ZYXEL
N E T W O R K S

WAX510D
802.11ax (WiFi 6) Dual-Radio Unified Pro Access Point

The WAX510D is truly the next generation of wireless (WiFi 6) AP, especially for businesses looking to strike the right balance between performance and budget. Its built-in 2nd Generation WiFi 6 (Qualcomm 802.11ax 2.0) chipset allows the access point to take advantage of the full range of WiFi 6 technologies including uplink OFDMA and MU-MIMO, which can't be found in the earlier releases of 802.11ax. The WAX510D boasts an impressive Quad-Core processor with 2 network accumulators to guarantee that a smooth and consistently fast service is provided to each client at all times. Also, it uses the second generation transmit beamforming technology incorporating Low End Sensitivity Improvements and Time Domain Channel Smoothing allowing data rates to increase for not only MU-MIMO clients, but for all existing ones as well.

The WAX510D is not only efficient at delivering impressive high speeds with smooth and consistent delivery to wireless clients, but also it's efficient on power. The WAX510D can deliver its impressive performance while keeping the consumption of PoE within the PoE+ standard, so that you can enjoy the latest WiFi 6 technology offering without the need to invest in upgrading your traditional switching architecture.

The WAX510D with NebulaFlex Pro offers the full flexibility for users to switch among standalone, controller-managed and cloud-managed modes. In addition, it comes with a 1-year bundled Nebula Professional Pack license[*1] that eliminates immediate licensing cost when migrating to full-featured cloud management.

AX 802.11 — Dual-radio (dual 2x2 MIMO) 802.11ax AP provides maximum data rate of 1775 Mbps

OFDMA is arguably the best innovation of WiFi, delivering the highest performance and low latency for all scenarios

Dual-optimized antenna provides wall-/ceiling-mounting modes to fit in your deployment

NebulaFlex Pro allows users to switch among standalone, on-premises controller managed or intuitive Nebula cloud managed modes as needed

Advanced Cellular Coexistence minimizes interferences from 4G/5G cellular networks

Next generation beamforming technology delivers maximum coverage

nebula

Zyxel **one** network
Redefining network integration

Benefits

Bringing next generation WiFi within reach

Zyxel's new WAX510D is a true WiFi 6 access point that delivers faster performance and massive increased-capacity, which along with unique Zyxel dual optimized antenna technology, make the user experience even better. Apart from running at 25% faster speed, the WAX510D can also accommodate more client devices without any fall-off in speed, allowing an easy scale-up capacity to support hundreds of connections without increased latency.

NebulaFlex Pro – simply manage it your way!

The NebulaFlex Pro provides extended flexibility, allowing users to easily switch among standalone, on-promises controller or our intuitive NCC (Nebula Control Center) modes any time according to your needs without additional cost while protecting wireless technology investments. The privilege of one-year professional pack you can get once upon registration on Nebula includes wireless health, site-wide topology, 365-day statistics on the devices and clients monitoring along with more upcoming advanced features on NCC and its App.

Unparalleled high-density performance

Essentially, there are two technologies that make a real difference in WiFi 6 – orthogonal frequency-division multiple access (ODFMA), and spatial re-use, which is also referred to as Basic Service Set (BSS) coloring. These make WiFi 6 a much more efficient technology than 802.11ac. The BSS coloring allows multiple access points to be used in the same vicinity without fear of co-channel interference.

