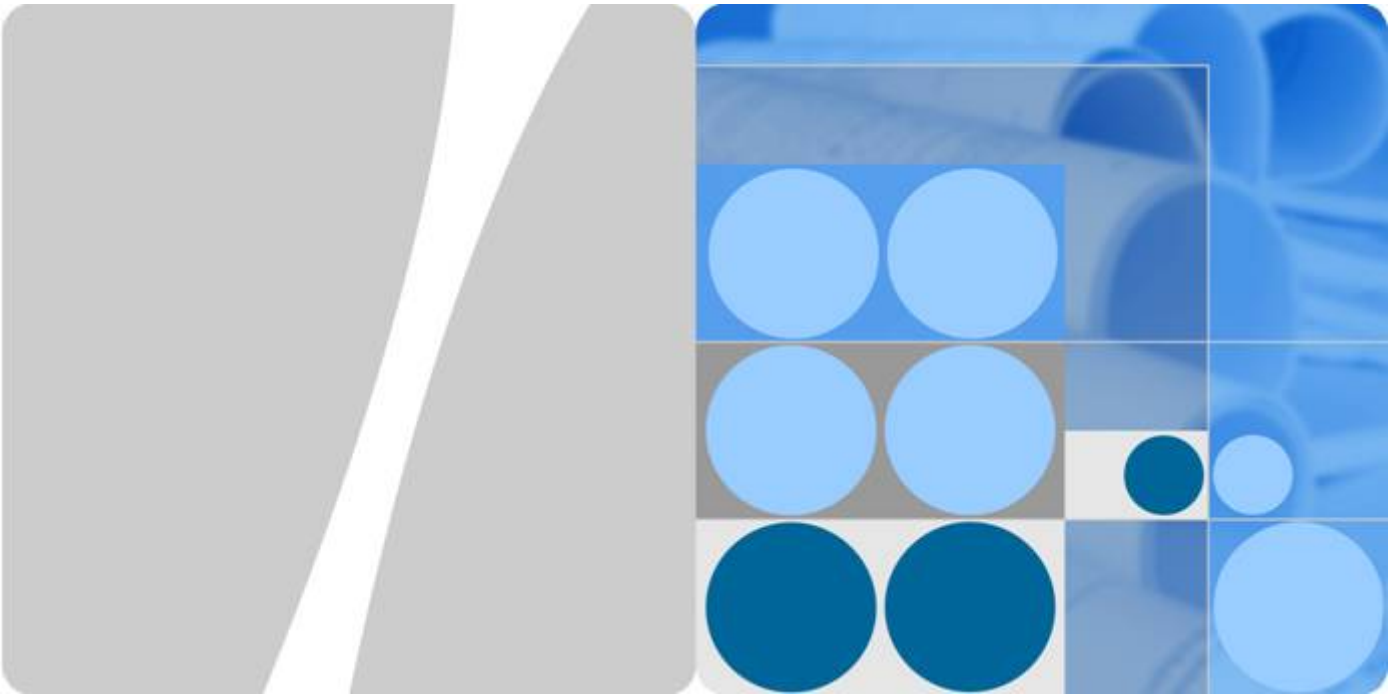

EchoLife HG8010 GPON Terminal

V100R003C00&C01

Product Description

Issue 03

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Contents

1 Introduction

1.1 Product Positioning

The HG8010 GPON terminal (hereafter referred to as the HG8010) is an indoor optical network terminal (ONT) designed for home users and small office and home office (SOHO) users. Its upper shell adopts the natural heat dissipation material, and its optical port adopts the dust-proof design with a rubber plug. The HG8010 is eye-pleasing and energy-efficient. It can be deployed on a workbench or mounted on a wall, meeting users' deployment requirements in different scenarios.

By using the Gigabit-capable Passive Optical Network (GPON) technology, the HG8010 provides a high-speed data channel through a single optical fiber with an upstream rate of 1.244 Gbit/s and a downstream rate of 2.488 Gbit/s. In this way, you can enjoy the high-speed data service, quality voice service, superior video service.

