



Key Features

VCStack Plus™

- Two SwitchBlade x8100 chassis can be stacked together into a single virtual unit using VCStack Plus. The stacking link uses the 10 Gigabit front panel ports on the CFC960 control cards, which provides a massive 160 Gigabits of stacking bandwidth. VCStack Plus provides a highly available system where network resources and distribution switches are connected across the units for ultimate resiliency. Management is simplified as the two chassis operate as a single virtual unit.

Long-distance VCStack Plus

- As the VCStack Plus links are fiber, the two chassis do not need to be collocated, but can be kilometres apart - perfect for a distributed network environment, or data-mirroring solution.

Allied Telesis Autonomous Management Framework (AMF)

- Allied Telesis Autonomous Management Framework (AMF) is a sophisticated suite of management tools that provide a simplified approach to network management. Powerful features like centralized management, auto-backup, auto-upgrade, auto-provisioning and auto-recovery enable plug-and-play networking and zero-touch management.
- Any SwitchBlade x8100 Series switch can operate as the AMF network master, storing firmware and configuration backups for all other network nodes. The AMF master enables auto-provisioning and auto-upgrade by providing appropriate files to new network members. New network devices can be pre-provisioned making installation easy because no on-site configuration is required.
- AMF secure mode encrypts all AMF traffic, provides unit and user authorization, and monitors network access to greatly enhance network security.
- AMF Guestnode allows Allied Telesis wireless access points and further switching products, as well as third party devices such as IP phones and security cameras, to be part of an AMF network.

AMF Controller

- The CFC960 can manage AMF networks of up to 120 nodes, which can be located locally or across WAN links. This can be dramatically increased by installing the AMF Controller, which enables multiple AMF Masters to be managed from a single point. With the AMF Controller, a network of over 7,000 devices can be managed, allowing all the time saving, cost reducing benefits of AMF to be multiplied and efficiencies to be increased.

In-Service Software Upgrade (ISSU)

- ISSU (also called "hitless firmware upgrade") allows firmware to be updated without causing any network disruption from a device reboot. This enables essential maintenance to be performed when it is required rather than having to schedule a

network outage or tolerate any loss of service. ISSU is supported on dual controller systems and can be used in conjunction with VCStack Plus, making it ideal for high availability applications.

Virtual Routing and Forwarding (VRF Lite)

- VRF Lite provides Layer 3 network virtualization by dividing a single switch into multiple independent virtual routing domains. With independent routing domains, IP addresses can overlap without causing conflict, allowing multiple customers to have their own secure virtual network within the same physical infrastructure. VRF Lite on the CFC960 supports both unicast and multicast traffic.

Ethernet Protection Switched Ring (EPSRing™)

- EPSRing combines with 40G or 10G Ethernet to allow several switches to form high-speed protected rings capable of recovery within as little as 50ms. This feature is perfect for high performance and high availability at the core of enterprise or provider access networks.
- Superloop Protection enables a link between two EPSR nodes to be in separate EPSR domains, improving redundancy and network fault resiliency.

Access Control Lists (ACLs)

- AlliedWare Plus™ delivers industry-standard access control functionality with ACLs. ACLs filter network traffic to control whether routed packets are forwarded or blocked at the port interface. This provides a powerful network security mechanism to select the types of traffic to be analyzed, forwarded, or influenced in some way.

VLAN ACLs

- Simplify access and traffic control across entire segments of the network. Access Control Lists (ACLs) can be applied to a Virtual LAN (VLAN) as well as a specific port.

Industry-leading Quality of Service (QoS)

- Comprehensive low-latency wirespeed QoS provides flow-based traffic management with full classification, prioritization, traffic shaping and min/max bandwidth profiles. Enjoy boosted network performance and guaranteed delivery of business-critical Ethernet services and applications. Time-critical services such as voice and video take precedence over non-essential services such as file downloads, maintaining responsiveness of enterprise applications.

