Wireless AP Managed Switch with 8-Port 802.3at PoE + 2-Port 10G SFP+

Wireless Management Solution with PoE

PLANET WS-1232P, an enhanced Wireless AP Managed Switch, features **Smart AP control**, **Layer 3 OSPF/static routing and Intelligent PoE capability** to enable service providers and IT managers to control all wireless APs at the same time in small- and medium-scale wireless network environments, such as hotels, villas, resorts and any public area. The WS-1232P provides IPv6/IPv4 dual stack management and built-in L2/L4 Gigabit Switching engine along with 8 10/100/1000BASE-T ports featuring up to **36-watt 802.3at PoE+**, 2 additional Gigabit copper ports and another 2 extra **1/10 Gigabit BASE-X SFP+ fiber slots** which definitely offer enterprises a quick, safe and cost-effective AP Control with Power over Ethernet network solution.

Five Steps to Manage AP Cluster within Minutes

The WS-1232P offers a user-friendly Web GUI for easy configuration. It features centralized management of PLANET Smart AP series without needing to manually configure each AP for the wireless SSID, radio band and security settings. With a five-step configuration process, different purposes of wireless profiles can be simultaneously delivered to multiple APs or AP groups to minimize deployment time, effort and cost.

Visualizing Wi-Fi Signals through Map

Importing your floor maps and locating each AP or AP group according to the field deployment can save your time and cost of on-site support and monitoring. It shows real-time AP status, and its signal heat map is capable of reflecting the actual coverage and helps the administrator to fine-tune the overlapping of the adjacent APs anytime to optimize the wireless network performance.

Visualizing Wi-Fi Signals through Map
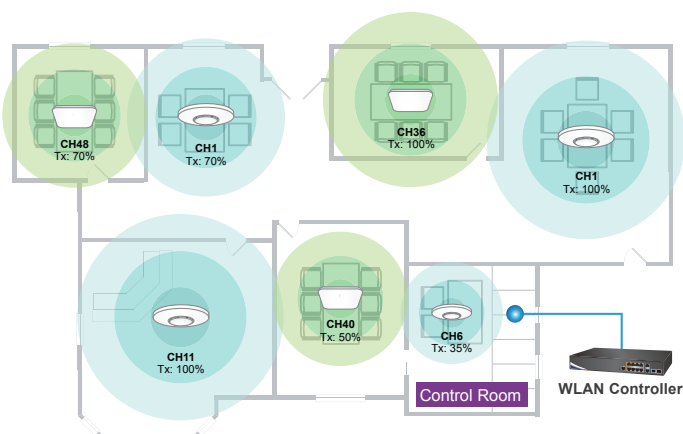
Physical Ports

- **8-port 10/100/1000BASE-T** with 36W PoE injector
- **2-port 1/10G BASE-X** SFP+
- RS-232 RJ45 console interface for switch basic management and setup

Wireless LAN AP Management

- Dashboard: provides at-a-glance view of system and wireless network status
- AP Discovery: one key to discover the managed APs on the managed LAN
- Customized Profile: allows multiple wireless profiles creation and maintenance
- Auto Provision: multi-AP provisioning with one click
- Cluster Management: simplifies high-density AP management
- Zone Plan: optimizes AP deployment with actual signal coverage
- Analysis: real-time AP status monitoring
- Scalability: free system upgrade and AP firmware bulk upgrade capability

Power over Ethernet

- Up to 8 ports of IEEE 802.3af/802.3at devices powered
- Supports PoE Power up to 36 watts for each PoE port
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100 meters
- PoE Management
  - PoE Port Status monitoring
  - Total PoE power budget control
  - Over Temperature Protection
  - PoE usage threshold
  - Temperature threshold
  - Per port PoE function enable/disable
  - PoE Port Power feeding priority
  - Per PoE port power limit
  - PD classification detection
  - Sequence port PoE

Maximal Scalability and Compatibility with Various Smart APs

To fulfill various business needs, the WS-1232P provides a maximum scalability and is compatible with over 10 models of Smart APs from indoor to outdoor series including ceiling-mount, wall-mount, in-wall, industrial, single-band, dual-band and high-power access points which are able to adapt to different environments.

