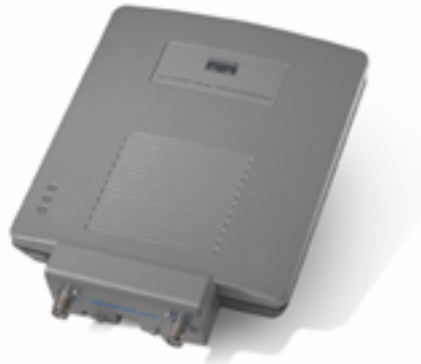


## CISCO AIRONET 1230AG SERIES 802.11A/B/G ACCESS POINT



### PRODUCT OVERVIEW

Cisco® Aironet® 1230AG Series IEEE 802.11a/b/g access points deliver the versatility, high capacity, security, and enterprise-class features demanded by WLAN customers. It is designed specifically for challenging RF environments like factories, warehouses, and large retail establishments that require the antenna versatility associated with connectorized antennas, a rugged metal enclosure, and a broad operating temperature range.

Orderable supporting either Cisco IOS® Software, or the Lightweight Access Point Protocol (LWAPP), the Cisco Aironet 1230AG Series uses radio and network management features to extend the security, scalability, reliability, ease of deployment, and manageability available in wired networks to the WLAN. In addition, when running Cisco IOS Software the Cisco Aironet 1230AG Series supports link role flexibility which provides both access point and bridge functionality through configuration of each radio as an access point, repeater, root bridge, non-root bridge, or workgroup bridge. This configuration flexibility enables the Cisco Aironet 1230AG Series to address applications ranging from basic wireless LAN coverage to wireless LAN coverage with wireless backhaul to more traditional bridging applications.

With simultaneous support of 802.11a and 802.11g standards, the Cisco Aironet 1230AG Series delivers up to 108 Mbps of data rate in the 5 GHz and 2.4 GHz bands. Fifteen nonoverlapping channels are available today, which will increase up to 22 nonoverlapping channels with a future firmware release (and pending country specific regulatory approvals), simplifying deployments for high capacity wireless networks. For investment protection, the Cisco Aironet 1230AG Series fully supports the capabilities of today's dual-band WLAN clients while providing backward compatibility with legacy 802.11b clients.

The Cisco Aironet 1230AG Series is part of the award-winning Cisco Wireless Security Suite, which supports 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA, and numerous Extensible Authentication Protocol (EAP) types. WPA and WPA2 are the Wi-Fi Alliance certifications for interoperable, standards-based WLAN security. These certifications support IEEE 802.1X for user-based authentication, Temporal Key Integrity Protocol (TKIP) for WPA encryption, and Advanced Encryption Standard (AES) for WPA2 encryption. These certifications help to ensure interoperability between Wi-Fi-certified WLAN devices from different manufacturers.

