G.hn Access Multiplexer (GAM)
Quick Installation Guide
GAM-8-MRX / GAM-4-MRX

Publication Information

GAM (G.hn Access Multiplexer)
Quick Installation Guide

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Chapter 1

About the GAM

1.1 **Introduction**

The GAM is a Fiber to the Distribution Point (FTTDp) solution typically installed inside a wiring closet. The GAM-8-MRX and GAM-4-MRX comes with one (1) 10 Gigabit SFP+ interfaces to support any type of fiber or PON standards (using an SFP-based or external ONT as required that is compatible with the OLT).

The ITU-T G.9960 G.hn Wave-2 standard leverages the existing telephone wiring (UTP, CAT-3 or CAT-5/5e) or RG-6/RG-59 coax cabling to deliver a Gigabit Internet service to each subscriber without the cost, complexity and delays associated with in-building fiber installation. G.hn is an Access technology for 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, Operators deliver advanced services such as Gigabit High Speed Residential Internet and 4K IPTV without the high capital and operational expenses associated with a fiber retrofit. Each G.hn subscriber port supports up to 1.7 Gbps of dynamically allocated bandwidth for near symmetrical Gigabit services over the existing telephone wire or coaxial cable. 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.

Note: Read Chapter 4 Safety and Warnings before proceeding.

1.2 GAM Connections

This section provides an overview of the connectors inside a GAM-8-MRX or GAM-4-MRX. Please refer to section 2 for a detailed step-by-step installation procedure.

1.2.1 Power Connection

The GAM-8-MRX and GAM-4-MRX are Reverse Powered Fed (RPF) from the subscriber end using Positron G1001-MR end-point devices. An optional 12Vdc connector is available to power the device during its initial configuration and to validate the proper functioning of the uplink connection.

Note: Once you remove the optional 12Vdc power source, the GAM will be OFF until you connect and active a first subscriber with a G1001-MR device.

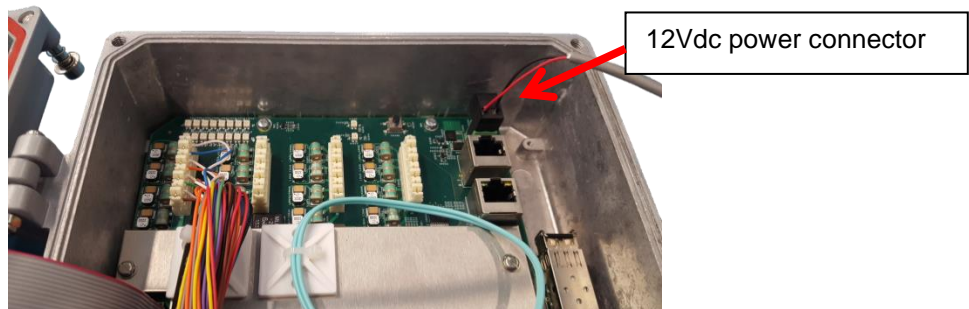
Figure 1*: GAM Power Input Connector*
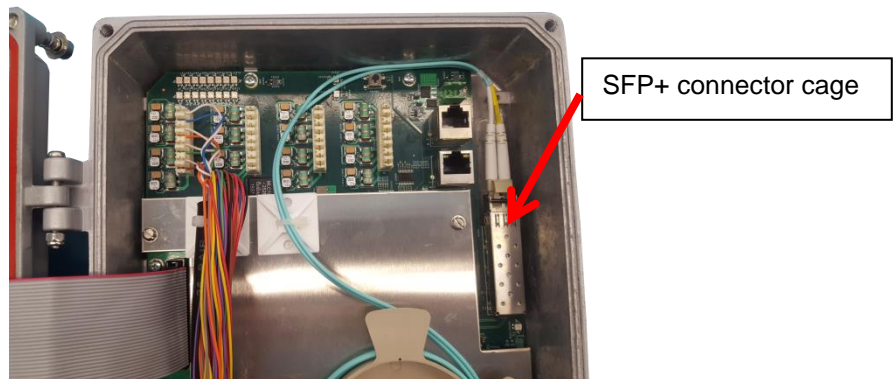
1.2.2 Ethernet (SFP+) Port

Figure 2*: GAM SFP+ Connectors*

The GAM has one (1) SFP+ ports that support any MSA-compliant SFP/SFP+ modules. (Fiber: 1G, 10G and Copper RJ-45: 100M, 1G).

Important note: When connecting the SFP+ port to a Passive Optical Network (PON) fiber connection, please make sure to use an Optical Network Unit (ONU) approved by the OLT vendor you are using.

1.2.3 G.hn Ports

The GAM-8-MRX has 8 G.hn ports and the GAM-4-MRX has 4 G.hn ports.

110 Punch-down blocks are used to connect the copper pairs to each of the G.hn ports. You can connect either a single pair (SISO mode) or two (2) pairs (MIMO mode) per port. The 110 Punch-down blocks are located at the top left portion inside the GAM IP67 enclosure.

Pair 1	Port 1	Pair 1	Port 3	Pair 1	Port 5	Pair 1	Port 7
Pair 2		Pair 2		Pair 2		Pair 2	
Pair 1	Port 2	Pair 1	Port 4	Pair 1	Port 6	Pair 1	Port 8
Pair 2		Pair 2		Pair 2		Pair 2	
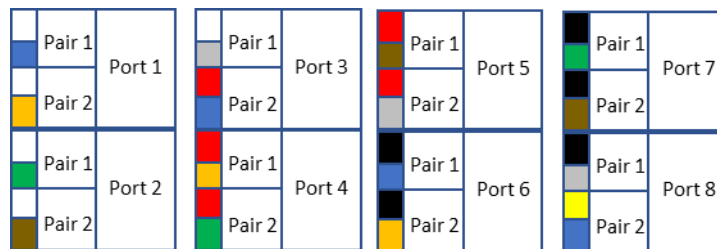
Note: fast and resettable lightning protection is pre-installed on the GAM motherboard for each copper pair.

