



RG-S5310-E Series Switches



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RG-S5310-24GT4XS-E



RG-S5310-24GT4XS-P-E



RG-S5310-48GT4XS-E



RG-S5310-48GT4XS-P-E

| Product Overview

The RG-S5310-E series are next-generation gigabit Ethernet switches launched by Ruijie according to its design philosophy of security, high efficiency, energy saving, and independent innovation. This series can provide full gigabit access and flexibly extensible 10G uplink data exchanges. With a new hardware architecture and Ruijie's latest RGOS12.X modular OS, the RG-S5310-E series are capable of providing more resource entries, faster hardware processing, and better user experience.

Product Features

Sound Security Protection Policies

Address Resolution Protocol (ARP) viruses or attacks are a type of common and influential network attack. The RG-S5310-E series switches support ARP spoofing prevention in multiple modes. Regardless of whether clients automatically obtain addresses from the DHCP server or use static IP addresses, the RG-S5310-E series switches record clients' authentic IP+MAC addresses and compare addresses in ARP packets with recorded IP+MAC addresses when switch ports receive the ARP packets from hosts. The switches forward only ARP packets whose addresses match the recorded IP+MAC addresses and discard fake ARP packets. In this way, ARP spoofing is shielded outside the network and network users are protected from ARP virus attacks.

The RG-S5310-E series switches are capable of actively defending against various Distributed Denial of Service (DDoS) attacks on networks. Computers may be infected with viruses due to network openness or attackers may launch attacks on network devices and servers for various purposes, resulting in network unavailability. The common ARP flooding attacks can lead to the failure of the gateway to respond to requests. ICMP flooding attacks can paralyze network devices due to high CPU load. DHCP request flooding attacks deplete addresses of the DHCP server, and users cannot obtain IP addresses for network access.

The RG-S5310-E series switches provide an industry-leading hardware CPU protection mechanism: CPU Protect Policy (CPP). It classifies data traffic sent to the CPU, processes the traffic by queue priority, and limits the bandwidth rate as required. This protection mechanism fully protects the CPU against illegitimate traffic occupancy, malicious attacks, and resource consumption, thereby ensuring the CPU security and protecting the switches.

The RG-S5310-E series switches adopt the innovative Network Foundation Protection Policy (NFPP) technology to limit the rate of ARP packets, ICMP requests, DHCP requests, and other packets sent to networks. The switches discard packets whose rate exceeds the threshold, identify attack behaviors, and isolate users launching attacks. In this way, the basic networks are protected from network attacks, and therefore the network stability is guaranteed.

DHCP snooping enables the RG-S5310-E series switches to receive DHCP responses only from trusted ports and prevent

spoofing from unauthorized DHCP servers. With DHCP snooping, the switches dynamically monitor ARP packets, check users' IP addresses, and discard illegitimate packets that do not match bound entries, thereby effectively preventing ARP spoofing and source IP address spoofing.

Virtual Switching Unit

The RG-S5310-E series switches support the Virtual Switching Unit (VSU), in which multiple physical devices are connected and virtualized into one logical device. The devices use the same IP address, Telnet process, and command line interface (CLI) for management and support automatic version check and automatic configuration. Users need to manage only this logical device to enjoy the work efficiency and use experience brought by multiple devices.

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 50–200 milliseconds.

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

Increase in return on investment: Aggregate links used for connecting the VSU to peripheral devices not only provide redundancy links but also implement load balancing. All network devices and bandwidth resources are fully leveraged. Any 10G port can be used to build a VSU virtual network through data transmission cables. No additional cables and expansion cards are required, and the types of ports and

cables are not limited. Therefore, the return on investment is best protected.

High Reliability

The Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), and MSTP help the RG-S5310-E series switches achieve fast convergence, improve the fault tolerance capability, and ensure stable network operation and load balance of links. The switches utilize network channels appropriately to raise the utilization of redundant links.

The Virtual Router Redundancy Protocol (VRRP) helps the switches effectively ensure the network stability.