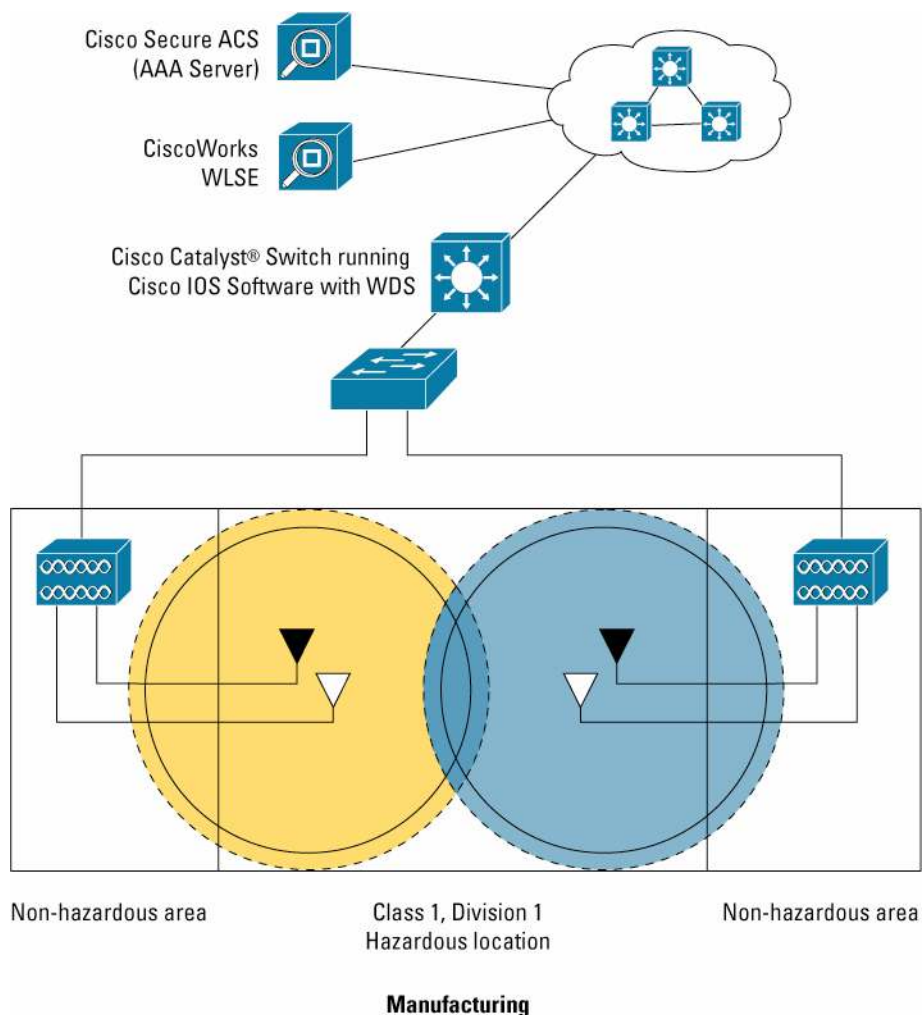
The Cisco Aironet 1230AG Series hardware-accelerated AES encryption supports enterprise-class, government-grade secure encryption over the WLAN without compromising performance. IEEE 802.1X authentication helps to ensure that only authorized users are allowed on the network.

Backward compatibility and support for WPA client devices running TKIP, the RC4 encryption algorithm is also supported by the Cisco Aironet 1230AG Series.

## APPLICATIONS

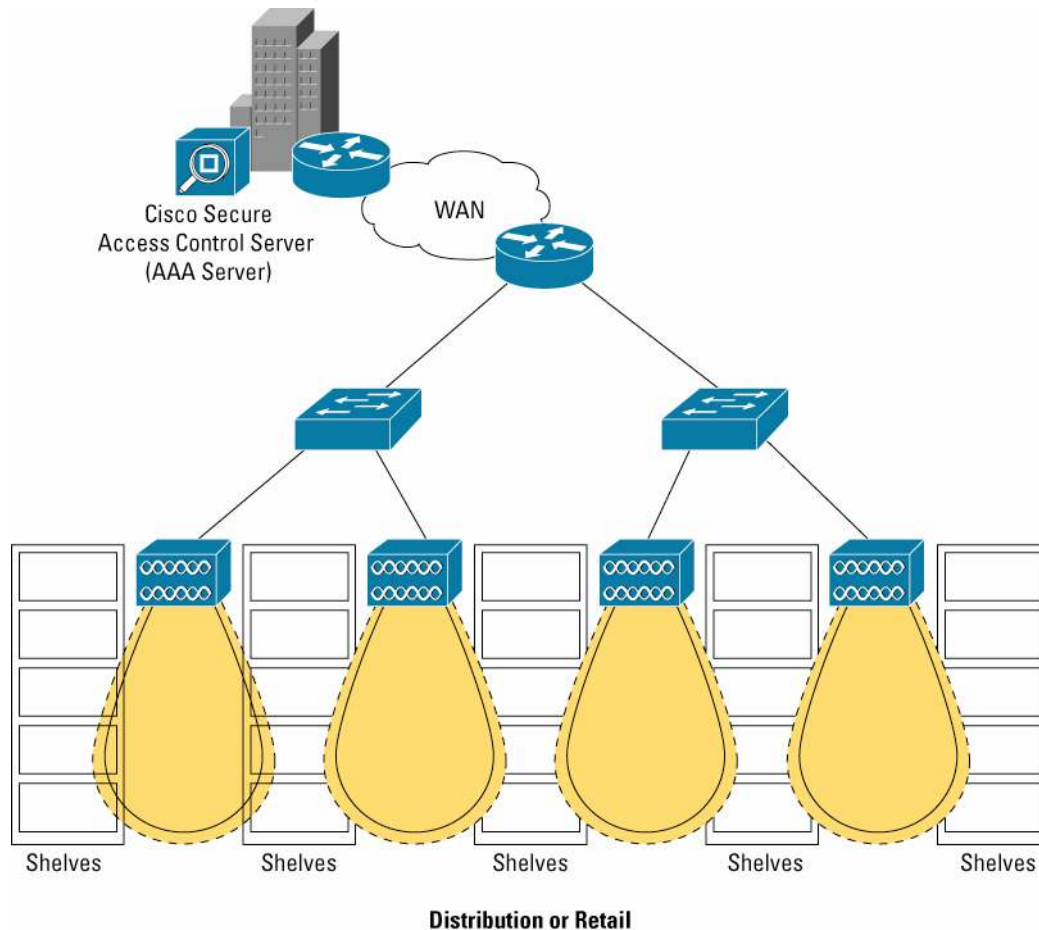
Designed for rugged environments and installations that require antenna versatility, the Cisco Aironet 1230AG Series features antenna connectors for extended range or coverage versatility and more flexible installation options. Manufacturing applications, for example, can place WLANs in hazardous locations and remotely place antennas in the hazardous locations while securing the Cisco Aironet 1230AG Series access points within the wiring closet (Figure 1). The two remain connected via low-loss antenna cables.