110 Punch-down blocks for G.hn ports
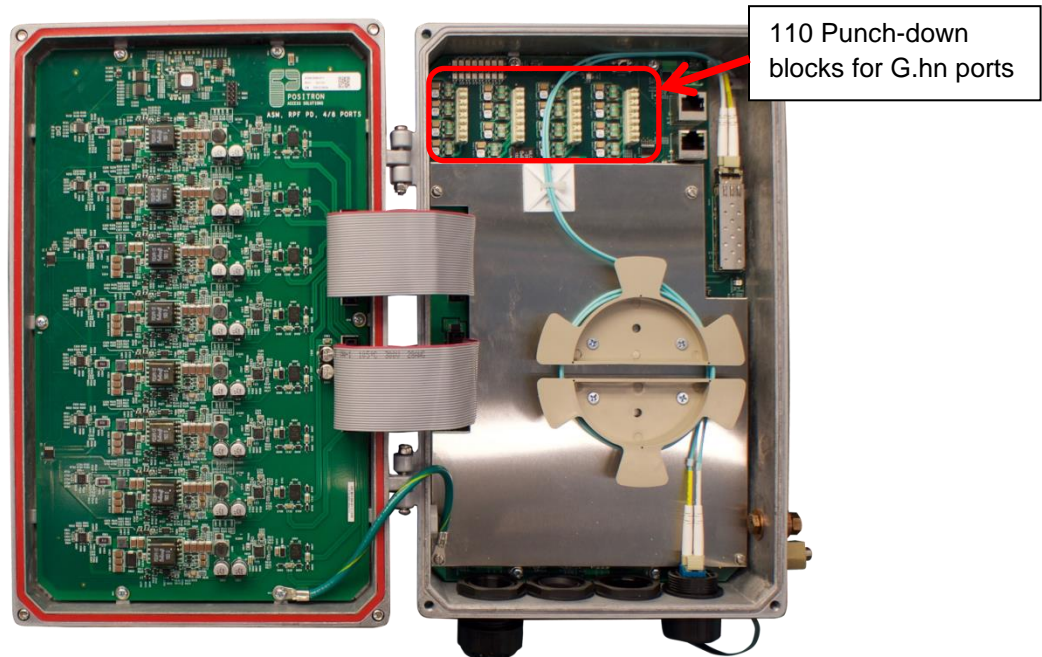
Figure 3: *Inside view of GAM-8-MRX with 110 Punch-down Block*

1.2.4 **Local management ports**

The GAM devices have two (2) local management ports located near the top right corner of the enclosure.
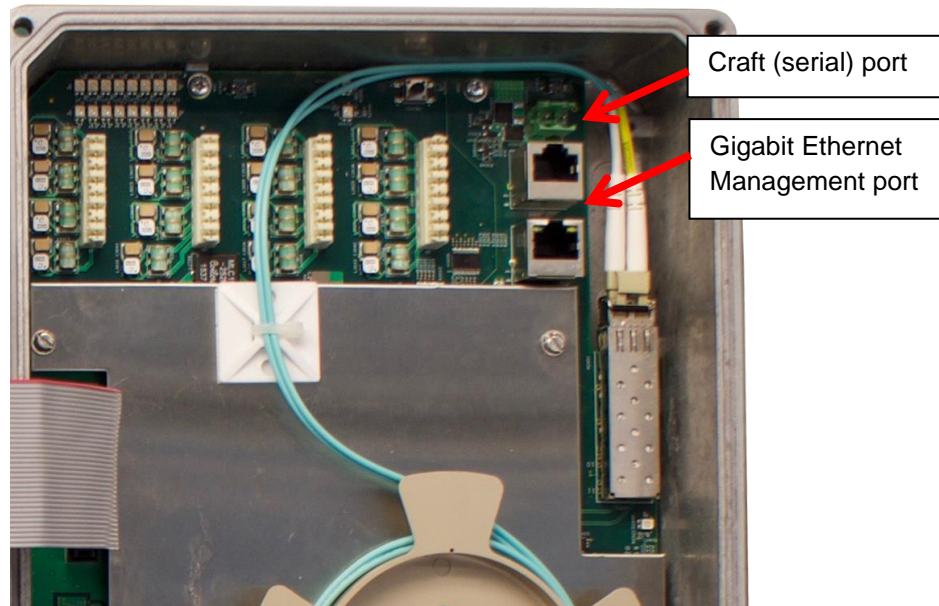
Figure 4: *Local Management Ports are at the top right corner of the GAM circuitry*

The CRAFT port is a standard serial (V.24, 115200, 8, N, 1)) port that provides access to the command line interface of the GAM device.

The pinout of the RJ-45 serial port is compatible with the popular Cisco pinout as per the following diagram:
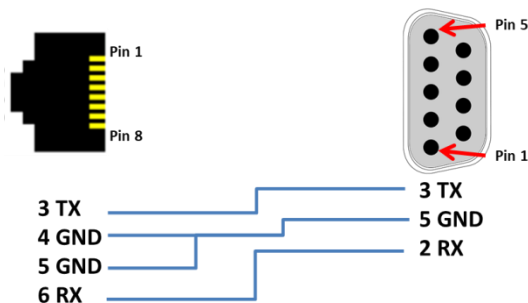
Figure 5: *GAM Serial Management Port pinout*

The MGMT port is a 10/100/1000Base-T Ethernet port provides access to the WEB GUI interface using a standard WEB browser or an SSH interface to the command line interface of the GAM device.

1.2.5 GAM LED Indicators

The GAM uses three (3) LED indicators inserted in the cover of the IP67 enclosure to provide information about its global status and operating mode.

