

# CentreCOM<sup>®</sup> GS980MX Series

## Stackable Multi-Gigabit Layer 3 Lite Switches

The Allied Telesis Centre COM GS980MX Series of Layer 3 Gigabit switches feature high-capacity, resiliency and easy management. Power over Ethernet models with Multi-Gigabit support make them an ideal solution for high-speed connectivity at the network edge.



AMF PLUS EPSRING™ VCSTACK™ AMF-SEC

VCSTACK™ LD VISTA MANAGER™ EX ACTIVE FIBER MONITORING™ AlliedWare Plus™ OPERATING SYSTEM IPv6 READY

### Overview

Allied Telesis GS980MX Series are high-performing, feature-rich, and versatile for today's networks. With Gigabit/Multi-Gigabit ports and 10 Gigabit uplinks, plus the power of Allied Telesis Virtual Chassis Stacking (VCStack™), the GS980MX Series enable flexible deployment and a resilient solution.

The Power over Ethernet models offer 2.5G and 5G Multi-Gigabit ports to support connecting and powering high-speed Wi-Fi 6 wireless networks, and other high bandwidth applications. The HSm models can provide up to 90 Watts (PoE++) per port. This enables powering high power devices such as high resolution PTZ cameras with heater/blowers for outdoor applications, enhanced infrared lighting, and more.

### Specifications

#### Performance

- ▶ 10KB L2 and 9KB L3 jumbo frames
- ▶ 4094 configurable VLANs
- ▶ Up to 16K MAC addresses
- ▶ 1GB DDR3 SDRAM
- ▶ 256MB NAND flash memory
- ▶ Packet buffer memory:
  - 1.5MB (28-port models)
  - 3MB (10, 18, 52-port models)
  - 4.5MB (52Psm model)

#### 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
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#### Expandability

- ▶ Stack up to 4 units in a VCStack at any port speed

#### 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

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

#### Management

- ▶ Front panel 7-segment LED provides at-a-glance status and fault information
- ▶ Allied Telesis Autonomous Management Framework Plus (AMF Plus) enables powerful centralized management and zero-touch device installation and recovery
- ▶ Manage the GS980MX 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 GS980MX Series (or other AMF Plus switches) to automatically block the spread of malware by quarantining suspect end user devices
- ▶ Console management port on the front panel for ease of access
- ▶ NETCONF/RESTCONF northbound interface with YANG data modelling
- ▶ Eco-friendly mode allows ports and LEDs to be disabled to save power
- ▶ Industry-standard CLI with context-sensitive help
- ▶ Powerful CLI scripting engine with built-in text editor
- ▶ Web-based Graphical User Interface (GUI)

## Key Features

- ▶ AlliedWare Plus Enterprise-class operating system
- ▶ Autonomous Management Framework™ Plus (AMF Plus) edge node
- ▶ Vista Manager EX compatible
- ▶ AMF-Security compatible
- ▶ VCStack™ up to 4 switches
- ▶ VCStack LD for long distance stacking
- ▶ EPSR transit node
- ▶ 10 Gigabit uplinks
- ▶ 2.5/5G with PoE for high-speed wireless APs (Psm and HSm models)
- ▶ IEEE 802.3at PoE+ (30W per port on Psm models)
- ▶ IEEE 802.3bt PoE++ (90W per port on HSm models)
- ▶ Continuous PoE
- ▶ Active Fiber Monitoring (AFM)
- ▶ IPv6 features
- ▶ Eco-Friendly
- ▶ Device GUI for web-based management
- ▶ NETCONF/RESTCONF with YANG data modelling
- ▶ USB interface allows software release files, configurations and other files to be stored for backup and distribution to other devices
- ▶ Comprehensive SNMP MIB support for standards based device management