**Figure 1.** Cisco Aironet 1230AG Series Access Points in Manufacturing Environments



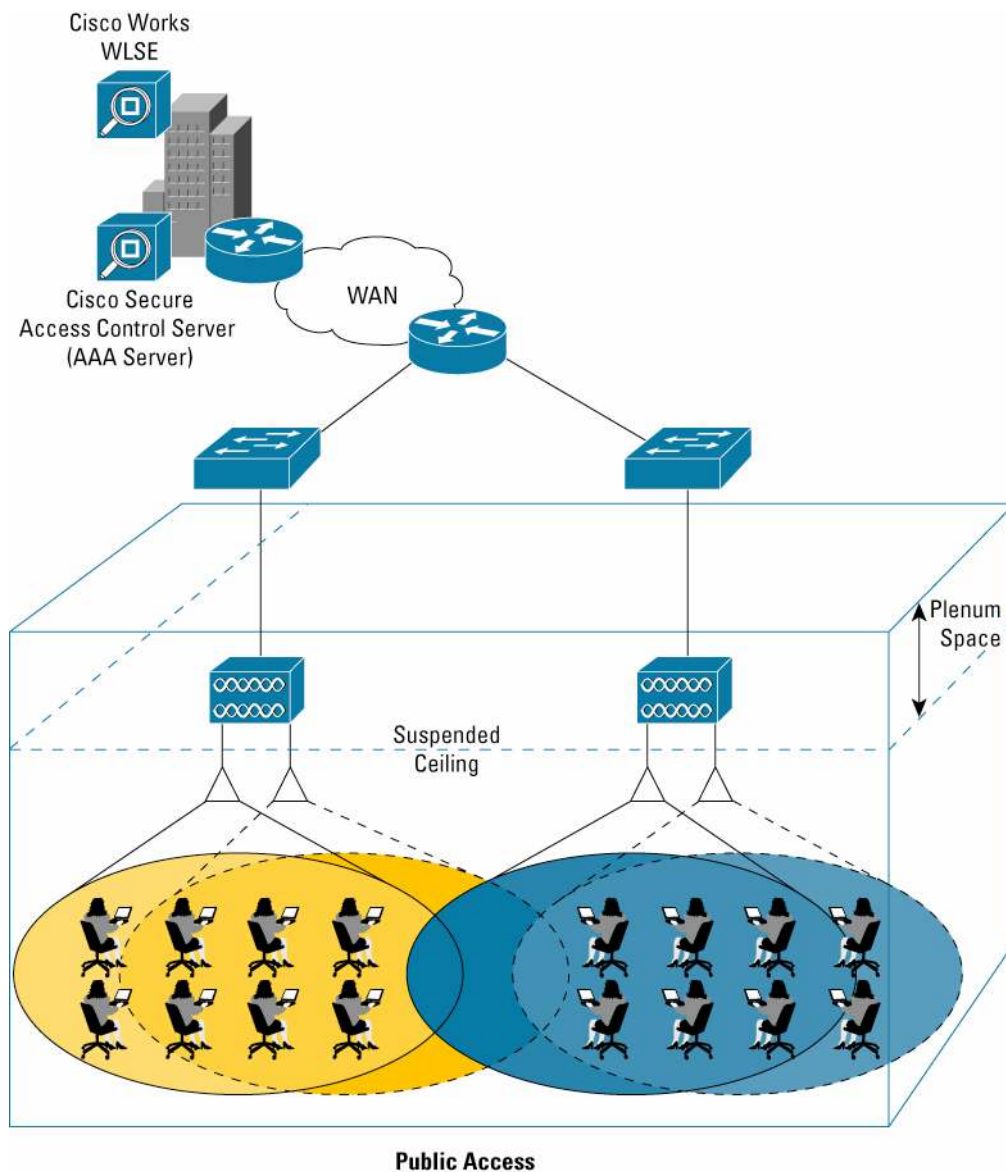
The metal housing and industrial-grade components of the Cisco Aironet 1230AG Series provide the ruggedness and extended operating temperature range required in factories, warehouses, “big box” retail environments and similar facilities (Figure 2). High transmit power, receive sensitivity and delay spread for both 2.4 GHz and 5 GHz radios provide the long range and large coverage area consistent with these applications.

