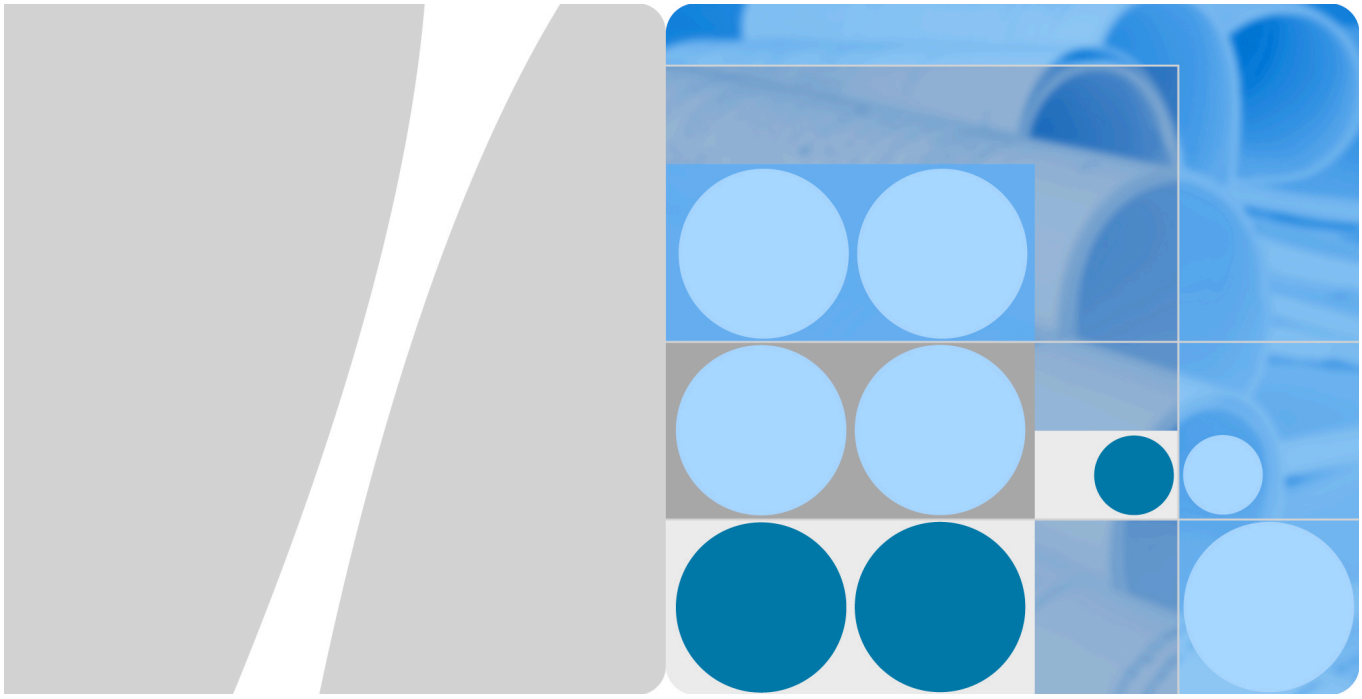

Eircom F2000 eFibre Modem
User Guide & Product Description

Issue 01

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HUAWEI TECHNOLOGIES CO., LTD.

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Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: http://www.huawei.com

Email: mobile@huawei.com

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1 Overview

1.1 Introduction to the eircom F2000 eFibre Modem

Figure 1-1 Appearance of the eircom F2000 eFibre Modem

The eircom F2000 eFibre Modem is a next generation voice gateway that supports very-high-data-rate digital subscriber line 2 (VDSL2) uplink, one Giga Ethernet uplink port and 4 Giga Ethernet downlink ports. The eircom F2000 is designed for voice over broadband (VoBB) users, mid-range and high-end users using voice over IP (VoIP) and high bandwidth services, such as HD video.

The eircom F2000 comes with Broadcom's latest chipset solution with the vectoring function that effectively solves the VDSL2 crosstalk issue. The vectoring function keeps the transmission rate at 100 Mbit/s when the user is within a range of 300 meters. Without vectoring, the transmission rate decreases to 70 Mbit/s. For typical triple play services, HD video, high-speed Internet, and VoIP, the coverage range can be up to 800 meters (without vectoring: 500 meters). The eircom F2000 effectively reduces the cost to carriers and guarantees high quality HD video services.

