



RG-WALL 1600-Z3200-S

Ruijie Cloud-Managed Firewall



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| Product Pictures



Front Top View of the RG-WALL 1600-Z3200-S

| Product Overview

Introduction

As new hot spots such as social networking, cloud computing, and big data have emerged, the Internet has entered an unprecedented era of prosperity. However, the information security problems accompanied have become increasingly complex, bringing huge challenges to the traditional security construction model. Drawing on years of technological expertise and in line with the development trend of next-generation firewalls, Ruijie Networks has unveiled the RG-WALL 1600-Z3200-S series cloud management firewall to cater for ever-changing demands of today's market. This firewall can be installed on a standard 19-inch rack and features high performance and flexible expansion.

Product Features and Benefits

The RG-WALL 1600-Z3200-S series firewalls use a DPDK-based high-performance network forwarding service platform to provide intelligent quick deployment, active asset discovery, intelligent policy manager, one-click fault analysis, and service health diagnosis, simplifying device deployment and O&M. They have rich security functions, including intrusion prevention, antivirus, port scan, traffic learning, application control, and defense against DoS/DDoS attacks. They also support unified management on the cloud platform, data synchronization to the cloud for analysis and reporting, remote monitoring and O&M, policy translation for device replacement, batch configuration, and automatic inspection.

In addition, you can expand the performance of the RG-WALL 1600-Z3200-S series firewalls by purchasing performance licenses.

| Firewall Throughput | Firewall (Traffic Mix) | IPS | NGFW | Threat Protection | Port |
|---|------------------------|----------|----------|-------------------|--|
| 10 Gbps | 1 Gbps | 900 Mbps | 850 Mbps | 800 Mbps | 8 x 1G electrical ports, 1 x 1G optical port, and 1 x 10G optical port |
| 10 Gbps | 2 Gbps | 1.6 Gbps | 1.2 Gbps | 900 Mbps | 8 x 1G electrical ports, 1 x 1G optical port, and 1 x 10G optical port |
| 10 Gbps | 3 Gbps | 2 Gbps | 1.6 Gbps | 1 Gbps | 8 x 1G electrical ports, 1 x 1G optical port, and 1 x 10G optical port |
| Combination of product and performance licenses: 1G: RG-WALL 1600-Z3200-S chassis 2G: RG-WALL 1600-Z3200-S chassis + one RG-WALL 1600-Z3200-S-1G-LIC performance license 3G: RG-WALL 1600-Z3200-S chassis + two RG-WALL 1600-Z3200-S-1G-LIC performance licenses | | | | | |

Applicable Industries and Scenarios

The RG-WALL 1600-Z3200-S can be deployed at an Internet egress, area boundary, and data center boundary, and for branch uplink.

Appearance Design

- The RG-WALL 1600-Z3200-S adopts a brand new security product design style of Ruijie Networks. The symmetrical, concise, octagonal-corner appearance reflects simplicity and high reliability.
- The octagonal corners are user-friendly.
- The unique mounting bracket design allows rapid deployment, simplifying the installation process. In a complex equipment room environment, only one person is needed to complete the device installation and securing processes.

Hardware Security

Different from common software-based defense, the RG-WALL 1600-Z-S series firewall implements attack defense by using an exclusive built-in anti-DoS/DDoS component on the CPU. This significantly improves the DoS/DDoS attack defense performance and enables more robust and secure networks.

All-New Hardware Design, Higher Reliability

A voltage or grid exception may incur a storage component failure. To cope with this risk, add monitoring and spare components on the firewall to enhance the capability of storage components to withstand shocks, thereby reducing device damages and data loss.

Product Highlights

- The firewall has an exclusive built-in anti-DoS/DDoS component on the CPU.
- The firewall features industry-leading multi-core lock-free design and the new NTOS operating system.
- By transforming the troubleshooting capabilities of senior engineers into product functions, the firewall provides you with a one-stop troubleshooting wizard.
- In the industry-first policy simulation space, you can foresee the effects of security policy adjustment, realizing zero-risk policy adjustment.
- Simple cloud O&M allows you to manage network and security devices on the entire network on a mobile app.

