



## NU60GM FTTH / GPON ONT

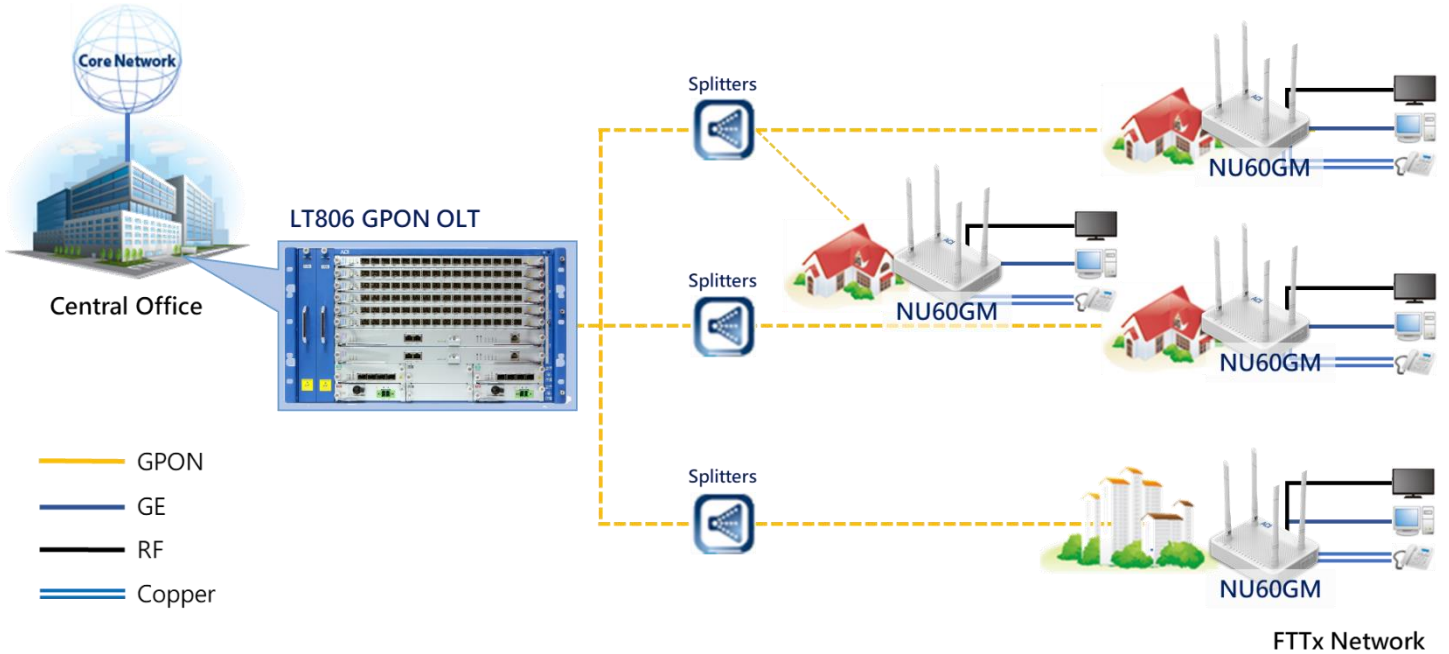
### FTTH/GPON ONT

The NU60GM optical network terminal is targeted for 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 NU60GM supports data rates of 1.25Gbps upstream and 2.5Gbps downstream. With ACI'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 NU60GM 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 NU60GM 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 NU60GM supports full triple play services including voice, video and high-speed Internet access services.