**Figure 2.** Cisco Aironet 1230AG Series Access Points Using Directional Antennas



Access points may be placed above ceilings or suspended ceilings, allowing antennas to be discreetly placed below drop ceilings. The UL 2043 rating of the Cisco Aironet 1230AG Series allows the access points to be placed above ceilings in plenum areas regulated by municipal fire codes. Public access applications such as large hotel buildings may also present a challenging RF environment; the antenna versatility of the Cisco Aironet 1230AG Series, together with industry-leading range and coverage, provides reliable performance for the most demanding environments (Figure 3).

**Figure 3.** Cisco Aironet 1230AG Series Access Points in Public Access Areas



## FEATURES AND BENEFITS

Table 1 lists the features and benefits of Cisco Aironet 1230AG Series access points.

**Table 1.** Features and Benefits of Cisco Aironet 1230AG Series Access Points

Feature	Benefit
<b>Cisco Unified Wireless Network</b>	Extends the security, scalability, reliability, ease of deployment, and manageability available in wired networks to the wireless infrastructure.
<b>Dual 802.11a and 802.11g Radios</b>	Provides up to 108 Mbps of capacity in a single device for industry-leading capacity and backward compatibility with legacy 802.11b clients.
<b>Dual RP-TNC Antenna Connectors for both 2.4 GHz and 5 GHz Radios</b>	Antenna connectors support a variety of Cisco 2.4 GHz and 5 GHz antennas providing range and coverage versatility.
<b>Cisco IOS Software</b>	Delivers enterprise-class features for connectivity, scalability, and high availability.
<b>Lightweight Access Point Protocol (LWAPP)</b>	Automatically detects the best available Cisco wireless LAN controller to download appropriate policies and configuration information with no hands-on intervention.
<b>Link Role Flexibility (When Running Cisco IOS Software)</b>	<ul style="list-style-type: none"><li>• Provides both access point and bridge functions through configuration of each radio as an access point, repeater, root bridge, non root bridge, or workgroup bridge.</li><li>• Enables deployment flexibility including basic wireless LAN coverage, wireless LAN coverage with wireless backhaul, and more traditional bridging applications.</li></ul>
<b>Security Architecture Client Authentication and Encryption</b>	<p>Cisco Wireless Security Suite supporting WPA and WPA2, including:</p> <p><b>Authentication</b></p> <ul style="list-style-type: none"><li>• 802.1X support, including Cisco LEAP, EAP-Flexible Authentication via Secure Tunneling (EAP-FAST), Protected EAP- Generic Token Card (PEAP-GTC), PEAP-Microsoft Challenge Authentication Protocol Version 2 (PEAP-MSCHAPv2), EAP-Transport Layer Security (EAP-TLS), EAP-Tunneled TLS (EAP-TTLS), and EAP-Subscriber Identity Module (EAP-SIM) to yield mutual authentication and dynamic, per-user, per-session encryption keys (WPA and WPA2)</li><li>• MAC address and standard 802.11 authentication mechanisms</li></ul> <p><b>Encryption</b></p> <ul style="list-style-type: none"><li>• AES-CCMP encryption (WPA2)</li><li>• TKIP encryption enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation via Cisco TKIP or WPA TKIP</li><li>• Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits</li></ul>
<b>Currently Supports 15 Non-Overlapping Channels; Will Support Up to 22 Channels with a Future Firmware Release</b>	Lower potential interference with neighboring access points simplifies deployment. Fewer transmission errors deliver greater throughput.
<b>Rugged Metal Housing</b>	Cast aluminum case and rugged features support deployment in factories, warehouses, the outdoors (in a NEMA enclosure), and other industrial environments.

