

Ruijie RG-AP820-AR(V3) Datasheet



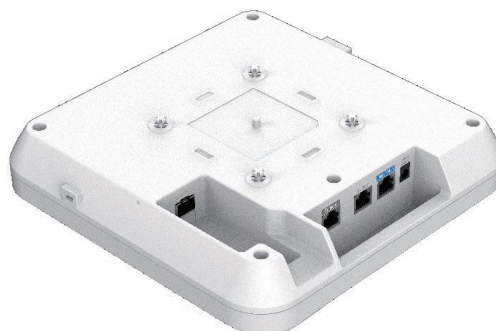
Product Overview

- The RG-AP820-AR(V3) is a Wi-Fi 6 wireless access point designed to deliver high performance, tri-radio functionality, AI Radio design, and enterprise-grade encryption.
- Its hybrid cloud management mode and high-density access design make it ideal for deployment in various high-quality network environments, such as classrooms, meeting rooms, offices, dormitories, and large venues in the education sector, as well as production workshops and warehouses in the manufacturing industry.
- This device features tri-radio design, including 2.4 GHz, 5 GHz, and AI radio, supporting up to 2.976 Gbps peak data rates.
- It delivers high-speed wireless access with six spatial streams and advanced technologies like Orthogonal Frequency-Division Multiple Access (OFDMA) and Multi-User Multiple-Input Multiple-Output (MU-MIMO).
- Powered by AI radio technology, it ensures optimal roaming experiences while reducing network interference.

Product Highlights

- **High Speed and Performance:** With a peak data rate of up to 2.976 Gbps, the RG-AP820-AR(V3) ensures high-speed wireless access.
- **Flexible Deployment:** Supports both local and cloud management, offering easy network optimization.
- **Enhanced Security:** Equipped with WPA3 encryption and intelligent roaming to ensure secure and efficient access.
- **Advanced Roaming:** AI-powered radio ensures seamless roaming with optimized client experience.
- **Multi-User Support:** Equipped with MU-MIMO and OFDMA for high-performance in dense environments.
- **Rich IoT Integration:** Supports PoE, Bluetooth 5.1, and wireless location services for smart networking.

Detailed Features



RG-AP820-AR(V3)

Component	Specification
Wi-Fi Standard	IEEE 802.11a/b/g/n/ac/ax (Wi-Fi 6), tri-radio design
Max Data Rate	Up to 2.976 Gbps (2.4G: 574 Mbps, 5G: 2402 Mbps)
Interface	2 × GE ports + 1 × SFP + 1 × USB 2.0
PoE Standard	Supports IEEE 802.3af/at (PoE-in), optional PoE-out
Deployment Mode	Supports standalone, cloud-managed, and hybrid deployment



Enterprise-Grade Wi-Fi 6 Access Point

The Ruijie RG-AP820-AR(V3) is a high-performance tri-radio Wi-Fi 6 access point designed to support ultra-reliable, high-density wireless coverage. With a peak rate of up to 2.976 Gbps and AI-driven RF optimization, it ensures seamless connectivity across enterprise, education, and healthcare scenarios.

Tri-Radio Architecture for High-Density Environments

Featuring a 2.4 GHz radio, a 5 GHz radio, and a built-in AI Radio, the RG-AP820-AR(V3) enables dynamic scanning and traffic steering for minimal interference and seamless roaming. The AI Radio works independently to monitor the wireless environment and apply intelligent policy adjustments in real time.

Advanced Wireless Technologies

Utilizing OFDMA, MU-MIMO, and 1024-QAM, the AP enhances spectral efficiency and enables concurrent transmission to multiple clients. These technologies ensure that bandwidth is distributed evenly across users—even in high-demand areas like classrooms or conference halls.

AI-Driven Roaming Optimization

The independent AI Radio scans client behavior and radio conditions continuously, ensuring optimal roaming performance. This is especially effective in mobile workspaces or scenarios requiring uninterrupted access, such as medical ward rounds or mobile video conferencing. This ensures users can maintain a stable connection while moving freely across large or complex environments.

Flexible Uplink Options and Deployment Modes

The AP supports both Ethernet and optical uplinks, with speeds up to 5 Gbps, enabling flexible and fast deployment. It is compatible with both cloud and on-premises management platforms, offering centralized control and simplified network administration.

Robust Security and Access Control

With WPA3, 802.1X authentication, and PPSK support, the AP ensures secure access control at the user level. Enhanced open security and dynamic encryption strengthen overall wireless protection, critical in sensitive environments like education and healthcare.

24/7 Security Monitoring via AI Radio

The AI Radio not only enhances roaming but also operates as a dedicated monitor for the 2.4 GHz and 5 GHz bands. It performs radar scanning, interference detection, and anomaly identification to safeguard the network around the clock.

Optimized RF and Transmission Reliability

With Dynamic Frequency Selection (DFS), beamforming, LDPC, and other advanced algorithms, the AP improves wireless signal quality, extends range, and maintains stable performance. These features are crucial for maintaining seamless connectivity in environments with physical obstructions or multiple APs.

