

# CentreCOM<sup>®</sup> GS980EM Series

## Gigabit Layer 3 Lite PoE++/PoE Pass-through Switches

The Allied Telesis GS980EM Series of Gigabit Layer 3 Lite PoE++/PoE pass-through switches offer an impressive set of features in a compact design. Ideal for deployment at the network edge, the GS980EM Series feature flexible Power over Ethernet capabilities to support IoT device connectivity in today's converged business environments.



**AMF PLUS** **EPSRING™** **AMF-SEC**

**VISTA MANAGER™ EX** **ACTIVE**



### Overview

Allied Telesis GS980EM Series are secure and reliable, offering 8 x Gigabit PoE enabled ports and 2 x SFP uplinks, and providing a high value solution for flexible PoE at the network edge.

The GS980EM/10H can provide up to 90 Watts (PoE++) on all ports. This enables powering high power devices such as high resolution PTZ cameras with heater/blowers for outdoor applications, enhanced infrared lighting and lighting controllers, and more. The GS980EM/10H requires a PWR300 external power supply to operate and provide PoE power. Up to three PWR300 PSUs can be used to increase the available PoE power.

The GS980EM/11PT can supply up to 30 Watts (PoE+) to connected devices. It can be powered by an AC power adapter, or by PoE<sup>1</sup>. When deployed together, the GS980EM/11PT can be powered by the GS980EM/10H, while PoE pass-through enables power from the GS980EM/10H to pass through the GS980EM/11PT to power connected end points.

### Specifications

#### Performance

- ▶ 10KB L2 jumbo frames
- ▶ 4094 configurable VLANs
- ▶ Up to 16K MAC addresses
- ▶ Up to 2K multicast entries
- ▶ 512MB DDR3 SDRAM
- ▶ 128MB NAND flash memory
- ▶ Packet buffer memory: 1.5MB

#### Reliability

- ▶ Modular AlliedWare Plus operating system
- ▶ Full environmental monitoring of PSUs, fans, temperature and internal voltages. SNMP traps alert network managers in case of any failure

### Flexibility and Compatibility

- ▶ 1G-SFP ports on GS980EM will support any combination of Allied Telesis 100Mbps and 1000Mbps SFP modules listed in this document under Ordering Information
- ▶ Port speed and duplex configuration can be set manually or by auto-negotiation

### Diagnostic Tools

- ▶ Active Fiber Monitoring detects tampering on optical links
- ▶ Built-In Self Test (BIST)
- ▶ Cable fault locator (TDR)
- ▶ Find-me device locator
- ▶ Automatic link flap detection and port shutdown
- ▶ Optical Digital Diagnostic Monitoring (DDM)
- ▶ Ping polling for IPv4 and IPv6
- ▶ Port mirroring
- ▶ Trace Route for IPv4 and IPv6
- ▶ Uni-Directional Link Detection (UDLD)

### IP Features

- ▶ RIP, OSPF, and Static routing for IPv4
- ▶ Device management over IPv6 networks with SNMPv6, Telnetv6, SSHv6
- ▶ IPv6 hardware ACLs
- ▶ Log to IPv6 hosts with Syslog v6
- ▶ IPv6 Ready certified
- ▶ DHCPv4 and v6 client
- ▶ Equal Cost Multi Path (ECMP) routing

### Management

- ▶ Allied Telesis Autonomous Management Framework Plus (AMF Plus) enables powerful centralized management and zero-touch device installation and recovery
- ▶ Manage the GS980EM Series with Vista Manager EX - our graphical single-pane-of-glass monitoring and management tool for AMF Plus networks, which also supports wireless and third party devices
- ▶ From AW+ 5.5.2-2, an AMF Plus license operating in the network provides all standard AMF network management and automation features, and also enables the AMF Plus intent-based networking features menu in Vista Manager EX (from version 3.10.1 onwards)
- ▶ AMF Security (AMF-Sec) enables a self-defending network - managing the GS980EM (or other AMF Plus switches) to automatically block the spread of malware by quarantining suspect end devices
- ▶ Console management port on the front panel for ease of access

