AP 300 Access Port

Next-Generation Access Ports: More Functionality at a Lower Cost

symbol®
The Enterprise Mobility Company™

Wireless Switch System

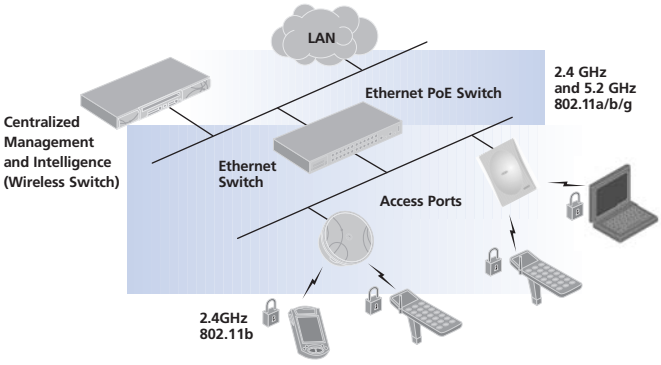
WIRELESS LANs

Powerful Enterprise-Level Next-Generation

Wireless Technology

Access Ports are a key component of Symbol Technologies' award winning Wireless Switch System, the second-generation wireless LAN architecture that does more, yet costs less. Working in conjunction with Symbol's Wireless Switch 5000 and Wireless Switch 2000, the AP 300 Access Port delivers robust and feature rich IEEE 802.11a/b/g connectivity. Access Ports substantially reduce the cost of deploying, implementing and managing a wireless LAN, while significantly increasing features, functionality and security of the wireless LAN infrastructure.

Next Generation Wireless Switch Network Architecture with Access Ports



Access Ports, second-generation wireless LAN technology, replace the traditional access point. Features, functionality, security and management are all centralized in the Wireless Switch—Access Ports become zero configuration devices, obtaining everything from initial configuration to ongoing updates automatically from the Wireless Switch. Much less expensive than their counterparts, the access point, Access Ports substantially reduce the cost of deploying, implementing and managing a wireless LAN, while significantly increasing features, functionality and security.

More Functionality for a Fraction of the Cost of Access Points

Access Ports are much leaner and only a fraction of the cost of first generation WLAN access points, due to the centralized architecture of Symbol's Wireless Switch System. Access Ports connect to a centralized processing and switching engine that resides in WS 5000 and WS 2000 Wireless Switches via standard CAT 5 cabling—just as the access point connects to an Ethernet hub or switch. But unlike the access point, features, functionality, security and management are all centralized in the Wireless Switch, effectively allowing the Access Ports to become zero configuration devices. Maintenance and management, required for each and every access point, is effectively eliminated. Access Ports, once verified as an authorized network device, obtain initial configuration information as well as ongoing updates automatically from the Wireless Switch. Advanced radio processing ensures the most robust wireless performance and range, even in the most demanding environments.

The result is a wireless LAN that delivers IEEE 802.11a/b/g value—more functionality, low cost and high investment protection. Operational costs are reduced through centralized management. The leaner, less expensive hardware reduces capital expenditures, and the ability to upgrade features centrally on the switch future-proofs your investment.

Symbol's Access Ports, in conjunction with the Wireless Switch, offer increased functionality with a comprehensive array of features, including:

Dual-radio 802.11a and 802.11g Design

Simultaneous service to 802.11a, 802.11b and 802.11g mobile devices provides high-bandwidth wireless connectivity at speeds of up to 54 Mbps in both the 2.4 and 5.2 GHz ISM bands.

Thin AP Design

The AP 300, as with all other Symbol Access Ports, requires no configuration or manual firmware maintenance. The Symbol Wireless Switch discovers Access Ports on the network and automatically downloads all configuration parameters and firmware. Installation, maintenance and troubleshooting costs are greatly reduced.

Flexible Mounting Options

The AP 300 is designed to provide maximum flexibility for fast and easy installation, offering wall, ceiling and above ceiling tile mounting options. The internal antenna version snaps onto the T-bars of suspended ceilings without the use of any hardware, reducing installation time. The external antenna version can be installed above ceiling tiles, and all hardware to install a light-pipe through the ceiling tile is provided. Either version can also be wall mounted.

AP 300 (internal antennas) shown mounted to T-Bar used in suspended ceilings.

AP 300 (external antennas) mounted above ceiling tile with light pipe.