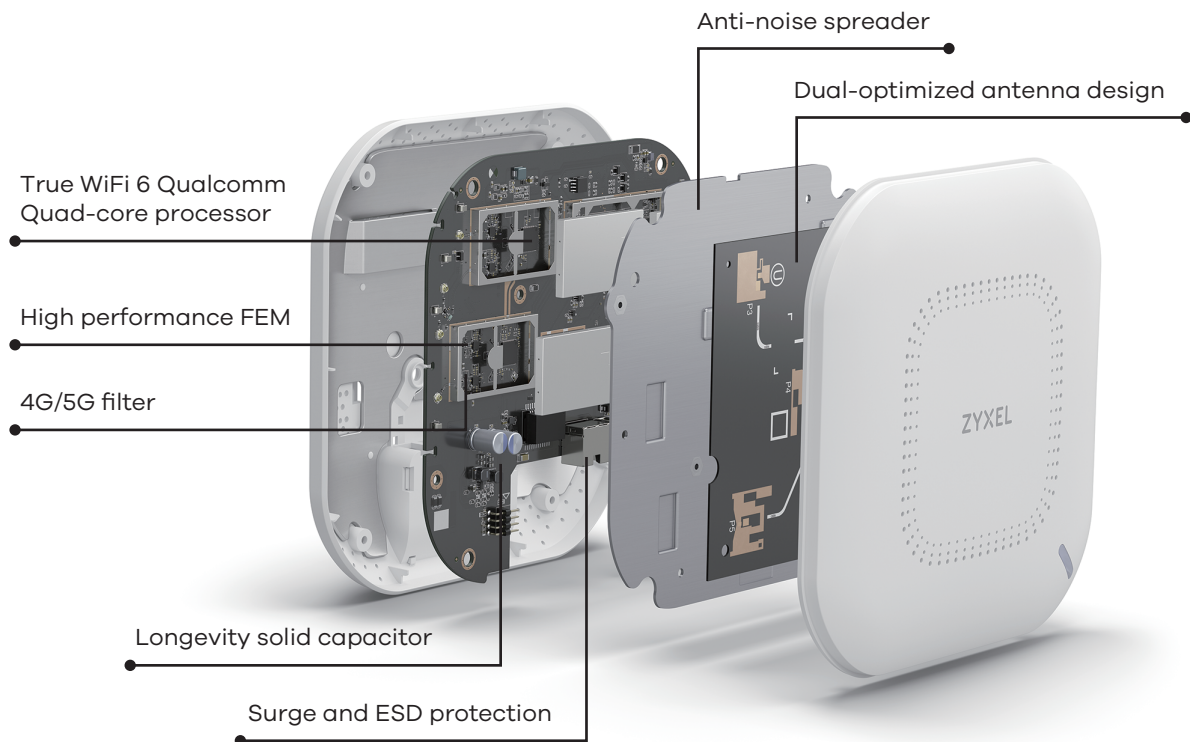## Superior performance with innovative "Dual-optimized" antenna

People without RF expertise may not realize that installing an AP optimized for ceiling-mount as wall-mount may cause the ceiling-mount radiation pattern to interfere with other devices up- or downstairs as well as to deliver signals with shorter-than-expected range for its clients. Designed with the innovative "Dual-optimized" antenna, the WAX510D adapts to both wall- and ceiling-mount installations. Thus, users can switch between the two optimized antenna modes easily to fit either situation. To boost WiFi speeds for your network, the WAX510D is definitely an excellent choice.
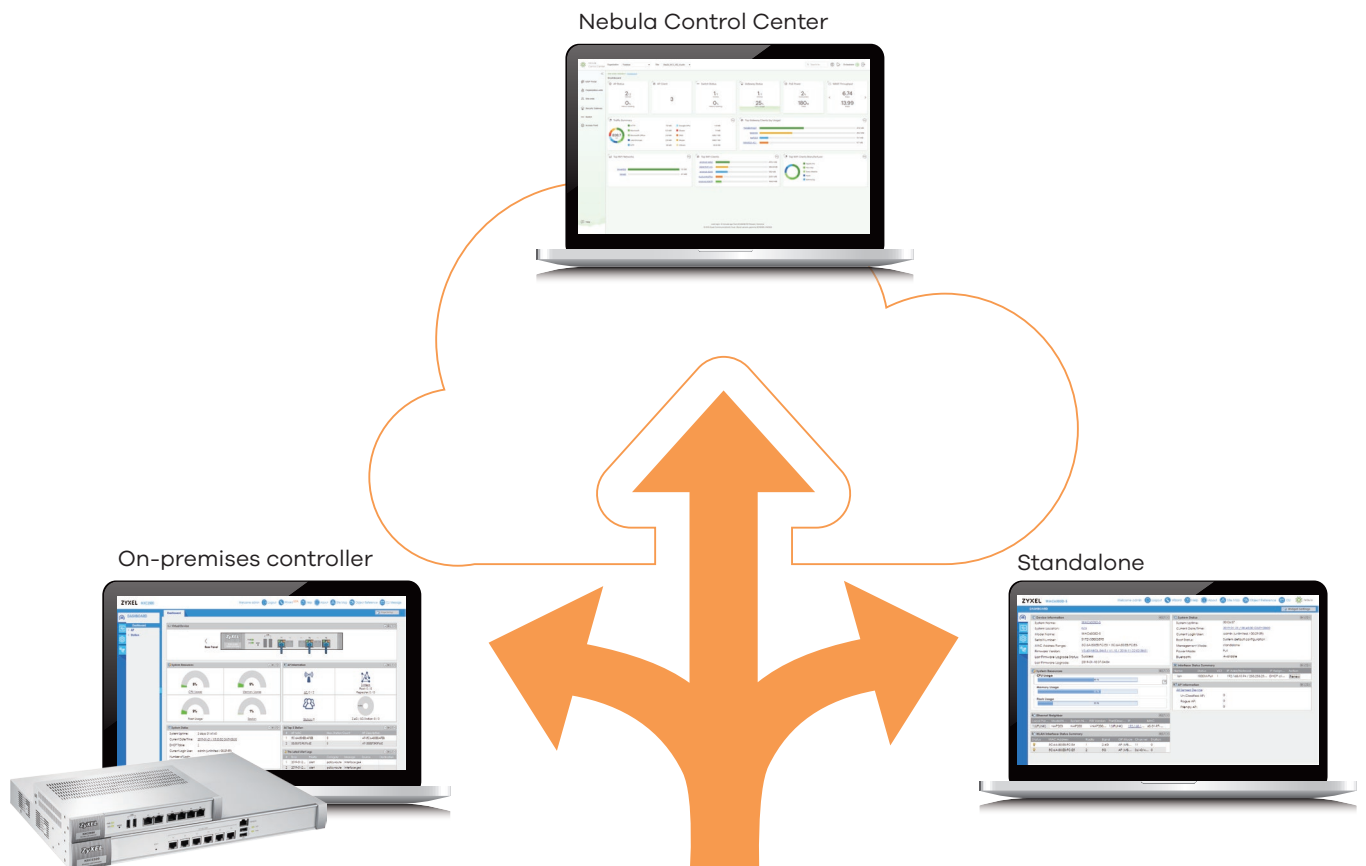
4G/5G cellular network coexistence