With the Rapid Link Detection Protocol (RLDP), the switches can quickly detect the link connectivity and unidirectional optical fiber links. The port loop detection function helps the switches prevent network failures caused by loops resulting from unauthorized port connection to hubs.

The RG-S5310-E series switches support the Ethernet Ring Protection Switching (ERPS) technology, which is an international layer-2 link redundancy backup protocol designed for the core Ethernet. The loop block and link recovery of ERPS are implemented on the controlling device, and non-controlling devices directly report their link status to the controlling device, without processing from other non-controlling devices. Therefore, loop disruption and recovery time of ERPS is faster than that of STP. Based on the above differences, ERPS supports link recovery within milliseconds in the ideal environment.

When STP is disabled, the Rapid Link Protection Protocol (RLDP) can still provide basic link redundancy and millisecond-level fault recovery faster than STP.

With the Bidirectional Forwarding Detection (BFD), the switches are able to detect links within milliseconds, and quickly converge routing and other services through the correlation with upper-layer routing protocols, ensuring the continuity of services.

Software-Defined Networking (SDN)

The RG-S5310-E series support OpenFlow 1.3 as the times require, and will collaborate with Ruijie's SDN controller to easily build large-scale L2/L3 networks. The switches allow you to smoothly upgrade the whole network to an SDN network and provide access control, visualized O&M, and other SDN features. The products greatly reduce network O&M costs while significantly simplifying network management.

Energy Efficiency

In response to China's call for energy efficiency, Ruijie deeply studies noise and energy consumption issues of conventional switches and integrates multiple energy-saving design ideas into the RG-S5310-E series switches. The switches reduce loud noise produced by deployment in offices and solve excessive energy consumption resulted from the large-scale deployment of access devices.

In addition, the RG-S5310-E series adopt the next-generation hardware architecture as well as advanced energy-efficient circuit design and components, to significantly save energy and lower noise. The entire series are equipped with variable-speed axial fans to intelligently control the fan speed based on the ambient temperature, which reduces the power consumption and noise while ensuring stable operation of the devices.

In the PoE networking environment, the RG-S5310-E series provide automatic PoE mode and energy-saving PoE mode to meet needs of users.

Easy Network Maintenance

The RG-S5310-E series switches support the Simple Network Management Protocol (SNMP), Remote Network Monitoring (RMON), Syslog, Sampled Flow (sFlow), log and configuration backup using USB flash drives for routine network diagnosis and maintenance. Administrators can also use CLI, Web-based management, telnet, CPE WAN Management Protocol (CWMP(TR069) based zero configuration and other methods to manage and maintain devices conveniently.

A PoE button is available on the panel of the switches. You can press this button to check the current communication status and PoE status of all ports on the switches.

VXLAN Feature

RG-S5310-E series support the Virtual Extensible LAN (VXLAN), which will allow users to build a logical L2 network on an L3 network via software upgrade.

IPv4/IPv6 Dual-stack Multi-layer Switching

The hardware of the RG-S5310-E series switches supports line-rate IPv4/IPv6 dual-stack multi-layer switching, distinguishes and processes IPv4 and IPv6 protocol packets. In that case, the switches can plan networks or maintain the network status based on IPv6 network requirements, and

flexibly create IPv6 network communication solutions. The RG-S5310-E series switches support a wide range of IPv4 routing protocols, including static routing, RIP, OSPFv2, IS-ISv4 and BGP4. Users can select appropriate routing protocols based on network environments to flexibly build networks. The RG-

S5310-E series switches also support abundant IPv6 routing protocols, including static routing, Routing Information Protocol next generation (RIPng), OSPFv3, IS-ISv6 and BGP4+, which can be selected flexibly to either upgrade the existing network to an IPv6 network or build a new IPv6 network.