802.3af

Support for 802.3af standards-based Power-Over-Ethernet greatly reduces installation costs. It allows the AP 300 to receive 48V DC power from any 802.3af-compliant power source via the Ethernet cable, eliminating the need to run power cables and install AC outlets.

Multi-BSSIDs and Multi-ESSIDs

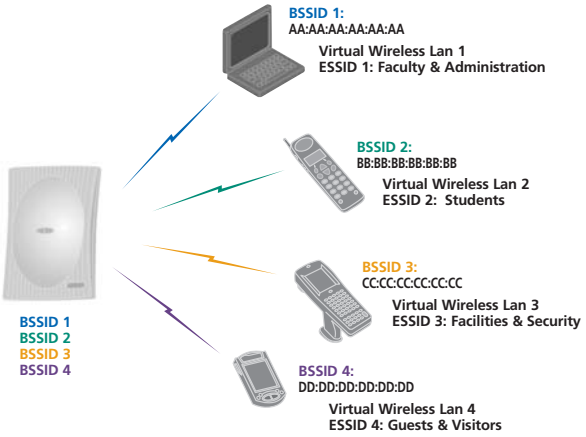
Support for multiple WLANs significantly improves wireless device performance, increasing throughput and battery-life. Each radio supports up to 16 WLANs and four BSSIDs, and virtually appears as four independent access points. This functionality enables a different Class of Service to be set for multiple user groups as well as the ability to secure and manage bandwidth on a per-WLAN basis.

Virtual AP Enables True RF Virtual LANs (VLANs) for Better Device and Network Performance

With Virtual AP, each Access Port can support four separate wireless broadcast domains—functionality that would otherwise require the installation of four first-generation access points. These true wireless VLANs enable separation of mobile end-users, ensuring that broadcast traffic reaches only those recipients for which it is intended. Overall network traffic is reduced, network and device performance is improved, and device battery life is increased—at a fraction of the cost required to deliver the same functionality in a first generation access point-based network.

Each AP 300 supports four BSSIDs (Basic Service Set Identifiers) and 16 ESSIDs (Extended Service Set Identifiers) per radio, enabling granular segmentation of the wireless LAN into multiple broadcast domains to meet specific enterprise needs. Typical access points support only one BSSID, utilizing ESSIDs (instead of BSSIDs) to create VLANs.

Access Port VLAN Architecture: Multiple BSSID VLAN
Improved Performance and Security



In the diagram above, four BSSIDs are used to create four separate wireless VLANs. Typical access points support only one BSSID, utilizing ESSIDs (instead of BSSIDs) to create VLANs. ESSIDs are utilized to create separate wireless LANs for students, faculty, guests and visitors, and facilities. However, since the single BSSID of any access point is automatically adopted by all associated client devices, broadcast traffic, which is sent to a specific BSSID, reaches the users of all 4 wireless LANs. Messages intended only for faculty reach students, guests, visitors and facilities-regardless of the ESSID identifier. The resulting increase in traffic reduces throughput and bandwidth, forces client devices to waste battery power processing unnecessary traffic, and potentially compromises confidentiality and security.