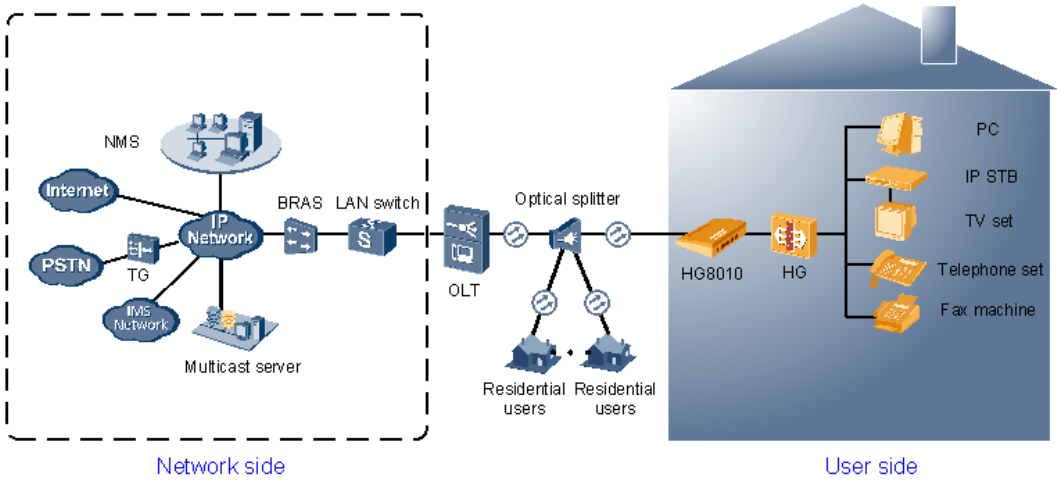
As an ONT, the HG8010 provides the more convenient and efficient remote management function. It supports the ONT Management and Control Interface (OMCI) protocols and manages all home terminals in a unified manner, implementing remote fault diagnosis, service provisioning, and performance statistics.

1.2 Network Applications

As a network terminal, the HG8010 is deployed at the GPON access layer and connects the home users and SOHO users to the Internet through the optical upstream port.

Figure 1-1 shows the position of the HG8010 in a network.

Figure 1-1 Network topology of the HG8010



- In the upstream direction, the HG8010 is connected to the optical splitter and the network-side OLT through the passive optical network (PON) port, namely the OPTICAL port, to provide the integrated access service.
- In the downstream direction, the HG8010 is provides a 10/100/1000M Base-T Ethernet port for connecting to a home gateway. The home gateway then can be connected to a PC, STB, or video phone to provide high-speed data and video services.

1.3 Product Highlights

1.3.1 Comprehensive Triple Play Service

On the LAN side, the HG8010 provides an Ethernet port for connecting to a home gateway, VoIP device, or IPTV device to implement voice, data, and video access services.

1.3.2 Convenient Automatic Provisioning, Maintenance, and Management of the Remote Service

The HG8010 applies the TR-069 and OMCI management, manages terminal services without additional IP networks, which facilitates automatic provisioning, maintenance, and management of the remote service.

The remote service management of the HG8010 has the following features:

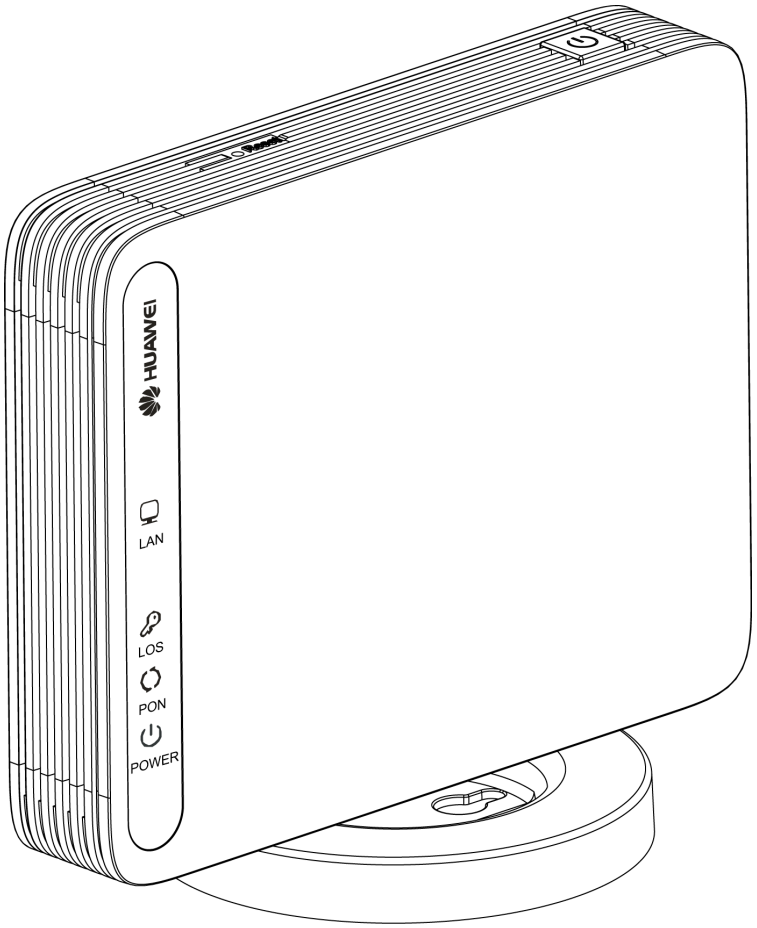
- Supports configuring the global profile and issuing the XML configuration file on the NMS. To provision ONT services in batches and adjust the network, only a few changes are required.
- Supports user-defined upgrade policies configured through the NMS. The device is automatically upgraded after being powered on and no manual operation is required.
- Supports remote performance management of the HG8010 through the NMS. By collecting the performance data, the network performance exception can be monitored in real time.

- Supports remote fault locating of the HG8010 through the NMS. Through alarm reporting and remote loopback diagnosis, the fault can be located remotely, which decreases the maintenance cost.

1.4 Hardware Features

1.4.1 Appearance

Figure 1-2 Appearance of the HG8010



1.4.2 Port/Button

Ports and Buttons on the Rear Panel

Figure 1-3 Ports and buttons on the rear panel of the HG8010

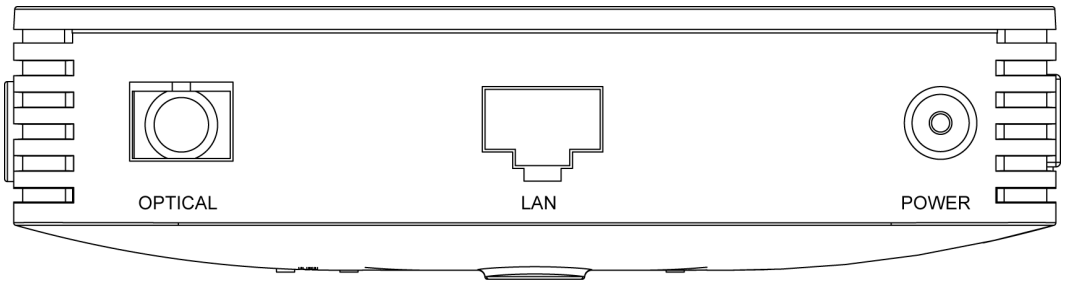


Table 1-1 Description of ports and buttons on the rear panel of the HG8010

Port/Button	Function
OPTICAL	Indicates an optical port. The optical port is equipped with a rubber plug and is connected to an optical fiber for upstream transmission. The type of the optical connector connected to the OPTICAL port is SC/APC.
LAN	Indicate auto-sensing 10/100/1000M Base-T Ethernet ports (RJ-45), used to connect to PCs or IP set-top boxes (STBs).
POWER	Indicates the power port, used to connect to the power adapter or backup battery unit.