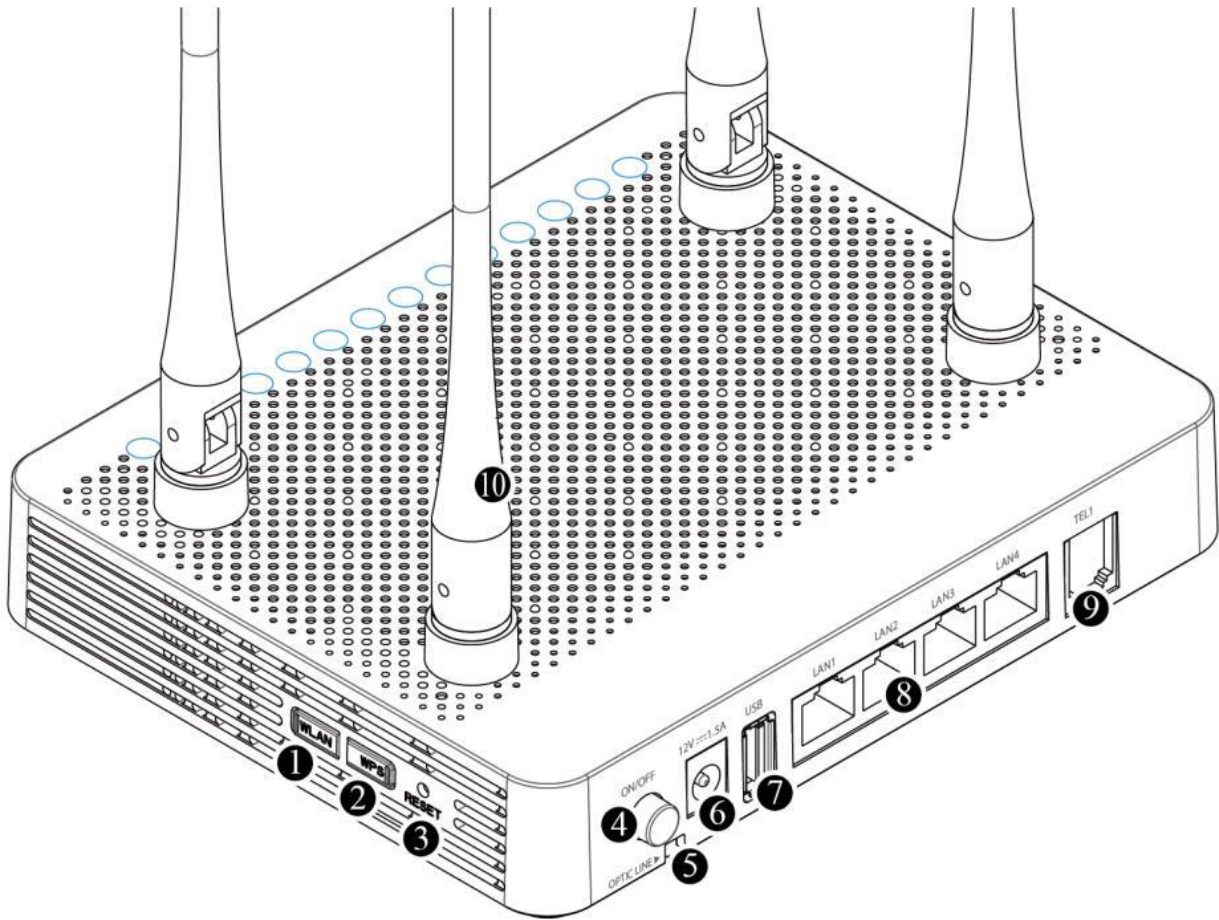
The NU60GM contains both built-in wire-speed L2 switch and L3 routing gateway with port forwarding, NAT and NAT address translation, PPPoE client support for high speed Internet service.

# FTTx Network Diagram



A PON consists of an Optical Line Termination (OLT) located at the HUB or 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 local networks.

## Interface Layout



| 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 Optic Line    | Connect to OLT via a passive optical splitter.<br>1 GPON uplink interface.      | SC/APC         |
| ⑥ Power port    | Connect an external power supply.   | -              |
| ⑦ USB           | Connect an external USB drive.  | USB            |
| ⑧ LAN 1-4       | Connect to PC or LAN.<br>4 10/100/1000Base-T interfaces for data communication. | RJ45           |
| ⑨ TEL           | Connect to VoIP phone.<br>1 FXS interfaces for phone service.                   | RJ11           |
| ⑩ Antenna       | Transmit and receive Wi-Fi packets.   | -              |

## Operating Status LEDs

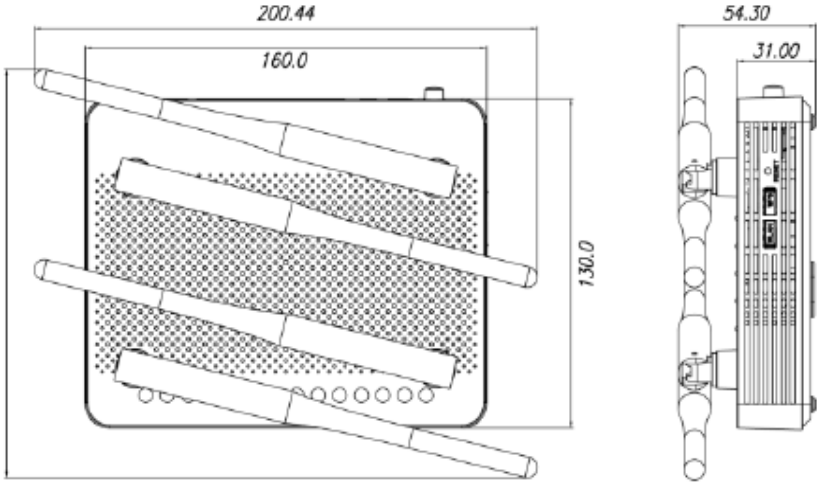
The status of the ONT is indicated by the LEDs located on the front of unit. LED indicators illuminate to show normal ONT operation and will blink and/or turn off to indicate the current status or errors. Refer to the following table for details of each LED state.



