

CentreCOM[®] GS980EM/10H

Gigabit Layer 3 Lite PoE++ Switch

The Allied Telesis GS980EM/10H Gigabit Layer 3 Lite PoE++ switch offers an impressive set of features in a compact design. Ideal for deployment at the network edge, the GS980EM/10H features flexible Power over Ethernet capabilities to support IoT device connectivity in today's converged business environments.



Overview

Allied Telesis GS980EM/10H is secure and reliable, and enables 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.

Specifications

Performance

- ▶ Supports 10KB 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 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

Management

- ▶ Allied Telesis Autonomous Management Framework (AMF) enables powerful centralized management and zero-touch device installation and recovery
- ▶ Console management port on the front panel for ease of access
- ▶ 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
- ▶ 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

Key Features

- ▶ Allied Telesis Autonomous Management Framework™ (AMF) edge node
- ▶ Up to 90 Watts of PoE power per port
- ▶ 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

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

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Security Features

- ▶ Access Control Lists (ACLs) based on layer 3 and 4 headers
- ▶ 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	POE++ ENABLED PORTS	1000X SFP PORTS	SWITCHING FABRIC	FORWARDING RATE
GS980EM/10H	8	2	24Gbps	14.9Mpps

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)

Power Characteristics

PRODUCT	MAXIMUM POE POWER (using PWR300 redundant PSUs)	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 (PWR300 x 1)	8	8	8	4	2	21	71	320	218
	480W (PWR300 x 2)	8	8	8	8	5			600	409
	720W (PWR300 x 3)	8	8	8	8	8			880	600

Latency (microseconds)

PRODUCT	PORT SPEED	
	100MBPS	1GBPS
GS980EM/10H	5.4µs	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++¹)
- 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 MIB and SNMP traps
- 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 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
- 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

¹ Support for the 802.3bt standard coming soon

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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

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 ports²

² Power supplies must be ordered separately

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-SPFX/2

100FX multi-mode 1310 nm fiber up to 2 km

AT-SPFX/15

100FX single-mode 1310 nm fiber up to 15 km

AT-SPFXBD-LC-13

100BX Bi-Di (1310 nm Tx, 1550 nm Rx) fiber up to 10 km

AT-SPFXBD-LC-15

100BX Bi-Di (1550 nm Tx, 1310 nm Rx) fiber up to 10 km

AT-SPTX

1000T 100 m copper

AT-SPSX

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

AT-SPSX/I

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

AT-SPEX

1000X GbE multi-mode 1310 nm fiber up to 2 km

AT-SPLX10

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

AT-SPLX10/I

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

AT-SPBD10-13

1000LX GbE Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 10 km

AT-SPBD10-14

1000LX GbE Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 10 km

AT-SPLX40

1000LX GbE single-mode 1310 nm fiber up to 40 km

AT-SPZX80

1000ZX GbE single-mode 1550 nm fiber up to 80 km

AT-SPBD20-13/I

1000BX GbE Bi-Di (1310 nm Tx, 1550 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

Feature Licenses

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