Ports and Buttons on the Side Cover

Figure 1-4 Ports and buttons on the side cover of the HG8010

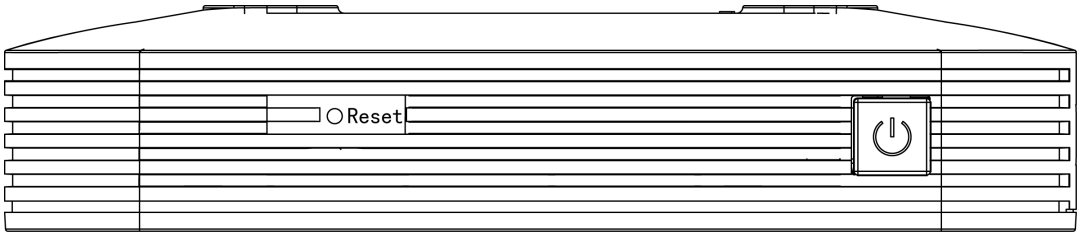


Table 1-2 Description of ports and buttons on the side cover of the HG8010

Port/Button	Function
	Indicates the power button. It is used to power on or power off the device.
RESET	Indicates the reset button. Press the button for a short time to reset the device; press the button for a long time (longer than 10s) to restore the device to the default settings and reset the device.

1.4.3 LEDs

Figure 1-5 LEDs on the HG8010

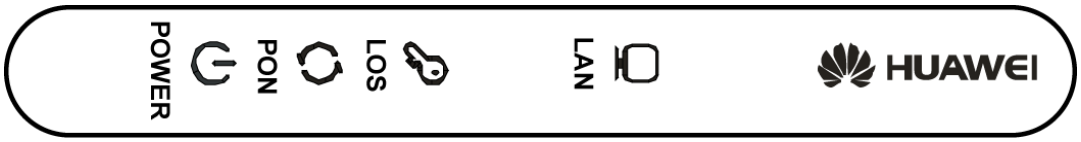


Table 1-3 Indications of the LEDs on the HG8010

LED	Description	Status	Description
POWER	Power supply LED	Green: always on	The device is powered on.
		Off	The power supply is cut off.
PON	Authentication LED	See **Table 1-4**.	
LOS	Connection LED	See **Table 1-4**.	
LAN	Ethernet port LED	Always on	The Ethernet connection is in the normal state.
		Blinks	Data is being transmitted on the Ethernet port.
		Off	The Ethernet connection is not set up.

Table 1-4 Indications of the PON and LOS LEDs

No.	LED Status		Description
	PON	LOS	
1	Off	Off	The ONT is disabled by the OLT.
2	Blinks quickly (twice per second)	Off	The ONT is attempting to set up a connection to the OLT.
3	Always on	Off	The connection between the ONT and the OLT is set up.
4	Off	Blinks slowly (once two seconds)	The Rx optical power of the ONT is lower than the optical receiver sensitivity.
5	Blinks quickly (twice per second)	Blinks quickly (twice per second)	The OLT detects that the device is a rogue ONT.

2 Product Functions and Features

2.1 GPON Features

- Compliance with ITU-T G.984 GPON Recommendations
- Class B+ optical power budget
- A maximum upstream rate of 1.244 Gbit/s and downstream rate of 2.488 Gbit/s at the GPON physical layer
- GEM encapsulation mode
- 8 T-CONTs with up to 32 GEM ports
- GEM port to T-CONT mapping
- Multiple traffic mapping modes:
  - Mapping from VLAN to GEM port
  - Mapping from PRI to GEM port
  - Mapping from Ethernet port to GEM port
  - Mapping from VLAN+PRI to GEM port
  - Mapping from IPToS to GEM port
- Dynamic Bandwidth Assignment (DBA)
- Forward error correction (FEC) function in the upstream and downstream directions
- Embedded OAM, physical layer OAM (PLOAM), and OMCI
- 128-bit advanced encryption standard (AES) in the downstream direction
- Authentication modes of SN, password, and SN+password
- Deactivation/Activation and re-register of the ONT
- Loopback test based on the GEM port

