

RG-SG7000L Series

ODON Master Device



01 Product Overview

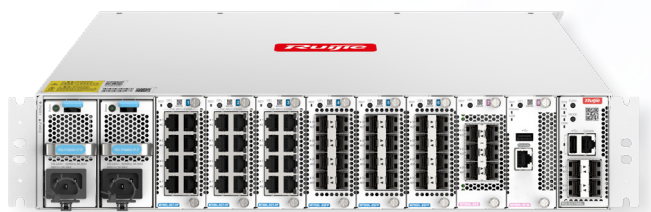
The RG-SG7008L series ODON master device is a high-performance, large-capacity modular product launched by Ruijie Networks for next-generation converged networks. It fully integrates campus switching, egress routing, wireless, and network management features. With powerful and rich combination of functions, the RG-SG7008L series ODON master device can guarantee network egress security, manage Internet access behavior and wireless devices, optimize network egress, and improve service performance, meeting diverse requirements of various industries on small and medium-scale network egress.

Using the RGOS12.X modular OS, the RG-SG7008L supports IPv4, IPv6, and other network services, meeting the application requirements of Ethernet in the future. The routing module integrates virtualized CPU (vCPU), Ruijie Express Forwarding (REF), and X-Flow technologies of Ruijie Networks and has complete anti-traffic attack capabilities and QoS mechanism to ensure multi-service deployment. In addition, this module has strong scalability and flexible configuration, supports diverse interfaces and built-in features, and integrates multiple technologies including IPv6, BGP, IPsec, MPLS VPN, HQoS, and multicast. The M7008L-WSM wireless card supports intelligent radio frequency (RF) management and optimization, intelligent load balancing, network-wide seamless roaming, and fair scheduling, ensuring high throughput and superior experience on the wireless network.

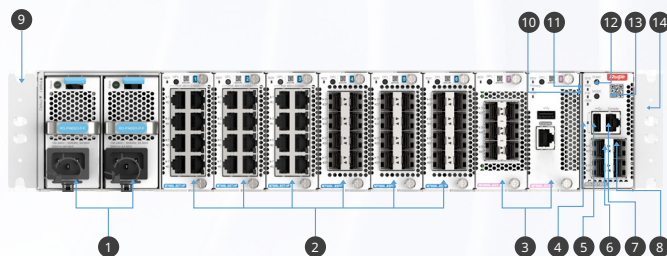
With ultimate high cost performance, the RG-SG7008L series ODON master device can be deployed in MANs, campus networks, and data centers based on service requirements. It can be used as a LAN/WAN integrated all-in-one egress device, core switch, access controller (AC), or network management system (NMS) for campus networks of small and medium-sized enterprises, primary and secondary schools, small and medium hospitals, and small and medium-sized government agencies. It can also be used as an aggregation device of large and medium-sized networks. In SD-WAN scenarios at the edge of enterprise branches and data centers, it can meet the requirements for fast and secure access and efficient transmission of service data of enterprise branches under the trend of cloud-driven enterprise applications.

The RG-SG7008L series ODON master device integrates INC EMB and supports intelligent networking features. Self-discovery, self-organizing network (SON), and self-configuration can be achieved among gateways, switches, and wireless APs without a controller or Internet access.

02 Product Appearance

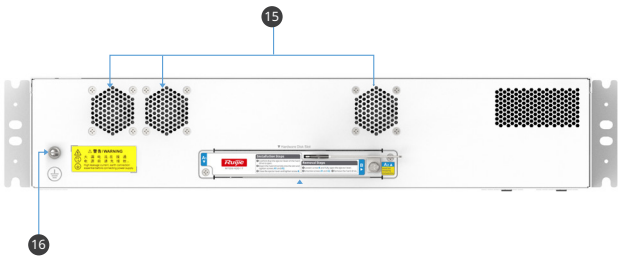


RG-SG7008L
Front Top View of RG-SG7008L



RG-SG7008L
Front Panel of the RG-SG7008L

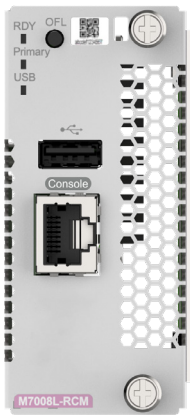
No.	Item	Description
1	Modular power supply slot	Is used for installing the system power module.
2	Common service card slot	Is used for installing a common service card based on actual application requirements.
3	Multi-service card slot	Is used for installing a multi-service card based on actual application requirements.
4	USB LED	Solid green: The USB flash drive works properly. Solid red: The USB flash drive encounters an exception. Off: The USB flash drive is not installed.
5	USB port	Connects to a USB flash drive to store logs, software versions, alarms, and other diagnostic information, which can be easily used for online upgrade of device software and storage of log information.
6	10G SFP+ port LED	Off: No link is set up on the port. Solid green: A link is set up on the port at a rate of 1 Gbps or 10 Gbps. Blinking green: A link is set up on the port at a rate of 1 Gbps or 10 Gbps and data is transmitted on the link.
7	Console port	Connects to the serial port of the background computer for commissioning, configuration, maintenance, management, and program loading.
8	Fixed 10G SFP+ port	Provides four fixed 10G SFP+ ports. The 10G SFP+ port supports the 10G SFP+ module and 1G SFP module.
9	Left mounting bracket (front view)	Is used for mounting the chassis in the cabinet. The mounting bracket is integrated with the chassis.
10	DISK hard drive LED	Solid green: The DISK hard drive works properly. Solid red: The DISK hard drive fails. Off: There is no hard drive or the hard drive is removed or reinstalled. To hot swap the hard drive, run the disk offline command until the DISK LED is off. If you directly remove or reinstall the hard drive without first executing the disk offline command, problems such as hard drive damage, data loss, and system crash, may occur.
11	PoE LED	You can press the PoE button for less than 3s to switch the PoE port LED display mode. Solid green: The LED indicates the switching status. Solid yellow: The LED indicates the PoE status.
12	Fan status LED	Green: The fan module works properly. Red: The fan module fails. Off: Device hardware is abnormal or the device is not powered on.
13	System status LED	Solid green: The system works properly. Blinking green: The system is starting up. Solid red: A fault occurs in the system. Off: The system is not powered on, or is powered on but does not work properly.
14	MODE button	Is used for switching the PoE port LED display mode. When the device is powered on and in initialized state, the LED Mode button is green (switching mode). The electrical port LED indicates the port Link/ACT status. When you press the LED Mode button at one time, the LED Mode LED will turn yellow (PoE mode). The electrical port LED indicates the PoE status. When you press the LED Mode button again, the electrical port LED switches to the port Link/ACT status. Pressing this button at one time will switch the port status accordingly.
15	FUNC button	Is used for system reset.
16	Device QR code	Is used for QR code-based deployment.
17	Right mounting bracket (front view)	Is used for mounting the chassis in the cabinet. The mounting bracket is integrated with the chassis.



