

RG-WS7816C

High-Performance Wireless Access Controller



01 Product Overview

The RG-WS7816C high-performance wireless access controller (AC) is developed by Ruijie Networks to support next-generation high-speed wireless networks. It can be deployed on either a Layer 2 or Layer 3 network without any architecture or hardware changes, implementing seamless and secure control over wireless networks. The RG-WS7816C can manage up to 128 wireless access points (APs) by default. With licenses for capacity expansion, it can manage up to 10,240 APs.

Through powerful centralized and visualized management and control over wireless networks, the RG-WS7816C can significantly simplify construction and deployment of wireless networks. The RG-WS7816C can be used with Ruijie Networks' APs and Ruijie Unified Networking Central (RG-UNC) — a unified management platform for wired and wireless networks, to achieve flexible control of APs, optimize RF coverage and performance, implement cluster management, and reduce the workload of device deployment.

By adopting enhanced security and clustering technologies, the RG-WS7816C offers identity-based networking services. Multiple ACs in a cluster can share a user database, allowing clients to seamlessly roam in different areas of a network. The cluster design guarantees the security and session integrity during roaming and smooth interaction of data and voice over Wi-Fi applications.

02 Product Appearance



RG-WS7816C Front Top View



RG-WS7816C Rear View

03 Product Highlights

Cloud-Network
Convergence

Intelligent
Management

High Security
& Reliability

Cloud-Network Convergence

- **WIS Cloud-based Intelligent Network Service**

The WIS Cloud-based intelligent network service platform for the AC delivers professional, intelligent, and user-centric services across the entire wireless product lifecycle. From network planning and deployment to intelligent optimization, experience assurance, and ongoing preventive inspection and O&M, WIS Cloud helps streamline every stage of wireless network management.

- **Unified Management with WIS Cloud**

With WIS Cloud, network-wide configuration and optimization can be performed remotely, eliminating the need for onsite commissioning. In addition, the mobile app (Wi-Fi Moho) enables remote O&M anytime, anywhere, giving administrators full visibility and control over the wireless network.

- **Seamless Roaming**

The RG-WS7816C supports both Layer 2 and Layer 3 roaming for wireless clients, allowing users to move seamlessly across the entire wireless network while retaining the same IP address. This ensures uninterrupted mobility and enhanced security.

- **Remote Log Records**

The RG-WS7816C supports system log display and can forward logs to a remote server for centralized storage. This allows administrators to easily track detailed network operating status, with no worry about the lack of logs.

- **Wireless IPv6 Access**

The RG-WS7816C fully supports IPv6 features and enables IPv6 forwarding over wireless networks. Both IPv4 and IPv6 users can automatically establish tunnel connections with the RG-WS7816C, allowing IPv6-based applications to be seamlessly carried over the wireless network.

Intelligent Management

- **Intelligent Load Balancing**

In a high-density environment, the RG-WS7816C can monitor the number of clients and traffic on each associated AP in real time to intelligently distribute clients

connected to APs. This balances the traffic load, increases the average client bandwidth and QoS, and improves the availability of network connections.

- **Automatically Enabling/Disabling Radios/SSIDs**

The RG-WS7816C can automatically enable or disable radios and SSIDs as scheduled. Administrators do not need to be involved in daily operations; the radios and SSIDs are enabled or disabled as scheduled.

- **Centralized/Distributed, Integrated, and Intelligent Forwarding**

The intelligent local forwarding technology eliminates the traffic bottleneck of an AC. This technology enables the RG-WS7816C to forward data that is sensitive to delay and requires real-time high-performance transmission through a wired network. Therefore, it can better adapt to heavy-traffic transmission on future wireless networks.

- **Intelligent RF Management**

The RG-WS7816C can flexibly control AP configurations to optimize radio performance

High Security and Reliability

- **AC Virtualization**

Advanced AC virtualization technology ensures high reliability and capacity expansion. With this technology, the RG-WS7816C manages APs in groups for secure and convenient authentication and encryption.

- **Flexible and Complete Security Policies**

The RG-WS7816C supports a full range of data security protection mechanisms, including four authentication modes: Wi-Fi Protected Access (WPA), WPA-PSK, Wi-Fi Protected Access 2 (WPA2), and WPA2-PSK. It also supports three encryption technologies of Wired Equivalent Privacy (WEP), Temporal Key Integrity Protocol (TKIP), and Advanced Encryption Standard (AES), to ensure data transmission security on wireless networks.

- **Disabling SSID Broadcast**

The RG-WS7816C can control APs to disable the SSID broadcast mechanism. This can prevent unauthorized clients from searching for SSIDs in local areas to crack passwords.