2.2 Ethernet Features

- Compliance with the IEEE 802.3ab standards
- Auto-negotiation of rate and duplex mode
- Setting to 10/100/1000 Mbit/s manually

- IPv6 Layer 2 transparent transmission
- Setting to half duplex or full duplex mode manually
- MDI/MDI-X adaptation
- Upstream and downstream rate limit based on the Ethernet port with a granularity of 64 kbit/s
- PAUSE traffic control (IEEE 802.3 Annex 31B)
- Ethernet frame of up to 2000 bytes

2.3 Multicast Features

- IGMP V2&V3 Snooping
- Up to 255 multicast groups
- VLAN transforming of the upstream multicast protocol packet
- Separate GEM ports for the downstream multicast service streams and the IGMP signaling packets
- Transformation, transparent transmission, and removal of the downstream multicast VLAN
- Filtering downstream multicast packets
- Multicast filtering and forwarding based on MAC address
- Authentication based on the GEM port
- Fast leave

2.4 OMCI Features

- OMCI configuration management (including the GEM port, T-CONT, CAR, and VLAN configurations)
- OMCI query management (including the device information and Ethernet port status)
- OMCI alarming and alarm synchronization
- OMCI performance statistics

2.5 Security Features

- MAC address filtering
- Access control rule (ACL) configuration of the ONT

2.6 Device Maintenance

- Local service configuration, query, and software upgrade on the Web page
- Automatic remote service provisioning, device management, and software upgrade through OMCI
- Query of the information about the ONT optical transceiver

- Type B protection
- Reporting the Dying_Gasp alarm when the ONT is powered off
- System energy conservation
- Dual system protection of the software (normal system and mini system)

3 Technical Specifications

3.1 Optical Port Specifications

GPON Port Specifications

Table 3-1 GPON port specifications

Parameter	Specifications
Transmission rate	Rx: 2.488 Gbit/s Tx: 1.244 Gbit/s
Port mode	Single mode
Connector	SC/APC
Maximum reach	20 km
Standard compliance	ITU-T G.984.2 CLASS B+
Center wavelength	Tx: 1310 nm Rx: 1490 nm
Tx optical power	0.5 dBm to 5.0 dBm
Extinction ratio	> 10 dB
Minimum receiver sensitivity	-27 dBm
Maximum overload optical power	-8 dBm

3.2 Power Specifications

- Power adapter input: 100–240 V AC, 50–60 Hz
- System power supply: 11–14 VDC, 1A

- Maximum power consumption: 6 W

3.3 Working Environment

- Operating temperature: 0ºC – 40ºC
- Environment humidity: 5% – 95% (non-condensing)

3.4 Dimensions and Weight

- Dimensions (Length x Width x Height): 143 mm x 115 mm x 30 mm
- Weight (including power adapter): about 250 g

A Acronyms and Abbreviations

AES	Advanced Encryption Standard
BRAS	Broadband Remote Access Server
DBA	Dynamic Bandwidth Assignment
DoS	Denial of Service
FEC	Forward Error Correction
FTTH	Fiber To The Home
GPON	Gigabit-capable Passive Optical Network
IGMP	Internet Group Management Protocol
NMS	Network Management System
OAM	Operations, Administration, and Maintenance
OLT	Optical Line Terminal
OMCI	Optical Network Termination Management and Control Interface
ONT	Optical Network Terminal
PLOAM	Physical Layer OAM
PON	Passive Optical Network
PSTN	Public Switched Telephone Network
SOHO	Small Office and Home Office
STB	Set Top Box
VLAN	Virtual Local Area Network
VoIP	Voice over IP