## Specifications

### Product Specifications

PRODUCT	10/100/1000T (RJ-45) COPPER PORTS	100M/1/2.5/5 GIGABIT PORTS	1/10 GIGABIT SFP+ PORTS	STACKING PORTS	POE ENABLED PORTS	SWITCHING FABRIC	FORWARDING RATE
GS980MX/10HSm	-	8	2	2*	8	120Gbps	89.2Mpps
GS980MX/18HSm	-	16	2	2*	16	200Gbps	148.8Mpps
GS980MX/28	24	-	4	2*	-	128Gbps	95.2 Mpps
GS980MX/28PSm	20	4	4	2*	24	160Gbps	119 Mpps
GS980MX/52	48	-	4	2*	-	176Gbps	130.9Mpps
GS980MX/52PSm	40	8	4	2*	48	240Gbps	179Mpps

\*Any port/s can be used for stacking

### Physical Specifications

PRODUCT	WIDTH X DEPTH X HEIGHT	MOUNTING	WEIGHT		PACKAGED DIMENSIONS
			UNPACKAGED	PACKAGED	
GS980MX/10HSm	210 x 362 x 42.5 mm (8.26 x 14.25 x 1.67 in)	Rack-mount	3.5 kg (7.7 lb)	5.5 kg (12.1 lb)	461 x 371 x 153 mm (18.15 x 14.60 x 6.02 in)
GS980MX/18HSm	441 x 256 x 44 mm (17.36 x 10.07 x 1.73 in)	Rack-mount	4.3 kg (9.48 lbs)	5.8 (12.78 lb)	526 x 412 x 129 mm (20.70 x 16.22 x 5.07 in)
GS980MX/28	441 x 323 x 44 mm (17.36 x 12.72 x 1.73 in)	Rack-mount	4.3 kg (9.5 lb)	6.3 kg (13.8 lb)	563 x 534 x 128 mm (22.16 x 21.02 x 5.04 in)
GS980MX/28PSm	441 x 421 x 44 mm (17.36 x 16.57 x 1.73 in)	Rack-mount	5.6 kg (12.4 lb)	7.6 kg (16.7 lb)	563 x 534 x 128 mm (22.16 x 21.02 x 5.04 in)
GS980MX/52	441 x 323 x 44 mm (17.36 x 12.72 x 1.73 in)	Rack-mount	4.8 kg (10.1 lb)	6.8 kg (14.9 lb)	563 x 534 x 128 mm (22.16 x 21.02 x 5.04 in)
GS980MX/52PSm	441 x 421 x 44 mm (17.36 x 16.57 x 1.73 in)	Rack-mount	6.1 kg(13.5 lb)	8.1 kg(17.8 lb)	563 x 632 x 128 mm (22.16 x 24.88 x 5.04 in)

### Power and Noise Characteristics

PRODUCT	NO POE LOAD			FULL POE LOAD			MAXIMUM POE POWER	POE SOURCING PORTS				
	MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE	MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE		POE (7.5W)	POE (15.4W)	POE+ (30W)	POE++ (60W)	POE++ (90W)
GS980MX/10HSm	60	204	42	605	2065	64	500W	8	8	8	8	5
GS980MX/18HSm	86	293	42	970	3317	42	720	16	16	16	12	8
GS980MX/28	39	133	42*	-	-	-	-	-	-	-	-	-
GS980MX/28PSm	70	239	42*	510	1741	42*	370W	24	24	12	-	-
GS980MX/52	60	205	42*	-	-	-	-	-	-	-	-	-
GS980MX/52PSm	95	324	42*	530	1809	42*	370W	48	24	12	-	-

\* This figure is under 30 degree C ambient temperature

Noise: tested to ISO7779; front bystander position

### Latency (microseconds)

PRODUCT	PORT SPEED				
	100MBPS	1GBPS	2.5GBPS	5GBPS	10GBPS
GS980MX/10HSm	8.24µs	7.89µs	5.63µs	3.49µs	2.12µs
GS980MX/18HSm	8.35µs	7.96µs	7.72µs	5.23µs	2.56µs
GS980MX/28	8.29µs	7.63µs	-	-	1.63µs
GS980MX/28PSm	8.29µs	7.63µs	7.41µs	4.97µs	1.63µs
GS980MX/52	8.34µs	7.75µs	-	-	1.67µs
GS980MX/52PSm	8.34µs	7.75µs	7.51µs	5.06µs	1.67µs

