



Smart Antenna Wi-Fi Access Point. The Perfect Choice for Easy 802.11ac Migration.

- **Dual-band 2.4GHz and 5GHz 802.11ac Wave 1 Wireless Access Point**
- **WAC6503D-S and WAC6502D-S Smart Antenna AP**
 - Smart Antenna design
 - More than 700 optimized antenna patterns provide breakthrough performance anywhere
 - Ideal for high-density and interference-laden indoor environments
- **WAC6502D-E External Antenna AP**
 - Antenna changeable design
 - Extended operating temperature for challenging environments
 - Ideal for rugged industrial environments such as warehouses and industrial production areas
- **WAC6553D-E Outdoor AP**
 - IP66-rated weather protection
 - Ideal for harsh outdoor environments
- **Advanced IEEE 802.11ac delivers up to 1.75 Gbps combined data rates**
- **Industry-leading receive sensitivity as low as -102 dBm**
- **APFlex™, DCS and tool-less bracket design streamline deployment**
- **ZyXEL One Network is supported**

In the Gigabit era in Wi-Fi connectivity, upgrading to the 802.11ac standard represents the next step in wireless evolution. Many enterprises looking to break the 1-Gbps Wi-Fi speed barrier face the challenge of replacing existing 802.11n access points. While 802.11n operates on both 2.4 GHz and 5 GHz frequency band, 802.11ac predominantly uses the 5 GHz band which by its nature traditionally reduces coverage when compared to 2.4 GHz. This led to costly and time consuming efforts for installers to ensure that sufficient APs were installed to give complete coverage.

ZyXEL Smart Antenna technology is a groundbreaking feature of the WAC6500 Series of wireless APs that solves the coverage problem by adaptively adjusting antenna patterns to fit a variety of wireless environments. The WAC6500 Series's industry-leading RF output power and sensitivity combine to offer greater coverage and performance over traditional networks, making ZyXEL's WAC6500 Series the ultimate one-to-one AP upgrade choice.

As well as ZyXEL Smart Antenna technology, the WAC6500 Series includes several other new features including the innovative APFlex™, tool-less mounting bracket, and many other software enhancements such as the ZyXEL One Network utilities, making the WAC6500 a complete product designed to streamline network installation and speed deployment for the best possible Wi-Fi experience.

Benefits

Breakthrough Smart Antenna technology for any environment

The WAC6500 Series of 802.11ac APs delivers industry leading performance, thanks in part to its innovative Smart Antenna design. Featuring more than 700 optimized antenna patterns, the ZyXEL Smart Antenna continuously calculates the ideal physical-layer path for each individual client. This feature not only offers the best possible signal by shaping to various patterns, but it also mitigates interference from other wireless clients. The WAC6500 Series's ultra-fast capabilities makes it perfect for delivering premium performance in interference-laden environments, such as conference rooms, airports, educational facilities and other high-density venues. And the series' enhanced adaptability further simplifies one-to-one AP replacement.

Best-in-class coverage and performance

In a Wi-Fi market crowded with 802.11ac APs, the WAC6500 Series stands out with regard to performance and coverage due to its unique RF design. The AP's three-stream hardware configuration provides power of up to 30 dBm while providing unequalled receive sensitivity as low as -102 dBm. The ZyXEL Smart Antenna doubles the WAC6500 Series' performance over conventional internal antennas, and performs three times (3x) better than legacy 802.11n APs.



ZyXEL **onenetwork**
Redefining network integration

WAC6500 Series
802.11ac Dual Radio Unified
Pro Access Point

Easy and instant deployment with APFlex™, DCS, and tool-less bracket design

ZyXEL APFlex™ eases installation by resolving the managed/standalone AP mode configuration, automatically integrating into the network environment with or without Dynamic Host Configuration Protocol (DHCP), eliminating the need for pre-installation preparation. Other helpful features include Dynamic Channel Selection (DCS), avoid the interference of co-channel and overlapping channel at initialization. In addition to software solutions, the WAC6500 Series' simplifies installation through creative design features. For example, the universal and tool-less bracket design allows for flexible ceiling track mounting without the need for special tools. From software to hardware, the WAC6500 Series makes setup and operation fast and simple.

