Delivering Gigabit to the Home over Existing Wiring
Line Powered G.hn to Ethernet Endpoint with POE/POE+

G2002-M+ (Front)

G2002-M+ (Back)
POE and GigE ports

"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 G2002 series of G.hn to Ethernet Endpoint is line-powered from the Positron G.hn Access Multiplexer (GAM) and complements the popular G1001 and G1002 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.**

With the G2002-M+ and line power from the GAM, you can now combine G.hn over copper to build whole-MDU Wi-Fi coverage with seamless roaming in a very flexible approch. This allows Operators to install and control the Wi-Fi infrastructure using their preferred Wi-Fi vendor.

Introducing G.hn

The G2002-M+ 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) 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 Residential Internet and 4K IPTV.

About the G2002-M+ Managed Demarcation Point with POE / POE+ support

The G2002-M+ terminates the G.hn link under the control of the Positron GAM. It makes 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 G2002-M+ operates over twisted pair, is managed by the GAM and provides Power over Ethernet (POE or POE+) to devices such as Wi-Fi Access Points, IP Cameras or Residential Gateways (RG).

The Positron GAM family is designed to optimize coverage of Gigabit Internet services in an MDU or MTU. The G2002-M+ can be line powered when the GAM is coupled with the GAM-PWR-12-M+ or GAM-PWR-24-M+ Mid-Span Power Injector solution. In this case, the G2002-M+ supports the IEEE 802.3af POE standard and delivers up to 15.4W to devices connected to the GE1 (PoE-capable) Gigabit Ethernet port. When locally powered, the G2002-M+ supports the IEEE 802.3at standard and delivers up to 30W to serve devices such as Wi-Fi 6 Access Points or Routers.
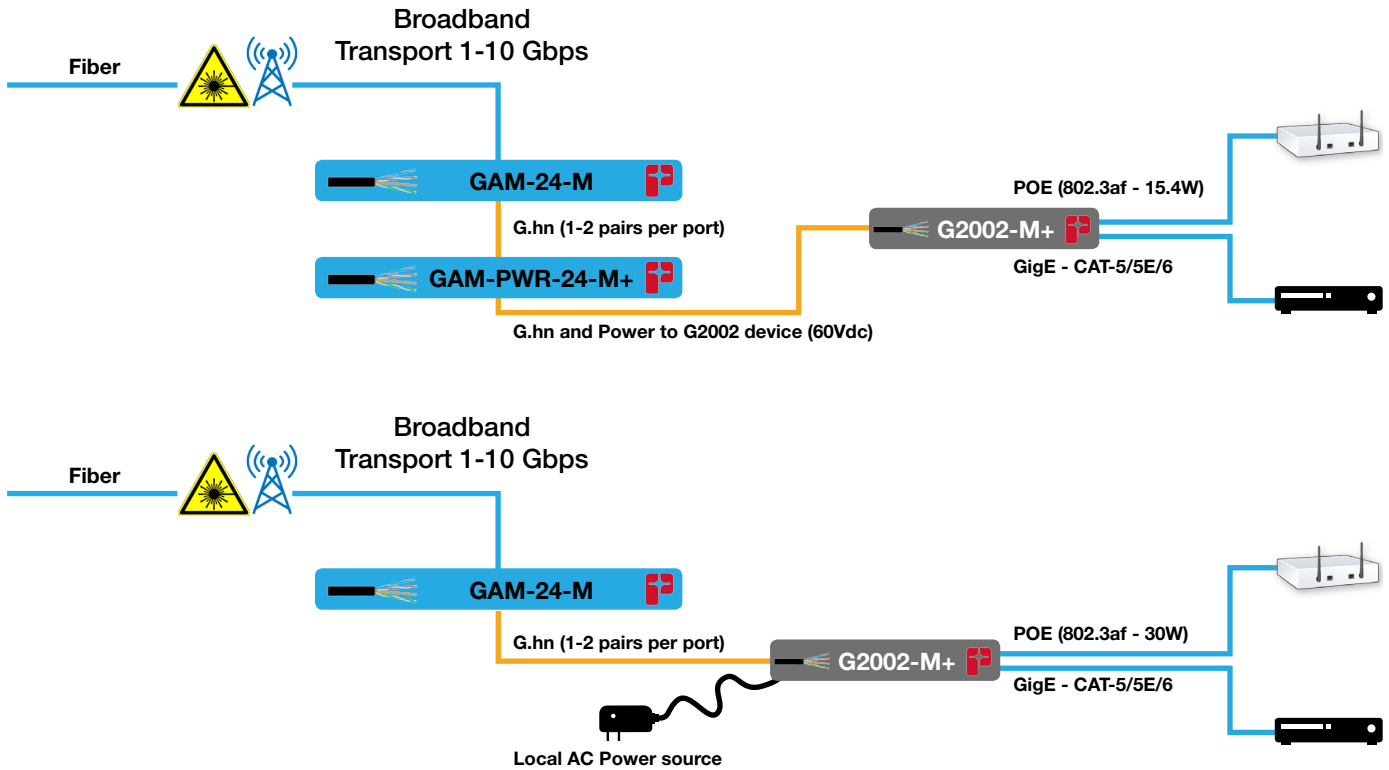
When locally powered, the G2002-M+ can provide a POE+ feed to a device as per IEEE 802.3at (30W), and does not require the GAM-PWR-24/12-M+ mid-span injector.

Ordering Information

Part Number	Description
G2002-M+	G.hn Wave-2 to Ethernet Bridge over Twisted Pair Multiple Input Multiple Output (MIMO) mode G.hn port (RJ45 port) Two (2) 10/100/1000BaseT RJ45 ports / One (1) with POE/POE+
GAM-12-M	12 port G.hn Access Multiplexer (GAM) for use over Twisted Pair wiring for 1 pair (SISO) or 2 pairs (MIMO) per RJ45 port
GAM-24-M	24 port G.hn Access Multiplexer (GAM) for use over Twisted Pair wiring for 1 pair (SISO) or 2 pairs (MIMO) per RJ45 port
GAM-PWR-12-M+	12 port Mid-Span Power G.hn copper Power Injector to power G2002-M+ devices
GAM-PWR-24-M+	24 port Mid-Span Power G.hn copper Power Injector to power G2002-M+ devices

Specifications

Environmental	
Dimensions	3.7" Width x 1.35" Height x 6.7" Depth / 95 mm W x 34.3 mm H x 169.5 mm D
LED	Power, G.hn, Status (STA) and POE
Line Powering	GAM devices combined with GAM-PWR mid-span power injector devices can line power G2002-M+ (2 pairs per port)
Optional Power Adapter	110-220 Vac to 48 Vdc / 1A power adapter (sold separately)
Power Consumption	Up to 25.2W when line powered (802.3af POE mode) Up to 42.3W when locally powered and 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 (G2002-M+)
Point-to-point support	Supports Point-to-point (twisted pair) with G2002-M+
Ethernet Standards	IEEE 802.3, 802.3u, 802.3z, 802.1q (VLAN), 802.1ad (Q-in-Q)
POE Standards	IEEE 802.3af (POE up to 15.4W), 802.3at (POE+ up to 30W)
POE Management and control	G2002-M+ reports 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 of issues with the 3rd party devices powered by a G2002-M+ device
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) Radio Band Notching function allows cohabitation with legacy Analog Cable TV channels over coax
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)	Support for VectorBoost™ cloud-based 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 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.