>The USB port is not connected.</li> <li>The HG658 V2 is powered off.</li> </ul>
VoIP	Steady on	The HG658 V2 is registered with the SIP (Session Initiation Protocol) server, but no data is being transmitted.
	Blinking	The VoIP connection is set up, and data is being transmitted.
	Off	<ul style="list-style-type: none"> <li>No VoIP connection is established.</li> <li>The HG658 V2 is powered off.</li> </ul>

## 1.3 Network Architecture

Figure 1-4 shows the location of the HG658 V2 in the network.

**Figure 1-4** Networking diagram of the HG658 V2





# 2 Functional Features

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## 2.1 High-bandwidth VDSL2 UpLink

With an embedded high-performance VDSL2 network processor, the HG658 V2 can bring more abundant service experiences to users. It's also compatible with ADSL, ADSL2 and ADSL2+.

## 2.2 WLAN Function

The HG658 V2 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 2\*3 MIMO smart antennas technology and the access rate can reach 300Mbit/s.

## 2.3 WPS Function

The HG658 V2 provides the WPS2.0 function. A wireless connection can be set up between the computer and the HG658 V2 conveniently and securely.

## 2.4 Routing Function

HG658 V2 supports NAT/NAPT and RIP v1/v2, and complies with an embedded PPP dialer and a Dynamic Host Configuration Protocol (DHCP) server, which can access multiple users and devices simultaneously.

## 2.5 VoIP Function

HG658 V2 provides the Voice over IP (VoIP) and Fax (T.38 and G.711) services.

## 2.6 IPv6 Function

The HG658 V2 provides the IPv6 function. It supports the IPv4 & IPv6 dual stack mode and the DS-Lite mode.

## 2.7 Flexible QoS Policies

The HG658 V2 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.

## 2.8 Standardized TR-069 Management

The HG658 V2 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 HG658 V2 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.

## 2.9 Convenient and Secure Configuration and Management

The HG658 V2 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

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## 3.1 Interface Features

### 3.1.1 DSL Interface

#### Multiple DSL Standards

- VDSL2
  - G.993.2 VDSL2
  - VDSL2 Profiles for 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a
  - VDSL Vectoring
- ADSL2+  
Supports G.992.5 (G.dmt.bitplus)
- ADSL2  
Supports G.992.3 (G.dmt.bis) Annex L
- ADSL
  - Supports G.992.1 (G.dmt)
  - Supports G.992.2 (G.lite)
  - Supports G.994.1 (G.hs)
  - Supports ANSI T1.413 Issue 2

#### Other Features

- Multiple permanent virtual channels (most 8 PVCs)
- Manual configuration of PVC parameters
- Automatic PVC search

### 3.1.2 Ethernet Interface

- Provision of four 10/100 M adaptive LAN interfaces
- Supports IEEE 802.3 and IEEE 802.3u standard
- Supports for half duplex or full duplex mode
- 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
- 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 2T3R smart antennas used) : Up to 300.0 Mbit/s

### 3.1.4 Phone Interface

- Two phone interfaces to connect telephones.
- Supports SIP register and SIP stack
- Supports SIP client
- Supports TAPI and SLIC
- Supports PBX
- Supports RTP and RTCP
- Supports DSP (G.711, G.729A/B)
- Supports VoIP fax service and VoIP DTMF transmission mode

### 3.1.5 USB Interface

- Functions as a USB Host 2.0 interface for connecting USB modem, USB storage device or printer
- 3G broadband uplink can be customized
- Accessing a portable storage device through FTP server
- Reading from and writing on FAT32/FAT, NTFS, HS+, Ext2/3 file system
- Supports DLNA

## 3.2 Security Features

- Powerful wireless network security
- Parent control
- URL filtering

- ACL access control
- DMZ
- Prevents DoS attacks

### 3.3 Routing & Bridged Features

- Supports multiple PVC working mode
- Supports IPv6
  - IPv4 and IPv6 dual-stack
  - DS-Lite tunnel
  - SLAAC
- NAT and ALG expansion
- DHCP server/client
- DNS client, DNS relay , DNS server and DNS transmission
- IGMP proxy, IGMP snooping and IGMP channel Information
- SNTP
- MLD
- ULA
- RIP V1&V2
- Bridging between the WAN port and the LAN port

### 3.4 QoS Features

- Supports 802.1p and 802.1q
- Agile QoS Strategy
- Rich of stream classification strategy

### 3.5 Network Management

- Supports TR-069 and upgrading through TR-069
- Supports Views system logs
- Supports remote and local web configuration and management
- Backing up and restoring the configuration

### 3.6 Power Supply Specifications

- Product power supply: 12 V DC, 1 A
- Product power consumption: < 12 W

## 3.7 Physical Specifications

- Dimensions (W × L × H): 32 mm % 162 mm % 130 mm
- Product weight: about 360 g

## 3.8 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

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

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