Efficient and reliable Wi-Fi network

The WAC6500 Series ensures users get the best possible overall network performance by utilizing load balancing and client steering. Load balancing allows administrators to set limits on network traffic and the number of clients associated with each AP. Client steering monitors the capabilities of each wireless client and steers them to the less congested band and better signal AP. When it comes to deployments in challenging cabling locations, wireless mesh networks help extend Wi-Fi coverage. ZyXEL's proprietary ZyMesh creates reliable and resilient mesh links instantly. Yet the configuration is intuitive and centralized manageable on NXC controller. ZyMesh improves network reliability through true wireless connectivity with repeater APs selecting multiple routes to provide backup and failover for uninterrupted service. Together, these three technologies provide the WAC6500 Series with unbeatable efficiency and reliability.

ZyXEL One Network experience

Aiming for relieving our customers from repetitive operations of deploying and managing a network, ZyXEL One Network is designed to simplify the configuration, management, and troubleshooting, allowing our customers to focus on the business priorities. ZyXEL One Network presents an easy-to-use tool, ZyXEL One Network Utility (ZON Utility), to realize speed network setup. ZyXEL Smart Connect allows ZyXEL networking equipment to be aware and recognize each other and further facilitating the network maintenance via one-click remote functions such as factory reset or power cycling. ZyXEL One Network redefines the network integration across multiple networking products from switch to Wi-Fi AP and to Gateway.

Feature Highlights



ZyXEL Smart Antenna

ZyXEL Smart Antenna

ZyXEL Smart Antenna continuously applies a unique algorithm to compute the best physical-layer path for every individual client. It not only considers best signal, but also mitigates RF interference on over 700 optimized antenna patterns. The "switch-beam" technique mitigating RF interference runs at the physical layer, requiring no effort on the part of the end-user. The adaptive antenna design handles a variety of tough deployments, including high-capacity, high-performance and interference-laden environments like conference rooms, airports, classrooms and other crowded venues.



Tool-Less Installation

Tool-less Installation

WAC6500 Series features a creative mounting bracket design allowing installation of the AP in a variety of suspended ceiling tracks without the need for tools. The variable width of ceiling tracks makes our bracket universally adaptable to any building structure. Individual end-users can easily install the hardware, saving valuable time that could be better spent deploying additional APs.



ZyXEL AP Flex

ZyXEL APFlex™

ZyXEL APFlex™ includes Zero-touch AP mode changing and Automatic IP configuration. The Zero-touch AP mode setting detects if there is an existing ZyXEL controller and chooses stand-alone or managed mode. The Automatic IP configuration removes manual configuration, allowing the AP to set itself to fixed or dynamic IP address automatically. With these two intelligent features, IT administrators can skip the two critical settings that were handled manually on legacy products, shifting focus to more critical configuration tasks.



Wireless L2 Isolation

Wireless Layer-2 Isolation

The Layer-2 isolation protects private networks among client users, allowing users to access their shared devices without entering the rest of a private network for enhanced security. In addition, the intra-BSS blocking prevents different WiFi clients associated with the same AP from seeing each other and each others data.



WPA2 Enterprise

WPA2 Enterprise Certified

ZyXEL WAC6500 Series has been certified with industrial-strength WPA2 enterprise protection and supports a wide range of Extensible Authentication Protocol (EAP) types. It can be seamlessly integrated with deployed corporate RADIUS servers.



ZON Utility

ZyXEL One Network Utility

To streamline the management process, the WAC6500 Series comes with the ZyXEL One Network (ZON) utility, allowing administrators to assign IP addresses to multiple APs through just one platform. Administrators can avoid the hassle logging into each AP to change the default IP addresses before physical installation.



