Ruijie RG-S5760-X
## Series Switches Datasheet
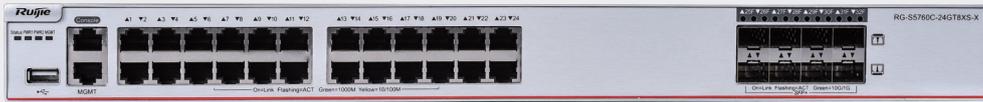
Ruijie

Figure 1 RG-S5760C-24GT8XS-X
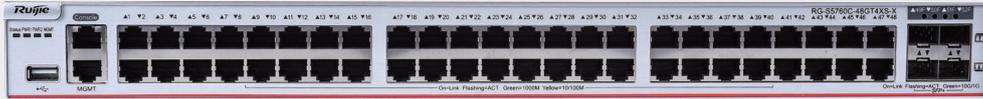
Figure 2 RG-S5760C-48GT4XS-X
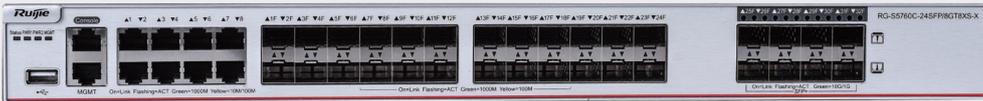
Figure 3 RG-S5760C-24SFP/8GT8XS-X

Product Overview

Ruijie RG-S5760-X series switches are the next-generation Ethernet switches which feature high performance and large capacity. The switches employ with new-generation chips together with Ruijie's latest RGOS12.X modular OS to provide a larger entry capacity, faster hardware processing, and better user experience.

The RG-S5760-X series switches support flexible 1000M access and provide four to eight fixed 10G SFP ports that support high-density high-performance uplink connection. They fully meet user requirements for high-density access and high-performance convergence.

For the convergence layer of large-sized networks, core layer of medium- and small-sized networks, and access layer of data center servers, the RG-S5760-X series switches provide high-performance and sound end-to-end service quality as well as rich security settings in a highly cost-effective way. They can meet requirements of enterprise networks for high speed, security, and intelligence to the maximum.

The RG-S5760-X series switches are equipped with carrier-class electric components, which ensure continuous and robust update and operation of customers' infrastructure networks.

Figure 1 Hardware overview for RG-S5760-X series switch
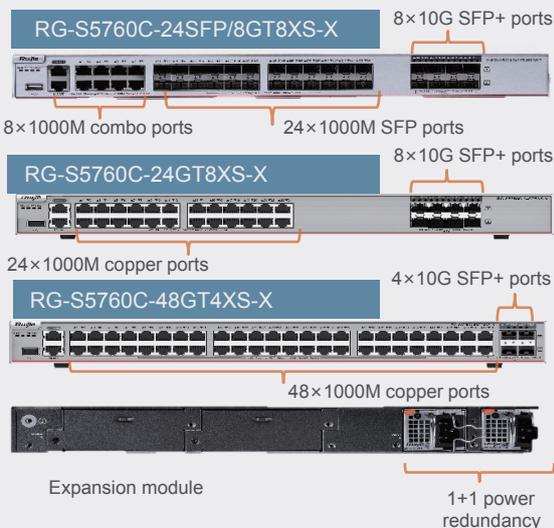
Feature highlights of RG-S5760-X Switch Series:

- Built-in Full Layer 3 Routing (24K Routing Table and L3 Multicast)
- Built-in advanced features without additional licensing: SDN, VXLAN,MPLS and Telemetry
- Full series model with 8 10G Uplink and support 100G expansion module
- 1+1 Power (AC/DC) & Fan Redundancy Support

Product Features

High Performance and High Scalability

Ruijie RG-S5760-X series provides four to eight fixed 10G SFP ports, which fully meet deployment requirements of the convergence layer of the large-sized enterprise and campus networks or the core layer of the medium- and small-sized networks. Customers can select the number of 10G SFP ports as required. The switches provide a large entry capacity, which is two or three times larger than the box-type aggregation switches of the same grade.

IPv4/IPv6 Dual-stack Multi-layer Switching

The hardware of the RG-S5760-X 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-S5760-X 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-S5760-X 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.

Virtual Switching Unit

The RG-S5760-X 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.

Aggregation links can be set up between 10G interfaces with a maximum stacked bandwidth of 80 Gbps.