Technical Specifications

Product Specifications

Feature	Value
Wi-Fi Standards	802.11n, 802.11ac, 802.11ax
Radios & Streams	- 802.11n: 3 radios, each 2x2 MIMO, total 6 spatial streams
Frequencies & Channels	- 2.4 GHz: 20 MHz, 40 MHz- 5 GHz: 20 MHz, 40 MHz, 80 MHz, 160 MHz
Peak Data Rates	- 802.11n: up to 600 Mbps; - 802.11ac: up to 1.733 Gbps; - 802.11ax: up to 2.976 Gbps
Modulation Types	BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM
Radio Technologies	OFDM, OFDMA, DFS, CDD/CSD, MRC, STBC, LDPC, TxBF

Feature	Value
Packet Aggregation	A-MPDU, A-MSDU
Security	WPA3 supported
Antenna Gain	<ul style="list-style-type: none"> - 2.4 GHz: 2 built-in omnidirectional antennas, 5.4 dBi - 5 GHz: 2 built-in omnidirectional antennas, 5.2 dBi
Bluetooth	Integrated BT 5.1 antenna, 4.6 dBi
Ports	<ul style="list-style-type: none"> - 1 x 100/1000/2.5G/5GBase-T (PoE++) - 1 x 5GE SFP/RJ45 combo port - 1 x 10/100/1000Base-T - 1 x RJ45 console- 1 x USB 3.0 (Type-A)
External Power Supply	<ul style="list-style-type: none"> - USB port: 1 A / 5 W - LAN 2: 48 V / 12.95 W (PoE output when powered by PoE++)
MTBF	200,000 hours (approx. 22 years at 25°C)
Operating Environment	<ul style="list-style-type: none"> - Temperature: -10°C to +50°C - Humidity: 5%–95% RH (non-condensing) - Altitude: -500 m to 5,000 m
Storage Environment	<ul style="list-style-type: none"> - Temperature: -40°C to +70°C - Humidity: 5%–95% RH - Altitude: -500 m to 5,000 m
System Memory	1 GB DRAM, 256 MB flash
Transmit Power	<ul style="list-style-type: none"> - 2.4 GHz: 19–27 dBm - 5 GHz: 21–26 dBm

Product Comparison

Feature	RG-AP820-AR(V3)	RG-AP840-I	RG-AP850-I
Wi-Fi Standard	Wi-Fi 6 (802.11a/b/g/n/ac/ax)	Wi-Fi 6 (802.11a/b/g/n/ac/ax)	Wi-Fi 6 (802.11a/b/g/n/ac/ax)
Radio Configuration	Dual-band + AI Radio (2×2 MU-MIMO)	Dual-band (2×2 MU-MIMO)	Dual-band (4×4 MU-MIMO)
Max Data Rate	2.976 Gbps	2.975 Gbps	5.95 Gbps
AI Radio	Supported (5GHz scanning & optimization)	Not supported	Not supported
PoE Standard	802.3af/at/bt	802.3af/at	802.3at
Uplink Port	1 x 5GE + 1 x Combo (GE/2.5GE/5GE) + 1 x GE	1 x 1GE	1 x 5GE
USB Port	USB 3.0 (5V/1A output)	Not available	USB 2.0
Bluetooth Support	Bluetooth 5.1	Not supported	Bluetooth 5.0
Power Output via USB	Supported	Not supported	Supported



Feature	RG-EG3250	RG-EG3210	RG-EG3280
Antenna Type	Built-in smart antennas	Internal antennas	Internal antennas
Antenna Gain (2.4G/5G)	5.4 dBi / 5.2 dBi	4 dBi / 5 dBi	5 dBi / 6 dBi
Temperature Range	-10°C to +50°C	0°C to +45°C	0°C to +50°C
Humidity Range	5%–95% (non-condensing)	5%–95% (non-condensing)	5%–95% (non-condensing)
Weight	1.0 kg	~0.8 kg	~1.3 kg
Security Features	WPA3, Dynamic ACL, BSS Coloring, OFDMA	WPA3, OFDMA, TWT	WPA3, Enhanced Access Control, OFDMA

Accessories

Category	Accessories
Included Accessories	- RG-AP820-AR(V3) AP
	- Mounting Bracket
	- Wall Anchor × 4
	- 4.2 mm x 20 mm Phillips Pan Head Self-Tapping Screw × 4
	- Warranty Card and Hazardous Substance Table
	- Quick Installation Guide
	- Ruijie Wireless Product Management Software (pre-installed on the AP)
Optional Accessories	- Ceiling Mount Kit: RG-MT-AP
	- PoE Injector: RG-E-120(GE)
	- External Antenna Kit (if applicable)



