SwitchBlade® x3106

ACCESS EDGE CHASSIS SWITCH

The SwitchBlade x3106 is a 6-slot access compact edge chassis designed for high density Ethernet FTTX solutions for communication service providers, and enterprise Layer 2+ Ethernet secure aggregation. The AT-SBx3106 architecture ensures high availability service delivery, high density wire-speed Ethernet ports (10/100/1000 and 10GbE) with a non-blocking switching all within a 4RU chassis.

FTTx Service Provider Access Applications

The AT-SBx3106 is a versatile carrier class FTTx platform for delivering Gigabit services to residential, Multi-Dwelling Unit (MDU) and business customers in the last mile. It features redundant power supplies, controllers and WAN ports to ensure reliability standards in carrier networks are met, along with powerful sub-50 millisecond failover protection using EPSR for VLAN level protection. The AT-SBx3106 is available with either AC or DC power options. the AT-SBx3106 can support a maximum of 200 ports per chassis using 40-port 1 Gigabit CSFP-based line cards (AT-SBx31GC40).

The AT-SBx3106 delivers true IP Triple Play services such as IPTV, VoIP, tiered High-Speed Internet Access (HSIA) and other cloud-based services such as over-the-top video, remote storage and backup, and Cloud computing.

Enterprise and Data Center Applications

As a network edge platform, the AT-SBx3106 can support a maximum of 200 one Gigabit ports per chassis using high density 40-port GbE copper or fiber cards. It can also support up to 34 – 10 Gigabit ports using 6-port SFP+ based line cards with AT-SBx31XS6. The AT-SBx3106 can act as an aggregation hub for last mile Fiber To The Business (FTTB) applications using 10G line cards. It features 80 Gigabits of bandwidth to each slot which allows the support for FTTX, service aggregation, 10/100/1000T and PoE thus providing a maximum level of performance. Coupled with ultra-fast 480 Gigabit switch controllers, these services can operate at wirespeed connectivity.

The raw performance combined with high availability of the AT-SBx3106 also allows it to be deployed as both end-of-row and aggregation in data center applications, and in campus applications as the ultimate in network edge connectivity.

High-Availability Architecture

The SwitchBlade x3106 is designed to deliver 99.999% reliability, while offering high availability with sub-millisecond hitless failover for mission-critical applications where uptime is essential such as data centers, hospitality, government, and financial institutions.

Dual redundant management/switch fabric modules inter-connected through redundant paths to the line cards over a passive backplane, and dual redundant power options, ensures maximum system up-time. Power is delivered via up to two AC or DC system power supplies, and two Power over Ethernet supplies to ensure continual operation.

Power over Ethernet Plus (PoE+)

The SwitchBlade x3106 supports IEEE 802.3at PoE+ (30W) to enable customers to future proof their network. PoE+ provides greater power for applications such as IP surveillance cameras supporting pan, tilt and zoom; IP video phones, RFID readers, point-of sale or wireless access points.

PoE plus

Secure Management

Only authorized administrators can access the management interface of the SwitchBlade x3106. Protocols such as SSH provide an encrypted interface for both local and remote connections, with out of band management achieved though a dedicated Gigabit port if required.

Securing the Network Edge

To ensure the protection of the data, it is important to control access to the network. Protocols such as IEEE 802.1x authentication guarantee that only known users are connected to the network. Unknown users who physically connect can be isolated to a pre-determined part of the network, offering guests such benefits as Internet access while ensuring the integrity of private network data.

QoS Differentiation

QoS schemes for SwitchBlade x3106 access solutions are designed to ensure that application performance and availability are not impacted with network growth. Features such as IEEE 802.1p/Q and DSCP enable tiered data services for residential, business and enterprise users or prioritize real time applications such as IP phones and IP cameras.

Environmentally Friendly

In keeping with our commitment to environmentally friendly processes and products, the SwitchBlade x3106 is designed to reduce power consumption and minimize hazardous waste. Features include the use of high efficiency power supplies and low power chip sets. The switches also include an eco-friendly button on the front panel allowing conservation of additional power by turning off all diagnostic LED indicators when they are not required.

eco friendly

Key Features

Performance
» Dual central fabric control cards enable load sharing, providing up to 960Gbps throughput with the AT-SBx31CFC960.