Features	Benefits
Dual-radio 802.11a and 802.11g design	Simultaneous service to 802.11a, 802.11b and 802.11g mobile units; dual-radio design services high-bandwidth wireless devices at speeds of up to 54 Mbps in both the 2.4 and 5.2 GHz ISM bands
Thin Access Port design	Installation, maintenance and troubleshooting costs are greatly reduced through the elimination of manual configuration, firmware installation or maintenance—the WS 2000 automatically discovers Access Ports on the network and downloads configuration parameters
Dual form-factors	Flexible installation options: plenum-rated external antenna model with metal housing is ideal for inconspicuous installation above ceiling tiles; the plastic internal-antenna housing allows for quick and easy installation within the 'carpeted-space' and cost-effective coverage via the integrated 2.4 and 5.2 GHz antennas
Interoperability	Standards-based wireless, wired and security protocols ensure interoperability with third-party wireless devices and security infrastructure; enables seamless operation over an existing wired infrastructure in an overlay topology or connected directly to a Wireless Switch
Multi-BSSIDs and Multi-ESSIDs	Increases performance of wireless devices, including higher throughput and longer battery-life through the ability to broadcast multiple WLANs to multiple user groups with different Classes of Service; each WLAN can be secured independently; wireless bandwidth can be managed on a per-WAN basis; each radio supports up to four BSSIDs, virtually appearing as four independent access points
802.1x supplicant	Integrates and operates in wired environments with 802.1x deployed to secure the wired network perimeter; can authenticate to a RADIUS sever to enable an 802.1x-protected Ethernet port
802.11h	Enables worldwide operation through support for standards-based dynamic frequency selection and power control, providing compliance with required global radar detection and avoidance regulations
802.11i	Ensures the highest level of protection for the wired network and privacy of data transmitted over the wireless network through support for IEEE standards-based security protocols for strong Encryption (AES, TKIP) and Authentication and Key Management (802.1x-EAP)
Flexible mounting options	Fast and easy installation anywhere in the enterprise environment with wall, ceiling and above-ceiling tile mounting options; internal antenna version snaps on to T-bars of suspended ceilings without the use of any hardware, reducing installation times; external antenna version installs easily above ceiling tiles, and includes hardware to install a light-pipe for easy visual monitoring of status lights; either version can be wall mounted
802.3af	Simplifies and reduces total cost of installation through support for standards-based Power-over-Ethernet (PoE); the AP 300 receives 48V DC power from any 802.3af-compliant power source over Ethernet cable
Load Balancing, Pre-Emptive Roaming and Rate Scaling	Increases reliability and resilience of the wireless network to support mission critical applications through these mobility-enabling features for Symbol wireless devices

Specification Highlights

Physical Characteristics	AP 300 (internal antenna)	AP 300 (external antenna)
Dimensions:	9.5 in. L x 7.0 in. W x 2.0 in. H 24.1 cm L x 17.8 cm W x 5.1 cm H	9.25 in. L x 5.75 in. W x 1.0 in. H 23.5 cm L x 14.6 cm W x 2.54 cm H
Weight:	1.0 lbs/0.45kg	1.6 lbs/0.73kg
Part Number*:	WSAP-5110-100-WW	WSAP-5100-100-WW
Available Mounting Configurations:	Ceiling-Mount (to suspended ceiling T-bars, below tile); Wall-Mount	Ceiling-Mount (above tile); Wall-Mount
Plenum Rated:	No	Yes, certified to UL 2043
LEDs Indicators:	2 LED indicators with multiple modes indicating 802.11a/802.11g Activity, Power, Adoption and Errors	
Wireless Data Communications		
Data Rates Supported:	802.11a: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps 802.11b/g: 1, 2, 5.5, 6, 9,11, 12, 18, 24, 36, 48, 54 Mbps	
Network Standard:	802.11a, 802.11b, 802.11g	
Wireless Medium:	Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM)	
Uplink:	Auto-sensing 10/100Base-T Ethernet	
Radio Characteristics		
Frequency:	802.11b/g: 2.412 GHz to 2.484 GHz 802.11a: 4.9 GHz to 5.875 GHz	
FCC (US and Canada):	2.412 GHz to 2.462 GHz 5.150 GHz to 5.250 GHz (UNII -1); 5.250 GHz to 5.350 GHz (UNII -2); 5.725 GHz to 5.825 GHz (UNII -3); 5.825 GHz to 5.850 GHz (ISM)	
EU:	2.412 GHz to 2.472 GHz 5.150 GHz to 5.250 GHz; 5.150 GHz to 5.350 GHz; 5.470 GHz to 5.725 GHz; (Country Specific)	
Japan:	2.412 GHz to 2.484 GHz 4.900 GHz to 5.000 GHz; 5.150 GHz to 5.250 GHz	
China:	2.412 GHz to 2.472 GHz	5.725 GHz to 5.850 GHz
Operating Channels:	802.11b/g: ETSI: 13; North America: 11; TELEC (Japan): 13	802.11a: ETSI: Country Specific; North America: 12 UNII I, II, III (approval for 5.4-5.7 GHz pending); TELEC (Japan): 8
Nominal Transmitter Power:	802.11b/g: 17.5 dBm +/- 1 dBm @ 1, 2, 5.5, 11 Mbps 17.0 dBm +/- 1 dBm @ 6 and 9 Mbps 16.5 dBm +/- 1 dBm @ 12 and 18 Mbps 14.0 dBm +/- 1 dBm @ 24 and 36 Mbps 12.5 dBm +/- 1 dBm @ 48 and 54 Mbps 802.11a: 17.5 dBm +/- 1 dBm @ 6 and 9 Mbps 16.0 dBm +/- 1 dBm @ 12 and 19 Mbps 14.0 dBm +/- 1 dBm @ 24 and 36 Mbps 12.0 dBm +/- 1 dBm @ 48 and 54 Mbps	
Receiver Sensitivity:	802.11b: 11 Mbps @ -84dBm; 5.5 Mbps @ -87dBm; 2 Mbps @ -88dBm; 1 Mbps @ -90dBm 802.11g: 54 Mbps @-68 dBm; 48 Mbps @ -70 dBm; 36 Mbps @ -75 dBm; 24 Mbps @-79 dBm 18 Mbps @ -81 dBm; 12 Mbps @-85 dBm; 9 Mbps @ -87 dBm; 6 Mbps @-88 dBm 802.11a: 54 Mbps @-68 dBm; 48 Mbps @ -70 dBm; 36 Mbps @ -75 dBm; 24 Mbps @-79 dBm 18 Mbps @ -81 dBm; 12 Mbps @-85 dBm; 9 Mbps @ -87 dBm; 6 Mbps @-88 dBm	