Figure 6: *GAM global status LEDs*

LED	Condition	Function
RPF	Off	No Reverse Power Feed
	On	Reverse Power Feed on at least 1 G.hn port
SRV	Solid Green	System OK
	Solid Yellow	GAM is starting up
	Solid Red	No Internet Connection
STA	Solid Green	Normal
	Solid Yellow	Minor Alarm Active
	Blinking Yellow	Firmware Update in Progress
	Solid Red	Critical or Major Alarm Active

Table 1: *GAM Global LED indicators*

Each of the G.hn ports has two (2) status LEDs.
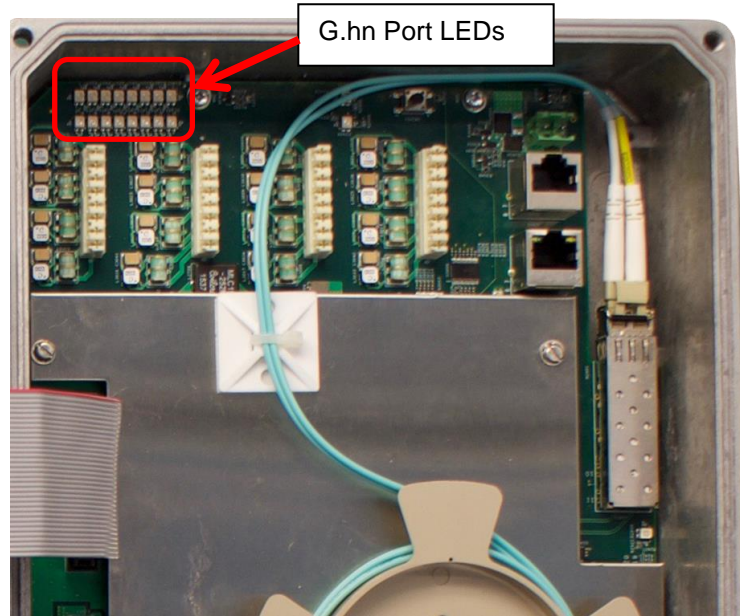
Figure 7: *G.hn Ports LEDs*

The top row of LEDs indicates the state of the G.hn link while the bottom row indicates the presence of the Reverse Power Feed source (from a G1001-MR device at the customer end).

LED	Condition	Function
G.hn ports	Off	Disabled or Link Down
	Blinking	Bad or low speed G.hn link
	On	Link is Up
RPF	Off	No Reverse Power Feed
	Green	Reverse Power Feed present

Table 2: *G.hn Ports LED indicators*

The SFP+ port of the GAM has a dedicated status LED located underneath the SFP+ cage.
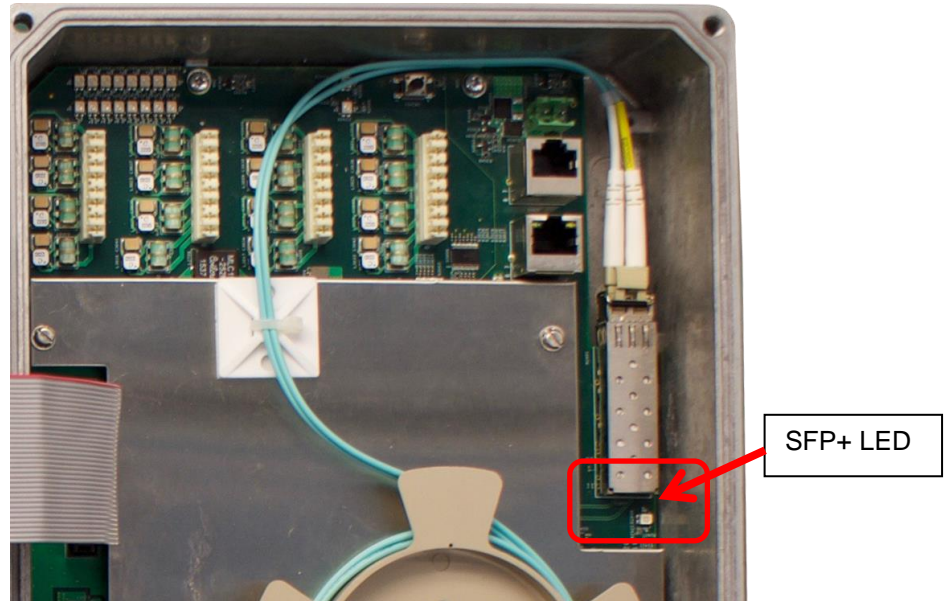
SFP+ LED

Figure 8: *SFP+ LED*

LED	Condition	Function
Located under SFP+ connector	Off	Disabled or Link is Down
	Green	Link is Up
	Blinking green	Link Activity

Table 3: *SFP+ LED indicator*

1.2.6 **GAM Reset Button**

Press the RST button to reset the GAM. When depressed for two (2) to ten (10) seconds, it will perform a cold reboot of the GAM. When depressed for more than ten (10) seconds, it will return the GAM device to its original factory default settings and will perform a cold reboot of the GAM.
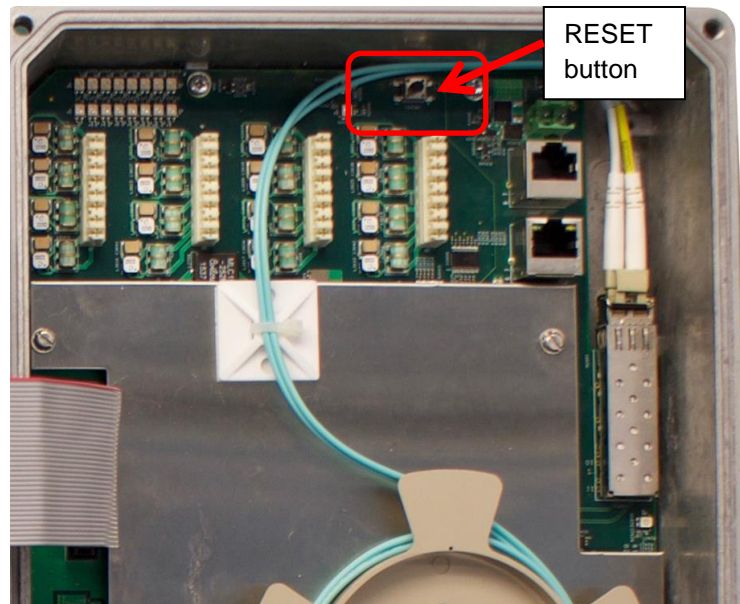
Figure 9: *GAM Reset (RST) button*