Power over Ethernet
» Power over Ethernet Plus provides standards-based IEEE 802.at class 4 for up to 80 x 10/100/1000T ports or IEEE 802.3af at class 3 for up to 96 x 10/100/1000T ports.

Ethernet Protection Switching Rings (EPSR)
» EPSR is a protection scheme for Ethernet networks, specifically for ring-based network topologies. EPSR provides a sub 50 milliseconds switching time for an Ethernet-based ring network, to maintain Layer 2 redundancy in the network. EPSR assists the multicast streams in being redirected around a faulty link in a ring network fast enough to result in an uninterrupted multicast service.

Spanning-Tree
» Supports STP, RSTP and MSTP.

Link Aggregation Group (LAG)
» The AT-SBx3106 supports a maximum of 127 LAGs configured on the system at one time. A maximum of eight member ports per LAG is supported.
» LACP functionality is also supported. With LACP the AT-SBx3106 can exchange LACP messages with neighboring systems to allow for dynamic aggregation of links between systems.

VLAN and Tagging
» Supports 4K active VLANs.

Upstream Forwarding Only (UFO) Mode
» A VLAN can be created where all data on the VLAN from downstream ports must be forwarded only to the upstream ports. UFO ensures customer security via traffic isolation.

HVLAN (Port- and VLAN-based, VLAN Double Tagging)
» To extend VLAN addressing beyond 4K, an additional or outer tag can be added on top of the IEEE 802.1Q tagged or untagged frame. The use of the additional tag creates a Hierarchical VLAN (HVLAN).

IGMP Snooping and MLD Snooping
» IGMP snooping and MLD snooping allows the product to conserve network bandwidth by limiting the Layer 2 forwarding of IP multicast packets only to the LAN segments that have expressed interest in receiving packets addressed to a multicast group.

Quality of Service (QoS)
» Classifies traffic based on user-defined flows such as voice, video or data services. Supports eight priority queues.

Access Control Lists (ACLs)
» Access Control Lists enable inspection of incoming frames and classify them based on various criteria. Specific actions can then be applied to these frames in order to more effectively manage the network traffic at Layer 2 through Layer 4. Typically ACLs are used as a security mechanism, either permitting or denying entry (hence the name Access Control) for frames in a group.

Port Rate Limiting
» Supports per queue egress rate limiting for customer- and network-facing ports.

RADIUS/TACACS+ Authentication
» TACACS+ and RADIUS authentication operates by using an external server as a means to authenticate logins to the system.

IEEE 802.1x Port Authentication
» IEEE 802.1x provides port-based network access control for restricting access to networks based on authentication information.

Secure Shell (SSHv2)
» Provides secure remote logins into the Command-Line Interface (CLI).

Address Resolution Protocol (ARP) Filtering
» ARP filtering provides the ability to "authenticate" ARP messages to ensure that unauthorized ARP spoofing is not permitted.