Rear Panel of the RG-SG7008L

No.	Item	Description
18	Expansion hard disk slot	Is used for installing the expansion hard disk.
19	Fixed fan outlet hole	Is used for drawing air outwards.
20	Grounding stud	It is used to connect to the ground cable.

M7008L-RCM

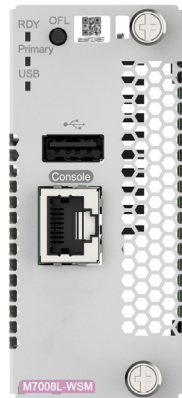


Front View of the M7008L-RCM Module

Port/Button/LED	Description
Console port	The console port is used to connect to the serial port of the background computer for commissioning, configuration, maintenance, management, and program loading.
USB port	The USB port is used to connect a USB flash drive to store logs, software versions, alarms, and other diagnostic information, which can be easily used for online upgrade of device software and storage of log information.
OFL hot swapping button	When you press and hold the button for more than 3s, the RDY LED starts blinking. After the button is released, the module completes uninstallation. When the RDY LED is off, the module can be hot-swapped.

Port/Button/LED	Description
RDY function module status LED:	Blinking green: The module is being initialized. Solid green: Initialization is complete, and the module works properly. Off: The module is not powered on, is not installed properly, or is removed.
USB port LED	Solid green: The USB flash drive works properly. Solid red: The USB flash drive encounters an exception. Off: The USB flash drive is not installed.
Primary LED	Off: This card is the standby one or the system is equipped with two routing cards without differentiating active and standby roles. Solid green: This card is the active one.

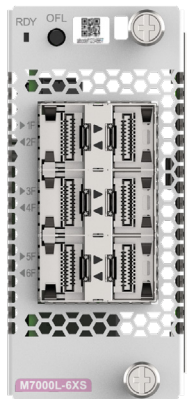
M7008L-WSM



Front View of the M7008L-WSM

Port/Button/LED	Description
Console port	The console port is used to connect to the serial port of the background computer for commissioning, configuration, maintenance, management, and program loading.
USB port	The USB port is used to connect a USB flash drive to store logs, software versions, alarms, and other diagnostic information, which can be easily used for online upgrade of device software and storage of log information.
OFL hot swapping button	When you press and hold the button for more than 3s, the RDY LED starts blinking. After the button is released, the module completes uninstallation. When the RDY LED is off, the module can be hot-swapped.
RDY function module status LED	Blinking green: The module is being initialized. Solid green: Initialization is complete, and the module works properly. Off: The module is not powered on, is not installed properly, or is removed.
USB port LED	Solid green: The USB flash drive works properly. Solid red: The USB flash drive encounters an exception. Off: The USB flash drive is not installed.
Primary LED	Off: This card is the standby one or the system is equipped with two routing cards without differentiating active and standby roles. Solid green: This card is the active one.

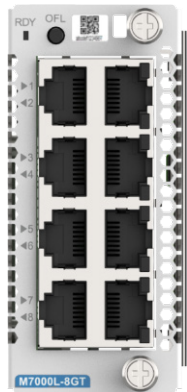
M7000L-6XS



Front View of the M7000L-6XS Module

LED	Description
OFL button	When you press and hold the button for more than 3s, the RDY LED starts blinking. After the button is released, the module completes uninstallation. When the RDY LED is off, the module can be hot-swapped.
RDY function module status LED:	Blinking green: The module is being initialized. Solid green: Initialization is complete, and the module works properly. Off: The module is not powered on, is not installed properly, or is removed.
SFP+ port LED	Port status Link/ACT Solid green: A link is set up on the port. Blinking green: A link is set up on the port and data is transmitted on the link. Off: No link is set up on the port.

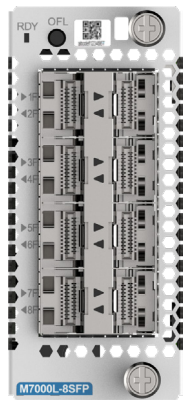
M7000L-8GT



Front View of the M7000L-8GT Module

Button/LED	State
OFL button	When you press and hold the button for more than 3s, the RDY LED starts blinking. After the button is released, the module completes uninstallation. When the RDY LED is off, the module can be hot-swapped.
RDY function module status LED:	Blinking green: The module is being initialized. Solid green: Initialization is complete, and the module works properly. Off: The module is not powered on, is not installed properly, or is removed.
10/100/1000Base-T Ethernet Port LED	Port status Link/ACT Solid yellow: A link is set up on the port at a rate of 10/100 Mbps. Blinking yellow: A link is set up on the port at a rate of 10/100 Mbps and data is transmitted on the link. Solid green: A link is set up on the port at a rate of 1000 Mbps. Blinking green: A link is set up on the port at a rate of 1000 Mbps and data is transmitted on the link. Off: No link is set up on the port.

M7000L-8SFP



Front View of the M7000L-8SFP Module

Button/LED	State
OFL button	When you press and hold the button for more than 3s, the RDY LED starts blinking. After the button is released, the module completes uninstallation. When the RDY LED is off, the module can be hot-swapped.
RDY function module status LED	Blinking green: The module is being initialized. Solid green: Initialization is complete, and the module works properly. Off: The module is not powered on, is not installed properly, or is removed.
SFP port status LED	Port status Link/ACT Solid green: A link is set up on the port. Blinking green: A link is set up on the port and data is transmitted on the link. Off: No link is set up on the port.

RG-PA180I-F



Front View of the RG-PA180I-F Power Module

LED	State	Description
Status	On	The output of the power module is normal.
	Off	Output exceptions: input overvoltage or undervoltage, output overcurrent, output short circuit, output overvoltage, over-temperature, fan failure, and power module not installed into the backplane of the device

M7000L-HDD-1T

Button/LED	Description
DISK hard drive LED	Solid green: The SATA hard drive works properly. Solid red: The SATA hard drive fails. Off: There is no hard drive or the hard drive is removed or reinstalled. To hot swap the hard drive, run the disk offline command until the SATA LED is off. If you directly remove or reinstall the hard drive without first executing the disk offline command, problems such as hard drive damage, data loss, and system crash, may occur.