Scalability and Compatibility

Indoor Smart APs | Outdoor Smart APs

10Gbps Ethernet Uplink for High-volume Transmission

As to the bandwidth, the WS-1232P offers 10Gbps uplink ports to relieve huge network traffic. Each of the 10G SFP+ slots in the WS-1232P supports **dual speed** and **10GBASE-SR/LR or 1000BASE-SX/LX**. With its 10G Ethernet link capability, the administrator now can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission distance or the transmission speed required to extend the network efficiently. The WS-1232P provides greater bandwidth and powerful processing capacity to make central management more efficient.

Unique PoE Management Features

The WS-1232P has a built-in L2/L4 Gigabit Switching engine and 8 10/100/1000BASE-T ports featuring 36-watt 802.3at PoE+, with a total power budget of up to 240W for different kinds of PoE applications. It perfectly meets the power requirements of PoE Wi-Fi access points including dual-band or outdoor high-power AP/CPE with high power consumption. As a managed PoE Switch for stable and reliable wireless AP operation, the WS-1232P features the following intelligent PoE management functions:

– PD Alive Check
– Scheduled Power Recycling
– SMTP/SNMP Trap Event Alert
– PoE Schedule

Layer 3 Routing Support

The WS-1232P enables the administrator to conveniently boost network efficiency by configuring Layer 3 IPv4/IPv6 VLAN static routing manually, and the **OSPFv2** (Open Shortest Path First) settings automatically. The OSPF is an interior dynamic routing protocol for autonomous system based on link state. The protocol creates a database for link state by exchanging link states among Layer 3 switches, and then uses the Shortest Path First algorithm to generate a route table based on that database.

Layer 2 Features

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
  – Broadcast/Multicast/Unknown unicast
- Supports **VLAN**
  – IEEE 802.1Q tagged VLAN
  – Up to 255 VLANs groups, out of 4094 VLAN IDs
  – Supports provider bridging (VLAN Q-in-Q, IEEE 802.1ad)
  – Private VLAN Edge (PVE)
  – Protocol-based VLAN
  – MAC-based VLAN
  – Voice VLAN
- Supports Spanning Tree Protocol
  – STP, IEEE 802.1D Spanning Tree Protocol
  – RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
  – MSTP, IEEE 802.1s Multiple Spanning Tree Protocol, spanning tree by VLAN
  – BPDU Guard
- Supports Link Aggregation
  – 802.3ad Link Aggregation Control Protocol (LACP)
  – Cisco ether-channel (static trunk)
  – Maximum 6 trunk groups, up to 4 ports per trunk group
  – Up to 44Gbps bandwidth (full duplex mode)
- Provides port mirror (many-to-1)
- Port mirroring to monitor the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops
- Supports ERPS (Ethernet Ring Protection Switching)

## Layer 3 IP Routing Features

- Supports maximum 128 static routes and route summarization
- IP dynamic routing protocol supports OSPFv2
- Routing interface provides per VLAN routing mode

Quality of Service

- Ingress Shaper and Egress Rate Limit per port bandwidth control
- 8 priority queues on all switch ports

IPv4/IPv6 Dual Stack Management Network

The WS-1232P offers IPv4/IPv6 VLAN routing feature which allows to crossover different VLANs and different IP addresses for the purpose of having a highly-secure, flexible management and simpler networking application. With the support for IPv6/IPv4 protocol, and user-friendly management interfaces, the WS-1232P is the best choice for system integrators to migrate network infrastructure from the IPv4 to the IPv6 network. It also helps SMBs to step in the IPv6 era with the lowest investment and without having to replace the network facilities even though ISPs establish the IPv6 FTTx edge network.
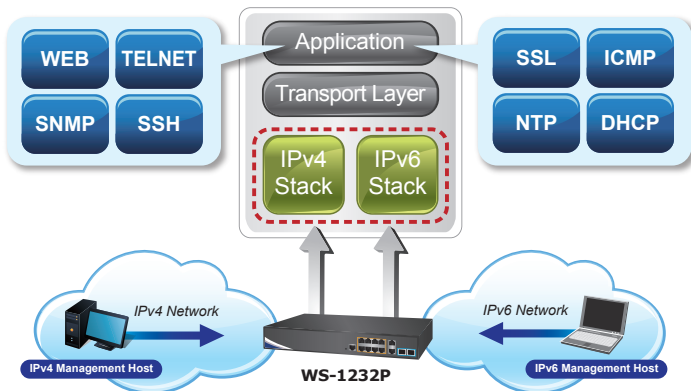
Optimal Redundant Ring for Faster Recovery of Managed Network