Technical Specifications

Hardware Specifications

Interface Specifications

Hardware Specifications	RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Fixed Ports	24x10/100/1000 BASE-T ports 4 x 1G/10G SFP+ ports	24x 10/100/1000 BASE-T ports 4x 1G/10G SFP+ ports Supports PoE Standards IEEE 802.3af, 802.3at	48 x 10/100/1000 BASE-T ports 4 x 1G/10G SFP+ ports	48 x 10/100/1000 BASE-T ports 4x 1G/10G SFP+ ports Supports PoE Standards IEEE 802.3af, 802.3at
Power Supplies	1+1 power supply backup	1+1 power supply backup Up to 720w of PoE+	1+1 power supply backup	1+1 power supply backup Up to 1440w of PoE+
Fans	Fixed fans	Fixed fans	Fixed fans	Fixed fans
Management Port	1 MGMT port, 1 console port, and 1 USB port, compliant with USB2.0 standard			

System Specifications

Hardware Specifications	RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
System Switching Capacity	336Gbps/3.36Tbps	336Gbps/3.36Tbps	432Gbps/4.32Tbps	432Gbps/4.32Tbps
Packet Forwarding Rate	96Mpps/126Mpps	96Mpps/126Mpps	132Mpps/166Mpps	132Mpps/166Mpps
No. of VSU Members	4	4	4	4
Maximum Stacking bandwidth	80Gbps	80Gbps	80Gbps	80Gbps

Hardware Specifications	RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
MAC Address	32K	32K	32K	32K
ARP Table	4k,16k(authorized)	4k,16k(authorized)	4k,16k(authorized)	4k,16k(authorized)
Routing Table Size (IPv4)	8K,12k(authorized)	8K,12k(authorized)	8K,12k(authorized)	8K,12k(authorized)
Routing Table Size (IPv6)	4k	4k	4k	4k
ACL Entries	In: 3500 Out:1500	In: 3500 Out:1500	In: 3500 Out:1500	In: 3500 Out:1500

CPU and Storage

Hardware Specifications	RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
CPU	Dual-Core CPU, 1.2GHz			
Flash Memory	2GB			

Dimensions and Weight

Hardware Specifications	RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Dimensions (W × D × H)	442 mm × 420 mm × 43.6 mm			
Weight	4.2KG	4.3KG	4.3KG	4.6KG

Power and Consumption

Hardware Specifications	RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Rated Voltage	S5310-24GT4XS-E、RG-S5310-48GT4XS-E, AC input: Rated voltage range: 100 V to 240 V Frequency: 50/60 Hz RG-S5310-24GT4XS-P-E、RG-S5310-48GT4XS-P-E, AC input: Rated voltage range: 200 V to 240 V			
Maximum Voltage	RG-S5310-24GT4XS-E、RG-S5310-48GT4XS-E, AC input: Maximum voltage range: 90 V to 264 V Frequency: 50/60 Hz RG-S5310-24GT4XS-P-E、RG-S5310-48GT4XS-P-E, AC input: Maximum voltage range: 176 V to 264 V			
Maximum Power Consumption	≤40W	<85W(Non POE) <810W (PoE full load)	≤55W	<75W(Non POE) <1570W (PoE full load)

Environment and Reliability

Hardware Specifications	RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Temperature	Operating temperature: 0°C~45°C Storage temperature: -40°C to 70°C			
Relative Humidity	Operating humidity: 10% to 90%RH Storage humidity: 5% to 95%RH			
Lightning Protection	10KV (Service Interface) 4KV (MGMT Interface)			
Fan Monitoring	Fan speed regulating and alarm function			

Software Specifications

Software Specifications		RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Layer 2 Features	VLAN	802.1Q VLAN Port-based VLAN MAC-based VLAN Private VLAN Voice VLAN GVRP			
	LLDP	LLDP LLDP IPv6 LLDP-MED LLDP-POE			
	MAC	MAC Address Filtering Setting MAC address aging time			
	RLDP	RLDP			
	Spanning Tree	Auto Errdisable Recovery BPDU FILTER BPDU GUARD IEEE802.1d STP IEEE802.1d STP IEEE802.1w RSTP PORT FAST ROOT GUARD standard 802.1s MSTP			
	QinQ	Basic QinQ Flexible QinQ			
	IGMP Snooping	IGMP v1,v2 Snooping			
	MLD Snooping	MLD Snooping			