ZyXEL AP Configurator

ZyXEL AP Configurator

While deploying a number of APs, repetitive configuration of each unit takes time and effort. ZyXEL AP Configurator (ZAC) builds templates that allows users to copy one profile to several APs, allowing batch firmware upgrades and profile backups in three easy steps to significantly reduce configuration time and effort.



ZyXEL Wireless Optimizer

ZyXEL Wireless Optimizer

ZyXEL Wireless Optimizer (ZWO) provides a powerful tool for centralized management covering initial planning, adjustment during deployment and after-sale maintenance of an AP network. Architects can simulate AP deployment on a map displaying the number of APs needed. During deployment, ZWO will also map actual signal coverage for architects to adjust their AP locations or configurations. After-sale, network administrators can access key performance details from ZWO, including channel in use, transmit retry rate and frame error rate, as well as the devices on the environment map. ZWO's user-friendly presentation saves time and facilitates quick response to the network problems.

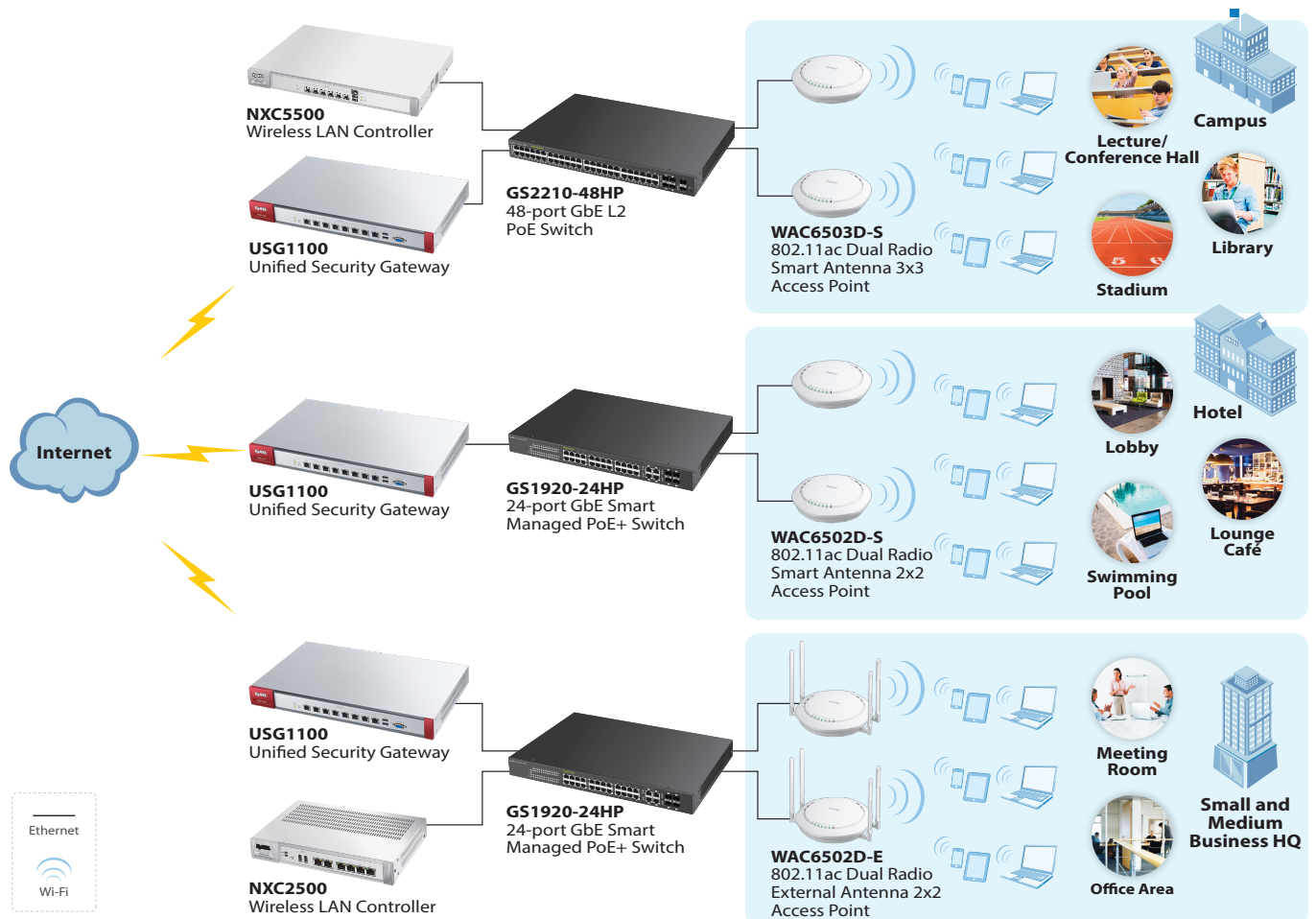


ZyMESH





ZyMesh

Wireless Mesh is an array of access points automatically forming dynamic wireless links. Built on this foundation of mesh networking, ZyMesh is ZyXEL's proprietary protocol for creating wireless mesh links for easy configuration, optimized management and enhanced reliability.

Application Diagram



Specifications

Model	WAC6503D-S	WAC6502D-S	WAC6502D-E	WAC6553D-E	
Product description	802.11ac Dual Radio Smart Antenna 3x3 Access Point 	802.11ac Dual Radio Smart Antenna 2x2 Access Point 	802.11ac Dual Radio External antenna 2x2 Access Point 	802.11ac Dual Radio External Antenna 3x3 Outdoor Access Point 	
Main Design					
Wireless frequency	2.4 and 5 GHz	2.4 and 5 GHz	2.4 and 5 GHz	2.4 and 5 GHz	
Radio	2	2	2	2	
RF Specifications					
Frequency band	2.4 GHz (IEEE 802.11 b/g/n) • USA (FCC): 2.412 to 2.462 GHz • Europe (ETSI): 2.412 to 2.472 GHz • Taiwan (TW): 2.412 to 2.462 GHz		5 GHz (IEEE 802.11 a/n/ac) • USA (FCC): 5.15 to 5.35 GHz; 5.725 to 5.850 GHz • European (ETSI): 5.15 to 5.35 GHz; 5.470 to 5.725 GHz • Taiwan (TW): 5.25 to 5.35 GHz; 5.725 to 5.850 GHz		