03 Product Features

Modular, Flexible, Cost-Effective

The RG-SG7008L series ODon master device adopts a modular design. Common service card slots and multi-service card slots are integrated on the chassis, and customers can purchase common service cards and multi-service cards as required, meeting the deployment needs of various services and delivering high scalability and low cost.

Virtual Switching Unit

The switching module of the RG-SG7008L series ODon master device supports VSU, in which multiple physical devices are connected through aggregate links and virtualized into one logical device. The devices use the same IP address, telnet process, command line interface (CLI) for management, and support automatic version

check and automatic configuration. You need to manage only this logical device to enjoy high efficiency and use experience brought by multiple devices and protect investment.

Simplified management: Administrators can manage multiple switches in a unified manner, with no need to connect to each switch for configuration and management.

Simplified network topology: A VSU serves as a switch on a network and connects to peripheral devices through aggregate links. Therefore, no Layer 2 loop exists and the Multiple Spanning Tree Protocol (MSTP) does not need to be configured. Various control protocols run on the VSU.

Fault recovery within milliseconds: A VSU connects to peripheral devices through aggregate links. If one device or member link in the VSU malfunctions, data and services can be switched to another member link within only 50 ms to 200 ms.

High scalability: User devices can be added to or removed from a virtualized network in a "hot swap" manner, without affecting normal running of other devices.

CLOS Architecture for Non-Blocking Switching

The RG-SG7008L series ODON master device features advanced CLOS architecture, which can separate the control plane from the forwarding plane to ensure non-blocking switching at the full line rate among ports, delivering continuous bandwidth upgrade and service support capabilities. A complete orthogonal design is adopted for service modules and switch fabric modules. Traffic is transmitted to the switch fabric modules for switching. In this way, there is no cabling on the backplane and the transmission loss is low, which greatly reduces the signal attenuation and improves the service traffic transmission efficiency in the ODON master device.

Sound Security Protection Policies

The RG-SG7008L series ODON master device effectively defends against virus spread and hacker attacks by using multiple inherent mechanisms such as DoS attack prevention, IP scanning prevention, validity check of port ARP packets, and multiple hardware-based ACL policies. It supports multiple functions such as VPN gateway, terminal behavior management, content audit, network traffic control, and WAN optimization.

The hardware-based IPv6 ACL can easily control the access of IPv6 users at the network boundary even if there are IPv6 users on an IPv4 network. The ODON master device allows the coexistence of IPv4 and IPv6 users and

can control access permissions of IPv6 users, for example, restricting access to sensitive resources on the network.

The industry-leading unique hardware CPU protection mechanism CPU Protection Policy (CPP) is applied. The CPP enables the ODON master device to classify data traffic sent to the CPU, process the traffic by queue priority, and apply the rate limit to traffic as required. The CPP fully protects the CPU from being occupied by unauthorized traffic, malicious attacks, and resource consumption, which ensures the security of the CPU and the ODON master device.

The RG-SG7008L adopts the innovative Network Foundation Protection Policy (NFPP) to limit the rate of sending ARP packets, ICMP requests, DHCP requests, and other packets to networks. The integrated switch discards packets whose rate exceeds the threshold, identifies attacks, and isolates clients launching attacks. In this way, basic networks are protected against network attacks, guaranteeing network stability.

DHCP snooping enables the RG-SG7008L to receive DHCP Response messages only from trusted ports and prevents spoofing from unauthorized DHCP servers. With DHCP snooping, the RG-SG7008L dynamically monitors ARP packets, checks user IP addresses, and discards unauthorized packets that do not match binding entries. This effectively prevents ARP spoofing and source IP address spoofing.

Sound QoS Policies

The RG-SG7008L series routing switch is capable of classifying and controlling various flows including MAC flows, IP flows, and application flows, to implement fine-grained bandwidth control, forwarding priorities, and other flow policies. Furthermore, the ODON master device can provide services based on applications and QoS levels required by different applications.

The Differentiated Services (DiffServ) model supports IEEE 802.1p priorities, IP ToS values, traffic filtering based on Layer 2 to Layer 7 information, Strict Priority (SP), Weighted Round Robin (WRR), and other QoS policies.

The RG-SG7008L series ODON master device offers high-performance and flexible Quality of Service (QoS) features, enabling precise management and control of network traffic. It provides advanced features such as queue scheduling, congestion avoidance, congestion management, traffic policing, traffic shaping, and priority marking. These features ensure accurate bandwidth allocation, latency control, jitter reduction, and packet loss prevention for different types of services, meeting the requirements of differentiated services for various users and service levels. The RG-SG7008L series ODON master device supports a fine-grained Hierarchical QoS (H-QoS)

feature with five levels of hierarchy for both upstream and downstream traffic. This capability satisfies the demands of high-performance and centralized QoS deployment that facilitates management.

High-Performance and Built-in Services

The routing module of the RG-SG7008L series ODON master device has comprehensive features built in, and integrates multiple technologies including NAT, IPv6, BGP, IPsec, MPLS VPN, HQoS, and multicast. Customers do need to purchase software licenses or service cards separately, saving investment.

The routing module has a built-in traffic visualization function. By implementing Internet Protocol Flow Information Export (IPFIX) and a sampling ratio of up to 1: 1, it realizes 24/7 uninterrupted monitoring of network traffic. The routing module can detect exceptions and abrupt traffic in a timely manner to eliminate potential failures and ensure stable and reliable network running. With Ruijie-patented flow table technology, the module can sample traffic without affecting service performance of the integrated switch.

Efficient and Fast Distributed Forwarding Technology

The RG-SG7008L series ODON master device adopts Ruijie's unique high-speed packet forwarding technology: distributed REF. Before a packet is forwarded, a high-speed forwarding table is created, which is used during packet forwarding. This removes the participation of data link layer and network layer in the traditional forwarding process, greatly improving the data forwarding efficiency.

With this flow table-based forwarding technology, no impact is imposed on the forwarding performance when QoS, ACL, NAT, policy-based routing (PBR), and other features are enabled on the service processing board, achieving both high service processing performance and high forwarding performance.

Powerful Route Processing Capability

The RG-SG7008L series supports IPv4/IPv6 static routing and various dynamic routing protocols to apply to different networks. Furthermore, it supports PBR to flexibly control and schedule network traffic, coping with routing demands of customers. Based on the high-performance flow table and fast forwarding technology, the RG-SG7008L series uses features such as GR, FRR, and BFD to accelerate convergence of traditional routing protocols, achieving rapid convergence on a large network.