Chapter 2

Step by Step Installation

2.1 **Step by Step Installation Procedure**

Here is a step-by-step procedure to install the GAM-8-MRX outdoor unit.
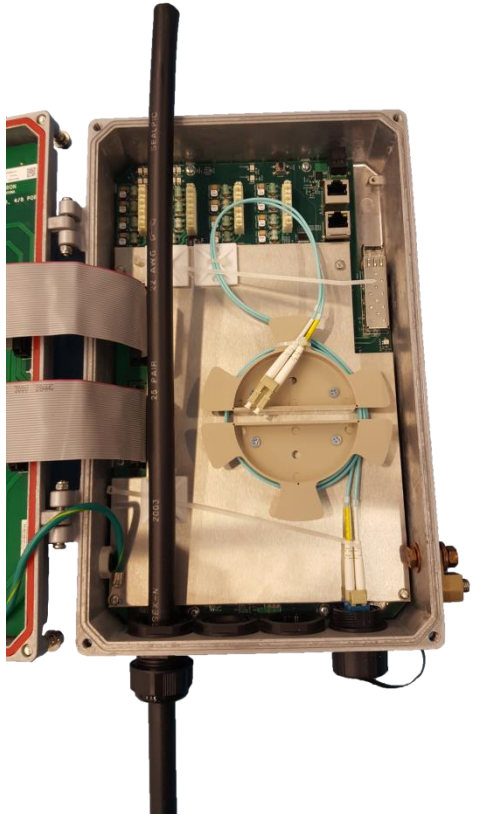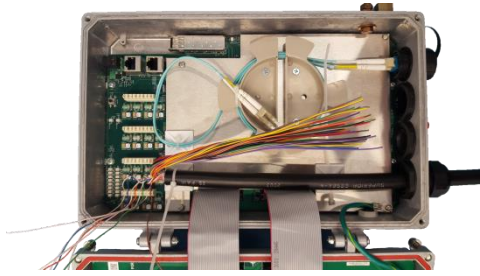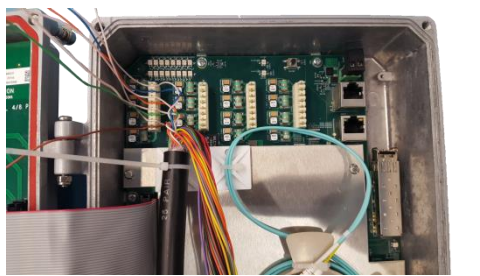
Note: The Copper cable binder shown does not ship with the GAM-8-MRX

Let's begin with the insertion and connection of the copper binder cable.

Step 1: The GAM-8-MRX ships with a protective insert to prevent dust from entering the enclosure via the left grommet used for the copper cable binder.	
Step 2: Remove the protective (red) insert by removing the sealing nut of the cable gland	

Step 3: insert the copper cable binder through the sealing nut and the cable gland opening.	

Step 4: pull on the copper binder cable to make sure you have enough length to reach the 110 punch-down blocks at the top of the enclosure. Once done, make sure to tighten the sealing nut to maintain IP67 protection.	
Step 5: select the pairs to connect and bend the remaining (unused) pairs along the copper cable binder section inside the enclosure. This is useful should you need to connect more pairs or use different pairs.	
Step 6: position the pairs: 1 per port when operating in SISO mode and 2 per port when in MIMO mode.	

Step 7: using a punch down tool, install each pair in their respective position. Make sure to remove any wire debris from inside the enclosure.	
Step 8: use a tie-wrap to secure the unused pairs along the copper cable binder.	
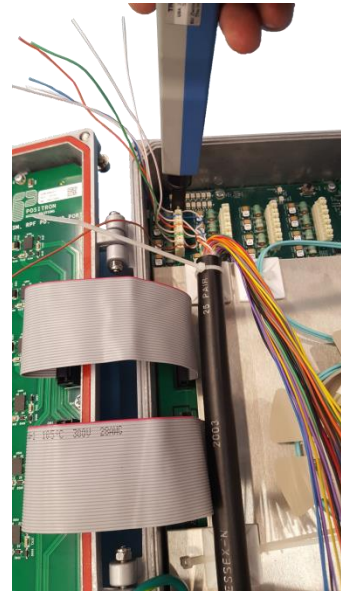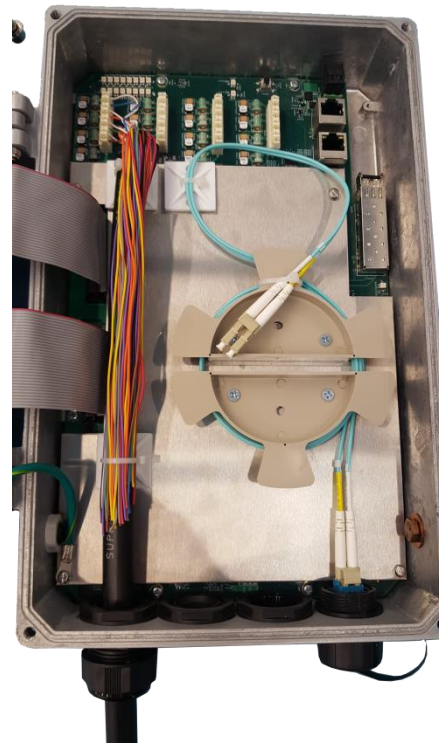
You are now ready to connect the optional 12Vdc power source. While the GAM-8-MRX is Reverse Power Fed from G1001-MR devices at the customer end, you can apply a temporary 12Vdc power source during the initial installation phase to complete the provisioning of the GAM and verify proper operation of the uplink.