Feature	Benefit
<b>UL 2043 Plenum Rating and Extended Operating Temperature</b>	Supports installation in environmental air spaces such as areas above suspended ceilings.
<b>Multipurpose and Lockable Mounting Bracket</b>	Provides greater flexibility in installation options for site specific options, as well as theft deterrence.
<b>Both Local and Inline Power Support</b>	Power can be supplied using the Ethernet cable, eliminating the need for costly electrical power line runs to remotely installed access points. The access points can be powered by Cisco inline power switches, single port power injectors, or local power.
<b>Hardware-Assisted AES Encryption</b>	Provides high security without performance degradation.
<b>IEEE 802.11i-Compliant; WPA2-Certified and WPA-Certified</b>	Helps to ensure interoperable security with wireless LAN client devices from other manufacturers.

## SUMMARY/CONCLUSION

Cisco Aironet 1230AG Series access points feature antenna connectors for greater range or coverage versatility using a broad selection of available Cisco antennas, as well as a rugged metal housing for operation over extended temperature ranges typical of industrial environments. Dual 802.11a and 802.11g radios deliver a combined capacity of 108 Mbps, meeting the performance requirements of the most demanding applications, while hardware-assisted AES encryption provides uncompromised support for interoperable IEEE 802.11i and WPA2 security.

## PRODUCT SPECIFICATIONS

Table 2 lists the product specifications for Cisco Aironet 1230AG access points.

**Table 2.** Product Specifications for Cisco Aironet 1230AG Access Points

Item	Specification
<b>Part Number</b>	<ul style="list-style-type: none"> <li>• AIR-AP1232AG-x-K9 (Cisco IOS Software)</li> <li>• AIR-LAP1232AG-x-K9 (LWAPP)</li> </ul> <p>NOTE: The Cisco Aironet 1230AG Series may be ordered with Cisco IOS Software to operate as an autonomous AP or with Lightweight Access Point Protocol (LWAPP). When the 1230AG is operating as a lightweight AP a WLAN controller is required.</p> <p>Regulatory Domains: (x = Regulatory Domain)</p> <ul style="list-style-type: none"> <li>• A = FCC</li> <li>• C = China</li> <li>• E = ETSI</li> <li>• I = Israel</li> <li>• K = Korea</li> <li>• J = TELEC (Japan) for AP1232AG only</li> <li>• N = North America (Excluding FCC)</li> <li>• P = Japan2</li> </ul>