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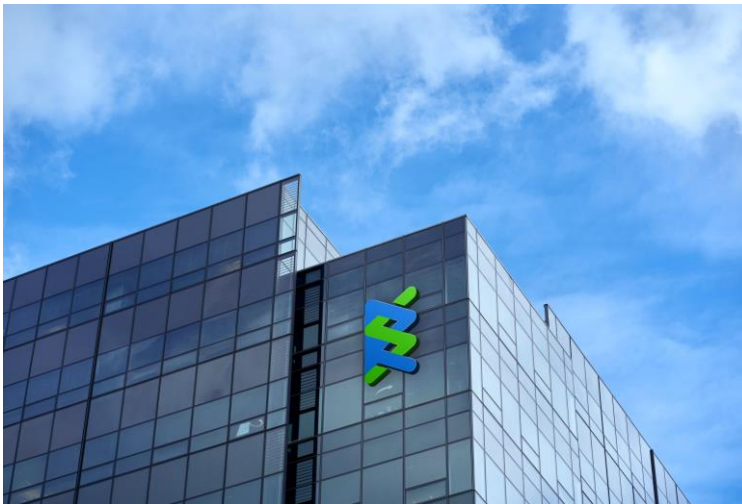


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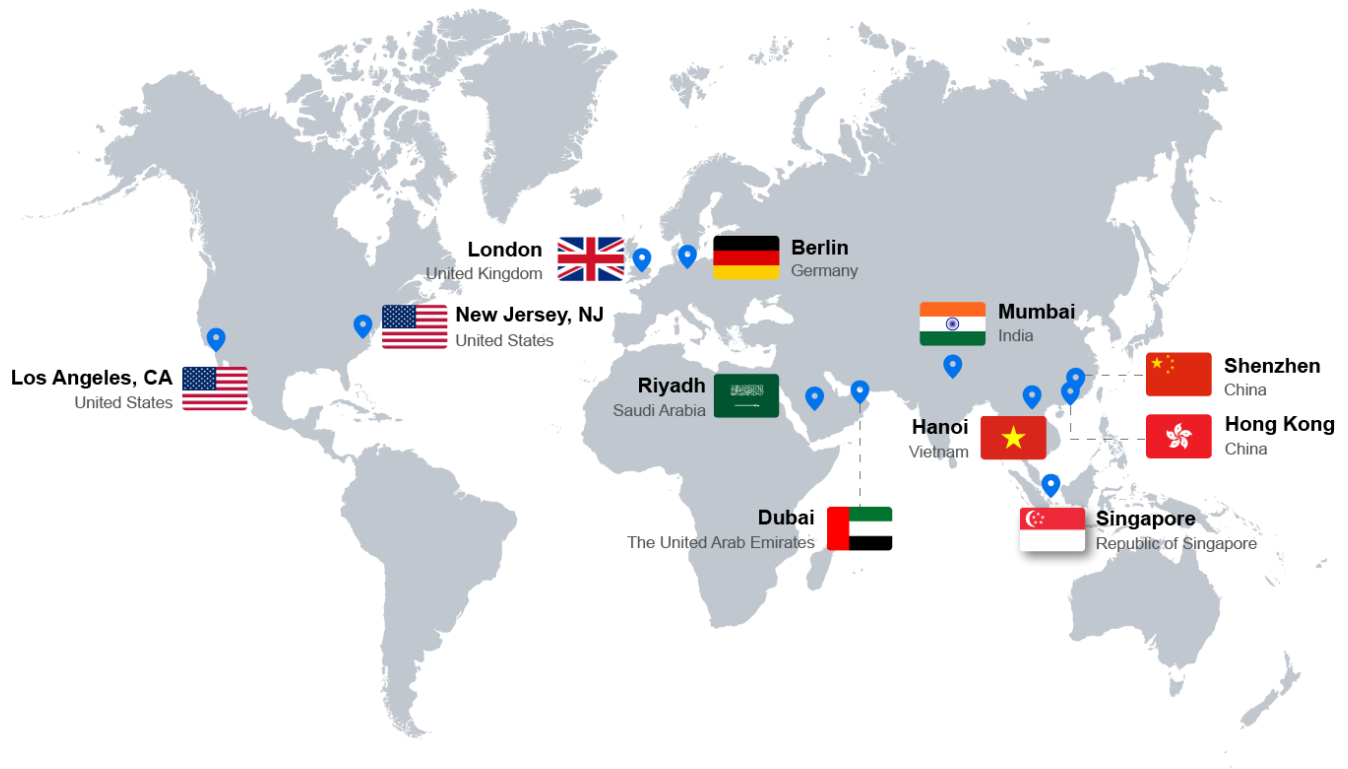
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USA Branch

3592 Rosemead Blvd, B #220, Rosemead, CA 91770, USA

UK Branch

Third Floor, 207 Regent Street, London W1B 3HH, UK



References

[1] Ruijie Networks. (n.d.). RG-AP820-AR(V3) Datasheet. Retrieved April 11, 2025, from <https://www.ruijienetworks.com/resources/preview/ap820arv3/>