Power over Ethernet Plus (PoE+)

- With PoE, a separate power connection to media end points such as IP phones and wireless access points is not necessary. PoE+ provides even

greater flexibility, providing the capability to connect devices requiring more power (up to 30 Watts)—for example, tilt and zoom security cameras.

Ease of management

- The AlliedWare Plus operating system incorporates an industry standard CLI, facilitating intuitive manageability.
- Configuration tasks can be automated as commands may be used in scripts. Triggers can also be utilized, providing a powerful mechanism for automatic and timed management by automating the execution of commands in response to specific events.
- With three distinct modes, the CLI is very secure, and the use of encrypted remote login sessions ensures CLI access is not compromised.

VLAN Mirroring (RSPAN)

- VLAN mirroring allows traffic from a port on a remote switch to be analysed locally. Traffic being transmitted or received on the port is duplicated and sent across the network on a special VLAN.

Optical DDM

- Most modern optical SFP/SFP+/XFP transceivers support Digital Diagnostics Monitoring (DDM) functions according to the specification SFF-8472. This enables real time monitoring of the various parameters of the transceiver, such as optical output power, temperature, laser bias current and transceiver supply voltage. Easy access to this information simplifies diagnosing problems with optical modules and fiber connections.

Active Fiber Monitoring

- Active Fiber Monitoring prevents eavesdropping on fiber communications by monitoring received optical power. If an intrusion is detected, the link can be automatically shut down, or an operator alert can be sent.

sFlow

- sFlow is an industry standard technology for monitoring high-speed switched networks. It gives complete visibility into network use, enabling performance optimization, usage accounting/billing, and defence against security threats. Sampled packets sent to a collector ensure it always has a real-time view of network traffic.

TACACS+ Command Authorization

- Centralize control of which commands may be issued by a specific user of an AlliedWare Plus device. TACACS+ command authorization complements authentication and accounting services for a complete AAA solution.

SBx81CFC960

SBx81XS16

SBx81XLEM with Q2 module





Product Specifications

AT-SBx81CFC960 (Controller Fabric Card)

- ▶ 2GB SDRAM
- ▶ 512KB NVRAM
- ▶ 256MB flash memory
- ▶ Up to 128K MAC addresses and 100K routes (with SBx81XLEM)¹
- ▶ Up to 32K MAC addresses and 7K routes (with other line cards)¹
- ▶ 32Mbit packet buffer memory
- ▶ Supports 10KB jumbo packets
- ▶ 4K VLANs
- ▶ 4 x 10GbE ports for stacking or uplinks

AT-SBx81GP24 (24 x 10/100/1000T PoE+ line card)

AT-SBx81GT24 (24 x 10/100/1000T line card)

- ▶ 12Mbit packet buffer memory

AT-SBx81GS24a (24 x 100/1000 SFP line card)

AT-SBx81XS6 (6 x 10Gbps SFP+ line card)

- ▶ 24Mbit packet buffer memory

AT-SBx81GT40 (40 x 10/100/1000T RJ.5 line card)

AT-SBx81XS16 (16 x 10GbE SFP+ line card)

AT-SBx81XLEM (12 x 100/1000 SFP, 1 module slot line card)

- ▶ 32Mbit packet buffer memory

Reliability

- ▶ Modular AlliedWare Plus operating system
- ▶ Redundant controller fabric cards
- ▶ Redundant 1200W AC or DC system power supplies
- ▶ Load-sharing 1200W PoE+ power supplies
- ▶ Full environmental monitoring of PSUs, fans, temperature and internal voltages. SNMP traps alert network managers in case of failure
- ▶ Over-temperature monitoring and shut down

Expandability

- ▶ 160Gbps of stacking bandwidth
- ▶ High-speed line slots support any mix of hot-swappable cards for port flexibility
- ▶ A line card can be installed in the second CFC slot of the SBx8106 chassis for extra port density
- ▶ Premium license option for additional features
- ▶ AMF Master license options for 40, 80 and up to 120 node networks