- **Client Blocklist/Allowlist**

The RG-WS7816C supports the global client blocklist/allowlist and SSID-based client blocklist/allowlist. Unauthorized clients cannot be associated with the wireless network of the RG-WS7816C, which can better control the wireless network to prevent password cracking and association operations from unauthorized clients.

04 Applicable Scenarios

Cloud-Network Convergence

- **WIS Cloud-based Intelligent Network Service**

An ISP can use WIS Cloud provided by Ruijie's RG-WS7816C to provide professional, intelligent, and user-centric services throughout the lifecycle of wireless products, covering network planning and design, implementation and deployment, intelligent network optimization, experience optimization, and subsequent preventive inspection and O&M.

- **Remote Log Records**

ISPs can obtain various log information remotely, grasping detailed operation of wireless networks in real time, effectively reducing onsite O&M costs, and improving the service quality.

Manufacturing Industry

- **High Performance and Reliability**

The manufacturing industry has high requirements on network stability. The high performance and high reliability of the RG-WS7816C help provide stable network services in this industry.

- **Seamless Roaming**

Multiple ACs in a cluster can share a user database, allowing clients to seamlessly roam in different areas of a network. The cluster design guarantees the security and session integrity during roaming and smooth data exchange in the manufacturing industry.

Healthcare Industry

- **WIS Cloud-based Unified Management**

With WIS Cloud, hospital network administrators can remotely configure, optimize, and monitor the network without the need for onsite debugging, significantly improving O&M efficiency.

- **High Security and Reliability**

The healthcare industry requires high security and reliability of wireless networks. The RG-WS7816C can provide secure and reliable network services.

05 Product Features

Smart Wireless Experience

- **Intelligent Client Identification**

The built-in Portal server of the RG-WS7816C can intelligently identify clients based on characteristics of the clients, and adaptively respond with a Portal authentication page of matching size and layout. Intelligent client identification eliminates the need to drag and resize a window, delivering users with a better intelligent wireless experience. This technology supports mainstream intelligent client operating systems, including Apple iOS, Android, and Windows.

- **Fair Client Access**

The RG-WS7816C works with Ruijie's APs to provide the same access time for clients in compliance with IEEE 802.11g, 802.11n, 802.11ac, 802.11ax, 802.11be, and other standards. This resolves issues such as high latency, slow speed, and low performance of APs caused by outdated network adapters in clients or long distance

between clients and APs. This also effectively improves the performance of low-speed clients, and ensures consistent and good wireless experience at the same location regardless of the client type.

- **Intelligent Load Balancing**

In a high-density environment, the RG-WS7816C can monitor the number of clients and traffic on each associated AP in real time to intelligently distribute clients connected to APs. This balances the traffic load, increases the average client bandwidth and QoS, and improves the availability of network connections.

In addition to client-based and traffic-based intelligent load balancing, the RG-WS7816C also supports load balancing based on the frequency band. Most Wi-Fi devices use the 2.4 GHz frequency band by default, but can achieve increased throughput in the 5 GHz frequency band (IEEE 802.11a/n/ac/ax/be-compliant). Load balancing based on the frequency band enables dual-radio-capable

clients to preferentially use the 5 GHz frequency band. This increases bandwidth utilization without additional cost and guarantees a high-speed wireless experience for clients.

High Performance and Reliability

• Centralized/Distributed, Integrated, and Intelligent Forwarding

The RG-WS7816C can be deployed on a Layer 2 or Layer 3 network without changing the original network architecture. It constitutes an overall switching architecture with APs to facilitate the control and processing of data transmission on all APs.

Intelligent local forwarding technology overcomes the traffic bottleneck of ACs. With this technology, the RG-WS7816C enables flexible configuration of AP data forwarding modes. Based on SSID and user VLAN planning, traffic can be selectively forwarded through the RG-WS7816C or directly to the wired network for local switching. By offloading delay-sensitive and real-time traffic to the wired network, local forwarding significantly reduces the traffic burden on the RG-WS7816C. Even under the high-throughput demands of 802.11ac, 802.11ax, and 802.11be networks, it helps ensure better performance and scalability for future wireless deployments, making it ideal for bandwidth-intensive and latency-sensitive applications such as high definition (HD) Video on Demand (VoD) and Voice over Wireless Local Area Network (VoWLAN) services.

• Intelligent RF Management

The RG-WS7816C enables APs to perform on-demand RF scanning across wireless bands and channels, identifying rogue APs and unauthorized wireless networks while promptly alerting administrators. This provides round-the-clock protection for security-sensitive environments.