## Key Features

- ▶ Allied Telesis Autonomous Management Framework™ Plus (AMF Plus) edge node
- ▶ Vista Manager EX compatible
- ▶ AMF-Security compatible
- ▶ Full 30 Watts of PoE+
- ▶ Up to 90 Watts of PoE++ (GS980EM/10H only)
- ▶ PoE pass-through (GS980EM/11PT only)
- ▶ AlliedWare Plus Enterprise-class operating system
- ▶ Energy Efficient Ethernet saves power
- ▶ Fanless design for silent operation
- ▶ Active Fiber Monitoring
- ▶ EPSRing™ enables resilient high-speed rings
- ▶ Static routing, RIP, OSPFv2
- ▶ IEEE 802.1x/MAC/Web authentication support
- ▶ IEEE 802.3x Flow Control
- ▶ Flexible deployment options including DIN rail mounting
- ▶ Eco-friendly mode allows ports and LEDs to be disabled to save power
- ▶ Web-based Graphical User Interface (GUI)
- ▶ Industry-standard CLI with context-sensitive help
- ▶ Powerful CLI scripting engine
- ▶ Comprehensive SNMP MIB support for standards-based device management

<sup>1</sup> The GS980EM/11PT uses PD port 11 to receive PoE power, but cannot be powered by PoE if the AC adapter is connected

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- ▶ Built-in text editor
- ▶ Event-based triggers allow user-defined scripts to be executed upon selected system events
- ▶ USB interface allows software release files, configurations and other files to be stored for backup and distribution to other devices

### Quality of Service

- ▶ 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port
- ▶ Limit bandwidth per port or per traffic class down to 64kbps
- ▶ Wire speed traffic classification with low latency essential for VoIP and real-time streaming media applications
- ▶ IPv6 QoS support
- ▶ Policy-based QoS based on VLAN, port, MAC and general packet classifiers
- ▶ Policy-based storm protection
- ▶ Extensive remarking capabilities
- ▶ Queue scheduling options for Strict priority, weighted round robin or mixed scheduling
- ▶ Type of Services (ToS) IP precedence and DiffServ marking based on layer 2, 3 and 4 headers

### Resiliency Features

- ▶ Control Plane Prioritization (CPP) ensures the CPU always has sufficient bandwidth to process network control traffic
- ▶ Dynamic link failover (host attach)
- ▶ EPSRing (Ethernet Protection Switched Rings) with Super-Loop Protection (SLP) and enhanced recovery for extra resiliency

- ▶ Loop protection: loop detection and thrash limiting
- ▶ PVST+ compatibility mode
- ▶ STP root guard

### Security Features

- ▶ Access Control Lists (ACLs) based on layer 3 and 4 headers
- ▶ Dynamic ACLs assigned via port authentication
- ▶ ACL Groups enable multiple hosts/ports to be included in a single ACL, reducing configuration
- ▶ Configurable ACLs for management traffic
- ▶ Configurable auth-fail and guest VLANs
- ▶ Authentication, Authorization and Accounting (AAA)
- ▶ Bootloader can be password protected for device security
- ▶ BPDU protection
- ▶ DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI)
- ▶ DoS attack blocking and virus throttling
- ▶ Dynamic VLAN assignment
- ▶ MAC address filtering and MAC address lock-down
- ▶ Network Access and Control (NAC) features manage endpoint security
- ▶ Port-based learn limits (intrusion detection)
- ▶ Private VLANs provide security and port isolation for multiple customers using the same VLAN
- ▶ Secure Copy (SCP)
- ▶ Secure File Transfer (SFTP) client
- ▶ Strong password security and encryption

- ▶ Tri-authentication: MAC-based, web-based and IEEE 802.1x
- ▶ Web-based authentication