With the growing pervasiveness of mobile devices in the wireless network, users start to experience degraded performance, such as ping drops and high latency, however whenever user shutdown the mobile equipment, wireless service resumes working smooth. Thus, to enable 4G/5G cellular network coexistence and minimize interference from 4G/5G antennas or signal boosters, the WAX510D has built-in 4G/5G interference filters. As a result, the visible or invisible 4G/5G indoor antennas in the environment is no longer an issue when installing APs.

*1: The licensing terms may vary depending on part numbers or regions Please contact your local sales representative.
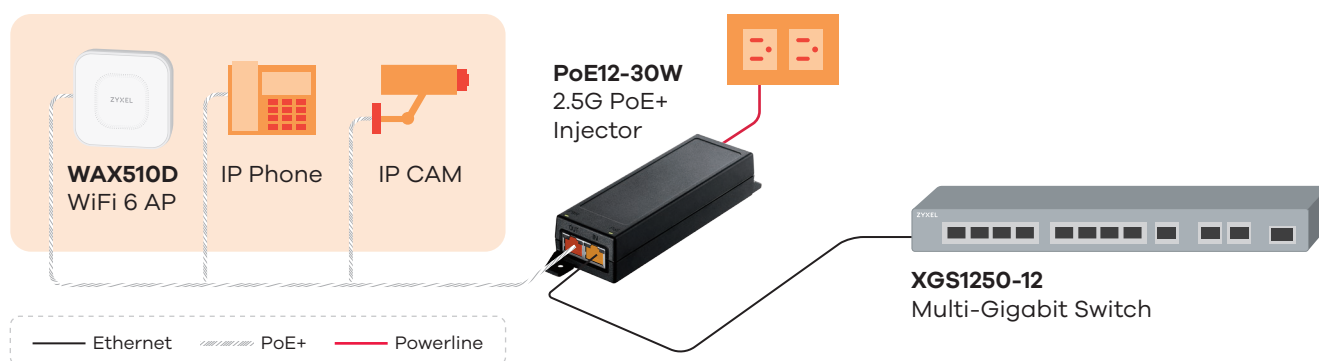
Powerful Hardware Design