The WS-1232P supports redundant ring technology and features strong, rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced **ITU-T G.8032 ERPS (Ethernet Ring Protection Switching)** technology, and Spanning Tree Protocol (802.1w RSTP) into customer's network to enhance system reliability and uptime in harsh environments. In a certain simple ring network, the recovery time could be less than 10ms to quickly bring the network back, thus enabling the management network to keep on operating.
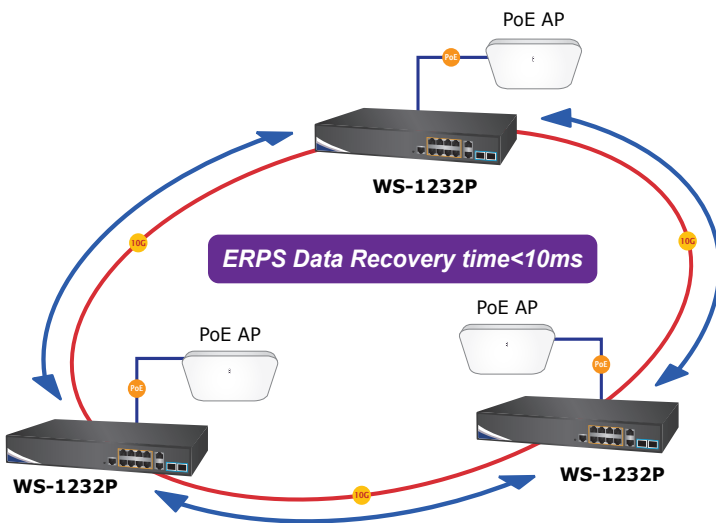
- Traffic classification
  - IEEE 802.1p CoS
  - TOS/DSCP/IP Precedence of IPv4/IPv6 packets
  - IP TCP/UDP port number
  - Typical network application
- Strict priority and Weighted Round Robin (WRR) CoS policies
- Supports QoS and In/Out bandwidth control on each port
- Traffic-policing policies on the switch port
- DSCP remarking

Multicast

- Supports IGMP Snooping v1, v2 and v3
- Supports MLD Snooping v1 and v2
- Querier mode support
- IGMP Snooping port filtering
- MLD Snooping port filtering
- Multicast VLAN Registration (MVR) support

Security

- Authentication
  - IEEE 802.1x Port-based/MAC-based network access authentication
  - Built-in RADIUS client to co-operate with the RADIUS servers
  - TACACS+ login users access authentication
  - RADIUS/TACACS+ users access authentication
- Access Control List
  - IP-based Access Control List (ACL)
  - MAC-based Access Control List
- Source MAC/IP address binding
- **DHCP Snooping** to filter un-trusted DHCP messages
- **Dynamic ARP Inspection** discards ARP packets with invalid MAC address to IP address binding
- **IP Source Guard** prevents IP spoofing attacks
- Auto DoS rule to defend DoS attack
- IP address access management to prevent unauthorized intruder

Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Console/Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSH/SSL secure access

User-friendly Secure Management

For efficient management, the WS-1232P is equipped with console, web and SNMP management interfaces. With the built-in web-based management interface, the WS-1232P offers an easy-to-use, platform-independent management and configuration facility. The WS-1232P supports SNMP and it can be managed via **PLANET centralized network management suite** or any management software based on the standard SNMP v1 and v2 protocols. For reducing product learning time, the WS-1232P offers Cisco-like command via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the WS-1232P offers remote secure management by supporting **SSH**, **SSL** and **SNMPv3** connection which can encrypt the packet content at each session.

Cybersecurity Network Solution to Minimize Security Risks

The cybersecurity feature included to protect the switch management in a mission-critical network virtually needs no effort and cost to install. Both SSH and SSL protocols are utilized to provide strong protection against advanced threats. The network administrator can now construct highly-secure corporate networks with considerably less time and effort than before.