Item	Specification
	<ul style="list-style-type: none"> <li>• S = Singapore</li> <li>• T = Taiwan</li> </ul> <p>Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country please, visit:  <a href="http://www.cisco.com/go/aironet/compliance">http://www.cisco.com/go/aironet/compliance</a></p> <p>Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.</p>
<b>Software</b>	Cisco IOS Software Release 12.3(4)JA or later LWAPP 3.1 or later
<b>Data Rates Supported</b>	<ul style="list-style-type: none"> <li>• 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps</li> <li>• 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps</li> </ul>
<b>Network Standard</b>	IEEE 802.11a, 802.11b, and 802.11g
<b>Uplink</b>	Autosensing 802.3 10/100BASE-T Ethernet
<b>Radio Module Form Factor</b>	<ul style="list-style-type: none"> <li>• 802.11a: CardBus (32-bit)</li> <li>• 802.11b or 802.11g: Mini-PCI (32-bit)</li> </ul>
<b>Frequency Band and Operating Channels</b>	<p><b>Americas (FCC)</b>  2.412 to 2.462 GHz; 11 channels  5.15 to 5.35, 5.725 to 5.825 GHz; 12 channels</p> <p><b>China</b>  2.412 to 2.472 GHz; 13 channels  5.725 to 5.825 GHz; 4 channels</p> <p><b>ETSI</b>  2.412 to 2.472 GHz; 13 channels  5.15 to 5.725 GHz; 19 channels</p> <p><b>Israel</b>  2.432 to 2.472 GHz; 9 channels  5.15 to 5.35 GHz, 8 channels</p> <p><b>Japan (TELEC)</b>  2.412 to 2.472 GHz; 13 channels Orthogonal Frequency Division Multiplexing (OFDM)  2.412 to 2.484 GHz; 14 channels Complementary Code Keying (CCK)  5.15 to 5.25 GHz; 4 channels</p> <p><b>Japan-P (TELEC 2 (Japan2) Cnfg)</b>  2.412 to 2.472 GHz; 13 channels Orthogonal Frequency Division Multiplexing</p> <p><b>Korea</b>  2.412 to 2.472 GHz; 13 channels</p>

Item	Specification		
	5.15 to 5.35, 5.46 to 5.72, 5.725 to 5.825, 19 channels <b>North America</b> 2.412 to 2.462 GHz; 11 channels 5.15 to 5.35, 5.725 to 5.825 GHz; 12 channels <b>Singapore</b> 2.412 to 2.472 GHz, 13 channels 5.15 to 5.25 GHz and 5.725 to 5.825 GHz, 8 channels <b>Taiwan</b> 2.412 to 2.462 GHz, 11 channels 5.25-5.35 GHz, 5.725 to 5.825, 7 channels (OFDM) 5.15 to 5.35 GHz, 8 channels		
<b>Nonoverlapping Channels</b>	<ul style="list-style-type: none"> <li>• 802.11a: Up to 19</li> <li>• 802.11b/g: 3</li> </ul>		
<b>Wireless Modulation</b>	<ul style="list-style-type: none"> <li>• 802.11a: OFDM</li> <li>• 802.11g: Direct sequence spread spectrum (DSSS); OFDM</li> </ul>		
<b>Receive Sensitivity (Typical)</b>	<b>802.11a:</b> 6 Mbps: -87 dBm 9 Mbps: -87 dBm 12 Mbps: -85 dBm 18 Mbps: -84 dBm 24 Mbps: -81 dBm 36 Mbps: -78 dBm 48 Mbps: -73 dBm 54 Mbps: -72 dBm	<b>802.11g:</b> 6 Mbps: -90 dBm 9 Mbps: -84 dBm 12 Mbps: -82 dBm 18 Mbps: -80 dBm 24 Mbps: -77 dBm 36 Mbps: -73 dBm 48 Mbps: -72 dBm 54 Mbps: -72 dBm	
<b>Available Transmit Power Settings</b> (Maximum power setting will vary by channel and according to individual country regulations)	<b>802.11a:</b> <i>OFDM:</i> 17 dBm (50 mW) 15 dBm (30 mW) 14 dBm (25 mW) 11 dBm (12 mW) 8 dBm (6 mW) 5 dBm (3 mW) 2 dBm (2 mW) -1 dBm (1 mW)	<b>802.11b:</b> <i>CCK:</i> 100 mW (20 dBm) 50 mW (17 dBm) 30 mW (15 dBm) 20 mW (13 dBm) 10 mW (10 dBm) 5 mW (7 dBm) 1 mW (0 dBm)	<b>802.11g:</b> <i>OFDM:</i> 30 mW (15 dBm) 20 mW (13 dBm) 10 mW (10 dBm) 5 mW (7 dBm) 1 mW (-1 dBm)