Flexibility and Compatibility

- ▶ Gigabit SFP ports will support any combination of Allied Telesis SFP modules listed in this document under Ordering Information
- ▶

Standards and Protocols

AlliedWare Plus Operating System

Version 5.4.7-1

Border Gateway Protocol (BGP)

BGP dynamic capability

BGP outbound route filtering

- RFC 1772 Application of the Border Gateway Protocol (BGP) in the Internet
- RFC 1997 BGP communities attribute
- RFC 2385 Protection of BGP sessions via the TCP MD5 signature option
- RFC 2439 BGP route flap damping
- RFC 2545 Use of BGP-4 multiprotocol extensions for IPv6 inter-domain routing
- RFC 2858 Multiprotocol extensions for BGP-4
- RFC 2918 Route refresh capability for BGP-4
- RFC 3392 Capabilities advertisement with BGP-4
- RFC 4271 Border Gateway Protocol 4 (BGP-4)
- RFC 4360 BGP extended communities
- RFC 4456 BGP route reflection - an alternative to full mesh iBGP
- RFC 4724 BGP graceful restart
- RFC 4893 BGP support for four-octet AS number space
- RFC 5065 Autonomous system confederations for BGP

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

- IEEE 802.2 Logical Link Control (LLC)
- IEEE 802.3 Ethernet
- IEEE 802.3ab1000BASE-T
- IEEE 802.3ae10 Gigabit Ethernet
- IEEE 802.3af Power over Ethernet (PoE)
- IEEE 802.3an 10GBASE-T
- IEEE 802.3at Power over Ethernet plus (PoE+)
- IEEE 802.3azEnergy Efficient Ethernet (EEE)
- IEEE 802.3ba40 Gigabit Ethernet
- 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 with MIB objects and traps for AMF and VCS+

- Optical DDM MIB
- SNMPv1, v2c and v3
- IEEE 802.1ABLink 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 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 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 4022 SNMPv2 MIB for TCP using SMIv2
- RFC 4113 SNMPv2 MIB for UDP using SMIv2
- RFC 4188 Definitions of managed objects for bridges
- RFC 4292 IP forwarding table MIB
- RFC 4293 SNMPv2 MIB for IP using SMIv2
- RFC 4318 Definitions of managed objects for bridges with RSTP
- RFC 4560 Definitions of managed objects for remote ping, traceroute and lookup operations
- RFC 5424 Syslog protocol
- RFC 6527 Definitions of managed objects for VRRPv3

Multicast Support

Bootstrap Router (BSR) mechanism for PIM-SM

IGMP query solicitation

IGMP snooping (v1, v2 and v3)

IGMP/MLD multicast forwarding (IGMP/MLD proxy)

MLD snooping (v1 and v2)

PIM-SM and SSM for IPv6

- 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 3376 IGMPv3
- RFC 3810 Multicast Listener Discovery v2 (MLDv2) for IPv6
- 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 2740 OSPFv3 for IPv6
- 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
- RFC 4552 Authentication/confidentiality for OSPFv3
- RFC 5329 Traffic engineering extensions to OSPFv3
- RFC 5340 OSPFv3 for IPv6 (partial support)

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 3246 DiffServ Expedited Forwarding (EF)

Resiliency Features

- IEEE 802.1AXLink 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 802.3adStatic and dynamic link aggregation
- RFC 5798 Virtual Router Redundancy Protocol version 3 (VRRPv3) for IPv4 and IPv6



PoE Power provisioning

Maximum number of ports that can be powered (with 2 x AT-SBxPWRPOE1 installed)

	PoE Power	Class 3 (15.4W)	Class 4 (30W)
PSUs in redundant mode	1200W	77	40
PSUs in boost mode	2400W	155	80