In addition, the RG-WS7816C supports real-time control of AP RF scanning to measure signal strength and interference. With intelligent optimization tools, it can dynamically adjust traffic loads, transmit power, RF coverage, and channel allocation to maximize both wireless coverage and network capacity.

• Network-Wide Seamless Roaming

The RG-WS7816C supports the advanced AC cluster technology, allowing multiple controllers in a cluster to synchronize client connection information and roaming records in real time. With shared client and authentication information across the cluster, users can roam freely throughout the network without service interruption. In addition, clients can roam seamlessly and securely while retaining their original IP addresses and authentication

status, enabling fast roaming and reliable support for voice services.

• Abundant QoS Policies

The RG-WS7816C supports abundant QoS policies such as bandwidth limiting in multiple modes and preferential bandwidth guarantee for key data applications.

• Wireless IPv6 Access

The RG-WS7816C provides comprehensive IPv6 support, enabling IPv6 forwarding across the wireless network. Both IPv4 and IPv6 users can automatically establish tunnel connections with the RG-WS7816C, allowing IPv6 applications to be smoothly carried over the wireless network.

In addition, it supports the reporting of users' updated IPv6 addresses through RADIUS update messages in IPv6 Stateless Address Autoconfiguration (SLAAC) mode.

Advanced AC Virtualization

The RG-WS7816C supports the cutting-edge AC virtualization technology. The technology can virtualize up to four ACs into one logical AC, maximizing utilization of existing network devices and achieving high reliability and capacity expansion without additional hardware devices.

• **Simplified topology:** All member ACs of the logical AC use the same IP address. Regardless of whether the logical AC connects to an AP or an authentication server, there is no need to assign an IP address to each member AC.

• **Simplified configuration:** Multiple member ACs can be managed as one AC. Any configuration of the active AC can be automatically synchronized to all member ACs.

• **High reliability:** N+M hot standby is supported. The breakdown of any AC will not affect the entire system.

• **Smooth capacity expansion:** The AP and client capacity can be expanded by adding a physical AC.

• **License sharing:** A license installed on any member AC of the logical AC can be shared by other member ACs.

Advanced Application Recognition and Policy Control

The RG-WS7816C supports application recognition and application-level QoS mapping technology for wireless clients. In centralized forwarding mode, it uses Deep Packet Inspection (DPI) to analyze packet characteristics and identify over 2,500 applications.

By recognizing applications, collecting application statistics, and applying QoS mapping based on application type, the RG-WS7816C helps administrators understand the application usage on the network. This enables fine-grained QoS policies for application traffic.

Flexible and Comprehensive Security Policies

• Local Authentication

With a built-in local user database and a built-in Portal server, the RG-WS7816C authenticates wireless clients locally through web-based authentication. Local authentication eliminates the need to deploy an authentication server such as the external Portal server and RADIUS server. Moreover, this authentication mode simplifies the entire network architecture and greatly reduces the network construction cost, meeting requirements for secure access to small- and medium-sized wireless networks.

• Client Data Encryption Security

The RG-WS7816C supports a full range of data security protection mechanisms, including Wired Equivalent Privacy (WEP), Temporal Key Integrity Protocol (TKIP), and Advanced Encryption Standard (AES), to ensure data transmission security on wireless networks.

• Standard Communication Protocol

The RG-WS7816C communicates with APs over Control and Provisioning of Wireless Access Points (CAPWAP) tunnels, ensuring encrypted transmission. This isolates wireless traffic from the wired network and protects the confidentiality of real-time communication between the RG-WS7816C and the APs. In addition, the RG-WS7816C can support the future management of third-party APs via CAPWAP, making network expansion easier while protecting existing investments.

• Virtual AP Technology

With the virtual AP technology, the RG-WS7816C can allocate multiple SSIDs on a network. Network administrators can separately isolate and encrypt subnets or VLANs using the same SSID, and can configure the separate authentication mode and encryption mechanism for each SSID.

• RF Security

The RG-WS7816C can be flexibly configured with the RF probe scanning mechanism to discover unauthorized APs or other RF interference sources in real time. It reports corresponding alarms to the network management system (NMS) in real time, so a network administrator can monitor potential network threats and usage in each wireless environment at any time.

• Virus and Attack Prevention

The RG-WS7816C has various built-in security mechanisms to effectively protect a network against virus and network traffic attacks, prevent unauthorized network access, and allow access from authorized clients. The security mechanisms include binding of IP addresses, MAC addresses, and WLANs, hardware ACL, and data stream-based rate limiting, so the RG-WS7816C is suitable for campus, hospital, and enterprise networks where access control of guests is strengthened and access of unauthorized clients is restricted.

