Delivering Gigabit to the Home

Positron G.hn to Ethernet Managed Demarcation Point

G1000-M

G1000-C

"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 G1000 series of G.hn to Ethernet Managed Demarcation Point devices complement the Positron G.hn Aggregation Multiplexer (GAM) family to deliver near symmetrical Gigabit Internet access to subscribers in MDUs over the existing telephone or coaxial infrastructure at a fraction of the cost of alternatives.

Introducing G.hn

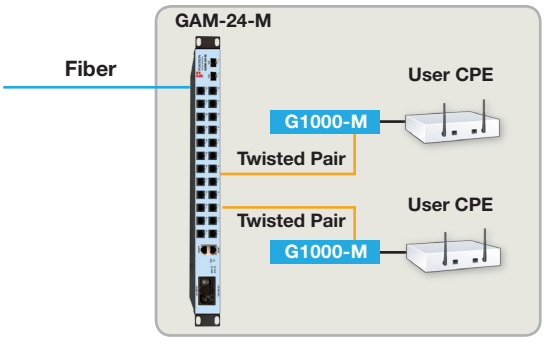
The ITU-T G.9960 G.hn Wave-2 standard is designed to leverage the existing telephone wiring (UTP, CAT-3 or CAT-5/5e) or RG-6/RG-59 coax cabling with an access technology that delivers a Gigabit Internet service to each subscriber at a lower cost and without the cost, complexity and delays associated 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 without the high capital and operational expenses associated to a fiber retrofit. The Positron GAM solution is MEF CE 2.0 compliant and is ideally suited to deliver Business Ethernet services in an MDU and/or MTU deployment.

About the G1000 Managed Demarcation Point

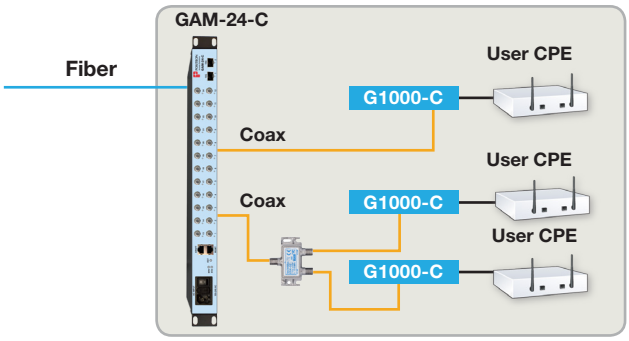
The Positron G.hn to Ethernet Bridge (G1000-M for twisted pair or G1000-C for coaxial) is a Managed Demarcation Point acting as a Virtual CPE (vCPE) that can be used to connect to a Residential Gateway (RG) that does not have native support for G.hn on its WAN port.

The G1000-M and G1000-C devices are used to control how a Residential Gateway (or User CPE) connects to the G.hn Access Network under the control of the Positron GAM. In this role, they make sure the information transmitted over the G.hn links is protected with strong AES-128 encryption. When used in Point-to-multipoint mode (coaxial wiring), the G1000-C operates under control of the GAM to isolate the traffic from each subscribers that share the same coax splitter.

MDU with Twisted Pair Infrastructure



MDU with Coax Infrastructure



Since the G.hn Access Network operates at layer-2 (same as Gigabit Ethernet and GPON), the G1000-M and G1000-C can operate under a virtual CPE (vCPE) mode when Operators rely on a Virtualized Network Function (VNF) architecture where services such as IP Routing and Firewall are handled by servers in the “cloud”.

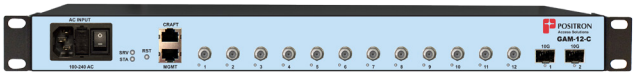
About the Positron GAM

The Positron G.hn Access Multiplexer (GAM) family is designed to optimize coverage of Gigabit Internet services in an MDU. Operation over twisted-pair cabling is always Point-to-point. When operating over a coax infrastructure in Point-to-multipoint mode, it is possible to serve up to sixteen (16) G1000-C per G.hn port of the GAM.

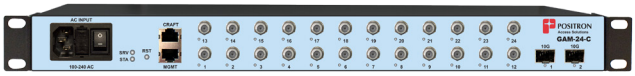
GAM-12-M

GAM-24-M

GAM-12-C



GAM-24-C



Ordering Information

Part Number	Description
G1000-M	G.hn Wave-2 to Ethernet Bridge over Twisted Pair Multiple Input Multiple Output (MIMO) mode G.hn port (RJ14 port) Telephone port (via built-in POTS splitter) Two 10/100/1000BaseT RJ45 ports
G1000-C	G.hn Wave-2 to Ethernet Bridge over Coax G.hn port (F-type male connector) CATV port (F-type male connector) Two 10/100/1000BaseT RJ45 ports
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 RJ14 port
GAM-12-C	12-port G.hn Access Multiplexer (GAM) for use over Coaxial cable (F-Type male connector)
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 RJ14 port
GAM-24-C	24-port G.hn Access Multiplexer (GAM) for use over Coaxial cable (F-Type male connector)

Specifications

Environmental	
Dimensions	2.36” Width x 1” Height x 4” Depth / 60 mm W x 27 mm H x 103.4 mm D
Weight	G1000-M: 0.37 lbs (170 g) G1000-C: 0.42 lbs (190 g)
LED	Power, RJ45 ports link/active, G.hn link
Power Source	12 Vdc / 1A power adapter
Power Consumption	Less than 3W
Certification	CE Mark, FCC Part 15 Class A
Operating Temperature	0ºC to 40ºC
Storage Temperature	-25ºC to 80ºC
Operating Humidity	5% to 95% relative, non-condensing
G.hn Specification	
G.hn Standards	G.hn Wave-2 Client Based on GigaWire Alliance speficiation 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 (G1000-M) or coax cabling (G1000-C)
Point-to-point and Point-to-multipoint support	Supports Point-to-point (twisted pair and coax) with G1000-M Point-to-multipoint operation (coax) for up to 16 G1000-C per G.hn port
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) with support for 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 TDD Multiplexing for programmable upstream / downstream ratio
Vectoring (Telephone Wiring)	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 Far End Crosstalk (FEXT) mitigation via Cloud-based VectorBoost™ vectoring
Reliability and Resiliency	State of the art LDPC Forward Error Correction (FEC)