Software Specifications		RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Layer 3 Features	ARP	Static ARP Static ARP ARP proxy ARP Entry Timeout			
	ND	ND ND proxy			
	VRF	IPv4 VRF IPv6 VRF			
	PBR	PBR V4 PBR V6			
Interface Features	AP	Basic LACP Inter-VSU AP			
	Mirror	One-to-one mirroring many-to-one mirroring one-to-many mirroring RSPAN Flow-based local and remote mirroring			
	Ethernet	Jumbo frames			
Application Protocol Reatures	DHCP	DHCP Client DHCP Server DHCP Relay DHCP Snooping DHCPv6 Client DHCPv6 Server DHCPv6 Relay DHCPv6 Snooping			
	DNS	DNS Client DNS Proxy DNSv6 Client			
	FTP	FTP Client FTP Server FTpv6 Client FTpv6 Server			
	NTP	NTP Client NTP Server NTPv6 Client NTPv6 Server			
	OpenFlow	OpenFlow Special 1.3			
	TFTP	TFTP Client TFTP Server TFTpv6 Client TFTpv6 Server			

Software Specifications		RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Application Protocol Reatures	ND Snooping	ND Snooping			
Routing Protocol Specification	IP Routing	IPv4/IPv6 static routing RIP, RIPng, OSPFv2, OSPFv3, BGP4, BGP4+,and IS-ISv4, IS-ISv6 Routing policy			
High Availability	High Availability	BFD、DLDP、GR、RAS、NSR、VRRP、VRRP+、SDN loop detection			
ACL and QoS	ACL	Standard IP ACLs (IP-based hardware ACLs) Extended IP ACLs (hardware ACLs based on IP addresses or TCP/UDP port IDs) MAC-based extended ACLs (hardware ACLs based on source MAC addresses, destination MAC addresses, and optional Ethernet type) Time-based ACLs Expert-level ACLs (hardware ACLs based on flexible combinations of the VLAN ID, Ethernet type, MAC address, IP address, TCP/UDP port ID, protocol type, and time) ACL 80 IPv6 ACLs Global ACLs ACL redirection			
	QoS	Port traffic identification Port traffic rate limiting 802.1p/DSCP/ToS traffic classification Eight priority queues per port SP, WRR, SP+WFQ, SP+WRR, RED/WRED queue scheduling mechanisms			
Multicast Features	IGMP	IGMP V1,V2,V3			
	MLD	MLD Proxy MLDV1 V2			
	PIM	PIM-DM PIM-SM v6 PIM-SSM v6 PIM-SM PIM-SSM			
MPLS	MPLS	L3VPN (authorized) LDP (authorized) MPLS forwarding(authorized)			
Security Features	Security Features	3-tuple binding (IP address, MAC address, and port) 3-tuple binding (IPv6 address, MAC address, and port) Filtering of invalid MAC addresses Port- and MAC-based 802.1x authentication MAB authentication Portal authentication and Portal 2.0 authentication ARP-check DAI ARP packet rate limiting Gateway ARP spoofing prevention			

Software Specifications		RG-S5310-24GT4XS-E	RG-S5310-24GT4XS-P-E	RG-S5310-48GT4XS-E	RG-S5310-48GT4XS-P-E
Security Features	Security Features	Broadcast storm suppression Hierarchical management of administrators and password protection RADIUS and TACACS+ AAA (IPv4/IPv6) for device login management SSH and SSH V2.0 BPDU guard IP source guard CPP, NFPP Port protection			
VSU Features	VSU	VSU technology Local stacking and remote stacking Inter-chassis link binding in a stack Virtualization via standard service interfaces			
OAM Features	PoE	IEEE 802.3af and 802.3at power supply standards Automatic and energy saving power supply management mode Uninterrupted power supply in hot start mode Scheduled powering on /off PoE ports on the basis of time policy Port priority Note: Only RG-S5310-24GT4XS-P-E and RG-S5310-48GT4XS-P-E support the PoE function.			
	RNS	RNS			
	Configuration Rollback	Configuration Rollback			
	802.3AH	802.3AH			
DataCenter Features	VXLAN	VXLAN (authorized)			
Cloud Services	MACC	MACC			
Management Features	Management	SNMPv1/v2c/v3, CLI(Telnet/Console), RMON(1, 2, 3, 9), SSH, Syslog, NTP/SNTP, Web, CLI(Telnet/Console), RMON, SSH, Syslog/Debug, NTP/SNTP, FTP, TFTP, Web, and sFLOW			