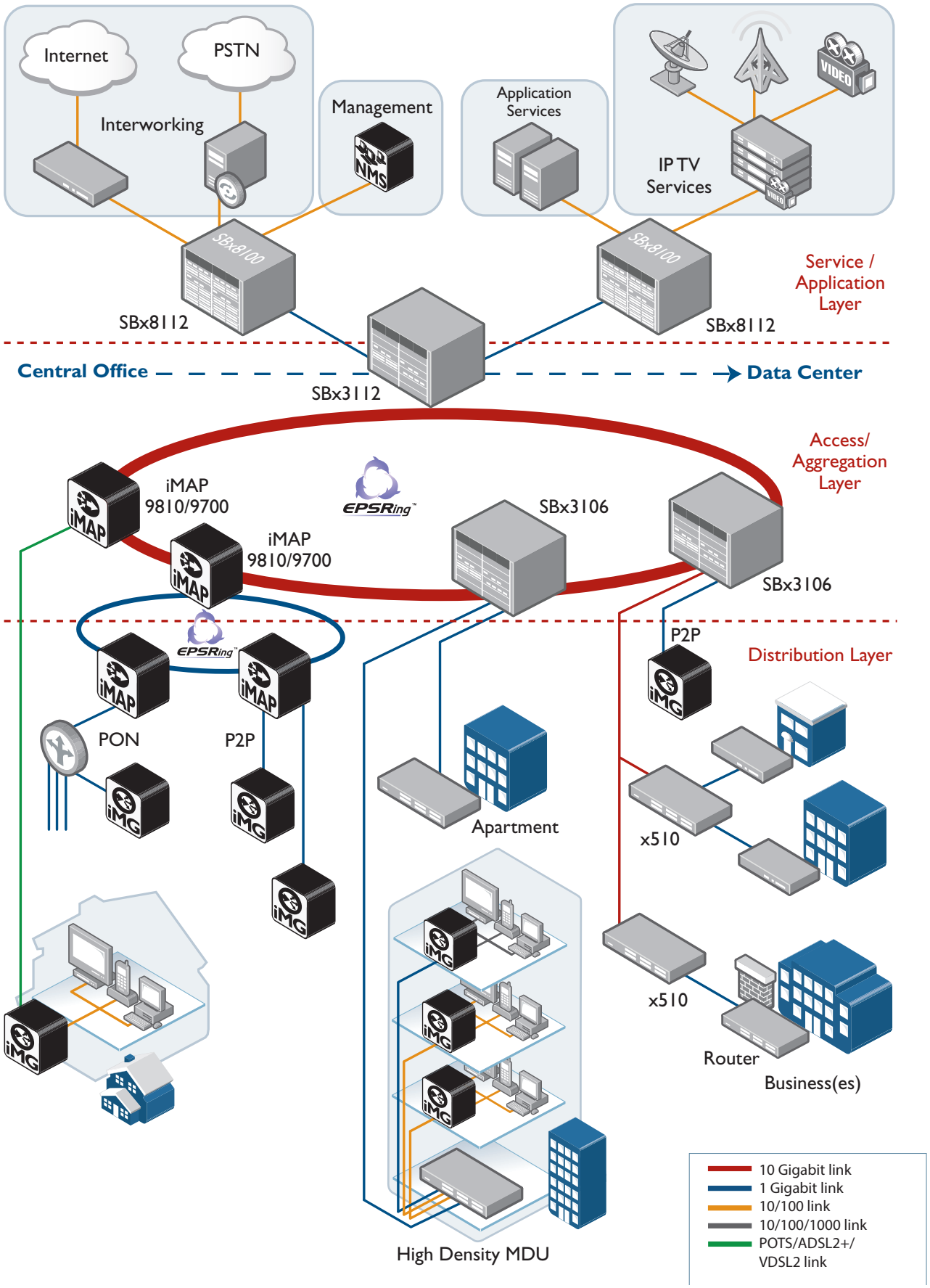
Simple Network Management Protocol (SNMP)
» Supports SNMPv1 and SNMPv2c.

Link Layer Discovery Protocol (LLDP)
» LLDP is an application protocol that runs directly over Layer 2 in network elements to facilitate a centrally located network manager to derive the physical network topology the network elements are part of.

Remote Network Monitoring (RMON)
» A collection of traffic statistics over port interfaces, accrued in a specified time period.

Securing the Network
» Supports three levels of security: User, Manager, and Security Officer.

Removable Media Support
» The CFCs provide either a SD slot or a USB port for file and log activities storage after the system is initialized.