802.11n/ac premium features	<ul style="list-style-type: none"> • 3x3 Multiple-Input Multiple-Output (MIMO) with three spatial streams • Maximal Ratio Combining (MRC) • 20-, 40- and 80-MHz channels • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • Cyclic Delay Diversity (CSD) support • Maximum Likelihood Demodulation (MLD) support • Low Density Parity Check (LDPC) support 	<ul style="list-style-type: none"> • 2x2 Multiple-Input Multiple-Output (MIMO) with two spatial streams • Maximal Ratio Combining (MRC) • 20-, 40- and 80-MHz channels • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • Cyclic Delay Diversity (CSD) support • Maximum Likelihood Demodulation (MLD) support • Low Density Parity Check (LDPC) support 	<ul style="list-style-type: none"> • 3x3 Multiple-Input Multiple-Output (MIMO) with three spatial streams • Maximal Ratio Combining (MRC) • 20-, 40- and 80-MHz channels • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • Cyclic Delay diversity (CSD) support • Maximum Likelihood Demodulation (MLD) support • Low Density Parity Check (LDPC) support 		
Typical transmit output power (Conducted)	FCC 11b/g	29	28	28	29
	FCC 11g/n	29	28	28	29
	FCC 11a	30	28	28	29
	FCC 11n/a (ac)	30	28	28	29
	EU 11b/g	15	14	14	15
	EU 11g/n	15	14	14	15
	EU 11a	23	22	22	23
EU 11n/a (ac)	23	22	22	23	
Number of antenna	6 embedded smart antenna	4 embedded smart antenna	4 external	6 N-type connectors*	
Antenna gain	4 dBi @2.4 GHz 6 dBi @5 GHz	4 dBi @2.4 GHz 6 dBi @5 GHz	5 dBi @2.4 GHz 7 dBi @5 GHz	-	
Support data rate	<ul style="list-style-type: none"> • 802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps • 802.11b: 1, 2, 5.5 and 11 Mbps • 802.11n: up to 450 Mbps in MCS23 (40 MHz) • 802.11ac: up to 1300 Mbps in MCS9 (80 MHz) 	<ul style="list-style-type: none"> • 802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps • 802.11b: 1, 2, 5.5 and 11 Mbps • 802.11n: up to 300 Mbps in MCS15 (40 MHz) • 802.11ac: up to 866 Mbps in MCS9 (80 MHz) 	<ul style="list-style-type: none"> • 802.11a/g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps • 802.11b: 1, 2, 5.5 and 11 Mbps • 802.11n: up to 450 Mbps in MCS23 (40 MHz) • 802.11ac: up to 1300 Mbps in MCS9 (80 MHz) 		
Receive sensitivity	Min. Rx sensitivity up to -102 dBm	Min. Rx sensitivity up to -100 dBm	Min. Rx sensitivity up to -100 dBm	Min. Rx sensitivity up to -102 dBm	
Interfaces					
Number of 10/100/1000M LAN	2	2	2	1	
Console port	RJ-45 serial	RJ-45 serial	RJ-45 serial	RJ-45 serial	
PoE	Yes	Yes	Yes	Yes	
PoE power draw	17.04 W	15.12 W	15.12 W	25 W	