Using the 802.11ac 3 x 3 and 802.11n 2 x 2 concurrent wireless technologies, the eircom F2000 provides wireless transmission rates of up to 1.6 Gbit/s, making it an ideal choice for HD video streaming, VoIP calls, and online gaming.

With the DLNA function enabled on the eircom F2000, you can build your own network access server (NAS) by connecting USB storage to the eircom F2000's USB port.

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1.2 Hardware Features

1.2.1 Indicators

Figure 1-2 Indicators on the eircom F2000 eFibre Modem

Table 1-1 Indicators on the eircom F2000 eFibre Modem

Indicator	Status	Description
Power	On	The eircom F2000 is powered on.
	Off	The eircom F2000 is powered off or faulty.
DSL	Blinking	The eircom F2000 is being activated through Ethernet or DSL.
	On	The eircom F2000 is activated through Ethernet or DSL.
	Off	The WAN or DSL port is not connected.
Internet	On	The Internet connection is successfully established but no data is being transmitted.
	Blinking	The Internet connection is successfully established and data is being transmitted.
	Off	• The eircom F2000 is working in bridge mode. • No Ethernet or DSL connection is established.

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Indicator	Status	Description
WiFi	On	The WLAN connection is set up, but no data is being transmitted.
	Fast Blinking (2Hz)	The WLAN connection is set up, and data is being transmitted.
	Slow Flashing (1Hz)	A wireless client, such as a computer installed with a wireless network adapter, is connecting to the eircom F2000 using the WPS function. This process lasts for no longer than 120 seconds.
	Off	The WLAN function is disabled.
VoIP	On	The eircom F2000 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	No VoIP connection is established.
LAN1 ~ LAN4	On	The eircom F2000 is connected to a device properly.
	Blinking	Data is being transmitted between the eircom F2000 and the device connected.
	Off	No connection is set up on the port.
USB	On	The USB connection is successfully established in USB host mode, but no data is being transmitted.
	Blinking	A USB device is connected to the USB port, and data is being transmitted on the USB port.
	Off	The USB port is not connected.

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1.2.2 Interfaces and Buttons

Figure 1-3 Interfaces and buttons on the eircom F2000 eFibre Modem

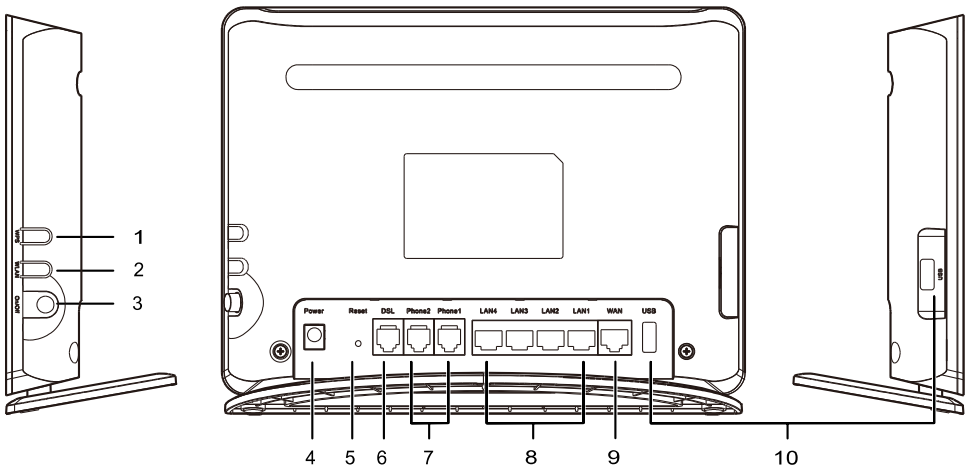

Table 1-2 Interfaces and buttons on the eircom F2000 eFibre Modem

No.	Interfaces and buttons	Description
1	WPS button	Which is used to enable the WPS negotiation function.
2	WLAN button	Which is used to enable or disable wireless network function quickly.
3	On/Off button	Which is used to power on or off the eircom F2000.
4	Power interface	Which is used to connect the eircom F2000 to the power adapter.
5	Reset button	Which is used to restore the factory settings of the eircom F2000.
6	DSL interface	Which is used to connect the eircom F2000 to the MODEM interface on the splitter or to the telephone jack on the wall.
7	Phone interfaces	Which are used to connect the eircom F2000 to the telephone.
8	LAN interfaces	Which are used to connect the eircom F2000 to the Ethernet interface on the computer.
9	WAN interfaces	Which is used to connect the eircom F2000 to the network.