Item	Specification			
Range	Indoor:		Outdoor:	
	<b>802.11a:</b>	<b>802.11g:</b>	<b>802.11a:</b>	<b>802.11g:</b>
	90 ft (27 m) @ 54 Mbps 225 ft (69 m) @ 48 Mbps 300 ft (91 m) @ 36 Mbps 350 ft (107 m) @ 24 Mbps 400 ft (122 m) @ 18 Mbps 450 ft (137 m) @ 12 Mbps 475 ft (145 m) @ 9 Mbps 500 ft (152 m) @ 6 Mbps	90 ft (27 m) @ 54 Mbps 95 ft (29 m) @ 48 Mbps 100 ft (30 m) @ 36 Mbps 140 ft (43 m) @ 24 Mbps 180 ft (55 m) @ 18 Mbps 210 ft (64 m) @ 12 Mbps 220 ft (67 m) @ 11 Mbps 250 ft (76 m) @ 9 Mbps 300 ft (91 m) @ 6 Mbps 310 ft (94 m) @ 5.5 Mbps 350 ft (107 m) @ 2 Mbps 410 ft (125 m) @ 1 Mbps	170 ft (52 m) @ 54 Mbps 350 ft (107 m) @ 48 Mbps 550 ft (167 m) @ 36 Mbps 700 ft (213 m) @ 24 Mbps 800 ft (244 m) @ 18 Mbps 875 ft (267 m) @ 12 Mbps 925 ft (282 m) @ 9 Mbps 950 ft (290 m) @ 6 Mbps	110 ft (34 m) @ 54 Mbps 200 ft (61 m) @ 48 Mbps 225 ft (69 m) @ 36 Mbps 325 ft (99 m) @ 24 Mbps 400 ft (122 m) @ 18 Mbps 475 ft (145 m) @ 12 Mbps 490 ft (149 m) @ 11 Mbps 550 ft (168 m) @ 9 Mbps 650 ft (198 m) @ 6 Mbps 660 ft (201 m) @ 5.5 Mbps 690 ft (210 m) @ 2 Mbps 700 ft (213 m) @ 1 Mbps
Ranges and actual throughput vary based upon numerous environmental factors so individual performance may differ.				

Item	Specification
Compliance	<p><b>Standards</b></p> <p><b>Safety</b></p> <ul style="list-style-type: none"> <li>• UL 60950</li> <li>• CAN/CSA C22.2 No. 60950</li> <li>• IEC 60950</li> <li>• UL 2043</li> </ul> <p><b>Radio Approvals</b></p> <ul style="list-style-type: none"> <li>• FCC Part 15.247</li> <li>• RSS-210 (Canada)</li> <li>• EN 300.328, EN 301.893 (Europe)</li> <li>• ARIB-STD 33 (Japan)</li> <li>• ARIB-STD 66 (Japan)</li> <li>• ARIB-STD T71 (Japan)</li> <li>• AS/NZS 4771, 4268.2 (Australia and New Zealand)</li> </ul> <p><b>EMI and Susceptibility (Class B)</b></p> <ul style="list-style-type: none"> <li>• FCC Part 15.107 and 15.109</li> <li>• ICES-003 (Canada)</li> <li>• VCCI (Japan)</li> <li>• EN 301.489-1 and -17 (Europe)</li> <li>• AS/NZS 3548</li> </ul> <p><b>Security</b></p> <ul style="list-style-type: none"> <li>• 802.11i, WPA2, WPA</li> <li>• 802.1X</li> <li>• AES, TKIP</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>• IEEE 802.11g and IEEE 802.11a</li> <li>• FCC Bulletin OET-65C</li> <li>• RSS-102</li> </ul>
Antennas	<ul style="list-style-type: none"> <li>• 2.4 GHz radio Two RP-TNC connectors; 802.11g approved with: AIR-ANT1728, AIR-ANT1729, AIR-ANT2012, AIR-ANT2506, AIR-ANT3213, AIR-ANT3549, AIR-ANT4941, AIR-ANT5959, and AIR-ANT2410Y-R</li> <li>• 5 GHz radio Two RP-TNC connectors; 802.11a approved with: AIR-ANT5135D-R, AIR-ANT5145V-R, and AIR-ANT5160V-R</li> </ul>