### Environmental Specifications

- ▶ Operating temperature range: 0°C to 50°C (32°F to 122°F)
- ▶ Storage temperature range: -25°C to 70°C (-13°F to 158°F)
- ▶ Operating relative humidity range: 5% to 90% non-condensing
- ▶ Storage relative humidity range: 5% to 95% non-condensing
- ▶ Operating altitude: Up to 3,000 meters maximum (9,843 ft)

### Electrical Approvals and Compliances

- ▶ EMC: EN55032 class A, FCC class A, VCCI class A, ICES-003 class A
- ▶ Immunity: EN55024, EN61000-3-levels 2 (Harmonics), and 3 (Flicker) – AC models only

### Safety

- ▶ Standards: UL60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN60950-1, EN60825-1, AS/NZS 60950.1
- ▶ Certification: UL, cUL

### Restrictions on Hazardous Substances (RoHS) Compliance

- ▶ EU RoHS compliant
- ▶ China RoHS compliant

## Product Specifications

PRODUCT	10/100/1000T (RJ-45) POE ENABLED PORTS	10/100/1000T (RJ-45) POE-IN PORT	1000X SFP PORTS	SWITCHING FABRIC	FORWARDING RATE
GS980EM/10H	8	-	2	24Gbps	14.9Mpps
GS980EM/11PT	8	1	2	24Gbps	16.4Mpps

## Physical Specifications

PRODUCT	WIDTH X DEPTH X HEIGHT	MOUNTING	WEIGHT		PACKAGED DIMENSIONS
			UNPACKAGED	PACKAGED	
GS980EM/10H	210 x 180 x 42.5 mm (8.26 x 7.08 x 1.67 in)	Rack-mount	1.6 kg	2.7 kg	417 x 336 x 151 mm (16.42 x 13.23 x 1.67 in)
GS980EM/11PT	210 x 180 x 42.5 mm (8.26 x 7.08 x 1.67 in)	Rack-mount	1.6 kg	3.5 kg	417 x 336 x 151 mm (16.42 x 13.23 x 1.67 in)

## Power Characteristics

PRODUCT	MAXIMUM POE POWER	MAXIMUM POE PORTS SUPPORTED					NO POE LOAD		FULL POE LOAD	
		POE (7.5W)	POE (15.4W)	POE+ (30W)	POE++ (60W)	POE++ (90W)	MAX POWER CONSUMPTION (W)	MAX HEAT DISSIPATION (BTU/H)	MAX POWER CONSUMPTION (W)	MAX HEAT DISSIPATION (BTU/H)
GS980EM/10H	240W (1 x PWR300 PSU)	8	8	8	4	2	21	71	320	218
	480W (2 x PWR300 PSUs)	8	8	8	8	5			600	409
	720W (3 x PWR300 PSUs)	8	8	8	8	8			880	600
GS980EM/11PT	0W (switch powered by 30W PoE) <sup>1</sup>	0	0	0	0	0	22	75	98W (using AC power adapter)	350 (using AC power adapter)
	31.6W (switch powered by 60W PoE) <sup>1</sup>	4	2	1	0	0				
	46.2W (switch powered by 90W PoE) <sup>1</sup>	6	3	1	0	0				
	62W (switch powered by AC Adaptor)	8	4	2	0	0				

<sup>1</sup> The GS980EM/11PT uses PD port 11 to receive PoE power, but cannot be powered by PoE if the AC adaptor is connected

## Latency (microseconds)

PRODUCT	PORT SPEED	
	100MBPS	1GBPS
GS980EM/10H	5.4µs	3.0µs
GS980EM/11PT	5.5µs	3.0µs

## Standards and Protocols

### Cryptographic Algorithms

#### FIPS Approved Algorithms

Encryption (Block Ciphers):

- ▶ AES (ECB, CBC, CFB and OFB Modes)
- ▶ 3DES (ECB, CBC, CFB and OFB Modes)

Block Cipher Modes:

- ▶ CCM
- ▶ CMAC
- ▶ GCM
- ▶ XTS

Digital Signatures & Asymmetric Key Generation:

- ▶ DSA
- ▶ ECDSA
- ▶ RSA

Secure Hashing:

- ▶ SHA-1
- ▶ SHA-2 (SHA-224, SHA-256, SHA-384, SHA-512)

Message Authentication:

- ▶ HMAC (SHA-1, SHA-2(224, 256, 384, 512))

Random Number Generation:

- ▶ DRBG (Hash, HMAC and Counter)

#### Non FIPS Approved Algorithms

RNG (AES128/192/256)

DES

MD5

### Ethernet Standards

- IEEE 802.2 Logical Link Control (LLC)
- IEEE 802.3 Ethernet
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3af Power over Ethernet (PoE)
- IEEE 802.3at Power over Ethernet up to 30W (PoE+)
- IEEE 802.3bt Power over Ethernet Plus Plus (PoE++)
- IEEE 802.3az Energy Efficient Ethernet (EEE)
- IEEE 802.3u 100BASE-X
- IEEE 802.3x Flow control - full-duplex operation
- IEEE 802.3z 1000BASE-X

### IPv4 Features

- RFC 768 User Datagram Protocol (UDP)
- RFC 791 Internet Protocol (IP)
- RFC 792 Internet Control Message Protocol (ICMP)
- RFC 793 Transmission Control Protocol (TCP)
- RFC 826 Address Resolution Protocol (ARP)
- RFC 894 Standard for the transmission of IP datagrams over Ethernet networks
- RFC 919 Broadcasting Internet datagrams
- RFC 922 Broadcasting Internet datagrams in the presence of subnets
- RFC 932 Subnetwork addressing scheme
- RFC 950 Internet standard subnetting procedure
- RFC 951 Bootstrap Protocol (BootP)
- RFC 1027 Proxy ARP
- RFC 1035 DNS client
- RFC 1042 Standard for the transmission of IP datagrams over IEEE 802 networks
- RFC 1071 Computing the Internet checksum
- RFC 1122 Internet host requirements
- RFC 1191 Path MTU discovery
- RFC 1256 ICMP router discovery messages

- RFC 1518 An architecture for IP address allocation with CIDR
- RFC 1519 Classless Inter-Domain Routing (CIDR)
- RFC 1542 Clarifications and extensions for BootP
- RFC 1591 Domain Name System (DNS)
- RFC 1812 Requirements for IPv4 routers
- RFC 1918 IP addressing
- RFC 2581 TCP congestion control

### IPv6 Features

- RFC 1981 Path MTU discovery for IPv6
- RFC 2460 IPv6 specification
- RFC 2464 Transmission of IPv6 packets over Ethernet networks
- RFC 3484 Default address selection for IPv6
- RFC 4007 IPv6 scoped address architecture
- RFC 4193 Unique local IPv6 unicast addresses
- RFC 4291 IPv6 addressing architecture
- RFC 4443 Internet Control Message Protocol (ICMPv6)
- RFC 5014 IPv6 socket API for source address selection
- RFC 5095 Deprecation of type 0 routing headers in IPv6

