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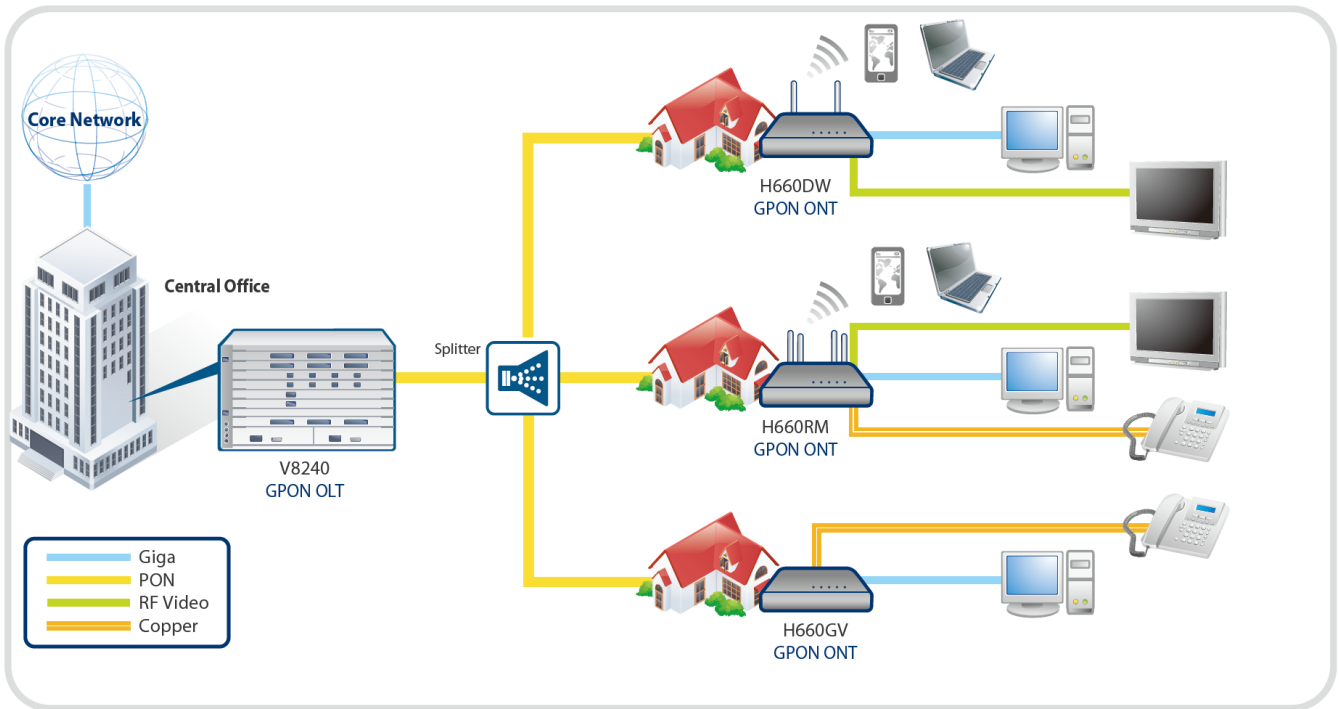
Product Overview

DASAN Networks' H660RM optical network terminal is targeted for all subscribers requiring multiple POTS, RF interface, and high-speed data interfaces in a cost-effective indoor housing. Fully compliant with ITU-T G.984 standards, the H660RM supports data rates of 1.25Gbps upstream and 2.5Gbps downstream. With DASAN's leading-edge GPON technology, users can enjoy bandwidth-intensive multimedia services such as real-time audio, video and gaming much easier and faster than ever before.

The H660RM provides one GPON uplink port, four Gigabit Ethernet (10/100/1000Base-T) ports, Wireless LAN interface, one RF out interface and two FXS voice ports that enhance the ability to deliver demanding data/Wi-Fi/video/VoIP services. The H660RM uses Session Initiation Protocol (SIP) to terminate VoIP calls so that in-home wiring does not change and standard telephone sets may be used. The H660RM supports the full triple play of services including voice, video and high-speed Internet access services.

The H660RM contains both built-in wire-speed L2 switch and L3 routing gateway with port forwarding, NAT and NAPT address translation, PPPoE client support for high speed Internet service.