Internet
PSTN
Interworking
Management
NMS
Application Services
IP TV Services
VIDEO
SBx8100
SBx8112
SBx8100
SBx8112
Service / Application Layer
Central Office
Data Center
SBx3112
Access/ Aggregation Layer
iMAP 9810/9700
iMAP 9810/9700
EPSRing
SBx3106
SBx3106
EPSRing
iMAP
iMG
PON
P2P
P2P
Distribution Layer
Apartment
x510
x510
Router
Business(es)
High Density MDU
10 Gigabit link
1 Gigabit link
10/100 link
10/100/1000 link
POTS/ADSL2+/ VDSL2 link

Product Specifications

Ethernet Specifications
RFC 894 Ethernet II encapsulation
IEEE 802.1D MAC bridges
IEEE 802.1ab LLDP
ANSI/TIA 1057 LLDP-MED
IEEE 802.1Q Virtual LANs
IEEE 802.2 logical link control
IEEE 802.3ab 1000T
IEEE 802.3ac VLAN TAG
IEEE 802.3u 100TX
IEEE 802.3x full-duplex operation
IEEE 802.3z Gigabit Ethernet
IEEE 802.3af Power over Ethernet class 3
IEEE 802.3at Power over Ethernet class 4
Jumbo frames (10Kbytes)
Cross card port mirroring

Spanning-Tree Protocol
IEEE 802.1D Spanning-Tree Protocol
IEEE 802.1w Rapid Spanning-Tree Protocol
IEEE 802.1s Multiple Spanning-Tree Protocol
BPDU cop

Resiliency
EPSR
EPSR SuperLoop
Bi-directional forwarding detection
Cross card Link Aggregation Groups (LAG)
Link Aggregation Control Protocol (LACP)
Layer 2 control plane prioritization
Hot-standby controller redundancy
System power redundancy
PoE+ power redundancy*

* Depends on PoE loading

Multicast
RFC 1112 IGMP snooping v1
RFC 2236 IGMP snooping v2
RFC 2710 MLD snooping
RFC 3810 MLD snooping V2
Dynamic multicast router detection
Set-top box mobility control
Configurable unknown multicast flooding

Security
RADIUS client
TACACS+
IEEE 802.1x
User account management
SSHv2
BPDU protection
DHCP snooping
RFC 3042 DHCP relay
DHCP option 82 insertion
Auto IP filtering
ARP filtering
Local ARP discard
Access Control Lists (ACLs)
Password recovery

Convergence
Eight QoS queues per port
Policy-based QoS
DSCP - based (Layer 3) QoS
Configurable user priority-to-queue mapping
Egress port rate limiting
Egress queue rate limiting
Priority tagging (IEEE 802.1p for ingress)
Remarking
Strict priority queue servicing

Network Manageability
CLI interface
Command line help
RFC 854 Telnet server
Telnet client
Out-of-band Ethernet / IP management interface
In-band Ethernet / IP management interface
Login banner
RFC 1350 TFTP client
FTP client
RFC 1157 SNMPv1
RFC 1902-1904 SNMPv2c
Command scripting command aliases
Time and daylight savings time management RFC 2030 SNTP client
Syslog
Log streaming
Log filtering
DNS client
Management interface ICMP support

MIB Support
RFC 1213 MIB-II
RFC 1573 MIB-II
RFC 2819 RMON MIB

Performance and Fault Management
RFC 1757 RMON groups 1,2,3,9
RMON threshold crossing alerts
User-defined packet counters
CPU utilization statistics
Alarm management
Configurable alarm security
Port outage alarm threshold
Thermal monitoring
Power-up diagnostics

Equipment Management
Profile management
Auto-provisioning
Pre-provisioning
PoE management

Layer 2 Switching and Control
FDB management
Configurable MAC removal modes
Port-based VLAN double tagging (Q-in-Q)
TPID editing
MAC address learning limits
Protocol tracing
Jumbo frames (Layer 2 forwarding)

VLAN
4K VLANs (IEEE 802.1Q)
VLAN management
Configurable VLAN ingress check
VLAN-based double tagging (Q-in-Q)
VLAN translation
Upstream Forwarding Only (UFO) VLANs
UFO Control Protocol (UCP)

System Administration
Software load management
Network booting
File management
Binary database backup / restore
Text config file backup / restore

Hardware
Redundant controller / fabric card
SD removable media supported only on AT-SBx31CFC
Redundant 1200W system power supply units
Load-sharing 1200W PoE power supply units
Fan tray

RoHS Standards
Compliant with European and China RoHS standards

Package Description
AT-SBx3106 chassis
Management cable (RJ-45 to DB-9)
Hardware kit accessories
Installation guide and CLI user's guide available at alliedtelesis.com/support/software