- ▶ Event-based triggers allow user-defined scripts to be executed upon selected system events  
Wirespeed forwarding

### Quality of Service (QoS)

- ▶ 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
- ▶ Wirespeed 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
- ▶ Taildrop for queue congestion control
- ▶ 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
- ▶ Long-Distance VCStack with fiber modules (VCStack LD)
- ▶ Loop protection: loop detection and thrash limiting
- ▶ PVST+ compatibility mode
- ▶ STP root guard
- ▶ VCStack fast failover minimizes network disruption

### 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

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- ▶ 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)  
Derated by 1°C per 305 meters (1,000 ft)
- ▶ 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 range:  
Up to 3,000 meters maximum (9,843 ft)

## Electrical approvals and compliances

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

## Safety

- ▶ Standards: UL60950-1, CSA-C22.2 No. 60950-1, EN60950-1, UL62368-1
- ▶ Certifications: cUL, cULus, TUV

## Restrictions on Hazardous Substances (RoHS) Compliance

- ▶ EU RoHS compliant
- ▶ China RoHS compliant

## Standards and Protocols

### Authentication

RFC 1321 MD5 Message-Digest algorithm  
RFC 1828 IP authentication using keyed MD5

### 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 802.3ae 10 Gigabit Ethernet  
IEEE 802.3af Power over Ethernet (PoE)  
IEEE 802.3at Power over Ethernet plus (PoE+)  
IEEE 802.3az Energy Efficient Ethernet (EEE)  
IEEE 802.3bt Power over Ethernet Plus Plus (PoE++)  
IEEE 802.3bz 2.5GBASE-T and 5GBASE-T ("multi-gigabit")  
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 3056 Connection of IPv6 domains via IPv4 clouds  
RFC 3484 Default address selection for IPv6  
RFC 3596 DNS extensions to support 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 4861 Neighbor discovery for IPv6  
RFC 4862 IPv6 Stateless Address Auto-Configuration (SLAAC)  
RFC 5014 IPv6 socket API for source address selection  
RFC 5095 Deprecation of type 0 routing headers in IPv6  
RFC 5175 IPv6 Router Advertisement (RA) flags option  
RFC 6105 IPv6 Router Advertisement (RA) guard

### Management

AT Enterprise MIB including AMF Plus 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 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  
RFC 6527 Definitions of managed objects for VRRPv3

### Multicast Support

IGMP query solicitation  
IGMP snooping (IGMPv1, v2 and v3)  
IGMP snooping fast-leave  
MLD snooping (MLDv1 and v2)  
RFC 2715 Interoperability rules for multicast routing protocols, multicast addresses  
RFC 4541 IGMP and MLD snooping switches

### 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  
RFC 5798 Virtual Router Redundancy Protocol version 3 (VRRPv3) for IPv4 and IPv6

### Routing Information Protocol (RIP)

RFC 1058 Routing Information Protocol (RIP)  
RFC 2081 RIPng protocol applicability statement

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RFC 2082 RIP-2 MD5 authentication  
RFC 2453 RIPv2

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

RFC 3315 DHCPv6 (relay and client)  
RFC 3633 IPv6 prefix options for DHCPv6  
RFC 3646 DNS configuration options for DHCPv6  
RFC 3993 Subscriber-ID suboption for DHCP relay agent option  
RFC 4330 Simple Network Time Protocol (SNTP) version 4  
RFC 5905 Network Time Protocol (NTP) version 4