* The antenna is not embedded and external antennas are separately sold.

Model	WAC6503D-S	WAC6502D-S	WAC6502D-E	WAC6553D-E
WLAN Features				
WLAN maximum throughput	Up to 900 Mbps	Up to 600 Mbps	Up to 600 Mbps	Up to 900 Mbps
Mesh AP (By license)*1	Yes*1	Yes*1	Yes*1	Yes*1
Mesh AP for multiple SSID with VLAN (through tunnel mode)*1	Yes*1	Yes*1	Yes*1	Yes*1
Fast roaming	Pre-authentication and PMK caching			
Wireless Security				
WEP	Yes	Yes	Yes	Yes
WPA/WPA2-PSK	Yes	Yes	Yes	Yes
WPA/WPA2-Enterprise	Yes	Yes	Yes	Yes
WMM (Wi-Fi certified)	Yes	Yes	Yes	Yes
EAP types	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST, EAP-AKA and EAP-SIM	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST, EAP-AKA and EAP-SIM	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST, EAP-AKA and EAP-SIM	EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST, EAP-AKA and EAP-SIM
IEEE 802.1X	Yes	Yes	Yes	Yes
Number of SSID	16	16	16	16
Web authentication*1	Yes	Yes	Yes	Yes
MAC filtering	Yes	Yes	Yes	Yes
Layer-2 isolation	Yes	Yes	Yes	Yes
RADIUS authentication	Yes	Yes	Yes	Yes
Microsoft AD authentication*1	Yes	Yes	Yes	Yes
LDAP authentication*1	Yes	Yes	Yes	Yes
MAC authentication*1	Yes	Yes	Yes	Yes
Rogue AP detection*1	Yes	Yes	Yes	Yes
Rogue AP containment*1	Yes	Yes	Yes	Yes
Network				
IPv6 host	Yes	Yes	Yes	Yes
VLANs	Yes	Yes	Yes	Yes
DHCP client	Yes	Yes	Yes	Yes
QoS (PG)				
WMM	Yes	Yes	Yes	Yes
WMM power save	Yes	Yes	Yes	Yes
DiffServ marking	Yes	Yes	Yes	Yes
Management				
ZON utility	<ul style="list-style-type: none"> • Discovery of ZyXEL switches, APs and gateways • Centralized and batch configurations <ul style="list-style-type: none"> • IP configuration • Device locating • Password configuration • IP renew • Web GUI access • One-click quick association with ZyXEL AP Configurator (ZAC) • Device reboot • Firmware upgrade 			
Smart connect	<ul style="list-style-type: none"> • Neighbor device discovery • One-click remote management access to the neighboring ZyXEL devices 			
ZyXEL AP configurator	<ul style="list-style-type: none"> • Batch AP configuration • Batch AP firmware upgrade • Batch AP profile backup 			
ZyXEL wireless optimizer	<ul style="list-style-type: none"> • Wi-Fi AP Planning • Wi-Fi coverage detection • Wireless health management 			
Standalone AP mode	Yes	Yes	Yes	Yes
Managed AP mode	Yes	Yes	Yes	Yes
CLI	Yes	Yes	Yes	Yes
Web UI	Yes	Yes	Yes	Yes
SNMP	v1/2c/3	v1/2c/3	v1/2c/3	v1/2c/3
Others				
Plenum rating	Yes	Yes	Yes	Yes
Kensington lock support	Yes	Yes	Yes	-
Input power	DC input: 12 VDC 2 A; PoE: 802.3at compliant (Power adapter is sold separately)			PoE: 802.3at compliant
MTBF (hr)	1,202,489	1,407,374	1,427,755	562,413