• Multiple Easy-to-Use Authentication Modes

The RG-WS7816C supports conventional web-based authentication and 802.1X authentication for monitoring network access behaviors. It also offers convenient and efficient authentication methods tailored to real-world scenarios, including MAC authentication bypass (MAB), SMS authentication, and QR code-based guest authentication.

With MAB, wireless users only need to enter their username and password the first time they connect, eliminating the need to re-enter credentials each time they power on their devices and allowing easy network access after a single authentication.

With SMS authentication, when guests connect to the wireless network, an authentication page automatically pops up. Guests can register using their mobile phone number and then log in using the username and password received via SMS.

QR code-based authentication provides another convenient way for guests to access the network. After connecting to the wireless network, guests receive a QR code prompt. Once authorized by the host (employee), they can access the network. Guest activity is directly associated with the host, providing enhanced security.

• ARP Anti-Spoofing

The ARP inspection function can effectively prevent increasingly frequent ARP gateway and ARP host spoofing attacks on a network, so as to ensure normal network access. Automatic IP-MAC binding can greatly save the labor cost and simplify management in dynamic or static IP allocation mode. An attacker may maliciously use scanning tools to flood ARP packets, which occupy network bandwidth and result in network congestion. To address this issue, the RG-WS7816C implements ARP rate limiting to control the rate of sending ARP packets.

• Rogue AP Containment

Rogue AP containment can effectively detect unauthorized APs on a wireless network. The RG-WS7816C can instruct an AP to send a probe packet to surrounding APs and wait for a response. It can detect the unauthorized AP

that does not send a response packet, thereby ensuring network-wide security.

• DHCP Snooping

DHCP snooping enables the RG-WS7816C to allow only DHCP Reply packets from trusted interfaces, preventing unauthorized DHCP server attacks. This is because an unauthorized DHCP server seriously affects IP address allocation and management, resulting in network access failures. With DHCP snooping configured, the RG-WS7816C can dynamically check source IP addresses of ARP packets to prevent ARP spoofing attacks and source IP address spoofing attacks in the environment where the DHCP server dynamically allocates IP addresses.

• Management Information Security

Through Secure Shell (SSH) and Simple Network Management Protocol version 3 (SNMPv3), the RG-WS7816C encrypts management information in Telnet and SNMP processes, ensuring information security of management devices and preventing hackers from attacking and controlling devices. Telnet access control based on the source IP address provides fine-grained device management and control. With this function, only the devices with IP addresses configured by administrators can connect to the RG-WS7816C, enhancing network management security.

Rich Management Policies

• Multiple Management Modes and Unified Management Platform

The RG-WS7816C supports the CLI and other management modes to perform centralized, effective, and low-cost planning, deployment, monitoring, and management of network-wide APs. RG-UNC, a unified management platform for wired and wireless networks developed by Ruijie, manages APs uniformly. The RG-WS7816C works with RG-UNC to implement various wireless network management functions, including topology generation, AP working status monitoring, online client status monitoring, network-wide RF planning, client locating, security alarm, link load and device utilization monitoring, roaming record, and report output. The RG-WS7816C allows an administrator to monitor and manage the running status of the entire network in a data center.

• eWeb Management

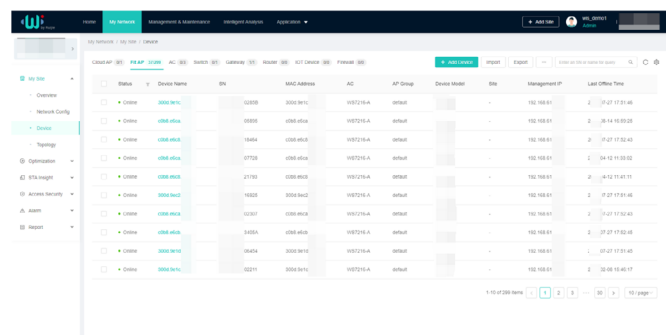
The RG-WS7816C provides eWeb where O&M personnel can complete wireless configuration easily, and manage the wireless network uniformly. On eWeb, O&M personnel can manage APs and connected clients, limit the client rates, and restrict network access behaviors of the connected clients. With eWeb, O&M personnel can plan, manage, and maintain wireless networks conveniently.