Step 9: The 12Vdc connector is located at the top right corner of the GAM enclosure. Pull on the male power connector that ships pre-installed in unit.	
Step 10: using 18 AWG wire, connect the 12Vdc power pair to the male power connector and tighten with a small flat screwdriver. If power cable is more than 25 feet (8 meters) long, use lower AWG cable to minimize the voltage drop along the cable. The pinout of the connector is as the following diagram. +12V GND 	
Step 11: insert the male power connector into the female receptacle. You can now connect the other end of the DC power cable to the 12Vdc / 3A power source: battery, accessory plug of the technician service vehicle, or any other suitable power source.	
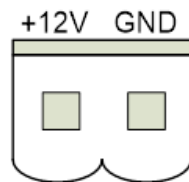
The next step is the insertion of the SFP or SFP+ module that provides the uplink connection.

Step 12: Insert the SFP or SFP+ module into the SFP cage at the top right section of the GAM enclosure. Make sure to lock the SFP / SFP+ module in place. **Note:** the SP cage can accommodate modules that draw up to 3W of power.	
Step 13: install the fiber patch cable around the fiber spool as per the fiber cable provider guidelines. Make sure you have enough length to reach the SFP cage while routing the fiber cable above the 2 x RJ-45 ports at the top right of the GAM enclosure.	
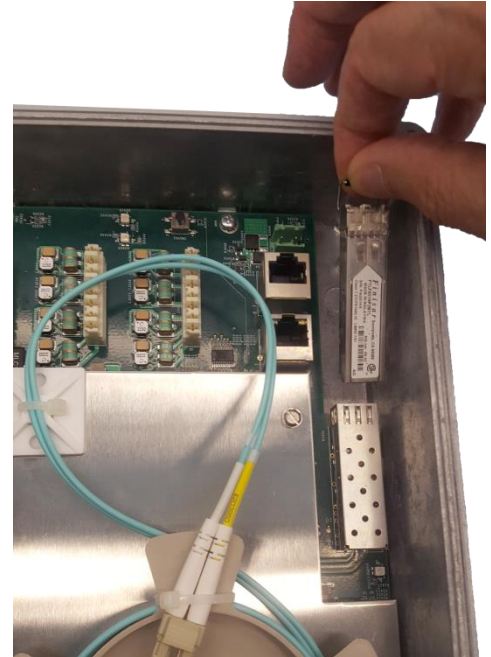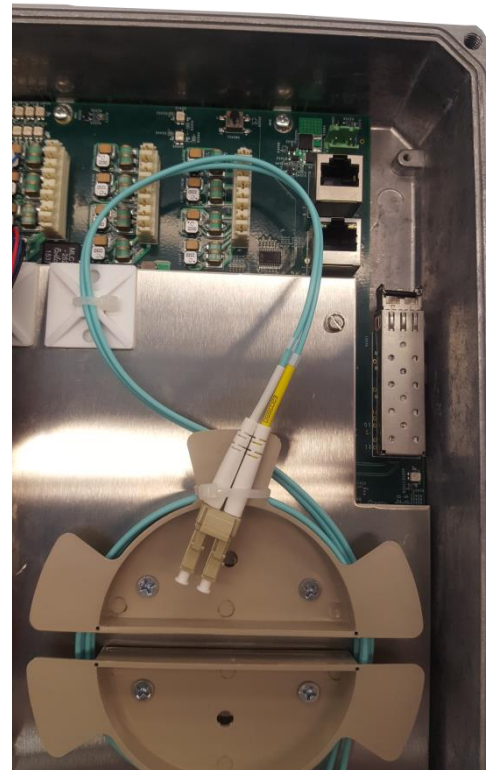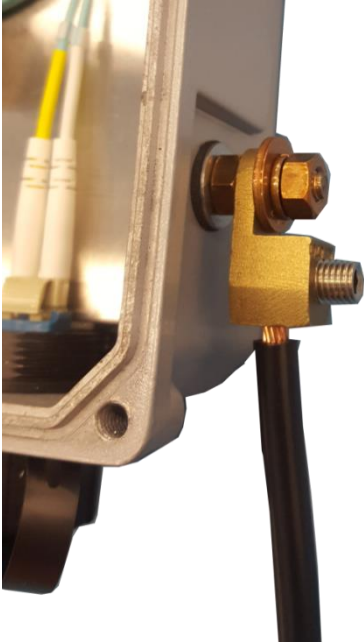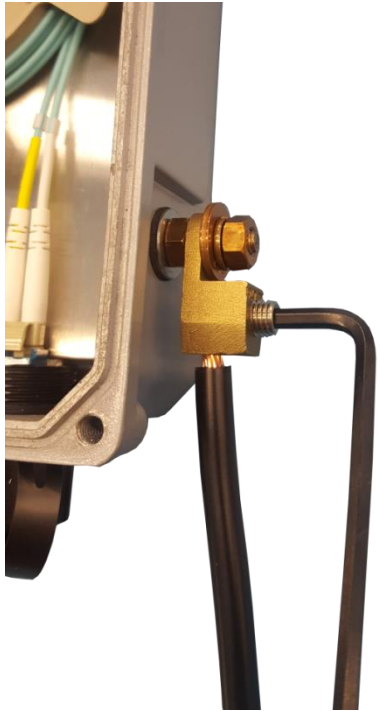
Step 14: insert the fiber connectors into the SFP / SFP+ module. **Note:** while an LC patch cable is shown here, you can also use an SC patch cable or a copper (CAT-5/6e) when using a copper SFP.	
Step 15: make sure you carefully route the fiber patch above and around the RJ-45 connectors.	
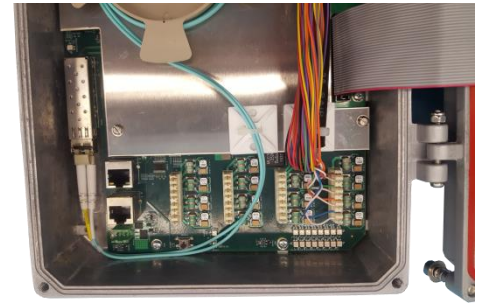
You are now ready to install the ground wire into the ground lug at the bottom right edge of the GAM enclosure.