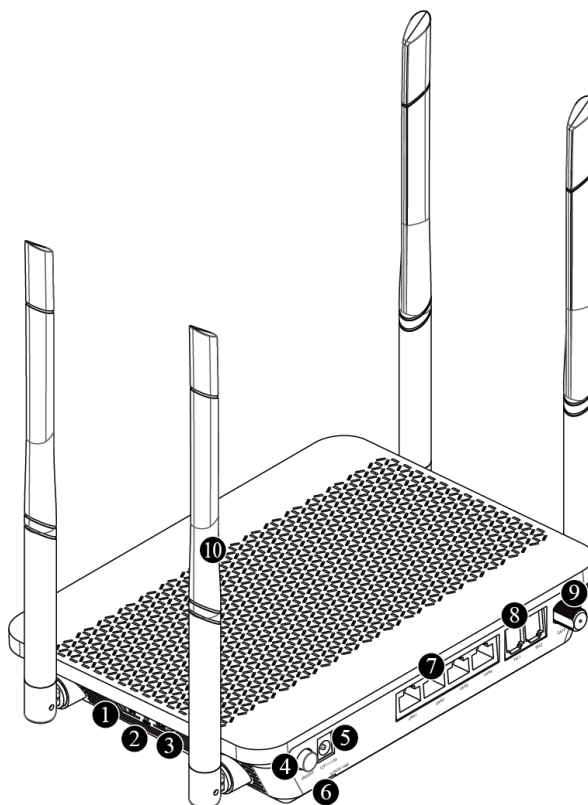
Service Scenario for PON



A PON consists of an Optical Line Termination (OLT) located at the Central Office and a set of Multi Dwelling Units (MDUs) or Optical Network Terminals (ONTs) located at the customer's premises. Between them is the optical distribution network (ODN) comprised of fibers and passive optical splitters or couplers. A splitter is a device that divides an optical signal into two or more signals. The OLT connects the PON to the IP network that controls and manages the PON clients. An MDU (ONT) connects the user-specific network to the PON. The ONT can be utilized by a single subscriber or used as a multi-dwelling gateway for a local network.

Interface Layout

The following drawing shows the interface layout of the product.



Interface Name	Description	Connector Type
① WLAN	Enable Wi-Fi function	-
② WPS	Enable WPS process	-
③ RESET button	Reboot the unit	-
④ ON/OFF button	Turn on/off the unit	-
⑤ Power port	Connect an external power supply	-
⑥ OPTIC LINE	Connect to OLT via a passive optical splitter 1 GPON uplink interface	SC/APC
⑦ LAN 1-4	Connect to PC or LAN 4 10/100/1000Base-T interfaces for data communication	RJ45
⑧ TEL 1-2	Connect to VoIP phone 2 FXS interfaces for phone service	RJ11
⑨ CATV	Connect to TV	F-connector
⑩ Antenna	Transmit and receive Wi-Fi packets	-

Operating Status LEDs

The status of the ONT is indicated by the LEDs located on the front of unit. LED indicators illuminate to show normal ONT operation, and will blink and/or turn off to indicate the current status or errors. Refer to the following table for details of each LED state.



Label	Color	Status	Description
PWR	Green	On	The system is turned on.
	Red	On	The power to the device is too low.
		Off	The system is turned off.
PON	Red	On	No optic signal. And the unit has not been registered.
	Green	On	Optic signal normal. Normally registered. OMCI success.
		Blinking	Firmware being downloaded.
ALM	Red	On	No optic signal, firmware update failure or other faults.
		Off	Received optical power is normal.
Internet	Green	On	In service.
		Off	Not in service.
TEL 1-2	Green	On	Hook off
		Off	Hook on
2.4/5G	Green	On	The 2.4G Wi-Fi function enabled.
		On	The 5G Wi-Fi function enabled.
		Blinking	The 2.4G/5G Wi-Fi function enabled.
		Off	Wi-Fi function disabled.
WPS	Green	On	WPS connection successfully established (for 5 seconds).
		Blinking	WPS in progress
		Off	Disabled or process finished successfully.
LAN 1-4	Green	On	The link is up.
		Blinking	Port is sending or receiving data.
		Off	The link is down.
CATV	Green	On	The CATV is functioning properly. (Power in -8 to 2 dBm)
		Off	The CATV is not ready or malfunctioned.

Product Specifications

Capabilities

System

- 128MB Flash Memory
- 128MB SDRAM
- GPON Interface Capacity:
Up 1.25Gbps / Down 2.5Gbps

GPON ONT

- ITU-T G.984.x compliant
- Forward Error Correction (FEC)
- Multiple T-CONTs/GEM ports per device
- Flexible mapping between GEM port and T-CONT
- Priority queues and scheduling on Upstream
- Activation with automatic discovered Serial Number and password
- Dying Gasp

L2/L3/L4 Switch

- IEEE802.1D and IEEE802.1Q
- Address learning with auto aging
- VLAN Filter
- L2/L3 Filter
- BPDU Filter
- Static routing
- DHCP server /client
- DNS proxy
 - Auto/Manual
- NAT/NAPT/Port forwarding (Forwarding engine up to 16K)
- MCL, DDNS, UPnP Port mapping, ALG
- NTP
- PPPoE client
 - Automatically initiating the session
 - Automatically keep alive