Anti-noise spreader

Dual-optimized antenna design

True WiFi 6 Qualcomm Quad-core processor

High performance FEM

4G/5G filter

Longevity solid capacitor

Surge and ESD protection

ZYXEL

Switch Among Triple Modes

Nebula Control Center

On-premises controller

Standalone

Suggested PoE Injector

Ethernet · · · PoE+ — Powerline

Specifications

Model	WAX510D
Product name	802.11ax (WiFi 6) Dual-Radio Unified Access Point

Wireless		
Standard		IEEE 802.11 ax/ac/n/g/b/a
MIMO		MU-MIMO
Wireless speed	2.4 GHz	575 Mbps
	5 GHz	1200 Mbps
Frequency band	2.4 GHz (IEEE 802.11 b/g/n/ax)	• USA (FCC): 2.412 to 2.462 GHz • Europe (ETSI): 2.412 to 2.472 GHz
	5 GHz (IEEE 802.11 a/n/ac/ax)	• 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
Bandwidth		20-, 40-, 80-MHz
Conducted typical transmit output power*1 (limited by local regulatory requirements)	US (2.4 GHz/5 GHz)	23/26 dBm
	EU (2.4 GHz/5 GHz)	20/25 dBm

RF Design		
Antenna type		2x2 dual-optimized antenna
Antenna gain	2.4 GHz	Peak gain 5 dBi
	5 GHz	Peak gain 6 dBi
Minimum receive sensitivity		Min. Rx sensitivity up to -101 dBm

WLAN Feature	
Band steering	Yes
WDS (Standalone)*2	Yes (V6.10)
ZyMesh (AP Controller)*2	Yes (V6.10)
Smart mesh*2	Yes (V6.10)
Fast roaming	Pre-authentication, PMK caching and 802.11r
DCS	Yes
Load balancing	Yes

*1: Conducted typical transmit output power excludes antenna gain. For total (EIRP) transmit power, add antenna gain.
*2: WDS, ZyMesh, Smart Mesh and Industry's Open Mesh, Easy Mesh are different mesh systems that do not work with one another.

Model	WAX510D
Security	
Encryption	WEP/WPA/WPA2-PSK/WPA3
Authentication	WPA/WPA2/WPA3-Enterprise/EAP/IEEE 802.1X/RADIUS authentication
Access management	L2-isolation/MAC filtering/Rogue AP detection
Networking	
IPv6	Yes
VLANs	Yes
WMM	Yes
U-APSD	Yes
MTBF (hr)	Yes
DiffServ marking	Yes
Management	
Operating mode	Nebula Cloud managed/controller-managed/standalone
ZON Utility	• Discovery of Zyxel switches, APs and gateways • Centralized and batch configurations ▪ IP configuration ▪ Web GUI access ▪ IP renew ▪ Firmware upgrade ▪ Device reboot ▪ Password configuration ▪ Device locating
Zyxel Wireless Optimizer	• WiFi AP planning • WiFi coverage detection • Wireless health management
Web UI/CLI	Yes
SNMP	Yes

Physical Specifications		
Item	Dimensions (WxDxH)(mm/in.)	180 x 180 x 39/7.09 x 7.09 x 1.54
	Weight (g/lb.)	453/1.00
Packing	Dimensions (WxDxH)(mm/in.)	229 x 216 x 64/9.02 x 8.50 x 2.52
	Weight (g/lb.)	770/1.70
Included accessories		• Mount plate • Mounting screws
MTBF (hr)		635,837

Physical Interfaces	
Ethernet port	1 x 10/100/1000M LAN
Power	• PoE (802.3) at: power draw 17 W • DC input: 12 VDC 1.5 A

Environmental Specifications		
Operating	Temperature	0°C to 50°C/32°F to 122°F
	Humidity	10% to 95% (non-condensing)
Storage	Temperature	-30°C to 70°C/-22°F to 158°F
	Humidity	10% to 90% (non-condensing)

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	Safety EN 60950-1, IEC 60950-1, BSMI CNS14336-1

Accessory

Model	PoE12-30W

RJ-45 (Data) input	1
RJ-45 (Data + Power) output	1
Data rate	100 Mbps and 1/2.5 Gbps
PoE standard	PoE, PoE+
Total PoE budget	30 watts
Suggested WiFi 6 AP	WAX510D

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

12/09/22

Datasheet WAX510D