**WS-2000-1C-ABG-WW (1-Cell Package includes one WS-2000-SME-WW with one AP 300)*

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User Environment	AP 300 (internal antenna)	AP 300 (external antenna)
Operating Temperature:	32°F to 104°F/0°C to 40°C	-4°F to 122°F/-20°C to 50°C
Storage Temperature:	-40°F to 158°F/-40°C to 70°C	
Operating Humidity:	5%-95% (non-condensing)	
Operating Altitude:	8000 ft./2438 m	
Storage Altitude:	15000 ft./4572 m	
Electrostatic Discharge:	+/- 15 kV (Air), +/- 8 kV (Contact)	
Power Specifications		
Operating Voltage:	48 VDC @ 7W (Typical), 36 VDC to 57 VDC (Range)	
Operating Current:	145mA @ 48VDC (typical)	
Integrated Power Over Ethernet Support:	Standards-based IEEE 802.3af	
Antenna Specifications		
Type:	Integrated 2.4 GHz and 5.2 GHz Dual-Antenna Elements with diversity	Two RSMA and two RBNC connectors for external antennas (not included)
Band:	2.4 GHz to 2.5 GHz; 4.9 GHz to 5.850 GHz (actual operating frequencies depend on regulatory rules and certification agency)	
VSWR:	2.4 GHz: Less than 2:1 5.2 GHz: Less than 1.5:1	(antenna-specific)
Gain:	2.4 GHz: 0.0 dBi 5.2 GHz: 3.0 dBi	(antenna-specific)
Regulatory		
Product Safety Certifications:	UL 60950, cUL, EU EN 60950, TUV and UL 2043 (external Antenna)	
Radio Approvals:	FCC (USA), Industry Canada, CE (Europe) and TELEC (Japan)	

About Symbol Technologies

Symbol Technologies, Inc., The Enterprise Mobility Company™, delivers solutions that capture, move and manage information in real time, from the point of activity to the point of decision. Symbol solutions integrate advanced data capture technology, ruggedized mobile computers, wireless infrastructure, enabling software and high-ROI applications from our business partners and Symbol Enterprise Mobility Services. Symbol enterprise mobility solutions increase business productivity and velocity, reduce costs and realize competitive advantage for the world's leading retailers, transportation and logistics companies and manufacturers as well as government agencies and providers of healthcare, hospitality and security. More information is available at **www.symbol.com**

Symbol Enterprise Mobility Services

Symbol Enterprise Mobility Services provide comprehensive support and technical expertise for designing, deploying and maintaining successful mobility solutions. Our diverse service offerings enhance your business operations, so you receive the highest value and uptime across the entire lifecycle of your mobility solution.

Our **Mobility Services** give you access to Symbol's expertise in designing and deploying global mobility solutions. Our extensive knowledge base and experience of successful mobility implementations enables early adopters to gain competitive advantage. **SymbolCertified Professional Services** providers apply best practices that integrate established mobility systems, devices and applications into your business environment. As a seamless extension of Symbol, certified partners provide services ranging from design and implementation to training and project management to help ensure a smooth transition from implementation to operations. Symbol **Customer Services** deliver the experience, expertise and global repair capabilities for maximum uptime of your business operations. A flexible and comprehensive portfolio of support services ensures that your mobility infrastructure, systems and solutions operate at peak performance.

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