Step 16: insert the 6 AWG ground wire into the ground lug.	
Step 17: use a 4 mm Allen (hex) key to secure the ground wire.	

You are now ready to securely fasten the cover back onto the enclosure.

Step 18: use a 5 mm Allen (hex) key to secure the 4 screws to ensure the IP67 water protection of the enclosure. Tighten the screws in an X fashion (top-right, bottom-left, top left, bottom right).	

The final step is the installation of the mounting bracket. The mounting bracket included with the GAM enclosure facilitates installation on a pole or a flat surface. You can also strand-mount the device using the optional **GAM-STRAND-KIT** adapter. **NOTE:** the installation and mounting of the GAM shall be done by a qualified technician.

Step 19: the top and bottom brackets are identical. Using the Phillips screws supplied with the unit to fasten the bracket on the back side of the enclosure. Apply a torque of 2.0 Nm (1.47 lb-ft) ± 10% to each M5 screw to secure the bracket.	
Step 20: Once both brackets are attached to the enclosure, you are ready to install the unit at its definitive location. It is recommended to mount the GAM on a ¾ inch plywood using #12 screws (5.5 mm). If you decide to mount on another type of surface, make sure the mounting can withstand the weight of the GAM and of the cables attached to the GAM.	

Chapter 3

RPF powering when connected to another GAM device

A number of application scenario rely on connecting a 1ˢᵗ GAM device to a GAM-4-MRX or GAM-8-MRX and use Link Aggregation (LAG) for 4 or 8 G.hn MIMO ports to achieve multi-gigabit services between those GAM devices.

In this case, there is a need to install a mid-span GAM-PWR-4-M power injector alongside a first locally powered indoor GAM to act as the RPF PSE device instead of using individual G1001-MR devices. This is achieved as per the following diagram.
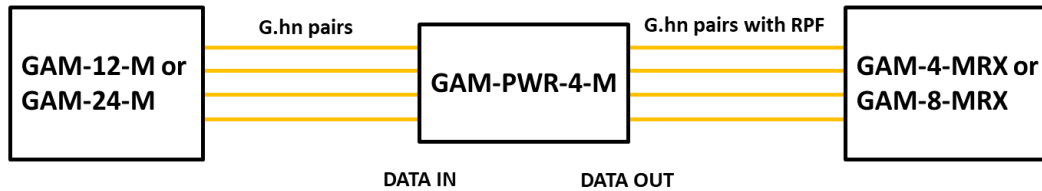
The use of a GAM-PWR-4-M mid-span injector requires specific wiring to allow the injection of the Reverse Power Feed on the G.hn MIMO pairs toward the GAM-4-MRX or GAM-8-MRX. Please refer to the GAM-PWR-4-M Quick Installation Guide (document 180-0216-001) for more information.

Chapter 4

WEB Management

4.1   **Introduction**

A WEB GUI interface and a Command Line Interface (CLI) are available to manage GAM devices. Supported WEB browsers include Chrome, Edge or Firefox.

4.2   **System Management**

4.2.1   **Logging into the WEB GUI**

The default configuration values of the GAM devices are:

IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Username	admin
Password	

Table 4: *GAM default credentials*

Enter the system's IP Address into the Web browser and a login screen similar to the following will appear:
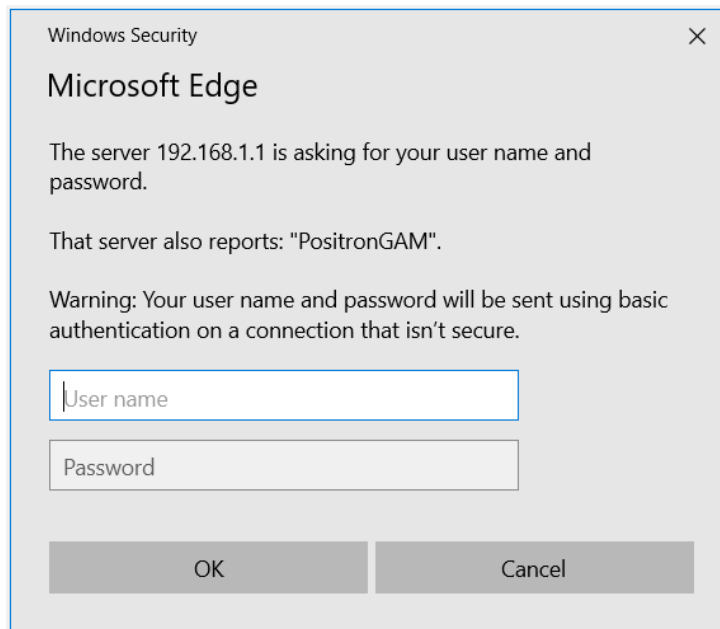
Figure 10: *GAM Login Page (Browser specific)*

Enter a Username and Password for the GAM device. The default Username is **admin** and the default password is null (not defined). Click **OK.**

IMPORTANT SECURITY NOTE: After a successful initial login, please change the password to avoid unauthorized access to the GAM device.

About the X.509 Public Key Infrastructure (PKI) Certificate: you may want to replace the default Positron-signed PKI Certificate used by the WEB GUI Administration Interface pre-installed by Positron with one from your preferred Certificate Authority.

Note: Secure HTTP is disabled by default. HTTPS can be enabled via menu: Configuration>Security>Switch>HTTPS

4.2.2 System

The System monitor page provides a front panel representation of the GAM device. The front panel is specific to the version of the GAM device. The sample screenshot below is for the GAM-8-MRX.

