"Fiber to the Home" is far from the only and most efficient technology to deliver Gigabit Internet access to subscribers. Retrofitting an existing (brownfield) Multi-Dwelling Unit (MDU) with fiber is complex and expensive. The G1002-M / G1002-M+ and G1002-C / G1002-C+ series of G.hn to Ethernet adapter complement the popular G1001 series with support for two (2) Gigabit Ethernet ports with one of the ports providing power to Ethernet devices as per the 802.3af / 802.3at standards (G1002-M+ and G1002-C+).

Introducing G.hn
The G1002 series supports the ITU-T G.9960 G.hn Wave-2 standard and is designed to operate over the existing telephone wiring (UTP, CAT-3 or CAT-5/5e) or coaxial cabling and deliver a Gigabit Internet service to each subscriber at a lower cost and without the complexity and delays associated with in-building fiber installation. G.hn is used as an Access technology by Operators looking to simplify their access network and backend infrastructure with an Ethernet-like technology that is highly scalable without some of the inherent complexity of DSL-related technologies. With G.hn as the Access technology, Operators deliver advanced services such as Gigabit High Speed Residential Internet and 4K IPTV.

About the G1002 Series Managed Demarcation Point with POE / POE+ support
The G1002 series terminates the G.hn link under the control of the Positron GAM, making sure the information transmitted over the G.hn links is protected with strong AES-128 encryption. It offers comprehensive VLAN support as per the IEEE 802.1q standard and the VLAN mode of each port is individually configurable: Trunk, Access or Untagged.

The G1002-M+ and G1002-C+ further add support on GigE port #1 for Power over Ethernet (POE or POE+) as per the IEEE 802.3at standard (30W) to devices such as Wi-Fi Access Points, IP Camera or Residential Gateways (RG).
The following diagram shows the simplicity of using the G1002-M+ to power a Wi-Fi 6 Access Point on port GigE #1 (configurable as a VLAN Trunk) and port GigE #2 to deliver additional services (such as IPTV).

The G1002-C+ offers the same Gigabit Ethernet dual-port capabilities as the G1002-M+ when used over Coax. When used for hospitality coverage, the G1002-C+ delivers a Gigabit feed in the back of the TV set where port GigE #1 can power a Wi-Fi 6 Access Point with support for a VLAN Trunk when needed and port GigE #2 connects directly to the Smart TV or the IPTV Set Top Box (STB).

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1002-M</td>
<td>G.hn Wave-2 to Ethernet Bridge over Twisted Pair</td>
</tr>
<tr>
<td></td>
<td>Multiple Input Multiple Output (MIMO) mode</td>
</tr>
<tr>
<td></td>
<td>Two (2) 10/100/1000BaseT RJ45 ports</td>
</tr>
<tr>
<td>G1002-M+</td>
<td>G.hn Wave-2 to Ethernet Bridge over Twisted Pair</td>
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<td></td>
<td>Two (2) 10/100/1000BaseT RJ45 ports / one with POE/POE+</td>
</tr>
<tr>
<td>G1002-C</td>
<td>G.hn Wave-2 to Ethernet Bridge over Coax</td>
</tr>
<tr>
<td></td>
<td>Two (2) 10/100/1000BaseT RJ45 ports</td>
</tr>
<tr>
<td>G1002-C+</td>
<td>G.hn Wave-2 to Ethernet Bridge over Coax</td>
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</tr>
</tbody>
</table>
### Specifications

<table>
<thead>
<tr>
<th>Environmental</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>3.7” Width x 1.35” Height x 6.7” Depth / 95 mm W x 34.3 mm H x 169.5 mm D</td>
</tr>
<tr>
<td>LED</td>
<td>Power, G.hn, Status (STA) and POE</td>
</tr>
</tbody>
</table>
| Power Adapter | G1002-M / G1002-C: 110-220 Vac to 12 VdC / 1A power adapter  
               | G1002-M+ / G1002-C+: 110-220 Vac to 48 VdC / 1A power adapter |
| Power Consumption | G1002-M / G1002-C: Up to 6.1W  
                   | G1002-M+ / G1002-C+: Up to 34.9W in 802.3at (POE+) mode |
| Certification  | CE Mark, FCC Part 15 Class B |
| Operating Temperature | 0˚C to +40 ˚C |
| Storage Temperature | -25˚C to +80 ˚C |
| Operating Humidity | 5% to 95% relative, non-condensing |

### G.hn Specification

- **G.hn Standards (Wave-2)**
  - Based on GigaWire Alliance specification and fully compliant with the following ITU-T standards
    - G.9960 Amendment 2 - System Architecture and PHY Layer
    - G.9961 Data Link Layer
    - G.9962 Management
    - G.9964 PSD
- **Ease of Deployment**
  - Support G.hn operation over telephone wiring (G1002-M / G1002-M+) or coax cabling (G1002-C / G1002-C+)
- **Point-to-point support**
  - Supports Point-to-point (twisted pair) with with G1002-M / G1002-M+
- **Point-to-Multipoint support**
  - Supports Point-to-Multipoint on coaxial cabling (up to 16 devices) with G1002-C / G1002-C+
- **Ethernet Standards**
  - IEEE 802.3, 802.3u, 802.3z, 802.1q (VLAN), 802.1ad (Q-in-Q)
- **POE Standards**
  - G1002-M+ and G1002-C+ support IEEE 802.3af (POE up to 15.4W), 802.3at (POE+ up to 30W)
- **POE Management and control**
  - G1002-M+ and G1002-C+ report detailed management information about the state and power consumption of the devices attached to their POE port
  - The GAM integrates control over the POE interface and allows a power cycle to force a restart of the device attached to the POE port to assist with remote troubleshooting and problem resolution with 3rd party devices
- **Ease of Operation**
  - Automatic firmware and configuration management via the Positron GAM
- **Encryption**
  - AES-128 encryption with individual keys for each end-node under the control of the Positron GAM acting as the Master Node
- **Modulation and Frequency Band**
  - Supports OFDM 200 MHz (Singe Input Single Output - SISO) on a single pair or OFDM 100 MHz (Multiple Input Multiple Output – MIMO) on two (2) pairs per port
  - Neighbor Domain Interface Mitigation (NDIM)
- **CATV co-habitation**
  - The G1002-C / G1002-C+ incorporate a Low-Pass Filter (LPF) to facilitate co-habitation with legacy CATV starting with Channel 30 (250 MHz)
- **Bandwidth Management**
  - Up to 1.7 Gbps with Dynamic Bandwidth Allocation to optimize throughput based on nature of traffic flows with automatic adjustment of the upstream / downstream ratio
- **Vectoring (Copper pairs)**
  - The G1002-M / G1002-M+ support VectorBoost™ embedded in the GAM that enables vectoring for Far-End Crosstalk (FEXT) mitigation and improved performance over Telephone wiring
- **Mitigation of Near-end Crosstalk**
  - Near End Crosstalk (NEXT) Mitigation and support for Neighbor Domain Interface Mitigation (NDIM)
- **PSD**
  - Programmable PSD mask for coexistence with xDSL / radio and Far End Crosstalk (FEXT) mitigation via Cloud-based VectorBoost™ vectoring
- **Reliability and Resiliency**
  - State of the art LDPC Forward Error Correction (FEC)

**Note:** The GAM product family comes with a 2-year hardware warranty.