Intelligent Load Balancing

The M7008L-WSM wireless card of the RG-SG7008L 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 M7008L-WSM 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-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.

Intelligent RF Management

The M7008L-WSM wireless card of the RG-SG7008L enables APs to perform on-demand RF scanning on the wireless network. The M7008L-WSM can scan wireless frequency bands and channels, identify unauthorized APs and wireless networks, and notifies network administrators of alarms, providing all-round protection in a security-sensitive environment. Moreover, the M7008L-WSM can control the RF scanning function of APs in real time, and measure the signal strength and interference. It can dynamically regulate the traffic load, transmit power, RF coverage area, and channel allocation using software tools to maximize the AP coverage and capacity.

The M7008L-WSM can effectively detect unauthorized APs on a wireless network. It can instruct an AP to send a probe packet to surrounding APs and wait for a response. In this case, the M7008L-WSM can detect the unauthorized AP that does not send a response packet, thereby ensuring network-wide security.

Comprehensive MPLS VPN Functions

The RG-SG7008L series ODON master device supports comprehensive MPLS protocol functions, and delivers fully distributed Layer 2 and Layer 3 VPN services. It provides a high-performance, secure, and hierarchical MPLS VPN solution.

The RG-SG7008L series ODON master device offers a routing module that supports distributed multicast VPN and can be enabled with high-performance multicast service on the MPLS VPN network, satisfying multicast service requirements of video conference and remote teaching.

Full IPv6 Support

The RG-SG7008L supports multiple IPv6 routing technologies, including static routing, ECMP, PBR, OSPFv3, RIPng, BGP4+, and IS-ISv6, supporting large IPv6 network deployment in the future.

The RG-SG7008L supports various IPv6 transition technologies, such as dual-stack, manual tunnel, Intra-Site Automatic Tunnel Addressing Protocol (ISATAP), and 6to4 tunneling technologies. These transition can effectively support the transition from IPv4 to IPv6 networks.

The RG-SG7008L also supports a large number of IPv6-related technologies, including automatic address configuration, ICMPv6, ICMPv6 redirect, ACL for IPv6, and TCP/UDP for IPv6. With full support for IPv6, the RG-SG7008L protects existing user investment while satisfying future development requirements, ensuring smooth migration from IPv4 to IPv6 networks.

Simplified VPN Deployment and Management

The RG-SG7008L series ODon master device applies Ruijie's simplified VPN solution. This solution enables unified VPN configuration of access devices, realizing zero-touch provisioning of these devices. In addition, it supports automatic dynamic negotiation and deployment of differentiated VPN configurations, enabling rapid deployment of massive branch VPNs and centralized remote maintenance.

Carrier-Class High Reliability

The RG-SG7008L series ODon master device has a modular architecture, and switching, routing, and wireless functions are physically isolated from each other. All cards can be flexibly configured, and redundancy design is applied for key hardware, including 1+1 redundancy for power modules and 1+1 redundancy for fan modules. The redundant power module supports hot swapping, maximizing the reliability and availability of the entire device.

By using Virtual Router Redundancy Protocol (VRRP), the RG-SG7008L effectively guarantees network stability. The RG-SG7008L supports spanning tree protocols (IEEE 802.1D, IEEE 802.1w, and IEEE 802.1s) to achieve fast convergence, improve the fault tolerance capability, and ensure stable network running and link load balancing. The RG-SG7008L effectively utilizes network channels to provide redundant links.

With the Rapid Link Detection Protocol (RLDP), the RG-

SG7008L can quickly detect the link connectivity and unidirectional optical fiber links. Through port loop detection, the RG-SG7008L can prevent network failures caused by the loops that occurs in the scenario where an unauthorized port is connected to hubs.

The RG-SG7008L series also supports the Ethernet Ring Protection Switching (ERPS) technology, which is an international Layer 2 link redundancy backup protocol designed for the core Ethernet. The loop blocking and link recovery of ERPS are implemented on the master control device, and non-master control devices directly report their link status to the master control device, without processing on other non-master control devices. Therefore, loop blocking and recovery time of ERPS is faster than that of STP. Based on the preceding differences, ERPS supports link recovery within milliseconds in an ideal environment.

When STP is disabled, the Rapid Ethernet Uplink Protection Protocol (REUP) can still provide basic uplink redundancy and millisecond-level fault recovery faster than STP.

The RG-SG7008L supports Bidirectional Forwarding Detection (BFD) for upper-level protocols (such as routing protocols), rapidly detecting connectivity of the forwarding path between two routing devices. BFD greatly shortens the convergence time for the upper-level protocols upon link status changes.

The RG-SG7008L also supports dual-boot at the hardware level. It uses two flash chips to store the boot software (system boot program) to achieve hardware-level boot redundancy and avoid the device start failure due to a flash chip fault.

High Energy Efficiency

The RG-SG7008L is equipped with modular power supplies to ensure efficient power supply. The RG-SG7008L adopts the next-generation hardware architecture, advanced energy-efficient circuit design and components, to efficiently reduce energy consumption and noise. The RG-SG7008L is equipped with variable-speed axial fan modules to intelligently control the fan speed based on the ambient temperature, which reduces the power consumption and noise while ensuring stable device running.

Simple Network Maintenance

The RG-SG7008L supports SNMP, RMON, syslog, and USB-based log and configuration backup for routine network diagnosis and maintenance. Administrators can utilize diversified management and maintenance methods, including the CLI, web-based NMS, and Telnet to facilitate

device management.

The RG-SG7008L supports OpenFlow and NETCONF interfaces, and enables upgrade to software-defined networking (SDN) networks. The ODon master device substantially reduces network maintenance costs while greatly simplifying network management.

The RG-SG7008L also supports gRPC-based Telemetry to periodically collect CPU and memory information.

The one switch one network (OSON) management software and service template are pre-installed on the device upon delivery for rapid deployment. The device also supports service planning for a network, as well as plug and play and zero-touch provisioning and replacement of remote units. In addition, the RG-SG7008L can interconnect with a cloud management platform to enable device management and remote O&M on the cloud,

Simple networking: Only a PC or mobile phone with Internet access is required to complete device deployment,

realizing plug and play. The system can automatically discover the network topology based on gateways and present it as a graph.

Simple O&M: The network can be managed anytime, anywhere, and both the wired and wireless gateways can be managed. The system supports configuration delivery, backup and recovery, command-line debugging, Eweb login, Telnet login, SSH login, reboot, and device upgrade.