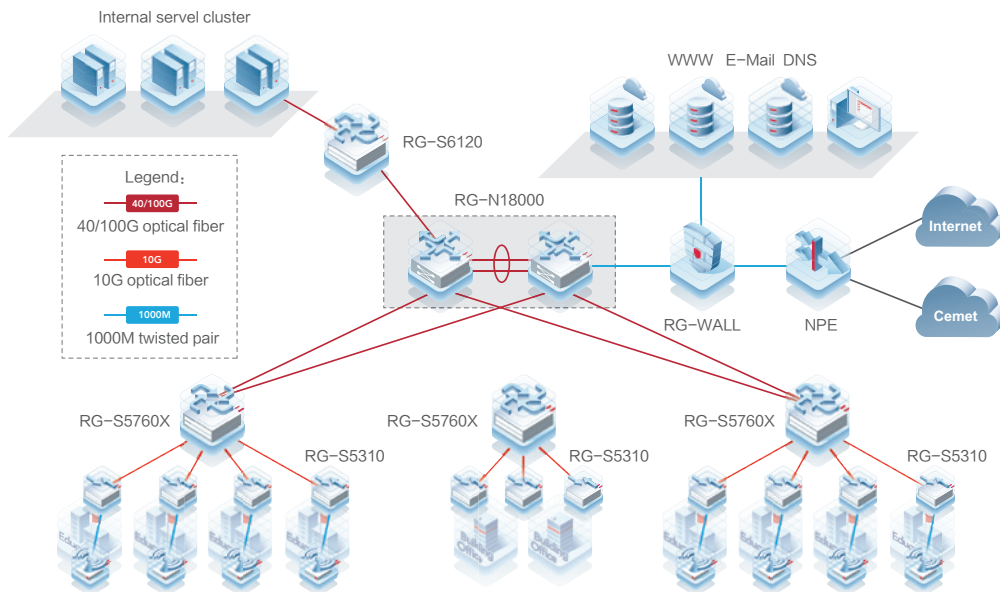
Typical Applications

With the highlights of high security, high efficiency, intelligence, and energy saving, the RG-S5310-E series can fully meet networking requirements in the following scenarios:

- Full gigabit access to LANs of large enterprises, institutions, and campuses, such as the LANs in government buildings, universities, and large manufacturing/energy/metallurgy/other organizations;
- Gigabit access to business systems related to medical care, libraries, exhibition centers, and websites;
- Access to IP phones, WLAN access points, and HD cameras;
- Gigabit access to server clusters and uplink access over 10G bandwidth;
- Requirements for flexible and diversified security control policies to prevent and contain network viruses and network attacks, and to provide secure access for users.