### Management

- AT Enterprise MIB including AMF Plus MIB and SNMP traps
- Optical DDM MIB
- SNMPv1, v2c and v3
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- RFC 1155 Structure and identification of management information for TCP/IP-based Internets
- RFC 1157 Simple Network Management Protocol (SNMP)
- RFC 1212 Concise MIB definitions
- RFC 1213 MIB for network management of TCP/IP-based Internets: MIB-II
- RFC 1215 Convention for defining traps for use with the SNMP
- RFC 1227 SNMP MUX protocol and MIB
- RFC 1239 Standard MIB
- RFC 1724 RIPv2 MIB extension
- RFC 2011 SNMPv2 MIB for IP using SMIv2
- RFC 2012 SNMPv2 MIB for TCP using SMIv2
- RFC 2013 SNMPv2 MIB for UDP using SMIv2
- RFC 2096 IP forwarding table MIB
- RFC 2578 Structure of Management Information v2 (SMIv2)
- RFC 2579 Textual conventions for SMIv2
- RFC 2580 Conformance statements for SMIv2
- RFC 2674 Definitions of managed objects for bridges with traffic classes, multicast filtering and VLAN extensions
- RFC 2741 Agent extensibility (AgentX) protocol
- RFC 2787 Definitions of managed objects for VRRP
- RFC 2819 RMON MIB (groups 1,2,3 and 9)
- RFC 2863 Interfaces group MIB
- RFC 3164 Syslog protocol
- RFC 3176 sFlow: a method for monitoring traffic in switched and routed networks
- RFC 3411 An architecture for describing SNMP management frameworks
- RFC 3412 Message processing and dispatching for the SNMP
- RFC 3413 SNMP applications
- RFC 3414 User-based Security Model (USM) for SNMPv3
- RFC 3415 View-based Access Control Model (VACM) for SNMP
- RFC 3416 Version 2 of the protocol operations for the SNMP
- RFC 3417 Transport mappings for the SNMP
- RFC 3418 MIB for SNMP
- RFC 3621 Power over Ethernet (PoE) MIB
- RFC 3635 Definitions of managed objects for the Ethernet-like interface types
- RFC 3636 IEEE 802.3 MAU MIB
- RFC 4188 Definitions of managed objects for bridges
- RFC 4318 Definitions of managed objects for bridges with RSTP
- RFC 4560 Definitions of managed objects for remote ping, traceroute and lookup operations

### Multicast Support

- Bootstrap Router (BSR) mechanism for PIM-SM
- IGMP query solicitation
- IGMP snooping (IGMPv1, v2 and v3)
- IGMP snooping fast-leave
- IGMP/MLD multicast forwarding (IGMP/MLD proxy)
- MLD snooping (MLDv1 and v2)
- RFC 1112 Host extensions for IP multicasting (IGMPv1)
- RFC 2236 Internet Group Management Protocol v2 (IGMPv2)
- RFC 2710 Multicast Listener Discovery (MLD) for IPv6
- RFC 2715 Interoperability rules for multicast routing protocols
- RFC 3306 Unicast-prefix-based IPv6 multicast addresses
- RFC 3376 IGMPv3
- RFC 3973 PIM Dense Mode (DM)
- RFC 4541 IGMP and MLD snooping switches
- RFC 4601 Protocol Independent Multicast - Sparse Mode (PIM-SM): protocol specification (revised)

### Open Shortest Path First (OSPF)

- OSPF link-local signaling
- OSPF MD5 authentication
- OSPF restart signaling
- Out-of-band LSDB resync
- RFC 1245 OSPF protocol analysis
- RFC 1246 Experience with the OSPF protocol
- RFC 1370 Applicability statement for OSPF
- RFC 1765 OSPF database overflow
- RFC 2328 OSPFv2
- RFC 2370 OSPF opaque LSA option
- RFC 3101 OSPF Not-So-Stubby Area (NSSA) option
- RFC 3509 Alternative implementations of OSPF area border routers
- RFC 3623 Graceful OSPF restart
- RFC 3630 Traffic engineering extensions to OSPF

### Quality of Service (QoS)

- IEEE 802.1p Priority tagging
- RFC 2211 Specification of the controlled-load network element service
- RFC 2474 DiffServ precedence for eight queues/port
- RFC 2475 DiffServ architecture
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2697 A single-rate three-color marker
- RFC 2698 A two-rate three-color marker
- RFC 3246 DiffServ Expedited Forwarding (EF)

### Resiliency Features

- IEEE 802.1AX Link aggregation (static and LACP)
- IEEE 802.1D MAC bridges
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad Static and dynamic link aggregation

### Routing Information Protocol (RIP)

- RFC 1058 Routing Information Protocol (RIP)
- RFC 2082 RIP-2 MD5 authentication
- RFC 2453 RIPv2