*1: Features supported when working with ZyXEL NXC controller series (ZyMesh feature on WAC6500 Series is available from FW release 4.21 or above.)

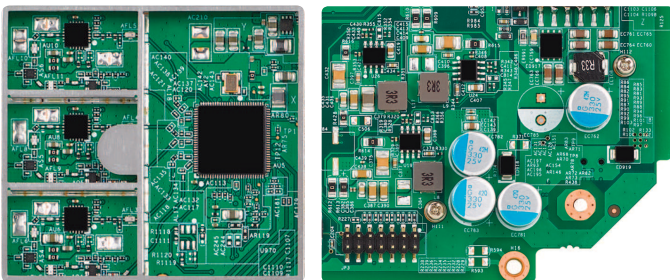
Model	WAC6503D-S	WAC6502D-S	WAC6502D-E	WAC6553D-E	
Standard Compliance					
Ethernet	<ul style="list-style-type: none"> • IEEE 802.3 • IEEE 802.3u • IEEE 802.11ab • IEEE 802.3au • IEEE 802.3az • IEEE 802.3at 	<ul style="list-style-type: none"> • IEEE 802.3 • IEEE 802.3u • IEEE 802.11ab • IEEE 802.3au • IEEE 802.3az • IEEE 802.3at 	<ul style="list-style-type: none"> • IEEE 802.3 • IEEE 802.3u • IEEE 802.11ab • IEEE 802.3au • IEEE 802.3az • IEEE 802.3at 	<ul style="list-style-type: none"> • IEEE 802.3 • IEEE 802.3u • IEEE 802.11ab • IEEE 802.3au • IEEE 802.3az • IEEE 802.3at 	
PoE	IEEE 802.3at ¹	IEEE 802.3at ¹	IEEE 802.3at ¹	IEEE 802.3at	
WLAN	<ul style="list-style-type: none"> • 802.11b: DBPSK, DQPSK, CCK • 802.11a: BPSK, QPSK, 16-QAM, 64-QAM • 802.11ac: BPSK, QPSK, 64-QAM, 256-QAM 		<ul style="list-style-type: none"> • 802.11g: BPSK, QPSK, 16-QAM, 64-QAM • 802.11n: BPSK, QPSK, 16-QAM, 64-QAM 		
Certifications					
Radio	FCC Part 15C, FCC Part 15E, ETSI EN 300 328, EN 301 893, LP0002				
EMC	FCC Part 15B, EN 301 489-1, EN 301 489-17, EN55022, EN55024, EN61000-3-2/-3, EN60601-1-2, BSMI CNS13438				
Safety	EN 60950-1, IEC 60950-1, BSMI CNS14336-1				
Physical Specifications					
Item	Dimensions (WxDxH)(mm/in.)	236 x 227 x 62/ 9.28 x 8.95 x 2.43	236 x 227 x 62/ 9.28 x 8.95 x 2.43	236 x 227 x 62/ 9.28 x 8.95 x 2.43	255 x 256 x 62/ 10.04 x 10.08 x 2.44
	Weight (g/lb.)	982/2.17	961/2.12	841/1.86	1708/3.77
Packing	Dimensions (WxDxH)(mm/in.)	308 x 323 x 127/ 12.13 x 12.72 x 5.00	308 x 323 x 127/ 12.13 x 12.72 x 5.00	308 x 323 x 127/ 12.13 x 12.72 x 5.00	393 x 158 x 430/ 15.47 x 6.22 x 16.93