Figure 11: *GAM Port Status page (default page after login)*

4.2.3 General Information
For complete detail on web management, please refer to the GAM User's Guide.

Chapter 5

Technical Specifications

5.1 GAM Technical Specifications

Part Number	10 GigE SFP+	G.hn Ports / Type	Out-of-band Management Ports
GAM-4-MRX	1	4 MIMO (MIMO – Copper) (8 pair 110 punch-down block)	1 x 10/100/1000BaseT 1 x serial
GAM-8-MRX	1	8 MIMO (MIMO – Copper) (16 pair 110 punch-down block)	1 x 10/100/1000BaseT 1 x serial
Environmental			
Dimensions	8" W x 12" H x 3" D / 200 mm W x 300 mm H x 75 mm D		
Weight	6.4 lbs / 2.9 kg		
Reverse Power Feed	Complies with ETSI TS 101 548 v.2.2.1 in SR3 mode		
Power Source	Reverse Power Fed from G1001-MR.		
Alternate Power Source	12Vdc 3A power connector inside the GAM-4-MRX / GAM-8-MRX to temporarily power the GAM device in the absence of subscribers to facilitate the initial provisioning of the GAM and to validate the uplink connection		
Safety certification	IEC 62368-1		
Electromagnetic Compatibility	EN 55032, FCC Part 15 Class A		
Other mark	CE		
Operating Temperature	-40ºC to +65ºC		
Storage Temperature	-40ºC to +70ºC		
Operating Humidity	Up to 95% relative, non-condensing		
10 Gbps Network-Network Interface (NNI)			
1 x SFP+ port	SFP+ offer versatile support for Active Ethernet and for GEPON, 10GEPON, NG-PON2 and XGS-PON via external ONU/ONT devices Also compatible with 3rd party PON SFP ONT modules		
G.hn Specification			
G.hn Standards	G.hn Wave-2 Domain Master on all GAM ports (MIMO or Coax) 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 (RJ-45 with 1 or 2 pairs)
Point to Point support	Point-to-point (twisted pair)
Ease of Operation	Supports firmware and configuration management of G.hn end-point devices
Encryption	AES-128 encryption with individual keys for each End Point. The Positron GAM Domain Master is also acting as the G.hn Security Controller
Modulation and Frequency Band	Supports OFDM 200 MHz. Telephone wiring supports 1 pair (Single Input Single Output - SISO) and 2 pairs (Multiple Input Multiple Output - MIMO) per RJ-45 port Radio Band Notching function allows cohabitation with legacy analog cable TV channels on coax cabling and concurrent use with POTS and DSL on telephone pairs
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™ vectoring for FEXT (Far-End Crosstalk) 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 VectorBoost™ vectoring
Reliability and Resiliency	State of the art LDPC Forward Error Correction (FEC)
Layer 2 Switching	
Spanning Tree Protocol (STP)	Standard Spanning Tree 802.1d Rapid Spanning Tree (RSTP) 802.1w Multiple Spanning Tree (MSTP) 802.1s
MAC Table	Up to 32K MAC addresses
Trunking	Link Aggregation Control Protocol (LACP) IEEE 802.3ad for any SFP+ or G.hn ports
VLAN	Supports up to 4K VLANs simultaneously (out of 4096 VLAN IDs) • Port-based VLAN • IEEE 802.1Q tag-based VLAN • IEEE 802.1ad (Q-in-Q) double tag VLAN • MAC-based VLAN • Management VLAN • Private VLAN Edge (PVE)
Generic VLAN Registration (GVRP)	Protocols for automatically propagating and configuring VLANs in a Multicast Domain for IPTV and other multicast services
IGMP v1/v2/v3 snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters Supports 1024 multicast groups
IGMP Proxy	IGMP snooping with proxy reporting or report suppression actively filters IGMP packets in order to reduce load on the multicast router
IGMP Query	IGMP query is used to support layer-2 multicast domain in the absence of a multicast router
MLD v1/v2 snooping	Deliver IPv6 multicast packets only to the required receivers
DHCP Server	Supports DHCP server to assign addresses to IPv4 client devices

DHCP Snooping	DHCP snooping provides security by filtering un-trusted DHCP messages and by building and maintaining a DHCP snooping binding table
DHCP Relay	By supporting DHCP option 82, it is possible to forward DHCP requests to another specific DHCP server via DHCP relay. The DHCP server may be on another network
Layer-3 Support	
IPv4 Static Routing	Static routing of IPv4 unicast traffic
IPv6 Static Routing	Static routing of IPv6 unicast traffic
Security	
Secure Shell (SSH) Protocol	SSH secures Telnet traffic in and out of the switch, SSH v1, v2 are supported
Secure Sockets Layer (SSL)	SSL encrypts the HTTP traffic, allowing advanced secure access to the browser-based management GUI in the switch
IEEE 802.1X	IEEE 802.1X: RADIUS authentication, authorization and accounting, MD5 hash, single / multiple host mode and single / multiple sessions Supports IGMP-RADIUS based 802.1X Dynamic VLAN assignment
RADIUS/ TACACS+	Supports RADIUS and TACACS+ authentication G.hn Aggregation Multiplexer acting as a RADIUS client
Layer 2 Isolation Private VLAN Edge (PVE)	PVE (also known as protected ports) provides L2 isolation between clients in the same VLAN, supports multiple uplinks
Port Security	Locks MAC Addresses to ports and limits the number of learned MAC addresses
Storm Control	Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port
ACLs	Supports up to 256 entries Drop or rate limitation based on source and destination MAC, VLAN ID or IP address, protocol, port, differentiated services code point (DSCP) / IP precedence, TCP / UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, TCP flag
Quality of Service	
Hardware Priority Queue	Support 8 hardware queues
Scheduling	Strict priority and Weighted Round-Robin (WRR) Queue assignment based on DSCP and class of service (802.1p/ CoS)
Classification	Port based; 802.1p VLAN priority based; IPv4/IPv6 precedence/ type of service (ToS) / DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs, trusted QoS
Rate Limiting	Ingress policer; egress shaping and rate control; per VLAN, per port and flow based
IPv6 Support	Web/ SSL, Telnet/ SSH, ping, Simple Network Time Protocol (SNTP), Trivial File Transfer Protocol (TFTP), SNMP, RADIUS, Syslog, DNS Client, protocol based VLANs