Power consumption

	Maximum	Heat dissipation
SBx81CFC960	75.0W	255.9 BTU/hr
SBx81GP24	34.4W	117.4 BTU/hr
SBx81GT24	34.4W	117.4 BTU/hr
S (B)-45. (x)-59.4 (B)-50.3 (1G)-52.1 (P0)2 (-481908 -1.42 Td(SB)5.3 (x)-8.4 -0.0152.10)2 (138 (11.968 -9.12132 re6.09144 -9t .853 -9t .853 -9t .853 4))-8.416.9910.-123 0-2589.6 (1)6.3 (.)-633 (.465)-2.9 40TU/S (B)-4		

Latency

Measured in microseconds (µs) at 64byte framesize

	10Mbit	100Mbit	1000Mbit
SBx81GP24	36.0 µs	5.6 µs	2.6 µs
SBx81GT24	36.0 µs	5.6 µs	2.6 µs
SBx81GT40	165.0 µs	20.0 µs	6.0 µs
SBx81GS24a	38.5 µs	7.0 µs	2.8 µs
SBx81XS6	3.1 µs (10Gbit)		
SBx81XS16	3.1 µs (10Gbit)		
SBx81XLEM (base)		6.3 µs	3.5 µs
SBx81XLEM/GT8		6.0 µs	5.5 µs
SBx81XLEM/XT4	6.5 µs (10Gbit)		
SBx81XLEM/XS8	1.7 µs (10Gbit)		
SBx81XLEM/Q2	1.5 µs (40Gbit)		
SBx81CFC960	2.9 µs (10Gbit)		

Feature licenses

NAME	DESCRIPTION	INCLUDES	STACK LICENSING
AT-FL-CFC960-01³	AT-SBx8100 Premium License	<ul style="list-style-type: none"> ▶ OSPF² (5K routes or 10K with XLEM) ▶ BGP4² (5K routes or 100K with XLEM) ▶ PIMv4-SM, DM, SSM ▶ VLAN double tagging (Q-in-Q) ▶ RIPng (1K routes or 3.5K with XLEM) ▶ OSPFv3 (1K routes or 5K with XLEM) ▶ BGP4+ (1K routes or 50K with XLEM) ▶ MLDv1 & v2 ▶ PIMv6-SM, SSM ▶ RADIUS-Full ▶ VRF-Lite (64 domains) ▶ UDLD 	▶ One license per stack member
AT-FL-CF9-VCSP³	VCStack Plus	▶ VCStack Plus for CFC960	▶ One license per stack member
AT-FL-CF9-AM80-1YR³	AMF Master License	▶ AMF Master 80 nodes for 1 year	▶ One license per stack
AT-FL-CF9-AM80-5YR³	AMF Master License	▶ AMF Master 80 nodes for 5 years	▶ One license per stack
AT-FL-CF9-AM120-1YR³	AMF Master License	▶ AMF Master 120 nodes for 1 year	▶ One license per stack
AT-FL-CF9-AM120-5YR³	AMF Master License	▶ AMF Master 120 nodes for 5 years	▶ One license per stack
AT-FL-CF9-AM300-1YR³	AMF Master License	▶ AMF Master 300 nodes for 1 year	▶ One license per stack
AT-FL-CF9-AM300-5YR³	AMF Master License	▶ AMF Master 300 nodes for 5 years	▶ One license per stack
AT-FL-CF9-AC10-1YR³	AMF Controller 10	▶ AMF Controller for 10 areas for 1 year	▶ One license per stack
AT-FL-CF9-AC10-5YR³	AMF Controller 10	▶ AMF Controller for 10 areas for 5 years	▶ One license per stack
AT-FL-CF9-AC30-1YR³	AMF Controller 30	▶ AMF Controller for 30 areas for 1 year	▶ One license per stack
AT-FL-CF9-AC30-5YR³	AMF Controller 30	▶ AMF Controller for 30 areas for 5 years	▶ One license per stack
AT-FL-CF9-AC60-1YR³	AMF Controller 60	▶ AMF Controller for 60 areas for 1 year	▶ One license per stack
AT-FL-CF9-AC60-5YR³	AMF Controller 60	▶ AMF Controller for 60 areas for 5 years	▶ One license per stack