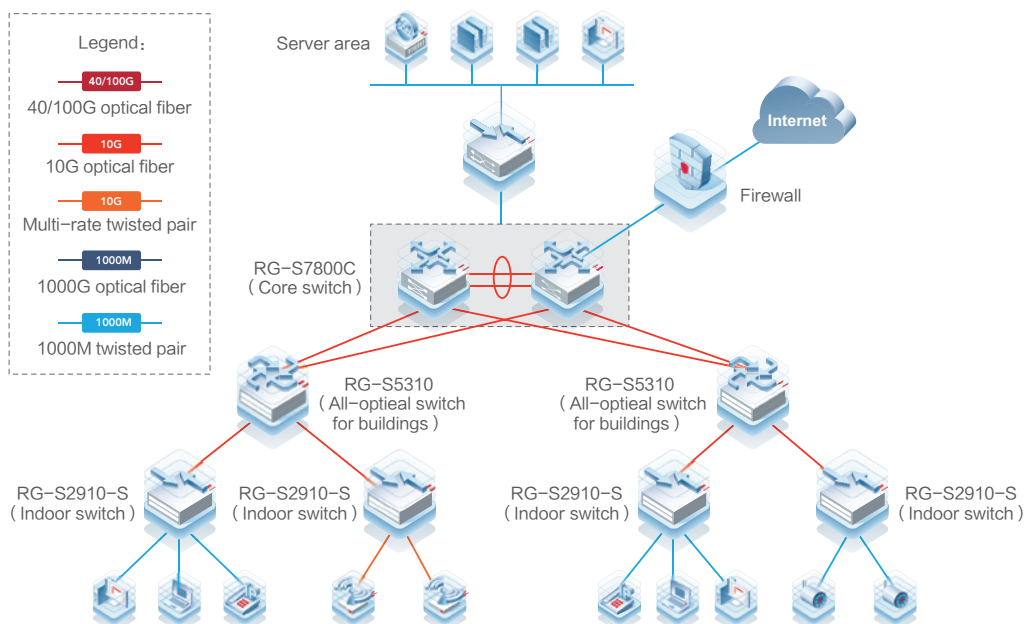
Scenario 1

The RG-S5310-E series serve as access switches. They network with aggregation switches deployed for buildings (RG-S5760X series/RG-S8600E series) and core switches deployed for campus networks (RG-N18000 series) to provide high-performance 1000M links to the desktop and 10G links from the aggregation layer to the core layer, so as to cope with the increasing information of access users. In SDN solutions, the RG-S5310-E series are capable of providing access control, visualized O&M, and other intelligent functions.



Scenario 2

The RG-S5310-E series serve as distribution switches. They network with the indoor access switches (RG-SF29 series) and core switches (RG-S7800C series) to build a cost-effective, high-performance, and high-bandwidth network. This network provides 1000M links to the desktop and 10G links from the distribution layer to the core layer, so as to cope with the increasing information of access users.



Ordering Information

Model	Description
RG-S5310--24GT4XS-E	24 x 10/100/1000M adaptive electrical ports, 4 x 1G/10G SFP+ ports
RG-S5310-24GT4XS-P-E	24 x 10/100/1000M adaptive electrical ports, 4 x 1G/10G SFP+ ports, supporting PoE remote power supply and the maximum PoE output power of 740 W.
RG-S5310-48GT4XS-E	48 x 10/100/1000M adaptive electrical ports, 4 x 1G/10G SFP+ ports
RG-S5310-48GT4XS-P-E	48 x 10/100/1000M adaptive electrical ports, 4 x 1G/10G SFP+ ports, supporting PoE remote power supply and the maximum PoE output power of 1440 W.
RG-PA70IB	70W AC Power Module
RG-PA150IB-F	150W AC Power Module
RG-PA600I-P-F	600W AC Power Module、POE Power Module
RG-PA1000I-P-F	1000W AC Power Module、POE Power Module
RG-VXLAN-MPLS-ENTRY-LIC	(*) S5310E Series, Software License for VxLAN、MPLS、Routing Table and ARP Table
Mini-GBIC-GT	1000BASE-GT mini GBIC module
Mini-GBIC-SX-MM850	Single-port 1000BASE-SX mini GBIC module (LC interface)
Mini-GBIC-LX-SM1310	Single-port 1000BASE-LX mini GBIC module (LC interface)
Mini-GBIC-LH40-SM1310	Single-port 1000BASE-LH mini GBIC module (LC interface), supporting a transmission distance of 40 km
Mini-GBIC-ZX100-SM1550	1000BASE-ZX mini GBIC module, supporting a transmission distance of 100 km
XG-SFP-SR-MM850	10G LC interface module (62.5/125 μ m: 33 m; 50/125 μ m: 66 m; 300-meter transmission at modal bandwidth of 2000 MHz*km), applicable to SFP+ ports
XG-SFP-LR-SM1310	10G LC interface module (1310 nm), 10 km, applicable to SFP+ ports
XG-SFP-ER-SM1550	10G LC interface module (1550 nm), 40 km, applicable to SFP+ ports

(*) indicates future support.



Ruijie Networks Co., Ltd.

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