Carrier Ethernet Protocol and features	
IEEE 802.3ah Ethernet OAM	Link Fault Management (LFM) for Ethernet links as defined in IEEE 802.3ah
IEEE 802.1ag Ethernet CFM	IEEE 802.1ag Ethernet CFM function that provides connectivity fault management
ITU-T Y.1731	ITU-T service OAM standard Y.1731 divides a network into maintenance domains in the form of hierarchy levels
ITU-T G.8031 and G.8032v2	Provides the standards-based method of delivering high-performance Carrier Ethernet services over a multi-node ring protection switching to serve large MDUs or MTUs
Management	
Web GUI Interface	Built-in configuration utility for browser-based device configuration (HTTP/ HTTPs). Supports configuration, system dashboard, maintenance and monitoring
Firmware Upgrade	Web browser upgrade (HTTP/ HTTPs) and FTP Secure upgrade through console port
Dual Firmware Image	Dual image and firmware partition provides independent primary and secondary OS files for backup while upgrading. Each firmware image has its corresponding firmware partition
SNMP	SNMP version1, 2c and 3 with support for traps and SNMP version 3 user-based security model (USM)
Remote Monitoring (RMON)	Embedded RMON software agent supports RMON groups 1,2,3,9 (history, statistics, alarms and events) for enhanced traffic management, monitoring and analysis
IPv4 and IPv6 Dual Stack	Coexistence of both protocol stacks to support a seamless migration
Port Mirroring	Traffic on a port can be mirrored to another port for Legal Interception (CALEA) or analysis with a network analyzer or RMON probe. Up to N-1 (N is Switch's Ports) ports can be mirrored to single destination port. A single session is supported
Network Time Protocol	Network Time Protocol (NTP) for clock synchronization over packet switched networks
Other Management	HTTP / HTTPs; SSH; RADIUS; DHCP Client / DHCPv6 Client; SNTP; cable diagnostics; ping; syslog; Telnet client (SSH secure support), IPv6 Management
Discovery	Link Layer Discovery Protocol (LLDP) (IEEE 802.1ab) with LLDP-MED extensions

Table 5: *GAM Summary Features*

Chapter 4

Safety and Warnings

Safety and Warnings

To ensure your safety when servicing and installing this equipment, please take the following precautions:

Make sure the primary protective ground (earthing) is connected to the GAM (using the proper wire gauge) before opening the enclosure and making connections.

The GAM-MRX products can be powered by either a 12Vdc local source connected into the AUX power port or by power coming from the RPF board (PCB assembly in the enclosure cover). That latter method requires 40Vdc minimum to be present on the G.hn pair at the GAM in order for RPF powering circuit to turn ON. Powering through the AUX power port should be temporary (during installation) as it is not protected from high voltage lightning/surges disturbances.

When power is applied to the AUX power port, make sure the power source can provide 3A or more at 12Vdc. Make sure the power source is protected for power fault conditions to avoid human injuries or damage to the GAM unit. Use cabling that will limit its voltage drop to less than 1.5V.

When the GAM is powered by the RPF method, ensure the power source is ETSI TS 101 548 v.2.2.1 (SR3) compliant or that it provides, as a minimum, current limiting of 400mA and short-circuit protection to avoid overheating of the copper pairs and damages that could result from that condition.

Only qualified personnel should service this system.

All wiring external to the product should follow the local wiring codes.

Use of this product in a manner other than defined in this installation guide may cause damage to equipment or injury to personnel.

If a problem has been isolated to this unit, do not attempt to repair. The unit's components are not user serviceable and therefore must not be replaced. Please return the unit to Positron Access Solutions for repair.

Observe local practice electrostatic discharge precautions when handling electronic equipment. Do not hold electronic plugs by their edge. Do not touch components or circuitry. Use a grounding wrist strap attached to a grounding connection point. Use only ESD-protective packaging materials when transporting equipment.

CAUTION!
SUBJECT TO ELECTROSTATIC DAMAGE
OR DECREASE IN RELIABILITY.

HANDLING PRECAUTIONS REQUIRED.

WARNING: The management (Craft, Ethernet) and AUX power ports of the equipment are suitable for connection to intra-building or unexposed wiring or cabling only. These ports MUST NOT be metallically connected to interfaces which connect to the OSP or its wiring. These interfaces require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring. Connection to these ports should be for temporary use during installation or maintenance.

THIS PRODUCT IS SUITABLE FOR MOUNTING ABOVE GROUND OR UNDER GROUND AT A MAXIMUM DEPTH OF 3 FEET. THE UNIT MUST ALWAYS BE CONNECTED TO EARTH GROUND FOR SAFETY OF EQUIPMENT AND PERSONEL.

⚠ CAUTION

Hot surface.
Do not touch.

WARNING: Under some installation and/or climate conditions the outdoor GAM equipment can become hot, do not touch. In order to prevent injuries, equipment shall be handled only by qualified personnel wearing safety gears.

Chapter 5

Warranty and Customer Service

Positron Access Solutions will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found in your Positron Access customer web portal: http://www.positronaccess.com/Portal.php

Positron Access Solutions Sales Pricing/Availability and Technical Support

US and Canada: 1-888-577-5254

International: +1-514-345-2220

customerservice@positronaccess.com

Repair and Return Address

Contact Customer Service prior to returning equipment to Positron.

Telephone US and Canada: 1-888-577-5254 option 6

International: +1-514-345-2220 option 6