Multicast

- IGMP snooping
- IGMP proxy

Quality of Service

- HW-based internal IEEE 802.1p (CoS)
- Strict Priority (SP)

- 802.1Q (VLAN tag) QoS mapping, ToS/CoS
- 8 queues per port

Management

- ITU_T 984.4 compliant OMCI interface
- IEEE802.3x flow control
- LED indications for maintenance
- Web-based management
- ONT service provisioning (on the OLT-side)

VLAN

- VLAN port filtering
- Destination address port filtering

Wireless LAN

- IEEE802.11b/g/n/ac compliant
- Multiple SSIDs
- Up to 32 devices can accessed simultaneously
- 64/128bit wireless encryption protocol (WEP)
- Bandwidth: 2.4GHz, 5GHz
- Two Transmit and Two Receive path (2T2R)
- 2x2 MIMO
- Max. data rate : 300Mbps in 802.11n, 867Mbps in 802.11ac
- Supports 20 MHz, 40 MHz and 80MHz (11ac) channels
- Security: WEP, WPA-PSK (TKIP) & WPA2-PSK (AES)
- Wi-Fi Protected Setup (WPS)

VoIP Features

- SIP (RFC3261/3262/3264)
- 5-REN per POTS
- RTP, RTCP (RFC3550/3551)
- Multiple codecs: G.711, G.723.1, G729
- T.38 FAX mode
- Echo cancellation

Video (RF) Receiver Feature

- Standard F-Type connector
- RF Frequency Range: 47~1,000MHz
- Analog RF video over dedicated 1550nm wavelength
- RF Output Level AGC Adjustment

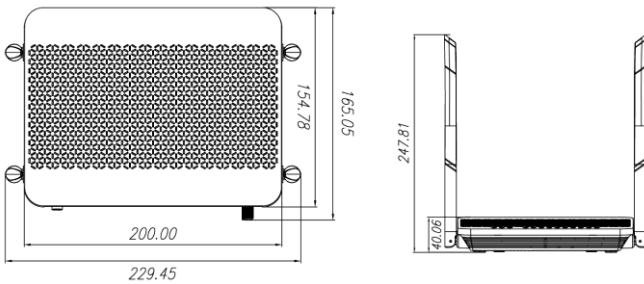
**Residential Gateway Unit Features
 (L3 Routing mode)**

- PPPoE client: multiple clients per RG ONT, Automatically initiating the session, Automatically keep alive
- DHCP server / client
- DNS Relay server (DNS relay, DNS transparent)
- NAT and NAPT
- Port forwarding
- Integrated stateful packet inspection firewall with ACL

Physical Specifications

Mechanics

- Dimensions



Environmental Conditions

- Operating temperature
 23 to 122°F (-5 to 50°C)
- Storage temperature
 -22 to 140°F (-30 to 60°C)
- Operating humidity
 20 to 90% (non-condensing)

Power Voltage (AC/DC Adaptor)

- Input: 100-240VAC, 50/60Hz
- Output: 12VDC/2A

Interface Parameter

- GPON i/f
 1 GPON port (SC/APC type)
- Gigabit Ethernet i/f
 4 10/100/1000Base-T ports (RJ45)
- FXS i/f
 2 FXS ports (RJ11)
- Wireless LAN
 IEEE802.11b/g/n/ac compliant
 Four antennas
- Video i/f
 1 RF Video port (F-connector, coax)

Operating Indicators (LED)

- PWR ON / OFF
 Power status
- PON ON / Blinking
 ONT registration status
- ALM ON / OFF
 Optical signal status
- Internet ON / OFF
 Configuration status
- TEL1~2 ON / OFF
 Off/On-hook status
- 2.4/5G ON / OFF
 Wireless function status
- WPS ON / Blinking / OFF
 WPS connection status
- LAN1~4 ON / Blinking / OFF
 LAN port link status activity status
- CATV ON / OFF
 RF power status

Ordering Information

Base Standard

H660RM (Fibrain)

G-PON (Class B+, ITU-T G.984), 4-Port 10/100/1000Base-T, 2-Port POTS, RF Overlay, Wi-Fi

- PON MAC : Econet (MT7525G) , Flash 128MB & SDRAM 128MB
- SC/APC Connector type
- Optic Module : Accelink
- 2T2R Wi-Fi(IEEE 802.11b/g/n/ac)
- Power Adaptor : Input 100~240VAC, Output 12V/2A
- CE Certification

Maximum wireless signal rate derived from IEEE standard 802.11 specifications. Actual data throughput and wireless coverage will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate and wireless coverage.

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