## Security Features

SSH remote login  
SSLv2 and SSLv3  
TACACS+ Accounting and Authentication  
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 3748 PPP Extensible Authentication Protocol (EAP)  
RFC 4251 Secure Shell (SSHv2) protocol architecture  
RFC 4252 Secure Shell (SSHv2) authentication 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 3046 DHCP relay agent information option (DHCP option 82)

## VLAN support

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

## Voice over IP (VoIP)

LLDP-MED ANSI/TIA-1057  
Voice VLAN

## Feature Licenses

NAME	DESCRIPTION	INCLUDES	STACK LICENSING
AT-FL-G98MX-CP	Continuous PoE license	▶ Continuous PoE power for PSm and HSm models	▶ One license per stack member
AT-FL-G98MX-UD	UDLD license	▶ UniDirectional Link Detection	▶ One license per stack member

## Ordering Information

### AT-GS980MX/10HSm-xx

8-port 100M/1/2.5/5G PoE++ stackable switch with 2 SFP+ ports and a single fixed power supply

### AT-GS980MX/18HSm-xx

16-port 100M/1/2.5/5G PoE++ stackable switch with 2 SFP+ ports and a single fixed power supply

### AT-GS980MX/28-xx

24-port 10/100/1000T stackable switch with 4 SFP+ ports and a single fixed power supply

### AT-GS980MX/28PSm-xx

20-port 10/100/1000T PoE+ and 4-ports 100M/1/2.5/5G PoE+ stackable switch with 4 SFP+ ports and a single fixed power supply

### AT-GS980MX/52-xx

48-port 10/100/1000T stackable switch with 4 SFP+ ports and a single fixed power supply

### AT-GS980MX/52PSm-xx

40-port 10/100/1000T PoE+ and 8-ports 100M/1/2.5/5G PoE+ stackable switch with 4 SFP+ ports and a single fixed power supply

### AT-RKMT-J15

Rack mount shelf kit for GS980MX/10HSm

### AT-BRKT-J24

Wall mount kit for GS980MX/10HSm

### AT-BRKT-J22

Wall-mount kit for GS980MX/28 & 52

### AT-VT-Kit3

Management Cable (USB to Serial Console)

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

## 10G SFP+ Modules

### AT-SP10TM

1G/2.5G/5G/10G, 100m copper, TAA<sup>1</sup>

### AT-SP10SR

10GSR 850 nm short-haul, 300 m with MMF

### AT-SP10SR/I

10GSR 850 nm short-haul, 300 m with MMF industrial temperature

### AT-SP10LRa/I

10GBASE-LR, 1310 nm, 10 km with SMF, I-Temp, TAA<sup>4</sup>

### AT-SP10ZR80/I

10GER 1550nm long-haul, 80 km with SMF industrial temperature

### AT-SP10BD10/I-12

10G Bi-Di, 1270 nm TX/1330 nm RX, 10km, industrial temperature, TAA<sup>1</sup>

### AT-SP10BD10/I-13

10G Bi-Di, 1330 nm TX/1270 nm RX, 10km, industrial temperature, TAA<sup>1</sup>

### AT-SP10BD20-12

10G Bi-Di, 1270 nm TX/1330 nm RX, 20km, TAA<sup>1</sup>

### AT-SP10BD20-13

10G Bi-Di, 1330 nm TX/1270 nm RX, 20km, TAA<sup>1</sup>

### AT-SP10BD40/I-12

10G Bi-Di, 1270 nm TX/1330 nm RX, 40km, industrial temperature, TAA<sup>1</sup>

### AT-SP10BD40/I-13

10G Bi-Di, 1330 nm TX/1270 nm RX, 40km, industrial temperature, TAA<sup>1</sup>

### AT-SP10TW1

1 meter SFP+ direct attach cable

### AT-SP10TW3

3 meter SFP+ direct attach cable

## 1000Mbps SFP Modules

### 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-SPLX10a

1000LX SFP, LC, SMF, 1310nm (10km), TAA<sup>1</sup>

### 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-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

### AT-SPLX40

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

<sup>1</sup>TAA = Trade Act Agreement Compliant