Simple monitoring: You can view the network health and device details (including the system status, traffic trend, connectivity, and power supply status) anytime. Faults and user network experience are visible, alarms are pushed in a timely manner, and logs are generated to facilitate event traceback. Alarms can be sent through WeChat official account, email, WeChat, and enterprise DingTalk.

Simple authentication: Relying on the cloud, real-name authentication for Internet access can be implemented for the entire network, with no extra software or server required.

04 Product Specifications

Hardware Specifications of RG-SG7008L

Hardware Specifications	RG-SG7008L
Fixed ports	4 x 1GE/10GE SFP+ ports
Management ports	1 x console port, 1 x USB port, compliant with the USB 2.0 standard
Module slots	6 x common service card slots (slots 1–6) 2 x multi-service module slots (slots 7 and 8) 2 x power module slots (slots PWR1 and PWR2) 1 x hard disk slot Built-in switch fabric unit (SFU) and fan modules
Multi-service card slots	M7000L-6XS (6 x 10GE optical interface ports) M7008L-RCM (routing card) M7008L-WSM (wireless card)
Common service card slots	M7000L-8GT (8 x GE Ethernet interface card) M7000L-8SFP (8 x GE optical interface card)
System Specifications	
Switching capacity	416 Gbps
Packet forwarding rate	310 Mpps
Dimensions and Weight	
Dimensions (W x D x H)	Chassis without cable management arm (2 U): 442 mm x 320 mm x 88 mm (17.40 in. x 12.60 in. x 3.46 in.) Chassis with cable management arm (3 U): 442 mm x 406 mm x 131.5 mm (17.40 in. x 15.98 in. x 5.18 in.)

Hardware Specifications		RG-SG7008L	
Weight		Net weight: about 5.95 kg (13.12 lbs.)	
Power Supply and Fan			
Power module		RG-PA180I-F: ● Input: 90 V–290 V AC ● Output power: 180 W (12 V/180 W)	
Power redundancy		Support 1+1 redundancy and current sharing.	
Fixed fan modules		3 x built-in fan modules Fan speed adjustment and fan failure alarming are supported.	
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		10% RH to 90% RH (non-condensing)	
Storage humidity		5% RH to 95% RH	
Altitude		Long-term operating altitude: 0 m to 1800 m (0°C to 45°C, 32°F to 113°F) Note: At an altitude from 1800 m (5906 ft) to 5000 m (16404 ft), the maximum temperature decreases by 1°C (1.8°F) each time the altitude increases by 220 m (722 ft). Operating altitude: up to 5000 m (16404 ft) Storage altitude: up to 5000 m (16404 ft)	

Software Specifications of RG-SG7008L

Software Specifications	Product Feature	RG-SG7008L
Switching module	VLAN	4000 IEEE 802.1Q VLANs Port-based VLAN Private VLAN Voice VLAN GVRP
	QinQ	Basic QinQ Flexible QinQ
	Link aggregation	LACP (IEEE 802.3ad)
	Spanning tree protocols	STP, RSTP, and MSTP
	VXLAN	The hardware supports Virtual Extensible LAN (VXLAN). Through software upgrade in the future, a logical Layer 2 network can be built on the basis of the Layer 3 network.
	DHCP	DHCP server DHCP client DHCP snooping DHCP relay IPv6 DHCP server IPv6 DHCP snooping IPv6 DHCP client IPv6 DHCP relay

Software Specifications	Product Feature	RG-SG7008L
Switching module	IP routing	RIP and RIPng BGP4 and BGP4+ OSPFv2, OSPFv3, IS-ISv4, and IS-ISv6 Packet-based and flow-based load balancing
	Multicast	IGMPv1/IGMPv2/IGMPv3 and IGMP proxy PIM-DM, PIM-SM, and PIM-SSM MLD Snooping and MLD PIM for IPv6
	ACL	Flexible and diversified hardware ACLs Standard IP ACLs (IP-based hardware ACLs) Extended IP ACLs (hardware ACLs based on IP addresses or TCP/UDP port numbers) MAC-based extended ACLs Time-based ACLs Expert-level ACLs IPv6 ACL
	Basic security features	3-tuple binding (IP address, MAC address, and port) Filtering of unauthorized MAC addresses 802.1x authentication based on the port number and MAC address Portal authentication and Portal 2.0 authentication ARP check, ARP packet rate limiting, gateway-targeted ARP spoofing prevention Port protection Broadcast storm suppression Hierarchical management and password protection of administrators RADIUS and TACAS+ AAA for device login management SSHv2 to provide a secure, encrypted connection for user login BPDU Guard CPP and NFPP Attack defense, DoS/DDoS defense, fragmentation attack defense, SYN attack defense, and IP spoofing attack defense L2TP, IPsec VPN, GRE
	Management features	SNMP, CLI (Telnet/Console), RMON, SSH, syslog, NTP/SNTP, SNMP over IPv6, IPv6 MIB support for SNMP, SSH over IPv6, Telnetv6, FTPv6/TFTPv6, DNSv6, NTP for IPv6, and Traceroute for IPv6 CLI configurations including the console port, auxiliary port, Telnet, or SSH File transfer protocols such as FTP, TFTP, and XMODEM sFlow, which utilizes the random sampling technology to sample flow information on the traffic of a switch WIS-based management
	High reliability	VSU (virtualizing multiple devices into one device) BFD ERPS (G.8032) REUP RLDP 1+1 power redundancy Hot swapping of power modules

Software Specifications	Product Feature	RG-SG7008L
Routing module	IPv4 features	LLDP, 802.1Q, 802.1p, 802.3ad, and other Ethernet features Static routing, RIPv1/RIPv2, OSPFv2, BGP, IS-IS, PBR, and routing policies VRRP, FTP, and TFTP ECMP and WCMP Static and dynamic NAT, static and dynamic NAPT, and VPN NAT DNS resolution and smart DNS NTP server and NTP client
	IPv6 features	IPv6 addressing, Neighbor Discovery (ND), ICMPv6, Stateless Auto Configuration, and Path MTU Discovery Static routing, RIPv6, OSPFv3, BGP4+, IS-ISv6, ECMP, and PBR VRRPv3, BFDv6, and 6VPE IPv6 ACL, NAT64, NAT-PT, DHCPv6, DNSv6, FTPv6, and TFTPv6 Manual tunnel, automatic tunnel, ISATAP, and GRE tunnel
	MPLS	MPLS forwarding, MPLS VPN/VPLS MPLS VPN inter-AS option A/B/C
	SSL VPN	Enabled by default; supporting access on the web page and iOS, macOS, Windows, and Android clients
	Egress features	User management, ACE based on user groups, and rate limiting for individual users Egress routing, ISP address library, Reverse Path Limited (RPL), domain name-based routing, and multi-link load balance (MLLB) DNS proxy, reverse DNS proxy, and DNS redirect Flow table-based attack prevention, single-user session limit, flow attack log, and flow table memory optimization Configuration backup and one-click recovery Flow log and URL log
	Security zone	Security zone division based on the IP address Security zone division based on the logical interface Attack defense domain (global protection policies, protocol policies, and domain policies) Security audit (attack defense domain log audit, security zone log audit, and management log audit)
	URL filtering	Self-defined URL and URL logs Automatic remote upgrade of URL library through HTTP Local storage of logs and storage on external log servers (including NAT logs, flow logs, and URL logs)
	Attack prevention	ARP attack prevention LAN attack prevention and WAN attack prevention Secure address binding Port scan attack prevention Segmentation packet attack prevention ICMP flood attack prevention Smurf attack prevention Teardrop attack prevention ICMP redirect attack prevention ICMP unreachable attack prevention