Product Features

AI-based Security of the Z Series Firewall

Traditional machine learning requires manual feature extraction, and some deep learning methods can extract only local features of domain name information but ignore contextual features between domain name characters. A single neural network model such as convolutional neural network (CNN) is used, which is insensitive to the input time order. The RG-WALL 1600-Z-S series firewall integrates domain name allowlist intelligence, rule filter, and convolutional recurrent neural network (CRNN) multi-level detection algorithm, addressing the problems of inaccurate and inefficient algorithms on traditional devices.

- Models are regularly updated based on self-learning. In this way, model-based detection is more accurate and can adapt to new Domain Generation Algorithms (DGAs).
- Word embedding is applied in the data pre-processing phase, resolving the problems of sparse matrix and curse of dimensionality in one-hot encoding.
- The CRNN algorithm enables large models and many parameters to be computed on embedded devices, greatly improving prediction efficiency.

Unified Security Defense

The RG-WALL 1600-Z-S series firewall integrates comprehensive security defense functions, meeting classified protection requirements on the firewall, antivirus, and intrusion prevention. Specifically, it provides DoS/DDoS attack defense against SYN, UDP, and ICMP flood attacks, ARP attack defense, detection and defense of attacks using common protocols including HTTP, TCP, UDP, DNS, and TLS, as well as various threats including

spoofing, injection, and man-in-the-middle attacks, cross-site request forgery, cross-site scripting, code execution, and use after free (UAF) vulnerabilities. The virus protection function integrates a large number of virus protection signature libraries and supports dual-engine scan, enabling both quick scan and deep scan.

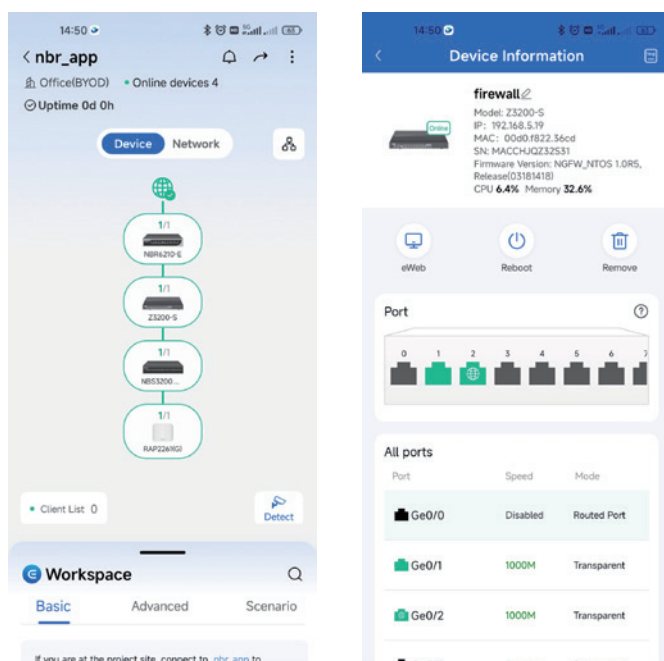
Simple Cloud O&M, Remote Device Commissioning

Administrators can remotely manage and control the firewall through Ruijie Cloud. Device configurations can be delivered uniformly, and device monitoring and other routine O&M functions can be implemented remotely.



Integrated Implementation and O&M on Ruijie Reeye App

You can use Ruijie Reeye App to perform quick onboarding and follow-up O&M of the firewall on a mobile phone. In addition, configurations can be delivered on this app, greatly improving the efficiency of implementation and O&M.



Hot Upgrade/Recovery

Hot patches can be installed in seconds to upgrade forwarding components, management components, and some system components and restart these components without affecting device running. This greatly improves the maintainability and stability of the device.