- **IPv6** IP Address/NTP/DNS management
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System Maintenance
  - Firmware upload/download via HTTP/TFTP
  - Reset button for system reboot or reset to factory default
  - Dual Images
- DHCP Relay
- DHCP Option82
- User Privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network Diagnostic
  - ICMPv6/ICMPv4 Remote Ping
  - Cable Diagnostic technology provides the mechanism to detect and report potential cabling issues
- SMTP/Syslog remote alarm
- Four RMON groups (history, statistics, alarms and events)
- SNMP trap for interface Linkup and Linkdown notification
- System Log
- PLANET Smart Discovery Utility for deployment management

Applications

Centralized AP Management for Enterprises

PLANET WS-1232P Wireless AP Managed Switch helps service providers and IT managers control all wireless APs at the same time. The WS-1232P enables administrators to effectively manage various wireless access points deployed in different locations. The administrator can automatically discover, configure, update and monitor all the managed APs through one single browser-based web user interface. Such design avoids the need to configure the wireless APs one by one.

AP Cluster Management
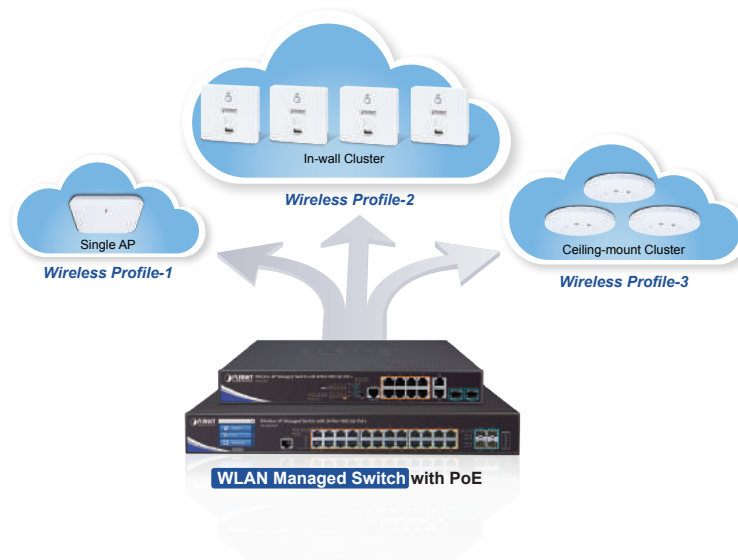
Cost-effective PoE Management Solution with Smart AP Control

The WS-1232P, providing eight 10/100/1000BASE-T PoE ports, in-line power interfaces and two 10 Gigabit SFP interfaces, is capable of building a secure and highly-efficient managed wireless network for the enterprises. For instance, it can work with the RADIUS Server to perform comprehensive security for wireless user authentication with powered APs

Specifications

Product	WS-1232P
Hardware Specifications	
Copper Ports	10 x 10/100/1000BASE-T RJ45 Auto-MDI/MDI-X interface with Port-1 to Port-10
SFP/mini-GBIC Slots	2 x 1/10G BASE-X SFP interfaces with Port-11 to Port-12
PoE Injector Port	8 ports with 802.3at/af PoE injector function with Port-1 to Port-8
Console	1 x RJ45 serial port (115200 , 8, N, 1)
Switch Architecture	Store-and-Forward
Switch Fabric	60Gbps/non-blocking
Throughput	44.642Mpps@ 64Bytes packet
Address Table	16K entries, automatic source address learning and aging
Shared Data Buffer	16Mbits
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex
Jumbo Frame	9KB
Reset Button	< 5 sec: System reboot > 5 sec: Factory default

LED Indicator	**System**:
	  Fan Alert (RED)
	  SYS (Green)
	  PWR (Green)
	10/100/1000BASE-T RJ45 Interfaces (Port 1 to Port 10):
	  1000Mbps LNK/ACT (Green)
	  10/100Mbps LNK/ACT (Orange)
	  PoE-in-Use (Orange) (Port 1 to Port 8)
	1/10G Mbps SFP Interfaces (Port 11 to Port 12):
	  1G LNK/ACT (Green)
	  10G Mbps (Orange)