Physical Specifications

Product	Dimensions (W x D x H)
AT-SBx3106 chassis	48.03 cm x 38.79 cm x 17.87 cm (18.91 in x 15.27 in x 6.94 in)

Product Weight

Product	Weight (kg / lbs)
AT-SBx3106 chassis	14.42 kg (31.80 lb)

Power Specifications

AC voltage / frequency requirements	100-240V AC, 50/60 Hz
AT-SBxPWRSYS1	16A maximum @ 100V
AT-SBxPWRPOE1	16A maximum @ 100V
AT-SBxPWRSYS1-80	36A maximum @ -40vDC to -60vDC

PSU heat dissipation

Power module	BTU/hr
AT-SBxPWRSYS1* (AC system PSU)	5118.21
AT-SBxPWR-POE* (PoE PSU)	5118.21
AT-SBxPWRSYS1-80* (DC system PSU)	4095

Power over Ethernet Specifications

Available Power over Ethernet	1200W @ 56vDC (using one PoE PSU)
IEEE 802.3at class 4 (30W/port)	Max 40 ports
IEEE 802.3af class 3 (15.4W/port)	Max 77 ports
IEEE 802.3af class 2 (7.0W/port)	Max 96 ports
IEEE 802.3af class 1 (4.0W/port)	Max 96 ports
Available Power over Ethernet	2400W @ 56vDC (using two PoE PSU)
IEEE 802.3at class 4 (30W/port)	Max 80 ports
IEEE 802.3af class 3 (15.4W/port)	Max 96 ports
IEEE 802.3af class 2 (7.0W/port)	Max 96 ports
IEEE 802.3af class 1 (4.0W/port)	Max 96 ports

IEEE 802.3at / IEEE 802.3af mode ▶ Alternative A (MDI)

Environmental Specifications

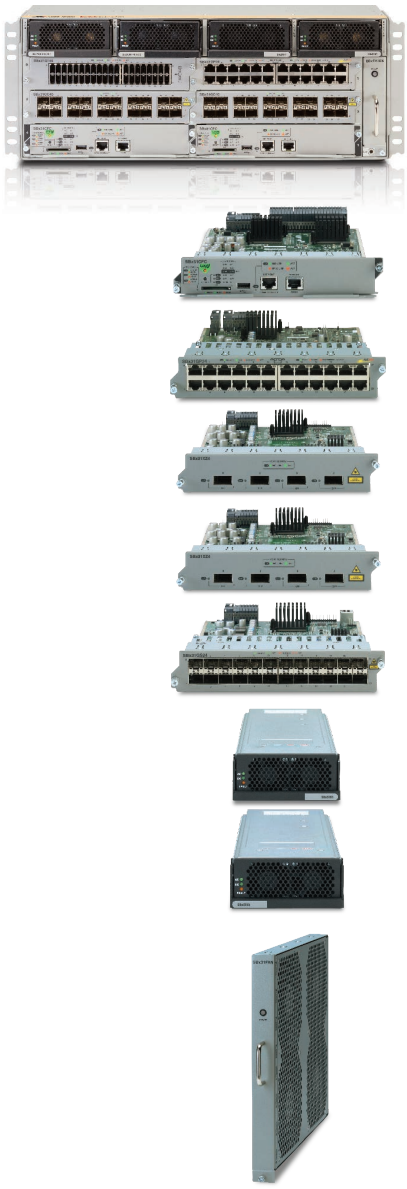
Operating temperature	-0°C to 40°C (32°F to 104°F)
Storage temperature	-25°C to 70°C (-13°F to 158°F)
Operating humidity	5% to 90% non-condensing
Storage humidity	5% to 95% non-condensing
Operating altitude range	Up to 3,000 m (9,843 ft)

Safety and Electromagnetic Emissions Certifications

EMI/RFI	FCC Class A, EN55022 Class A, CISPR Class A, ICES 003 Class A
Immunity	EN55024
Electrical safety	EN60950-1 (TUV), UL60950-1 (CULUS), EN60825
Safety agency approvals	CULUS, TUV, C-TICK, CE