06 Solution Scalability

Ruijie WIS Cloud Management Network Solution (WIS Cloud for short, <https://wis.ruijienetworks.com/>) provides full-lifecycle cloud management network services covering network procurement, planning, deployment, acceptance, and O&M. When the RG-WS7816C is connected to WIS Cloud, it can meet various needs in multiple scenarios including planning, deployment, acceptance, and O&M through cloud management, cloud O&M, cloud authentication, and other value-added services (VASs) provided by WIS Cloud.

Network-Wide Cloud Management

WIS Cloud supports integrated management and control of various types of devices including APs, ACs, switches, gateways, and routers. It supports remote O&M management operations such as adding or batch importing of multi-branch network devices, online status monitoring, configuration delivery, upgrade, restart, configuration backup, and restoration. It supports network-wide topology auto-discovery and topology status monitoring.

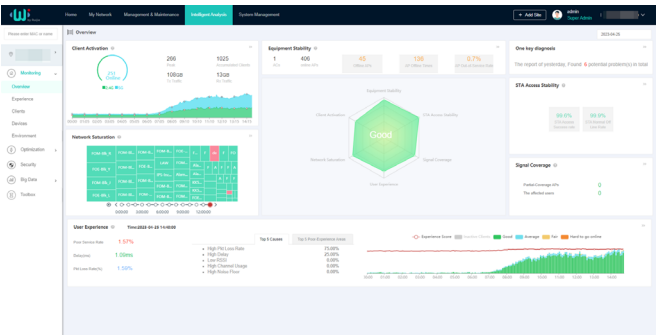


Device Name	SN	MAC Address	AC	AP Group	Device Model	Site	Management IP	Last Offline Time
WS7816C-0001	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0002	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0003	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0004	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0005	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0006	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0007	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0008	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0009	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00
WS7816C-0010	000000000000	000000000000	WS7816C	default	WS7816C	102.100.01	2	2023-07-10 10:00:00

Wireless Network Visualization

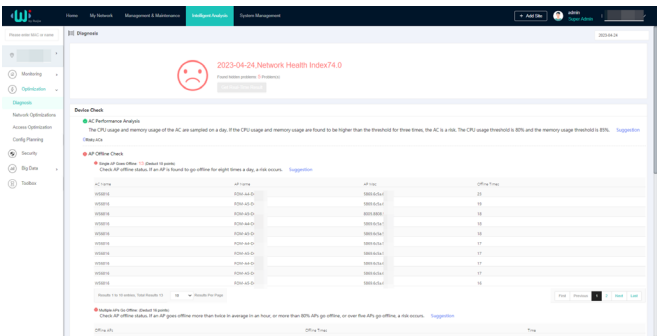
The overview function module of WIS Cloud provides a comprehensive view of the network running status from the perspective of overview, experience, users, devices, and environment. The network running information includes the following items:

- Network basic information: Device stability, device health, user stability, network signal coverage, and network association
- User usage: User activity (network dependency), and user online experience and analysis
- Network saturation: Network capacity usage and channel usage



Intelligent Network Diagnosis

With WIS Cloud, wireless network diagnosis and health index assessment can be completed in just one click, providing test results for each item. The health index provided by WIS Cloud enables you to rapidly assess the state of your live network. WIS Cloud can locate faulty areas, APs, and STAs, and provides potential risks and corresponding optimization suggestions.



07 Specifications

Key Specifications

Key Specification	RG-WS7816C
Maximum number of managed APs	10,240 (indoor or wall-plate APs) Note: The RG-WS7816C manages 128 APs by default. The maximum number of APs that can be managed by the RG-WS7816C is subject to the AP model. For details, see Ordering Information.
Maximum number of configurable APs	32,768
Maximum number of managed clients	120,000 Note: The maximum number of clients that can be managed by the RG-WS7816C is subject to the network environment. Contact technical support team for details.
802.11 forwarding performance	120 Gbps Note: The value depends on the wireless network environment and configuration mode.
WLAN service	Maximum number of WLAN IDs: 4,094 Maximum number of clients on each WLAN: 120,000
Maximum number of VLANs	4,094

Key Specification	RG-WS7816C
Port	16 x 10/100/1000BASE-T ports 12 x 10GE SFP+ ports 2 x 40GE QSFP+ ports 1 x RJ45 MGMT port 1 x RJ45 console port 2 x USB 3.0 ports, compatibility with USB 2.0
Power supply	2 x RG-PA550I II-F power modules (one power module configured) Power input: 100 V AC to 240 V AC, 50 Hz to 60 Hz, 7.2-3.5A MAX(X2) Power output: 12 V DC/45 A
Maximum power consumption	220 W
Rack size	1 RU
Software version	RGOS11.9(6)W7 or later
NMS platform	eWeb RG-UNC WIS