Power Requirements	100~240V AC, 50/60Hz
Power Consumption (Full Loading)	320 watts/1091.9 BTU (max.)
ESD Protection	6KV DC
EFT Protection	4KV
Dimensions (W x D x H)	330 x 200 x 43.5 mm, 1U height
Weight	2kg
Wireless AP Management	
Maximum Managed APs	32
Maximum AP Groups	10
Maximum APs per AP Group	32
Wireless Encryption/Security	WEP encryption security WPA Personal / Enterprise (TKIP / AES) WPA2 Personal / Enterprise (TKIP / AES) Enterprise Class 802.1x
AP Auto Discovery	Supports AP auto discovery
Dashboard	Summarized system overview includes online AP and activated client number
SSID/RF Profile	Allows multiple wireless profiles creation and maintenance
Cluster Management	Allows AP grouping for bulk provisioning and batch upgrading
Bulk AP Provisioning	Supports bulk AP provisioning with user-defined profiles
Bulk AP Firmware Upgrade	Supports bulk AP firmware upgrade
Coverage Heat Map	Enables real signal coverage of managed AP reflecting on the uploaded zone maps
Status Monitoring	Real-time traffic statistics reporting of AP and activated clients
Graphical Statistics	Real-time and historical visibility of traffic flow
Profile Backup/Restore	Provides SSID, radio profile backup/restore
SSIDs-to-VLANs Mapping	Allows to configure SSIDs-to-VLANs mapping in supported APs

Compatible AP Models	Managed AP Series Smart AP E Series Smart AP OE Series Smart AP OW Series
Remarks	The supported AP models may be changed after a firmware upgrade. The following AP models are classified according to their specifications: [1] Managed AP Series: The AP can be managed in the "**Managed AP**" mode. [2] Smart AP E Series: "**E**" stands for "**Enhanced**", meaning indoor smart AP with enhanced features. [3] Smart AP OE Series: "**OE**" stands for "**Outdoor Enhanced**", meaning outdoor smart AP with enhanced features. [4] Smart AP OW Series: "**OW**" stands for "**Outdoor Wireless**", meaning outdoor smart AP/CPE.

Power over Ethernet		
PoE Standard		IEEE 802.3at PoE Plus, PSE
PoE Power Supply Type		End-span
PoE Power Output		Per port 54V DC, max. 36 watts
Power Pin Assignment		1/2(-), 3/6(+)
PoE Power Budget		240 watts (max.) @ 25 degrees C 200 watts (max.) @ 50 degrees C
PoE Ability	PD @ 7 watts	8 units
	PD @ 15.4 watts	8 units
	PD @ 30.8 watts	8 units

Layer2 Management Functions	
Basic Management Interfaces	Console , Web browser, SNMP v1, v2c
Secure Management Interfaces	SSH, SSL, SNMP v3
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow Control disable/enable
Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status, trunk status
Port Mirroring	TX/RX/Both Many-to-1 monitor
VLAN	802.1Q tag-based VLAN, up to 255 VLAN groups Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN Registration) Up to 255 VLAN groups, out of 4094 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP/Static Trunk Supports 6 trunk groups with 4 ports per trunk
QoS	Traffic classification based, strict priority and WRR 8-level priority for switching - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP/TOS field in IP packet
IGMP Snooping	IGMP (v1/v2/v3) Snooping, up to 255 multicast groups IGMP Querier mode support
MLD Snooping	MLD (v1/v2) Snooping, up to 255 multicast groups MLD Querier mode support
Access Control List	IP-based ACL/MAC-based ACL Up to 256 entries
Bandwidth Control	Per port bandwidth control Ingress: 10Kbps~13000Mbps Egress: 10Kbps~13000Mbps
SNMP MIBs	RFC 1213 MIB-II RFC 2863 IF-MIB RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2737 Entity MIB RFC 2819 RMON MIB (Groups 1, 2, 3 and 9)

SNMP MIBs	RFC 2618 RADIUS Client MIB RFC 3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-MIB Power over Ethernet MIB

Layer 3 Functions

IP Interfaces	Max. 128 VLAN interfaces
Routing Table	Max. 128 routing entries
Routing Protocols	IPv4 OSPFv2 IPv4 hardware static routing IPv6 hardware static routing