Quality and Reliability

Product	MTBF
AT-SBx3106 chassis	260,000



Ordering Information

AT-SBx3106
Rack-mount 6-slot chassis with fan tray

AT-SBx31CFC
Fabric switch controller line card

AT-SBx31GP24
24-port 10/100/1000T PoE Ethernet line card

AT-SBx31XZ4
4-port 10GE XFP Ethernet line card

AT-SBx31XS6
6-port 10GE SFP+ Ethernet line card

AT-SBx31GS24
24-port SFP Ethernet line card

AT-SBx31GC40
40-port CSFP Ethernet line card

AT-SBxPWRSYS1-xx
1200W AC system power supply

AT-SBxPWRSYS1-80
1200W DC system power supply

AT-SBxPWRPOE1-xx
1200W AC PoE power supply

AT-SBxFAN06
Contains two fans, temperature sensors and controller board

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-SBxPWRSYS1-xx or AT-SBxPWRPOE1-xx power supplies.

Accessories

Small Form Pluggable Optics		Supported Platforms
AT-XPSR	XFP, MMF, 10Gbps, 300 m, 850 nm, LC	AT-SBx31XZ4
AT-XPLR	XFP, SMF, 10Gbps, 10 km, 1310 nm, LC	AT-SBx31XZ4
AT-XPER40	XFP, SMF, 10Gbps, 40 km, 1550 nm, LC	AT-SBx31XZ4
AT-XPER80	XFP, SMF, 10Gbps, 80 km, 1550 nm, LC	AT-SBx31XZ4
AT-SPSX	SFP, MMF, 1000Mbps, 220 / 500 m, 850 nm, LC	AT-SBx31GS24
AT-SPEX	SFP, MMF, 1000Mbps, 2 km, 1310 nm, LC	AT-SBx31GS24
AT-SPLX10	SFP, SMF, 1000Mbps, 10 km, 1310 nm, LC	AT-SBx31GS24
AT-SPLX40	SFP, SMF, 1000Mbps, 40 km, 1310 nm, LC	AT-SBx31GS24
AT-SPZX80	SFP, SMF, 1000Mbps, 80 km, 1550 nm, LC	AT-SBx31GS24
AT-SPBD10-13	SFP, SMF, 1000Mbps, 10 km, 1310/1490 nm, LC-BiDi	AT-SBx31GS24
AT-SPBD10-14	SFP, SMF, 1000Mbps, 10 km, 1490/1310 nm, LC-BiDi	AT-SBx31GS24
AT-SPBD20Dual-14	CSFP, SMF, 1000Mbps dual BiDi, 20 km, Tx1490/Rx1310, 2 x LC	AT-SBx31GC40
AT-SPBD40Dual-14	CSFP, SMF, 1000Mbps dual BiDi, 40km, Tx1490/Rx1310, 2 x LC	AT-SBx31GC40
AT-SPFX/2	SFP, MMF, 100Mbps, 2 km, 1310 nm, LC	AT-SBx31GS24
AT-SPFXBD-LC-13	SFP, SMF, 100Mbps, 10 km, 1310/1510 nm, LC-BiDi	AT-SBx31GS24
AT-SPFXBD-LC-15	SFP, SMF, 100Mbps, 10 km, 1510/1310 nm, LC-BiDi	AT-SBx31GS24
AT-SPFX/15	SFP, SMF, 100Mbps, 15 km, 1310 nm, LC	AT-SBx31GS24
AT-SP10SR	SFP+ 10G, 300M, 850 nm, C temp	AT-SBx31XS6
AT-SP10LR	SFP+ 10G, 10Km, 1310 nm, C temp	AT-SBx31XS6
AT-SP10TW1	SFP+ Twinax, 10G, 1 meter, copper C temp	AT-SBx31XS6
AT-SP10TW-3	SFP+ Twinax, 10G, 3 meter, copper, C temp	AT-SBx31XS6
AT-SP10TW-7	SFP+ Twinax, 10G, 7 meter, copper, C temp	AT-SBx31XS6

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