| Label    | Color | Status   | Description   |
|----------|-------|----------|---|
| PWR      | Green | On       | The system is turned on.                                  |
|          |       | 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      | Green | On       | Hook off.   |
|          |       | Off      | Hook on.  |
| 2.4/5G   | Green | On       | The 2.4G Wi-Fi function enabled.                          |
|          | Blue  | On       | The 5G Wi-Fi function enabled.                            |
|          |       | Blinking | The 2.4/5G 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.   |
| USB      | Green | On       | The USB is functioning properly.                          |
|          |       | Off      | The USB is not ready or malfunctioned.                    |

| NU60RM ONT Product Specifications |  |
|-----------------------------------|--|
| Capabilities                      | Specifications   |
| System                            | 128 MB Flash Memory  |
|                                   | 128 MB SDRAM   |
|                                   | GPON Interface Capacity: Up 1.25 Gbps / 2.5 Gbps                                 |
| 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               | IEEE 802.1D 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 / NAT / Port Forwarding (Fowarding engine up to 16K)                         |
|                                   | MCL, DDNS, UPnP Port Mapping, ALG  |
|                                   | NTP  |
|                                   | PPPoE Client:<br>Automatically Initating the session<br>Automatically Keep Alive |
|                                   | Multicast  |
| IGMP Proxy                        |  |
| Quality of Service (QoS)          | 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   |
|                                   | IEEE 802.3x 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   | IEEE 802.11 b/g/n/ac Compliant                                      |
|  | Multiple SSIDs  |
|  | Up to 32 Devices can Accessed Simultaneously                        |
|  | 64 / 128 bit Wireless Encryption Protocol (WEP)                     |
|  | Bandwidth: 2.4 GHz, 5 GHz   |
|  | Two Transmit and Two Receive (2T2R)                                 |
|  | 2x2 MIMO  |
|  | Max Data Rate:<br>300 Mbps in 802.11n<br>867 Mbps in 802.11ac       |
|  | Supports 20 MHz, 40MHz, 80 MHz (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 (RFC 3550/3551)   |
|  | Multiple Codecs: G.711, G.723, G.729                                |
|  | T.38 FAX Mode   |
|  | Echo Cancellation   |
| Residential Gateway Unit Features<br>(L3 Routing Mode) | PPPoE Client: Multiple Clients per RF ONT, Automatically keep alive |
|  | DHCP Server / Client  |
|  | DNS Relay Server (DNS Relay, DNS Transparent)                       |
|  | NAT and NATP  |
|  | Port Forwarding   |
|  | Integrated Stateful Packet Inspection Firewall with ACL             |

| Physical Specifications       | Specifications   |
|-------------------------------|--|
| Mechanics                     | <p style="text-align: center;">Dimensions</p>    |
| Environmental Conditions      | <p>Operating Temperature: 23 to 122°F (-5 to 50°C)</p> <p>Storage Temperature: -22 to 140°F (-30 to 60°C)</p> <p>Operating Humidity: 20 to 90% (non-condensing)</p>  |
| Power Voltage (AC/DC) Adaptor | <p>Input: 100-240 VAC, 50/60 Hz</p> <p>Output 12 VDC / 2A</p>  |
| Interface Parameter           | <p>GPON i/f: 1 GPON Port (SC/APC type)</p> <p>Gigabit Ethernet i/f: 4 x 10/100/1000Base-T Ports (RJ45)</p> <p>FXS i/f: 2 FXS Ports (RJ11)</p> <p>Wireless LAN: IEEE 802.11 b/g/n/ac Compliant, 4 Antennas</p>  |
| Operating Indicators (LED)    | <p>PWR: ON / OFF, Power Status</p> <p>PON: ON / Blinking, ONT Registration Status</p> <p>ALM: ON / OFF: Optical Signal Status</p> <p>Internet ON / OFF, Configuration Status</p> <p>TEL 1~2: ON / OFF, Off/On-Hook Status</p> <p>2.4 / 5G: ON / OFF, Wireless Function Status</p> <p>WPS ON / Blinking / OFF, WPS Connection Status</p> <p>LAN 1~4: ON / Blinking / OFF, LAN Port Link Activity Status</p> <p>USB ON / OFF, USB Status</p> |



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