If the forwarding component encounters an exception during device running, second-level automatic hot restart can be performed, without manual discovery and device restart for recovery. The forwarding recovery time is reduced from minutes or even hours to seconds, which greatly reduces the impact on normal services of users.

Intelligent Service Diagnostic Center

Fault Analysis

The RG-WALL 1600-Z-S series firewall is developed to transform the troubleshooting capabilities of senior engineers into product functions and provides you with a one-stop troubleshooting wizard. In the diagnostic center, automatic troubleshooting can be conducted based on the paths that clients use to access target resources, and fault information and handling suggestions are displayed. This greatly improves the efficiency of troubleshooting and saves additional expenses for troubleshooting.

Packet Tracing

In the diagnostic center, you can also analyze and trace packet processing of each security service module on the device, and check detailed information of packet tracing records to accelerate network fault troubleshooting and locating.

Port Scan and Traffic Learning, Simple Firewall Onboarding

Onboarding Configuration

To perform firewall onboarding, you can conduct Port Scan to automatically identify the IP address and port number of a service system, and then enable Traffic Learning to automatically detect the service access relationship on the live network. You can also generate access control policies based on ports with one click, and complete firewall onboarding without professional knowledge.

Server Port Check

In routine O&M, server ports need to be checked to meet high security requirements and formulate refined security policies. In traditional mode, server ports need to be manually verified with the customer, which takes a long time. With port scan and traffic learning, this process can be completed in one day, which greatly improves efficiency and lowers technical thresholds.

Policy Simulation Space to Foresee Effects, Zero-Risk Policy Adjustment

You can add, delete, and modify a policy in the simulation space, use the policy to match the real traffic to analyze the difference in traffic matching before and after the policy adjustment, and adjust the policy accordingly. In this way, policies can be adjusted without service interruption, and O&M personnel do not need to stay up late to adjust policies in off-peak hours. The risk of policy adjustment is minimized, and refined policy adjustment can be achieved.

New NTOS Operating System, High Efficiency

The firewall adopts an advanced multi-core lock-free design. Typically, a firewall has multiple CPUs. Without lock-free design, when multiple CPUs compete for data from a common memory pool for processing, a

CPU obtains data and locks it, and the other CPUs can process the data only after it is unlocked, resulting in low efficiency. The Z-S series firewall uses the industry-leading multi-core lock-free design, and designates an independent space in the memory for each CPU. The CPU can obtain data from the designated memory space, so

data does need to be locked and no conflict will occur. Data is also stored independently. For example, data from the same IP address source is stored in one memory unit and is processed by the same CPU. This multi-core lock-free design is applied at each of the four layers of the TCP/IP model, significantly improving efficiency.

Product Specifications

Product Performance

| Firewall Throughput ⁴ | Firewall (Traffic Mix) | IPS ¹ | NGFW ^{1,2} | Threat Protection ^{1,3} |
|---|------------------------|------------------|---------------------|----------------------------------|
| 10 Gbps | 1 Gbps | 900 Mbps | 850 Mbps | 800 Mbps |
| 10 Gbps | 2 Gbps | 1.6 Gbps | 1.2 Gbps | 900 Mbps |
| 10 Gbps | 3 Gbps | 2 Gbps | 1.6 Gbps | 1 Gbps |
| Combination of product and performance licenses: 1G: RG-WALL 1600-Z3200-S chassis 2G: RG-WALL 1600-Z3200-S chassis + one RG-WALL 1600-Z3200-S-1G-LIC performance license 3G: RG-WALL 1600-Z3200-S chassis + two RG-WALL 1600-Z3200-S-1G-LIC performance licenses | | | | |

| System Performance and Capacity | RG-WALL 1600-Z3200-S |
|--|----------------------|
| Firewall throughput of IPv4 packets (1518-byte UDP packets) ⁴ | 10 Gbps |
| Firewall throughput (packets per second) | 1.8 Mpps |
| Concurrent sessions (TCP) | 500000 |
| New sessions/second (TCP) | 50000 |
| Firewall policies | 3000 |
| SSL VPN throughput | 384 Mbps |
| Concurrent SSL VPN users (recommended maximum, tunnel mode) | 500 |
| Application control throughput (HTTP 64K) ² | 3 Gbps |
| IPsec VPN throughput (512-byte) | 1.3Gbps |

| System Performance and Capacity | RG-WALL 1600-Z3200-S |
|--------------------------------------|----------------------|
| Gateway-to-Gateway IPsec VPN tunnels | 1000 |

Note:

All performance values are the maximum values and may vary depending on system configuration.