Standards Conformance

Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3z 1000BASE-SX/LX IEEE 802.3ab 1000BASE-T IEEE 802.3ae 10Gb/s Ethernet IEEE 802.3x flow control and back pressure IEEE 802.3ad port trunk with LACP IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol IEEE 802.1p Class of Service IEEE 802.1Q VLAN tagging IEEE 802.1x Port Authentication Network Control IEEE 802.1ab LLDP IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP v1 RFC 2236 IGMP v2 RFC 3376 IGMP v3 RFC 2710 MLD v1 FRC 3810 MLD v2 RFC 2328 OSPF v2

Environments

Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

Ordering Information

WS-1232P	Wireless AP Managed Switch with 8-Port 802.3at PoE + 2-Port 10G SFP+

Related Products

WAPC-500	Enterprise-class Wireless LAN Controller supporting up to 500 APs (4 10/100/1000T LANs, LCD)
WAPC-1000	Enterprise-class Wireless LAN Controller supporting up to 1000 APs (4 10/100/1000T LANs, LCD)
WAPC-1232HP	Wireless AP Controller with 8-Port 802.3at PoE+
Smart AP Control	PLANET Smart Wireless AP Controller Software

CS-950	UTM Content Security Gateway
WDAP-C7200E	1200Mbps 802.11ac Dual Band Ceiling-mount Wireless Access Point
WNAP-C3220E	2.4GHz 300Mbps 802.11n Ceiling-mount Wireless Access Point
WNAP-W2200UE	2.4GHz 300Mbps 802.11n In-Wall Wireless Access Point w/USB Charger
WDAP-W7200AC	1200Mbps 802.11ac Dual Band Wall-mount Wireless Access Point
WNAP-C3220A	2.4GHz 300Mbps 802.11n Ceiling-mount Wireless Access Point
WNAP-W2201A	2.4GHz 300Mbps 802.11n In-Wall Wireless Access Point
WDAP-802AC	1200Mbps Dual Band 802.11ac Outdoor Wireless AP
WDAP-702AC	1200Mbps Dual Band 802.11ac Outdoor Wireless AP
WAP-252N	2.4GHz 802.11n 300Mbps Outdoor Wireless AP
WBS-200N	2.4GHz 300Mbps 802.11n Outdoor Wireless CPE
WBS-202N	2.4GHz 300Mbps 802.11n Outdoor Wireless CPE
WAP-552N	5GHz 802.11a/n 300Mbps Outdoor Wireless AP
WBS-502N	5GHz 300Mbps 802.11n Outdoor Wireless CPE
WBS-502AC	5GHz 900Mbps 802.11ac Outdoor Wireless CPE

Available 10Gbps Modules

MTB-SR	10GBASE-SR mini-GBIC module - 300m
MTB-LR	10GBASE-LR mini-GBIC module – 10km
MTB-LA20	10GBASE-LX (WDM,TX:1270nm) mini-GBIC module - 20km
MTB-LB20	10GBASE-LX (WDM,TX:1330nm) mini-GBIC module - 20km
MTB-LA40	10GBASE-LX (WDM,TX:1270nm) mini-GBIC module - 40km
MTB-LB40	10GBASE-LX (WDM,TX:1330nm) mini-GBIC module - 40km
MTB-LA60	10GBASE-LX (WDM,TX:1270nm) mini-GBIC module - 60km
MTB-LB60	10GBASE-LX (WDM,TX:1330nm) mini-GBIC module - 60km

Available 1000Mbps Modules

MGB-GT	SFP-Port 1000BASE-T module
MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module
MGB-L30	SFP-Port 1000BASE-LX mini-GBIC module - 30km
MGB-L50	SFP-Port 1000BASE-LX mini-GBIC module - 50km
MGB-L70	SFP-Port 1000BASE-LX mini-GBIC module - 70km
MGB-L120	SFP-Port 1000BASE-LX mini-GBIC module - 120km
MGB-LA10	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 10km
MGB-LB10	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 10km
MGB-LA20	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 20km
MGB-LB20	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 20km
MGB-LA40	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 40km
MGB-LB40	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 40km

WS-1232P