Software Specifications	Product Feature	RG-SG7008L
Routing module	Application Identification	Self-developed application identification function that can identify various application types, customizable application identification protocol P2P applications Streaming media software Chat software Game software Internal enterprise applications
	Content audit	Email content audit IM audit BBS forum content audit Search engine audit
Wireless module (M7008L-WSM)	Default number of managed APs	0 Note: The default number of APs that can be managed by the M7008L-WSM is subject to the AP model. For details, see the Ordering Information.
	Maximum number of managed APs	512 Note: The maximum number of APs that can be managed by the M7008L-WSM is subject to the AP model. For details, see the Ordering Information.
	Intra-AC roaming handoff time	< 50 ms
	IEEE 802.11 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, and 802.11ax
	CAPWAP protocol	Layer 2 and Layer 3 topology supported 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 NAT
	Roaming	Intra-AC Layer 2 or Layer 3 roaming Inter-AC Layer 2 or Layer 3 roaming Intra-AC Layer 2 or Layer 3 roaming in local forwarding mode Inter-AC Layer 2 or Layer 3 roaming in local forwarding mode
	User isolation	AC-based user isolation AP-based user isolation WLAN-based user isolation
	STA management	Access control based on the number of STAs associated with the AP Access control based on the number of STAs associated with the SSID Balanced access control based on the number of STAs associated with the AP Balanced access control based on the AP traffic Band steering RSSI threshold for STA access
	Wireless QoS	AP-based bandwidth limiting WLAN-based bandwidth limiting Static and intelligent rate limiting based on STA quantity Fair scheduling

Software Specifications	Product Feature	RG-SG7008L
Wireless module (M7008L-WSM)	RF management	Country or region code setting Manual setting of the transmit power Automatic setting of the transmit power Manual setting of the operating channel Automatic setting of the operating channel Automatic adjustment of the data rate Coverage Hole Detection AP load balancing based on traffic and STA quantity Band selection Radio frequency interference (RFI) detection and mitigation
	AP virtualization	Supported
EMB module	Device status query	Query device details, CPU/memory usage, interface status, temperature, power supply, fan, traffic, and bandwidth utilization
	Network configuration	VLAN management, trunk management, port setting, aggregate port, port mirroring, port rate limiting, static routing, DHCP, DHCP snooping, STP loop guard, RLD, and remote power supply management
	Zero- configuration features	CPE WAN Management Protocol (CWMP)
	Network management configurations	Syslog, Telnet, and SNMP
	Diagnosis tools	Network detection and one-click information collection
	Operations on devices	Upgrade, restart, configuration management, system time, log server, DNS server, system character set, and web console
	Quick configuration	Quick configuration
	Operation log	Log query, log type, and log management
	Device upgrade	Device upgrade
	Administrator account	Web administrator configuration
	Data backup and recovery	Data backup download, data import and recovery

Hardware Specifications of M7008L-RCM

Model	M7008L-RCM
CPU	Quad-core processor
BOOTROM	16 MB, and dual boot for active and standby chips
Flash Memory	4GB
SDRAM	4GB
External Port	1 x console port
Button	1 x FUNC button
Hot Swapping	Supported

Model	M7008L-RCM
EMC Regulation	EN 55032: 2015+A1: 2020 EN 61000-3-3: 2013+A1: 2019+A2: 2021 EN IEC 61000-3-2: 2019+A1: 2021 EN 55035: 2017+A11: 2020 EN 300386 V2.2.1 BS EN 55035: 2017+A11: 2020 BS EN IEC 61000-3-2: 2019+A1: 2021 BS EN 61000-3-3: 2013+A1: 2019+A2: 2021 BS EN 55032: 2015+A1: 2020
Safety Regulation	BS EN 62368-1: 2014+A11: 2017
Altitude	Maximum operating altitude: 5000 m (16404.20 ft.) Maximum storage altitude: 5000 m (16404.20 ft.)
Operating Temperature	0°C to 45°C (32°F to 113°F) (0 m to 1800 m) For the altitude in the range of 1800 m (5905.51 ft.) to 5000 m (16404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the operating temperature is decreased by 1°C (1.8°F).
Operating Humidity	10% to 90% RH (non-condensing)
Storage Temperature	-40°C to +70°C (-40°F to +158°F)
Storage Humidity	5% to 95% RH (non-condensing)
Weight	0.30 kg (0.66 lbs)
Dimensions (W x D x H)	Without captive screws: 86 mm x 208 mm x 38 mm (3.39 in. x 8.19 in. x 1.50 in.) With captive screws: 86 mm x 220 mm x 38 mm (3.39 in. x 8.66 in. x 1.50 in.)

Hardware Specifications of M7008L-WSM

Model	M7008L-WSM
CPU	Quad-core processor
BOOTROM	16 MB, and dual boot for active and standby chips
Flash Memory	4GB
SDRAM	4GB
External Port	1 x console port
Button	1 x FUNC button
Hot Swapping	Supported
EMC Regulation	EN 55032: 2015+A1: 2020 EN 61000-3-3: 2013+A1: 2019+A2: 2021 EN IEC 61000-3-2: 2019+A1: 2021 EN 55035: 2017+A11: 2020 EN 300386 V2.2.1 BS EN 55035: 2017+A11: 2020 BS EN IEC 61000-3-2: 2019+A1: 2021 BS EN 61000-3-3: 2013+A1: 2019+A2: 2021 BS EN 55032: 2015+A1: 2020
Safety Regulation	BS EN 62368-1: 2014+A11: 2017
Altitude	Maximum operating altitude: 5000 m (16404.20 ft.) Maximum storage altitude: 5000 m (16404.20 ft.)