1. The performance values of IPS (mixed traffic), application control, NGFW, and threat protection are measured with logging enabled.
2. NGFW performance is measured with firewall, IPS, and application control enabled.
3. Threat protection performance is measured with firewall, IPS, application control, and malware protection enabled.
4. Firewall throughput is the maximum forwarding performance (1518-byte UDP packets) of hardware.

Hardware Specifications

| Hardware Specificatio | RG-WALL 1600-Z3200-S |
|---------------------------------|--|
| Dimensions and Weight | |
| Product dimensions (W x D x H) | 440 mm x 200 mm x 43.6 mm (17.32 in. x 7.87 in. x 1.72 in.; without rubber pads) |
| Shipping dimensions (W x D x H) | 520 mm x 345 mm x 106 mm (20.47 in. x 13.58 in. x 4.17 in.) |
| Product weight | 2.9 kg |
| Shipping weight | 4.0 kg |
| Form factor | 1 U rack |
| Port Specifications | |
| Fixed 1G electrical port | 8 × 10/100/1000 Base-T RJ-45 Ethernet electrical ports with auto-negotiation |
| Fixed 1G optical port | 1 × 1000BASE-SX/LX/ZX Ethernet optical port |
| Fixed 10G optical port | 1 × 10GBASE-SR/LR/ZR Ethernet optical port (with 10G/1G auto-negotiation) |
| Fixed management port | 1 × 10/100/1000 Base-T RJ-45 Ethernet port with auto-negotiation (reusing port Ge 0/0) |
| Console port | 1 × RJ-45 console port (serial console port) |
| USB port | 2 × USB 2.0 ports |
| Storage Specifications | |
| Hard disk | No hard disk for factory delivery. A 1 TB SATA hard drive can be added. |

| Hardware Specificatio | RG-WALL 1600-Z3200-S |
|------------------------------|---|
| Power Supply and Consumption | |
| Power supply | Built-in single power module: <ul style="list-style-type: none"> Rated input voltage: 100–240 V; 50–60 Hz Rated input current: 0.65 A |
| Max. Power Consumption | < 25 W |
| Environment and Reliability | |
| Operating temperature | 0°C to 45°C (32°F to 113°F) |
| Storage temperature | –40°C to +70°C (–40°F to +158°F) |
| Operating humidity | 5% RH to 95% RH (non-condensing) |
| Storage humidity | 5% RH to 95% RH (non-condensing) |
| Noise level | 43.7 dB |
| Operating altitude | 0–5000 m (0–16404 ft.) |
| Compliance | EMC SZEM2302000974ATV LVD SZES2302001034AT |

Software Specifications

| Software Specifications | RG-WALL 1600-Z3200-S |
|-------------------------|--|
| Network | |
| Physical interface | Configuring interfaces as LAN/WAN interfaces; three IP address assignment modes for WAN interfaces: PPPoE, DHCP, and static IP modes Configuring routing or transparent mode for interfaces |
| Sub-interface | Configuring sub-interfaces and VLAN IDs |
| Bridge interface | Configuring interfaces in transparent mode as bridge interfaces |
| Static route | Configuring IPv4 static routes |
| PBR | Configuring policy-based routing (PBR) |