Hardware Specifications

Hardware Specification	RG-WS7816C
Unit dimensions (W x D x H)	Excluding the rack-mount bracket: 442 mm x 420 mm x 43.6 mm (17.40 in. x 16.54 in. x 1.72 in.) Including the rack-mount bracket: 484.6 mm x 420 mm x 43.6 mm (19.08 in. x 16.54 in. x 1.72 in.)
Shipping dimensions (W x D x H)	570 mm x 565 mm x 225 mm (22.44 in. x 22.24 in. x 8.86 in.)
Weight	Unit weight: 6.75 kg (14.88 lbs) Shipping weight: 7 kg (15.43 lbs)
Status LED	SYS: 1 x system status LED PWR: 2 x power module LEDs Link/ACT: 2 x MGMT port LEDs 16 x 1000M RJ45 port LEDs 12 x 10GE SFP+ port LEDs 2 x 40GE QSFP+ port LEDs
Button	1 x Reset button - Press the button for less than 3 seconds to restart the device. - Press the button for more than 5 seconds to restore the device to factory settings.
Environment	Storage temperature: -40°C to +70°C (-40°F to +158°F) Storage humidity: 5% RH to 95% RH (non-condensing) Storage altitude: -500 m to +5,000 m (-1,640.42 ft. to +16,404.20 ft.) Operating temperature: 0°C to 45°C (32°F to 113°F) Operating humidity: 10% RH to 90% RH (non-condensing) Operating altitude: -500 m to +5,000 m (-1,640.42 ft. to +16,404.20 ft.) Note: At an altitude in the range of 1,800-5,000 m (5,905.51-16,404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the maximum temperature decreases by 1°C (1.8°F).
Fan module	Fan speed adjustment Fan fault alarms

Hardware Specification	RG-WS7816C
Noise	< 78 dB
Mean Time Between Failures (MTBF)	400,000 hours (44 years) at the operating temperature of 25°C (77°F)

Software Specifications

Basic Function	RG-WS7816C
WLAN	
IEEE 802.11 LAN protocols	802.11, 802.11b, 802.11a, 802.11g, 802.11d, 802.11h, 802.11w, 802.11k, 802.11v, 802.11r, 802.11i, 802.11e, 802.11n, 802.11ac, 802.11ax, and 802.11be
CAPWAP	Layer 2 and Layer 3 topology between an AP and an AC An AP can automatically discover the accessible AC. An AP can be automatically upgraded through the AC. An AP can automatically download the configuration file from the AC. CAPWAP through Network Address Translation (NAT) Number of concurrent CAPWAP data tunnels: 10,240
Roaming	Intra-AC Layer 2 or Layer 3 roaming Handover time for intra-AC roaming: < 50 ms Inter-AC Layer 2 or Layer 3 roaming Intra-AC Layer 2 or Layer 3 roaming in centralized forwarding mode Intra-AC Layer 2 or Layer 3 roaming in local forwarding mode
Forwarding	Centralized forwarding Local forwarding Service-based flexible forwarding
Wireless QoS	AP/WLAN/STA-based bandwidth limiting (For WLAN/STA-based bandwidth limiting, the value range is from 8 to 261,120. The unit is expressed in 8 kbps.) STA-based static rate limiting and smart rate limiting Fair scheduling
STA isolation	AC-based global user isolation AP-based user isolation WLAN-based user isolation
Reliability	AC virtualization Dual-AC fast failover Multi-AC hot standby (1:1 A/A and A/S hot standby, and N:1 hot standby) Multi-AC cluster (N:N) Remote intelligent perception technology (RIPT) Service continuity during upgrade
Client management	AP-based access control by limiting the number of associated STAs SSID-based access control by limiting the number of associated STAs AP-based load balancing by limiting the number of associated STAs AP-based load balancing by limiting STA traffic Frequency band-based load balancing by limiting the number of associated STAs Band steering RSSI threshold for STAs: 0 to 100, in dBm Idle timeout period for STAs: 60 to 86,400, in seconds