Model	M7008L-WSM
Operating Temperature	0°C to 45°C (32°F to 113°F) (0 m to 1800 m) For the altitude in the range of 1800 m (5905.51 ft.) to 5000 m (16404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the operating temperature is decreased by 1°C (1.8°F).
Operating Humidity	10% to 90% RH (non-condensing)
Storage Temperature	–40°C to +70°C (–40°F to +158°F)
Storage Humidity	5% to 95% RH (non-condensing)
Weight	0.30 kg (0.66 lbs)
Dimensions (W x D x H)	Without captive screws: 86 mm x 208 mm x 38 mm (3.39 in. x 8.19 in. x 1.50 in.) With captive screws: 86 mm x 220 mm x 38 mm (3.39 in. x 8.66 in. x 1.50 in.)

Hardware Specifications of M7000L-6XS

Model	M7000L-6XS
Port Type	6 x SFP+ ports, supporting the 10G SFP+ module and 1G SFP module (there are slot limitations on the 1G SFP module)
Optical Module	SFP+ port SFP modules and SFP BIDI modules SFP+ modules, SFP+ cables, and SFP+ BIDI modules
LED	RDY, Link/ACT LED
EMC Standard	GB/T 9254.1
Hot Swapping	Supported
Altitude	- Maximum operating altitude: 5000 m (16404.20 ft.) - Maximum storage altitude: 5000 m
Operating Temperature	0°C to 45°C (32°F to 113°F) (0 m to 1800 m) For the altitude in the range of 1800 m (5905.51 ft.) to 5000 m (16404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the operating temperature is decreased by 1°C (1.8°F).
Operating Humidity	10% to 90% RH (non-condensing)
Storage Temperature	–40°C to +70°C (–40°F to +158°F)
Storage Humidity	5% to 95% RH (non-condensing)
Weight	0.30 kg (0.66 lbs)
Dimensions (W x D x H)	Without captive screws: 86 mm x 209 mm x 38 mm (3.39 in. x 8.23 in. x 1.50 in.) With captive screws: 86 mm x 220 mm x 38 mm (3.39 in. x 8.66 in. x 1.50 in.)

Hardware Specifications of M7000L-8GT

Model	M7000L-8GT
Port	8 x 10/100/1000BASE-T RJ45 ports
Transmission Medium	10/100/1000BASE-T Category 5 UTP
LED	RDY function module status LED or 10/100/1000Base-T Ethernet port LED
Hot Swapping	Supported

Model	M7000L-8GT
EMC Regulation	EN 55032: 2015+A1: 2020 EN 61000-3-3: 2013+A1: 2019+A2: 2021 EN IEC 61000-3-2: 2019+A1: 2021 EN 55035: 2017+A11: 2020 EN 300386 V2.2.1 BS EN 55035: 2017+A11: 2020 BS EN IEC 610000-3-2: 2019+A1: 2021 BS EN 61000-3-3: 2013+A1: 2019+A2: 2021 BS EN 55032: 2015+A1: 2020
Safety Regulation	BS EN 62368-1: 2014+A11: 2017
Altitude	Maximum operating altitude: 5000 m (16404.20 ft.) Maximum storage altitude: 5000 m
Operating Temperature	0°C to 45°C (32°F to 113°F) (0 m to 1800 m) For the altitude in the range of 1800 m (5905.51 ft.) to 5000 m (16404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the operating temperature is decreased by 1°C (1.8°F).
Operating Humidity	10% to 90% RH (non-condensing)
Storage Temperature	-40°C to +70°C (-40°F to +158°F)
Storage Humidity	5% to 95% RH (non-condensing)
Weight	0.20 kg (0.44 lbs)
Dimensions (W x D x H)	Without captive screws: 198 mm x 86 mm x 38 mm (7.80 in. x 3.39 in. x 1.50 in.) With captive screws: 210 mm x 86 mm x 38 mm (8.27 in. x 3.39 in. x 1.50 in.)

Hardware Specifications of M7000L-8SFP

Model	M7000L-8SFP
Port	8 x SFP ports that support the 1G SFP module
Optical Module	SFP modules and SFP BIDI modules
LED	RDY function module status LED and SFP port LED
Hot Swapping	Supported
EMC Regulation	EN 55032: 2015+A1: 2020 EN 61000-3-3: 2013+A1: 2019+A2: 2021 EN IEC 61000-3-2: 2019+A1: 2021 EN 55035: 2017+A11: 2020 EN 300386 V2.2.1 BS EN 55035: 2017+A11: 2020 BS EN IEC 610000-3-2: 2019+A1: 2021 BS EN 61000-3-3: 2013+A1: 2019+A2: 2021 BS EN 55032: 2015+A1: 2020
Safety Regulation	BS EN 62368-1: 2014+A11: 2017
Altitude	Maximum operating altitude: 5000 m (16404.20 ft.) Maximum storage altitude: 5000 m
Operating Temperature	0°C to 45°C (32°F to 113°F) (0 m to 1800 m) For the altitude in the range of 1800 m (5905.51 ft.) to 5000 m (16404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the operating temperature is decreased by 1°C (1.8°F).
Operating Humidity	10% to 90% RH (non-condensing)

Model	M7000L-8SFP
Storage Temperature	–40°C to +70°C (–40°F to +158°F)
Storage Humidity	5% to 95% RH (non-condensing)
Weight	0.25 kg (0.55 lbs)
Dimensions (W x D x H)	Without captive screws: 199 mm x 86 mm x 38 mm (7.83 in. x 3.39 in. x 1.50 in.) With captive screws: 210 mm 86 mm x 38 mm (8.27 in. x 3.39 in. x 1.50 in.)