| Software Specifications | RG-WALL 1600-Z3200-S |
|-----------------------------------|---|
| Routing table | Overall routing information of a device |
| DHCP server | DHCP server; configuring DHCP address pools |
| Address management list | Assigned DHCP address list |
| DNS server | Configuring DNS addresses for devices |
| Object | |
| Address/Address group | Configuring address objects in IP address/range format |
| Zone | Configuring security zones |
| Application and application group | Configuring application types in application/application group mode |
| Service/Service group | Configuring service objects; common default port services supported |
| Time plan | Configuring time objects; one-off time plans and cyclic time plans supported |
| Virus protection template | Configuring content object templates; predefined virus protection templates supported |
| | Configuring virus protection templates Configuring quick scan or deep scan; configuring templates based on protocols and directions; setting excluded viruses |
| Intrusion prevention template | Configuring content object templates; predefined intrusion prevention templates supported |
| | Configuring intrusion prevention templates Configuring rule filters based on objects, severity, protocols, threat types; setting excluded rules |
| SSL proxy certificate | Adding, importing, deleting, viewing, and downloading SSL proxy certificates Configuring a global SSL proxy certificate |
| Server certificate | Importing, deleting, viewing, and downloading server certificates |
| Security rule base | Viewing default security rules in the IPS library |
| Policy | |
| Simulation policy | Simulating policy execution in the simulation space to check whether uncertain security policies can achieve expected effects |
| Policy configuration wizard | Security policy configuration wizard for conducting port scan, performing configurations, testing configurations, and other steps to generate security policies |

| Software Specifications | RG-WALL 1600-Z3200-S |
|------------------------------|---|
| Policy optimization | Sorting out configured security policies and analyzing policies to identify redundant, expired, and conflicting policies |
| Policy lifecycle | Full lifecycle display of security policies, including detailed records of policy changes |
| Port scan | Port scan of configured IP ranges for all ports or selected ports; policy creation prompt for scan results |
| DoS/DDoS attack defense | Different DDoS attack defense policies in security defense |
| ARP attack defense | Anti-ARP spoofing, ARP flooding suppression, and other functions in security defense |
| Local defense | Configuring local defense policies in security defense |
| Blocklist/Allowlist | Configuring global blocklists and allowlists |
| SSL proxy policy | Configuring SSL proxy policies; customizing policies based on parameters including objects, contents, and zones; policy list |
| SSL proxy template | Configuring SSL proxy templates; setting the template type to protecting client or server |
| Allowlist | Configuring domain name allowlists and application allowlists |
| System | |
| Administrator | Creating device administrators, including account names, passwords, and description |
| Administrator role | Setting multiple administrator roles and assigning different permissions |
| Clock configuration | Configuring system time; NTP service configuration supported |
| Service parameter | Configuring service ports for a device, including web (HTTPS), SSH, and other ports |
| Authorization management | Managing licenses of devices, including license import and activation |
| Device information | Viewing device information, including the product name, SN, and MAC address, version information, running time, and license information |
| System restart | Restarting the system on the web UI |
| System upgrade | Upgrading the system |
| Patch installation | Downloading and installing patches for upgrade |
| Configuration backup | Import and export of device configurations |
| Factory settings restoration | Restoring factory settings on the web UI |
| Signature library upgrade | Automatic signature library upgrades based on the latest versions on the cloud |
| Cloud management platform | Enabling or disabling unified management on the cloud management platform |