Basic Function	RG-WS7816C
WLAN optimization	Adjustment of the transmit power for beacon packets or probe responses
RF management	Setting of the country code Manual setting of the transmit power Automatic setting of the transmit power Manual setting of the working channel Automatic setting of the working channel Automatic adjustment of the transmission rate Coverage hole compensation Traffic-based and STA-based AP load balancing Band selection Radio Frequency Interference (RFI) detection and mitigation
Security and Authentication	
IPv4 security authentication	Web-based authentication, MAB, SMS authentication, and QR code-based authentication 802.1X authentication Maximum number of users supported by the built-in Portal server: 120,000
IPv6 security authentication	Web-based authentication 802.1X authentication
IEEE 802.11 security and encryption	Multi-SSID mode SSID hiding IEEE 802.11i-compliant PSK authentication WPA, WPA2, and WPA3 WEP (WEP/WEP128) TKIP CCMP ARP anti-spoofing
ACL	Number of ACLs: 512K (524,288)
CPU Protect Policy (CPP)	Supported
Network Foundation Protection Policy (NFPP)	Supported
Wireless Intrusion Detection System (WIDS)	Supported
Virtual AP	Supported
Switching and Routing	
MAC	Maximum number of MAC address entries: 256K (262,144)
ARP	Maximum number of ARP entries: 308K (315,392)
IPv4 services	Ping Traceroute DHCP server DHCP client DHCP relay agent DHCP snooping DHCP IP address pool

Basic Function	RG-WS7816C
IPv4 services	• Maximum number of IPv4 address pools: 2,000 • Maximum number of IPv4 addresses (users): 308K (315,392) NTP Telnet TFTP server TFTP client FTP server FTP client
IPv6 services	DNSv6 client DHCPv6 relay DHCPv6 server DHCP IP address pool • Maximum number of IPv6 address pools: 256 • Maximum number of IPv6 addresses (users): 78K (80,000) TFTPv6 client FTPv6 server FTPv6 client IPv6 CAPWAP ICMPv6 IPv6 ping Manually configured tunnels, automatic tunnels, and ISATAP tunnels Manually configured IP addresses and automatically created local addresses IPv6 traceroute Neighbor Discovery (ND)
IPv4 routing	Static routing, RIP, OSPF, and PBR
IPv6 routing	Static routing, RIPng, OSPFv3, and PBR
Multicast	Maximum number of multicast static routes: 2,048 Maximum number of multicast group routes: 4,096
Network Management and Monitoring	
Network management	SNMPv1/v2c/v3 RMON Syslog Remote probe
User access management	Console port login Telnet login SSH login FTP upload

Value-added Software

The following value-added software functions can be achieved when the RG-WS7816C is used with RG-WIS and APs.

Value-added Software	RG-WS7816C
Intelligent O&M	
Experience	Network operation analysis such as device stability and signal coverage Measuring user network experience based on indicators including latency, packet loss, RSSI, and channel utilization, with visualized network experience results Statistics on the number of online and offline failures of STAs associated with different APs, average RSSI, and other parameters VIP monitoring and alarm, and custom alarm thresholds STA global experience map and experience coverage evaluation based on the time range STA access protocol replay and fine-grained STA fault diagnosis Note: These functions are supported only when the AP works in Fit mode.
Network optimization	Network performance optimization, including one-click network optimization and optimization solution setting based on different scenarios Sticky client roam steering and experience indicator comparison Remote association steering and experience indicator comparison One-click diagnosis for analyzing problems and providing suggestions
Big data	Baseline analysis, recording changes in configuration, software version, and other parameters, and tracking changes in network KPIs Time capsule for analyzing the history of device version and configuration changes
Area analysis	Batch generation of building floor information, floor plan upload, and drag-and-drop AP placement
One-click report	One-click health check report and generation of reports on the overall network operating status
Security radar	Unauthorized Wi-Fi signal locating and classified display, as well as containment capabilities
Cloud Management	
Management and maintenance	Uniformly connecting, managing, and maintaining APs, ACs, and other devices Batch device configuration and upgrade ZTP deployment, creating configuration templates, and automatically applying configured templates Discovering wired and wireless network topology with one click and generating the topology
Cloud Authentication	
Authentication mode	SMS authentication, fixed account authentication, one-click authentication, Facebook authentication, Instagram authentication, voucher authentication, and other authentication modes Authentication implemented in the cloud, without the need to deploy the local authentication server
Portal authentication page	Customizing Portal authentication pages for PCs and mobile phones
SMS gateway	Interworking with Guodu and Alibaba Cloud SMS gateways
Platform Capabilities	
Big data capabilities	Mainstream persistence solutions based on Hadoop, MongoDB, and MySQL, providing distributed storage capabilities Spark-based big data computing capabilities Data warehouse building based on Hive, data model conversion, and integration

Value-added Software	RG-WS7816C
Hierarchical and role-based access control	Authorizing different applications for different users to meet service needs of different departments Administrators at different sites have different operation permissions.
System management	System management functions including account operations, authorization configuration, email configuration, configuration backup, and exception alarms

Note: For details, refer to the latest hybrid cloud management solution of Ruijie Networks.