RG-PA180I-F Power Module Specifications

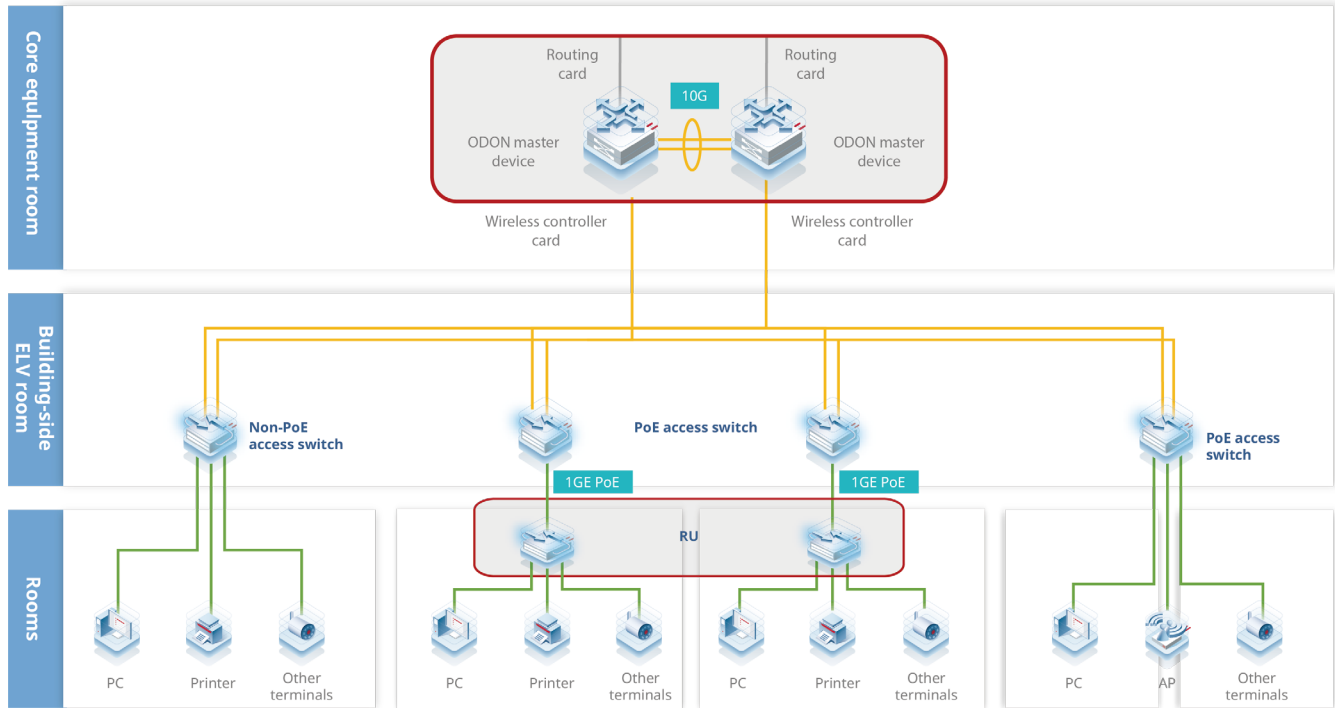
Model	RG-PA180I-F
Rated Voltage Range	110 V/220 V AC, 50 Hz to 60 Hz
Maximum Voltage Range	90 V AC to 290 V AC, 45 Hz to 65 Hz
Maximum Output Power	180 W
HVDC Parameters	192 V DC to 290 V DC, 2A Max., 180 W
Weight	0.45 kg (0.99 lbs)
Power Cord	10 A

Hardware Specifications of M7000L-HDD-1T

Model	M7000L-HDD-1T
Hard Drive Type	Hard Disk Drive (HDD)
Capacity	1 TB
LED	DISK status LED
Hot Swapping	Not Supported
EMC Regulation	EN 55032: 2015+A1: 2020 EN 61000-3-3: 2013+A1: 2019+A2: 2021 EN IEC 61000-3-2: 2019+A1: 2021 EN 55035: 2017+A11: 2020 EN 300386 V2.2.1 BS EN 55035: 2017+A11: 2020 BS EN IEC 61000-3-2: 2019+A1: 2021 BS EN 61000-3-3: 2013+A1: 2019+A2: 2021 BS EN 55032: 2015+A1: 2020
Safety Regulation	BS EN 62368-1: 2014+A11: 2017
Altitude	Maximum operating altitude: 5000 m (16404.20 ft.) Maximum storage altitude: 5000 m
Operating Temperature	0°C to 45°C (32°F to 113°F) (0 m to 1800 m) For the altitude in the range of 1800 m (5905.51 ft.) to 5000 m (16404.20 ft.), every time the altitude increases by 200 m (656.17 ft.), the operating temperature is decreased by 1°C (1.8°F).
Operating Humidity	10% to 90% RH (non-condensing)
Storage Temperature	–40°C to +70°C (–40°F to +158°F)
Storage Humidity	5% to 95% RH (non-condensing)
Weight	0.30 kg (0.66 lbs)
Dimensions (W x D x H)	159 mm x 100.2 mm x 20.5 mm (6.30 in. x 3.94 in. x 0.81 in.)

05 Typical Applications

Egress/Core Devices on a Small- and Medium-sized Network



06 Ordering Guide

Perform the following steps to configure an RG-SG7008L series device:

- Select the device chassis based on the specific product model.
- Select power modules based on power supply requirements. At least one power module is required.
- Select multi-service cards based on service requirements. Before ordering multi-service cards, please contact the online customer service personnel for card details.
- Select common service cards based on service requirements. Before ordering common service cards, please contact the online customer service personnel for card details.

Models marked with asterisks (*) in the ordering information will be available in the future.

07 Ordering Information

Chassis

Model	Description
RG-SG7008L	The RG-SG7008L chassis provides six common service card slots (slots 1–6), two multi-service card slots (slots 7–8), three built-in fixed fan modules, and two power module slots, common service cards, multi-service cards, and power modules support hot swapping and need to be purchased separately.

Multi-service Cards

Model	Description
M7008L-RCM	High-performance first-generation routing card of the RG-SG7008L
M7008L-WSM	High-performance first-generation wireless card of the RG-SG7008L By default, no license is supported. A generic AP consumes one license, while a wall-plate AP consumes 0.5 licenses. The number of licenses consumed by an i-Share AP is subject to the model. For details, see the Ordering Information in the datasheet of corresponding i-Share AP. The M7008L-WSM can manage up to 512 devices in total, including generic APs, wall-plate APs, and micro APs.

Common Service Cards

Model	Description
M7000L-8GT	8 x GE Ethernet ports (RJ45)
M7000L-8SFP	8 x GE Optical ports (SFP and LC)
M7000L-6XS	6 x 10GE optical ports (SFP+ and LC)

Power Modules

Model	Description
RG-PA180I-F	Power module (AC, 180 W, 10 A)

08 Warranty

For more information about warranty terms and period, 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.

09 More Information

For more information about Ruijie Networks, visit the official website of Ruijie Networks 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: EBGITSC@ruijie.com.cn



Ruijie Networks Co., Ltd.

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