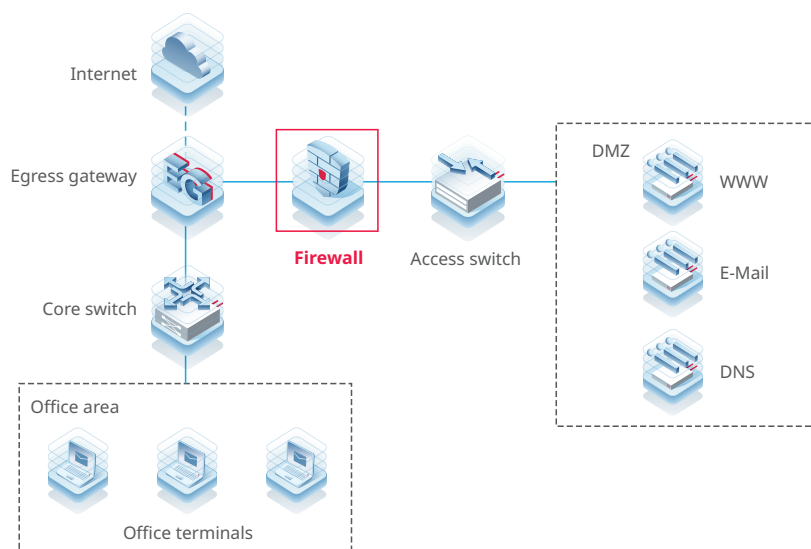
| Software Specifications | RG-WALL 1600-Z3200-S |
|-------------------------|---|
| Device binding | Adding devices to the cloud management platform by scanning a QR code |
| Ping | Ping for troubleshooting |
| Tracert | Tracert for troubleshooting |
| Packet obtaining tool | Tool for obtaining packets and exporting results |
| One-click collection | Collecting fault information with one click |
| Device health | Device health diagnosis |
| Service diagnosis | Service continuity diagnosis |
| Breakdown record | Breakdown information records |
| Device log retention | Device log retention |
| External APIs | RESTful APIs for third-party interconnection |

Typical Applications

Security Defense at Area Boundary

The RG-WALL 1600-Z-S series firewall can be deployed at an area boundary to meet LAN application requirements, improve information security, and guarantee LAN service security. The firewall can bring the following benefits:

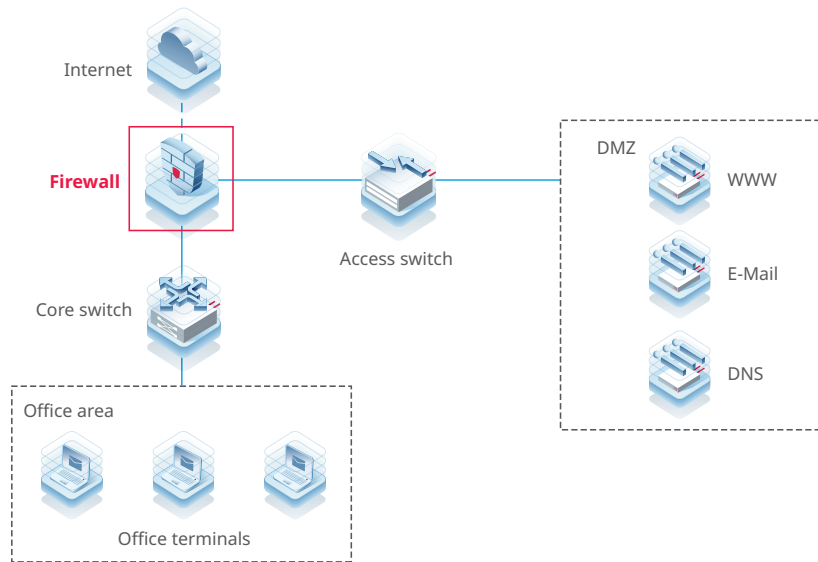
- Generate refined access control policies based on servers.
- Effectively defend against external attacks and viruses to protect key services of enterprises.
- Help users identify and control applications.



Small and Medium-Sized Internet Egress

The RG-WALL 1600-Z-S series firewall can satisfy the needs of small and medium-sized Internet egress, improve information security, and guarantee egress network security. The firewall can bring the following benefits:

- Meet the needs of small and medium-sized Internet egress scenarios.
- Effectively defend against external attacks and viruses to protect key services of users.
- Help users identify and control applications.