### Security Features

- SSH remote login
- SSLv2 and SSLv3
- TACACS+ accounting, authentication and authorisation (AAA)
- IEEE 802.1X authentication protocols (TLS, TTLS, PEAP and MD5)
- IEEE 802.1X multi-suplicant authentication
- IEEE 802.1X port-based network access control
- RFC 2246 TLS protocol v1.0
- RFC 2818 HTTP over TLS ("HTTPS")
- RFC 3546 Transport Layer Security (TLS) extensions
- RFC 4251 Secure Shell (SSHv2) protocol architecture

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- RFC 4252 Secure Shell (SSHv2) authentication protocol
- RFC 4253 Secure Shell (SSHv2) transport layer protocol
- RFC 4254 Secure Shell (SSHv2) connection protocol

## Services

- RFC 854 Telnet protocol specification
- RFC 855 Telnet option specifications
- RFC 857 Telnet echo option
- RFC 858 Telnet suppress go ahead option
- RFC 1091 Telnet terminal-type option
- RFC 1350 Trivial File Transfer Protocol (TFTP)
- RFC 1985 SMTP service extension
- RFC 2049 MIME
- RFC 2132 DHCP options and BootP vendor extensions
- RFC 2616 Hypertext Transfer Protocol - HTTP/1.1
- RFC 2821 Simple Mail Transfer Protocol (SMTP)
- RFC 2822 Internet message format
- RFC 4330 Simple Network Time Protocol (SNTP) version 4
- RFC 5905 Network Time Protocol (NTP) version 4

## VLAN Support

- Generic VLAN Registration Protocol (GVRP)
- IEEE 802.1Q Virtual LAN (VLAN) bridges
- IEEE 802.1v VLAN classification by protocol and port
- IEEE 802.3ac VLAN tagging

## Voice over IP (VoIP)

- LLDP-MED ANSI/TIA-1057
- Voice VLAN

## Feature Licenses

NAME	DESCRIPTION	INCLUDES
AT-FL-G98EM-01	GS980EM premium license	<ul style="list-style-type: none"> <li>▶ OSPF (128 Routes)</li> <li>▶ PIMv4-SM, DM and SSM</li> <li>▶ RIP (256 Routes)</li> <li>▶ STATIC (128 Routes)</li> <li>▶ EPSR Master</li> </ul>

## Ordering Information

### Switches

19 inch rack-mount brackets included



#### AT-GS980EM/10H

8-port 10/100/1000T PoE++ switch with 2 SFP ports, and 3 external PSU ports<sup>2</sup>



#### AT-GS980EM/11PT

8-port 10/100/1000T PoE+ switch with 2 SFP ports, one AC adapter port<sup>3</sup>, and one PoE-in port<sup>4</sup> (supporting PD and PoE pass-through)

<sup>2</sup> PWR300 power supplies for the GS980EM/10H must be ordered separately

<sup>3</sup> The GS980EM/11PT ships with an AC power adapter

<sup>4</sup> The GS980EM/11PT can be powered by PoE from 30W (class 4) to 90W (class 8)

## Power Supplies



#### AT-PWR300-xx

300W PoE power supply (for GS980EM/10H and x320-10GH switches)

Where xx = 10 for US power cord  
 20 for no power cord  
 30 for UK power cord  
 40 for Australian power cord  
 50 for European power cord

## SFP Modules

#### AT-SPTX/I

10/100/1000T SFP, RJ-45 (100 m), industrial temperature

#### AT-SPSX/I

1000SX GbE multi-mode 850 nm fiber up to 550 m industrial temperature

#### AT-SPLX/I

1000LX GbE single-mode 1310 nm fiber up to 10 km industrial temperature

#### AT-SPBD20-13/I

1000BX GbE Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 20 km

#### AT-SPBD20-14/I

1000BX GbE Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 20 km

#### AT-SPBD40-13/I

1000LX GbE single-mode Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 40 km, industrial temperature

#### AT-SPBD40-14/I

1000LX GbE single-mode Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 40 km, industrial temperature