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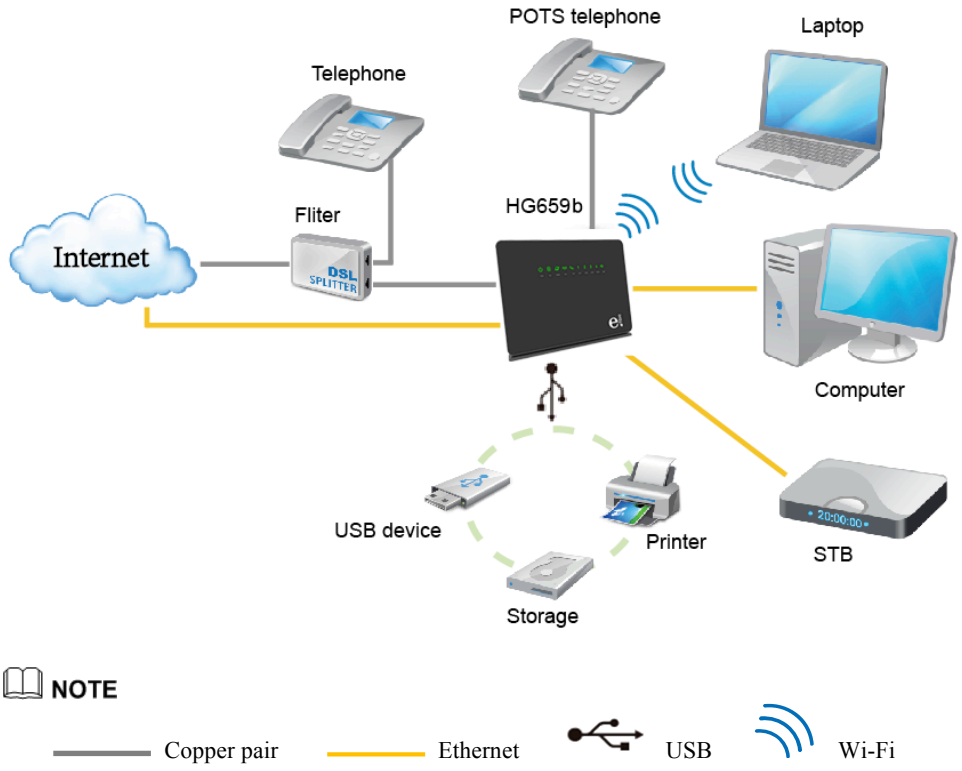
No.	Interfaces and buttons	Description
10	USB interface	Which is used to connect a USB device, such as a data card, USB storage device or a USB printer. **NOTE** The maximum voltage/current output from the USB port is 5 V/0.8 A. That is, the input voltage/current of the USB device connected to the USB port cannot exceed 5 V/0.8A. Otherwise, the eircom F2000 may not work correctly.

1.3 Network Architecture

Figure 1-4 Networking diagram of the eircom F2000 eFibre Modem



2 Functional Features

2.1 High-Speed Uplink Ethernet Access

Eircom F2000 supports the uplink gigabit Ethernet access, which provides high-speed network services experiences for users.

2.2 High-bandwidth VDSL2 Uplink

With an embedded high-performance VDSL2 network processor, the eircom F2000 can bring more abundant service experiences to users. It's also compatible with ADSL, ADSL2 and ADSL2+.

2.3 WLAN Function

The eircom F2000 provides high-speed, secure, and convenient wireless network access, and compliant with 802.11b, 802.11g, 802.11n (2.4 GHz) and 802.11ac (5 GHz). 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 x 2 technology with wireless data rates up to 300Mbit/s and the IEEE 802.11ac supports the MIMO 3 x 3 technology with wireless data rates up to 1.3Gbit/s.

2.4 WPS Function

A wireless connection can be set up between the computer and the eircom F2000 conveniently and securely by pressing WPS button.

2.5 Routing Function

The eircom F2000 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.

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2.6 VoIP Function

Eircom F2000 provides the Voice over IP (VoIP) and Fax (T.38 and G.711) services.

2.7 IPv6 Function

Supports the IPv4 & IPv6 dual stack mode and the DS-Lite mode.

2.8 Flexible QoS Policies

Multiple methods of traffic classification ensuring that user services at different levels of network applications are smoothly implemented and that end users can enjoy quality video and audio services.