Ordering Information

| Model | Description |
|-------------------------------|---|
| RG-WALL 1600-Z3200-S | The RG-WALL 1600-Z3200-S cloud management firewall provides 8 x 1G electrical ports, 1 x 1G optical port, 1 x 10G optical port, and single power module (for factory delivery). The firewall is 1 U high and supports expansion of 1 TB enterprise-class SATA hard drive. |
| RG-WALL 1600-Z3200-S-1G-LIC | Performance expansion license for the RG-WALL 1600-Z3200-S cloud management firewall: One license provides expansion of 1 Gbps network throughput. For each device, up to two licenses can be added to achieve 3 Gbps network throughput. |
| RG-WALL 1600-Z3200-S-LIS-M-1Y | Four-in-one license for the firewall: One license provides one-year upgrade services for intrusion prevention (IPS), antivirus (AV), app identification (APP), and URL signature libraries. |
| RG-WALL 1600-Z3200-S-LIS-E-1Y | Five-in-one license for the firewall: One license provides one-year upgrade services for IPS, AV, APP, and URL signature libraries and one-year threat intelligence services. |
| RG-NSEC-HDD-1T | 1 TB enterprise-class SATA hard drive can be added on the Z series firewall to meet hard disk configuration requirements. |

| Model | Description |
|--|---|
| RG-WALL 1600-Z3200-S+RG-WALL 1600-Z3200-S-LIS-M-1Y | Combination package of Ruijie cloud-managed firewall RG-WALL 1600-Z3200-S with a four-in-one firewall signature library license: includes one firewall and one-year upgrade services for IPS, AV, APP, and URL signature libraries. |
| RG-WALL 1600-Z3200-S+RG-WALL 1600-Z3200-S-LIS-E-1Y | Combination package of Ruijie cloud-managed firewall RG-WALL 1600-Z3200-S with a five-in-one firewall signature library license: includes one firewall, one-year upgrade services for IPS, AV, APP, and URL signature libraries, and one-year threat intelligence services. |

| Ordering Guide

The RG-WALL 1600-Z3200-S firewall provides one 1G optical port and one 10G optical port. The following table lists the optional optical modules.

| Model | Description |
|-----------------------|---|
| MINI-GBIC-SX-MM850 | 1G SR module, SFP form factor, LC, 550 m (1,804.46 ft.) over MMF |
| MINI-GBIC-LX-SM1310 | 1G LX module, SFP form factor, LC, 10 km (32,808.40 ft.) over SMF |
| Mini-GBIC-GT | 1G SFP copper module, SFP form factor, RJ-45, 100 m (328.08 ft.) over Cat 5e/6/6a |
| MINI-GBIC-LH40-SM1310 | 1G LH module, SFP form factor, LC, 40 km (131,233.60 ft.) over SMF |
| XG-SFP-LR-SM1310 | 10G LR module, SFP+ form factor, LC, 10 km (32,808.40 ft.) over SMF |
| XG-SFP-ER-SM1550 | 10G ER module, SFP+ form factor, LC, 40 km (131,233.60 ft.) over SMF |
| XG-SFP-AOC1M | 10G SFP+ AOC cable, 1 m (3.28 ft.) |
| XG-SFP-AOC3M | 10G SFP+ AOC cable, 3 m (9.84 ft.) |
| XG-SFP-AOC5M | 10G SFP+ AOC cable, 5 m (16.40 ft.) |

| Package Contents

| Item | Quantity |
|---|----------|
| RG-WALL 1600-Z3200-S chassis (with the nameplate at the bottom) | 1 |
| Power cord | 1 |
| Power cord retention clip | 1 |
| Yellow/Green grounding cable | 1 |
| Rubber pad | 4 |
| L-shaped mounting bracket | 2 |
| M4 x 8 mm cross recessed countersunk head screw | 6 |
| Console cable | 1 |
| Network cable | 1 |
| Warranty Card | 1 |
| User Manual | 1 |

| Warranty Information

For more information about warranty terms and period, visit the official Ruijie website or contact your local sales agency:

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

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

| 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.ruijienetworks.com/>
- Online support: <https://www.ruijienetworks.com/support>
- Hotline support: <https://www.ruijienetworks.com/support/hotline>
- Email support: service_rj@ruijienetworks.com



Ruijie Networks Co., Ltd.

For more information, visit www.ruijienetworks.com or call 86-400-620-8818.