	Weight (g/lb.)	1743/3.85	1722/3.81	1699/3.75	3904/8.63
Included accessories	<ul style="list-style-type: none"> • Ceiling mount plate • Mounting screws 	<ul style="list-style-type: none"> • Ceiling mount plate • Mounting screws 	<ul style="list-style-type: none"> • External antenna • Ceiling mount plate • Mounting screws 	<ul style="list-style-type: none"> • Pole/wall mounting kits • PoE injector • Power cord 	
Environmental Specifications					
Weather Protection	-	-	-	IP66 (Embedded heater for harsh weather)	
Operating	Temperature	0°C to 50°C/32°F to 122°F	0°C to 50°C/32°F to 122°F	-20°C to 60°C/-4°F to 140°F	-40°C to 60°C/-40°F to 140°F
	Humidity	10% to 90% (non-condensing)	10% to 90% (non-condensing)	10% to 95% (non-condensing)	10% to 95% (non-condensing)
Storage	Temperature	-40°C to 70°C/ -40°F to 158°F	-40°C to 70°C/ -40°F to 158°F	-40°C to 70°C/ -40°F to 158°F	-40°C to 70°C/ -40°F to 158°F
	Humidity	10% to 90% (non-condensing)	10% to 90% (non-condensing)	10% to 95% (non-condensing)	10% to 95% (non-condensing)

*1: Compatible with 802.3af mode with restricted function: 1x3 MIMO or 1x2 MIMO with 1 spatial stream.

Hardware & Smart Antenna

Robust, Reliable Hardware

- Ordered shielding frames prevent electromagnetic interference, while covers manage heat through thermal pads to mitigate overheating.
- Industry-leading durability from the beginning of design process through manufacturing with the highest-quality components ensures product reliability.

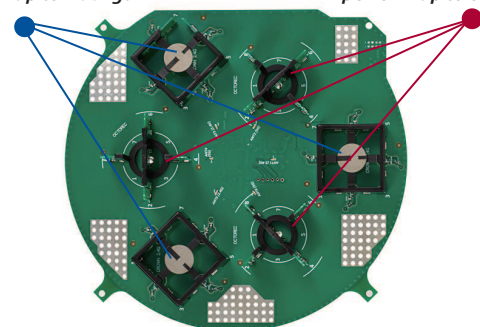


ZyXEL Smart Antenna

- Over 700 optimized antenna patterns create the best path for clients at a range of angles.
- WAC6500 Series APs deliver true ultra-fast wireless performance by eliminating the need for beam-forming through individual wireless client support.