Regulatory Compliance

Regulatory Compliance	RG-WS7816C
Regulatory compliance	IEC 62368-1 EN 62368-1 EN 55032 EN 55035 EN 61000-3-3 EN IEC 61000-3-2 ETSI EN 300 386

* For more country-specific regulatory information and approvals, contact your local sales agency.

08 Ordering Guide

Follow the steps to order an RG-WS7816C:

- First, order an RG-WS7816C.
- Select optical transceivers based on port requirements.
- Then order a dedicated upgrade license for the wireless controller based on your actual needs.

09 Ordering Information

Main Unit and Accessories

Model	Description
RG-WS7816C	The next-generation wireless controller RG-WS7816C provides 16 x 1000M RJ45 ports, 12 x 10GE SFP+ ports, and 2 x QSFP+ 40GE ports, supporting 128 licenses by default and up to 10,240 licenses. The maximum number of manageable APs is subject to the AP model, as follows: • A generic AP occupies one license. The RG-WS7816C can manage up to 10,240 generic APs. • A wall-plate AP occupies half of the license. The RG-WS7816C can manage up to 10,240 wall-plate APs. • An SOE O-Share micro AP occupies no license. The RG-WS7816C can manage up to 10,240 SOE O-Share micro APs. • The number of licenses occupied by an SOE O-Share master AP is subject to the model. For details, see Ordering Information in the datasheet of corresponding SOE O-Share master AP. One power module is configured for factory delivery, and the other power module needs to be purchased independently.
RG-PA550I II-F	550 W AC power module

License

Model	Description
RG-LIC-WS-16	16 licenses are provided for the RG-WS series wireless controller. A generic AP or two wall-plate APs consume one license. For the number of licenses consumed by an SOE O-Share master AP, see Ordering Information in its datasheet.
RG-LIC-WS-32	32 licenses are provided for the RG-WS series wireless controller. A generic AP or two wall-plate APs consume one license. For the number of licenses consumed by an SOE O-Share master AP, see Ordering Information in its datasheet.
RG-LIC-WS-128	128 licenses are provided for the RG-WS series wireless controller. A generic AP or two wall-plate APs consume one license. For the number of licenses consumed by an SOE O-Share master AP, see Ordering Information in its datasheet.
RG-LIC-WS-512	512 licenses are provided for the RG-WS series wireless controller. A generic AP or two wall-plate APs consume one license. For the number of licenses consumed by an SOE O-Share master AP, see Ordering Information in its datasheet.
RG-LIC-WS-1024	1,024 licenses are provided for the RG-WS series wireless controller. A generic AP or two wall-plate APs consume one license. For the number of licenses consumed by an SOE O-Share master AP, see Ordering Information in its datasheet.

Optical Transceivers

Model	Description
Mini-GBIC-SX	1000BASE-SX mini GBIC transceiver
Mini-GBIC-LX	1000BASE-LX mini GBIC transceiver
XG-SFP-SR-MM850	SR 10GE SFP+ transceiver
XG-SFP-LR-SM1310	LR 10GE SFP+ transceiver
40G-QSFP-SR-MM850	40GE SR QSFP transceiver, applicable to QSFP+ ports OM3 and OM4 MMF, MPO, 8-core, 850-nm wavelength, 100 m (0.062 miles) over OM3 MMF or 150 m (0.093 miles) over OM4 MMF
40G-QSFP-LR-SM1310	40GE LR4, QSFP transceiver, LC, 1310-nm wavelength, 2-core, 10 km (6.21 miles) over SMF, applicable to QSFP+ ports

10 Package Contents

Item	Quantity
RG-WS7816C AC	1
Power cord	1
Rubber pad	4
M4 x 8 mm Phillips countersunk screw	6
Console cable	1
Grounding wire	1
Rack-mount bracket	2
Product Manual	1

11 Warranty

For more information about warranty terms and period, contact your local sales agency:

- Warranty terms: <https://www.ruijie.com/support/servicepolicy>
- Warranty period: <https://www.ruijie.com/support/servicepolicy/Service-Support-Summary/>

Note: The warranty terms are subject to the terms of different countries and distributors.

12 More Information

For more information about Ruijie Networks, visit the official Ruijie website or contact your local sales agency:

- Ruijie Networks official website: <https://www.ruijie.com/>
- Online support: <https://www.ruijie.com/support>
- Hotline support: <https://www.ruijie.com/support/hotline>
- Email support: EBGITSC@ruijie.com.cn
- Ruijie Default Protocols and Ports for Wireless Products: https://www.ruijie.com/en-global/support/documents/slide_wlan-network-protocol-port/



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