² 64 OSPF and BGP routes included in base license

³ Only a single license is required per chassis. This is automatically synchronized to the second control card

Ordering Information

AT-SBx81I2

Rack mount 12-slot chassis with fan tray

AT-SBx8106

Rack mount 6-slot chassis with fan tray

AT-SBxFANI2

Contains four fans, temperature sensors and controller board for SBx81I2 chassis

AT-SBxFAN06

Contains two fans, temperature sensors and controller board for SBx8106 chassis

AT-SBx81CFC960

960Gbps Controller fabric card with 4 x 10GbE ports

AT-SBx81GP24

24-port 10/100/1000T PoE+ Ethernet line card

AT-SBx81GT24

24-port 10/100/1000T Ethernet line card

AT-SBx81GT40

40-port 10/100/1000T RJ.5 Ethernet line card

AT-SBx81GS24a

24-port 100/1000X SFP Ethernet line card

AT-SBx81XS6

6-port 10GbE SFP+ Ethernet line card

AT-SBx81XS16

16-port 10GbE SFP+ Ethernet line card

AT-SBx81XLEM

Modular 40G line card with 12 x 100/1000X SFP

AT-SBx81XLEM/Q2

2 x 40G QSFP+ expansion module for SBx81XLEM

AT-SBx81XLEM/XS8

8 x 1/10G SFP+ expansion module for SBx81XLEM

AT-SBx81XLEM/XT4

4 x 1/10G RJ45 expansion module for SBx81XLEM

AT-SBx81XLEM/GT8

8 x 1G RJ45 expansion module for SBx81XLEM

AT-SBxPWRSYS2-xx

1200W AC system power supply

AT-SBxPWRSYSI-80

1200W DC system power supply

AT-SBxPWRPOE1-xx

1200W AC PoE+ power supply

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

Power cords are only shipped with AT-SBxPWRSYS2 or AT-SBxPWRPOE1 power supplies.

Note: Power entry connector is IEC 60320 C19 (High capacity)

Accessories

40G QSFP+ Modules

AT-QSFPLR4

40GLR4 1310 nm medium-haul, 10 km with SMF

AT-QSFPSR4

40GSR4 850 nm short-haul up to 150 m with MMF

AT-QSFPSR

40GSR 850nm short-haul up to 150 m with MMF

AT-MTP12-1

MTP optical cable for AT-QSFPSR, 1 m

AT-MTP12-5

MTP optical cable for AT-QSFPSR, 5 m

AT-QSFP1CU

QSFP+ direct attach cable 1 m

AT-QSFP3CU

QSFP+ direct attach cable 3 m

10GbE SFP+ modules

(Note that any Allied Telesis 10G SFP+ module can be used for stacking with the 10G ports on the CFC960)

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-SP10LRM

10GLRM 1310 nm short-haul, 220 m with MMF

AT-SP10LR

10GLR 1310 nm medium-haul, 10 km with SMF

AT-SP10LR/I

10GLR 1310 nm medium-haul, 10 km with SMF industrial temperature

AT-SP10LR20/I

10GER 1310nm long-haul, 20 km with SMF industrial temperature

AT-SP10ER40/I

10GER 1310nm long-haul, 40 km with SMF industrial temperature

AT-SP10ZR80/I

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

AT-SP10T

10GBase-T 100 m copper

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, 1310nm 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

10GbE cables

AT-SP10TW1

1 meter SFP+ direct attach cable

AT-SP10TW3

3 meter SFP+ direct attach cable

AT-SP10TW7

7 meter SFP+ direct attach cable

RJ.5 to RJ-45 cables

For use with AT-SBx81GT40

AT-UTP/RJ.5-100-A-008

RJ.5 to RJ-45 1 m Ethernet cables (pack of 8)

AT-UTP/RJ.5-300-A-008

RJ.5 to RJ-45 3 m Ethernet cables (pack of 8)