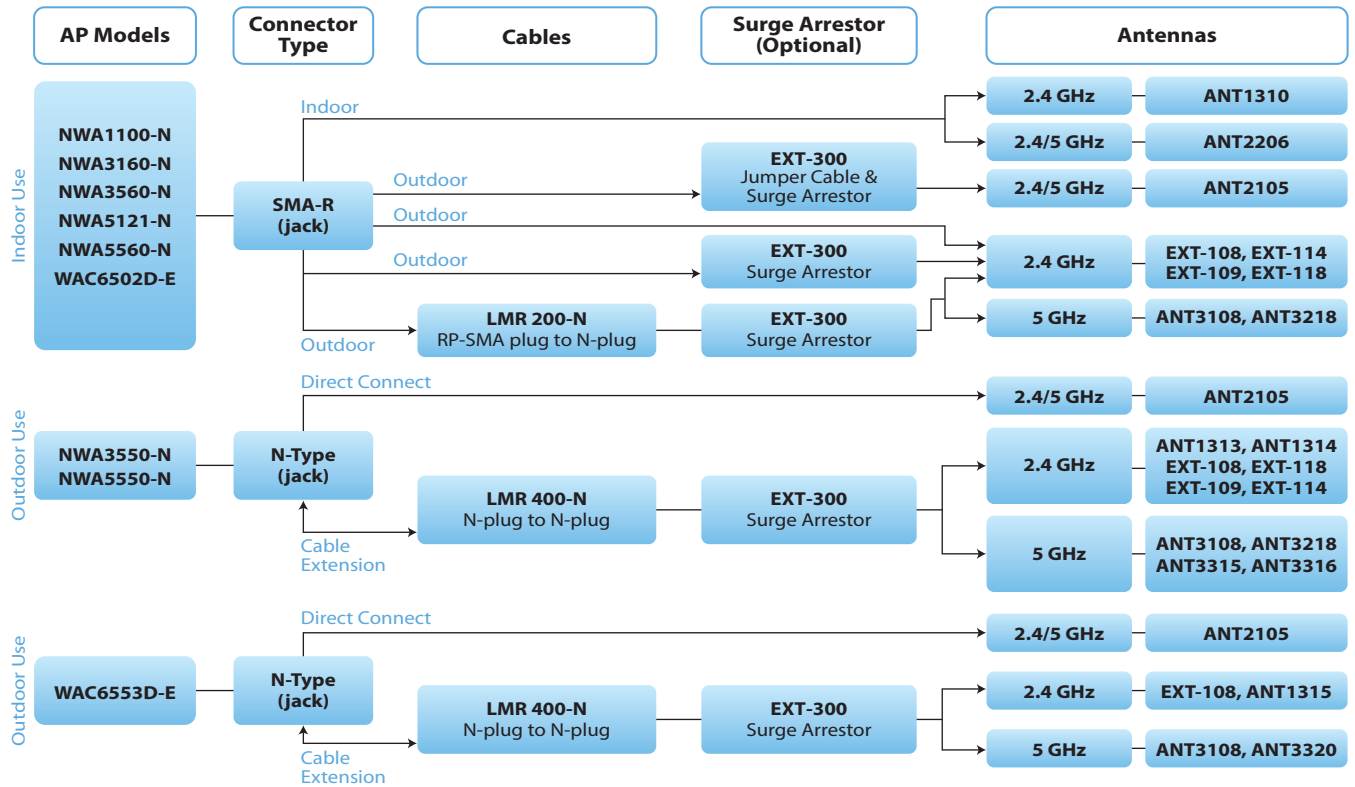
3x3: 3 antennas for 2.4 GHz
perform up to 4 dBi gain

3x3: 3 antennas for 5 GHz
perform up to 6 dBi gain



Optional Accessories

Antenna & Cable Compatibility



Power Module

Part Number	Description
ACCESSORY-ZZ0101F	Universal power adapter (12 V/2 A)



For more product information, visit us on the web at www.ZyXEL.com



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