Item	Specification
<b>Network Management</b>	BootP, Secure Shell (SSH) Protocol, Secure HTTP (HTTPS), Trivial File Transfer Protocol (TFTP), FTP, Telnet, console port, Simple Network Management Protocol (SNMP), MIB I and MIB II, CiscoWorks Resource Manager Essentials (RME), CiscoWorks Software Image Manager (SWIM), CiscoWorks Campus Manager, CiscoWorks CiscoView, and CiscoWorks WLSE
<b>LEDs</b>	Three indicators on the top panel report Ethernet activity and status, device operating status, and radio activity and status.
<b>Housing</b>	Die-cast aluminum
<b>Dimensions (H x W x D)</b>	1.660 x 6.562 x 7.232 in. (4.22 x 16.67 x 18.37 cm); add 0.517 in. (1.31 cm) to the height for mounting bracket
<b>Weight</b>	1.725lbs (0.783kg); add 0.4lbs (0.181kg) for mounting bracket
<b>Environmental</b>	-4 to 122°F (-20 to 50°C), 10 to 90 percent humidity (noncondensing)
<b>Memory and Processor</b>	<ul style="list-style-type: none"> <li>• IBM PowerPC405 (200 MHz)</li> <li>• 16 MB RAM; 8 MB Flash memory</li> </ul>
<b>Input Power Requirements</b>	<ul style="list-style-type: none"> <li>• 90 to 240 VAC ±10 percent (power supply)</li> <li>• 48 VDC ±10 percent</li> </ul>
<b>Power Draw</b>	13W maximum
<b>Warranty</b>	One year
<b>Wi-Fi Certification</b>	

## ORDERING INFORMATION

To place an order, visit the [Cisco Ordering Home Page](#).

Table 3 provides ordering information for Cisco Aironet 1230AG Series access points.

**Table 3.** Product Part Numbers for Cisco Aironet 1230AG Access Points

Part Number	Product Description
AIR-AP1232AG-A-K9	802.11a/g Modular IOS AP; RP-TNC; FCC Cnfg
AIR-AP1232AG-C-K9	802.11a/g Modular IOS AP; RP-TNC; China Cnfg
AIR-AP1232AG-E-K9	802.11a/g Modular IOS AP; RP-TNC; ETSI Cnfg
AIR-AP1232AG-I-K9	802.11a/g Modular IOS AP; RP-TNC; Israel Cnfg
AIR-AP1232AG-J-K9	802.11a/g Modular IOS AP; RP-TNC; Japan
AIR-AP1232AG-K-K9	802.11a/g Modular IOS AP; RP-TNC; Korea Cnfg
AIR-AP1232AG-N-K9	802.11a/g Modular IOS AP; RP-TNC; N. America Cnfg (not FCC)
AIR-AP1232AG-P-K9	802.11a/g Modular IOS AP; RP-TNC; Japan2 Cnfg
AIR-AP1232AG-S-K9	802.11a/g Modular IOS AP; RP-TNC; Singapore Cnfg
AIR-AP1232AG-T-K9	802.11a/g Modular IOS AP; RP-TNC; Taiwan Cnfg
AIR-LAP1232AG-A-K9	802.11a/g Modular LWAPP AP; RP-TNC; FCC Cnfg
AIR-LAP1232AG-C-K9	802.11a/g Modular LWAPP AP; RP-TNC; China Cnfg
AIR-LAP1232AG-E-K9	802.11a/g Modular LWAPP AP; RP-TNC; ETSI Cnfg
AIR-LAP1232AG-I-K9	802.11a/g Modular LWAPP AP; RP-TNC; Israel Cnfg
AIR-LAP1232AG-J-K9	802.11a/g Modular LWAPP AP; RP-TNC; Japan
AIR-LAP1232AG-K-K9	802.11a/g Modular LWAPP AP; RP-TNC; Korea Cnfg
AIR-LAP1232AG-N-K9	802.11a/g Modular LWAPP AP; RP-TNC; N. America Cnfg (not FCC)
AIR-LAP1232AG-P-K9	802.11a/g Modular LWAPP AP; RP-TNC; Japan2 Cnfg
AIR-LAP1232AG-S-K9	802.11a/g Modular LWAPP AP; RP-TNC; Singapore Cnfg
AIR-LAP1232AG-T-K9	802.11a/g Modular LWAPP AP; RP-TNC; Taiwan Cnfg

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## FOR MORE INFORMATION

For more information about Cisco 1230AG Series access points, contact your local account representative or visit: <http://www.cisco.com/go/aironet>

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For more information about the Cisco Unified Wireless Network, visit: <http://www.cisco.com/go/unifiedwireless>



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