2.9 Standardised TR-069 Management

Completely compatible with the TR-069 standard defined by the Digital Subscriber Line (DSL) Forum. The eircom F2000 Providing complete remote management and diagnostic functions, it can implement the zero configuration solution. In addition, the eircom F2000 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.

2.10 Convenient and Secure Management and Maintenance

The eircom F2000 supports the TR-069 remote management, provides a Web-based configuration utility, and ensures secure use of the Web-based configuration utility through password verification.

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3 Technical Specifications

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
  - VDSL Vectoring
- ADSL2+
  - G.992.5 (G.dmt.bitplus)
- ADSL2
  - G.992.3 (G.dmt.bis) Annex L
- ADSL
  - G.992.1 (G.dmt)
  - ANSI T1.413 Issue 2

Other Features

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

3.1.2 Ethernet Interface

- Provision of one 10/100/1000 M WAN interface and four 10/100/1000 M LAN interfaces
- Supports IEEE802.3, IEEE802.3u and IEEE802.3az standard for WAN interface
- Supports IEEE802.3 and IEEE802.3u standard for LAN interface
- Supports line MDI, MDIX and auto-sensing
- Supports for half duplex or full duplex mode

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- Supports for routing and bridging

3.1.3 WLAN Interface

- Compliant with 802.11b, 802.11g , 802.11n (2.4 GHz) and 802.11ac (5 GHz)
- WPS 2.0 (PBC mode and PIN mode)
- Supports BPSK, QPSK, 16-QAM and 64-QAM wireless modulation method
- Multiple SSIDs and SSID hiding
- WPA1.0 and WPA2.0 security
- 64/128 digits WEP encryption
- TKIP and AES encryption
- WMM
- 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 a 2 x 2 antenna used):Up to 300.0 Mbit/s
  - 802.11ac (with a 3 x 3 antenna used) :Up to 1.3 Gbit/s

3.1.4 Phone Interface

- Two phone interfaces to connect POTS telephones.
- Supports SIP register and SIP stack
- Supports SIP server
- Supports TAPI and SLIC
- Supports PBX
- Supports RTP and RTCP
- 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 storage devices or printers.
- Accessing a portable storage device through FTP server
- Supports DLNA

3.2 Security Features

- Powerful wireless network security
- MAC filtering
- URL filtering
- ACL access control
- Parent control

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- Prevents DoS attacks

3.3 Routing & Bridged Features

- Supports IPv6
  - IPv4 and IPv6 dual-stack
  - DS-Lite tunnel
  - IPv6 to IPv4 tunnel
  - SLAAC
- NAT and ALG expansion
- DHCP server/client
- DNS client, DNS relay , DNS server and DNS transmission
- IGMP proxy and IGMP snooping
- DMZ
- 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
- Two levels of web access control
- Upgrade through TR-069
- Remote and local web configuration and management
- Backing up and restoring the configuration

3.6 Power Supply Specifications

- Entire-device power supply: 12 V DC, 2 A
- Entire-device power consumption: < 24 W

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3.7 Physical Specifications

- Dimensions (L x W x H): about 232 mm x 181 mm x 35 mm
- Bare Weight: about 350 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

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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
DMZ	Demilitarised Zone
DNS	Domain Name System
DoS	Denial of Service
DSL	Digital Subscriber Line
HTTP	Hyper Text Transport Protocol
IP	Internet Protocol
LAN	Local Area Network
MAC	Media Access Control
MLD	Multicast Listener Discovery
NAS	Network Access Server
NAT	Network Address Translation
PBX	Private Branch Exchange
POTS	Plain Old Telephone Service
PVC	Permanent Virtual Channel
QoS	Quality of Service
RIP	Routing Information Protocol
RTP	Real-Time Transport Protocol

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RTCP	Real-time Transport Control Protocol
SSID	Service Set Identifier
SLIC	Subscriber Line Interface Circuit
SNTP	Simple Network Time Protocol
TAPI	Telephone Application Program Interface
TKIP	Temporal Key Integrity Protocol
VDSL	Very High Speed Digital Subscriber Line
VDSL2	Very High Speed Digital Subscriber Line 2 plus
VoIP	Voice over IP
VoBB	Voice over Broadband
WEP	Wired Equivalent Privacy
WLAN	Wireless Local Area Network
WPA	Wi-Fi Protected Access
WPS	Wi-Fi Protected Setup

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