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.
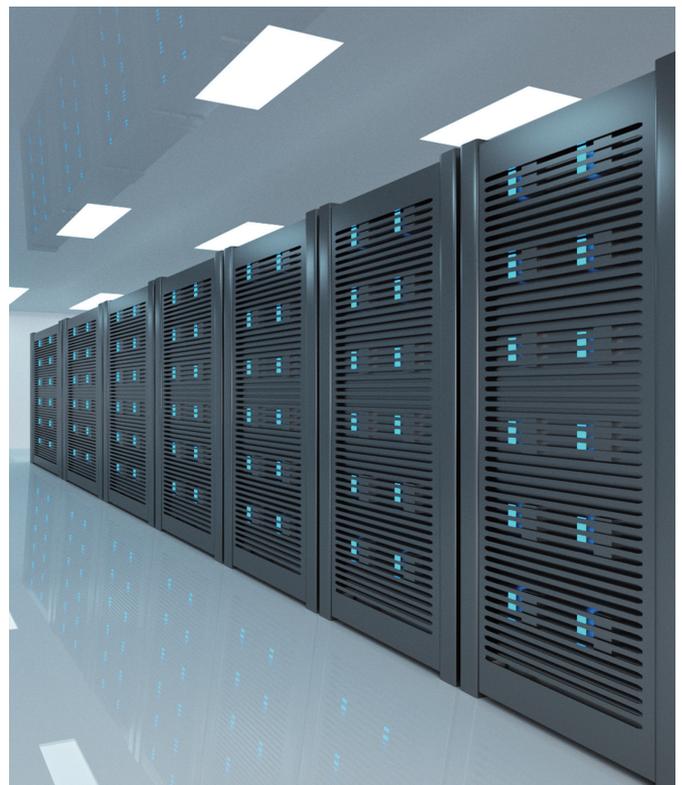
VXLAN Feature

RG-S5760-X series support the Virtual Extensible LAN (VXLAN), which will allow users to build a logical L2 network on an L3 network via software upgrade.
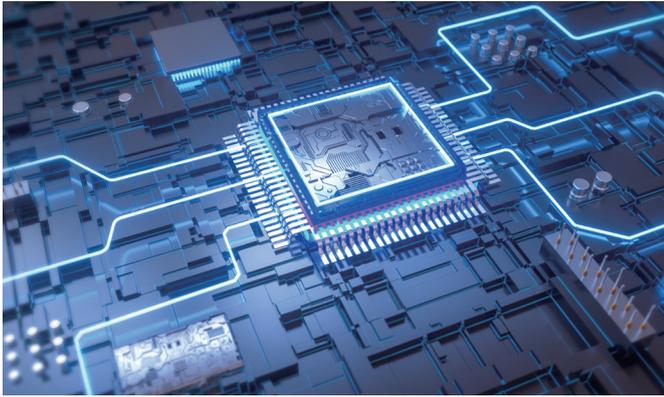
Flexible and Comprehensive Security Policies

Effectively prevents and controls virus spread and hack attacks with various inherent mechanisms, such as anti-DoS attacks, hacker IP scanning, illegal ARP packets checking and multiple hardware ACL policies.

Supports hardware-based IPv6 ACL. Allows coexistence of IPv4/IPv6 users and controls the resources access by IPv6 users.

Industry-leading CPU protection mechanism: The CPU protection policy (CPP) distinguishes the data flows sent to the CPU, which are processed according to their priorities, and implements the limitation on the bandwidth rate as needed. In this manner, users can prevent the CPU from being occupied by illegal traffic and protect against malicious attacks to guarantee normal operation of the CPU and switch.

Supports 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.

Implements flexible binding of a port or the system to the IP address and MAC address of users, strictly limiting user access on a port or in the entire system.

Supports DHCP snooping, and allows DHCP responses from trusted ports only. Based on DHCP listening and by monitoring ARP dynamically and checking the user IP address, the series directly discards illegal packets inconsistent with binding entries to effectively prevent ARP frauds and source IP address frauds.

Telnet access control based on the source IP address to prevent illegal personnel or hack attacks and strengthen the device security.

Secure Shell (SSH) and Simple Network Management Protocol v3 (SNMPv3) cryptographic network protocol ensure the security of management information and provide services such as multi-element binding, port security, time-based ACL and bandwidth rate limiting to block unauthorized users.
The switches take multiple measures to prevent unauthorized access, including multi-element bindings, port security, time-based ACLs, and data flow-based bandwidth limits. These measures help control user access and restrict the communication of unauthorized users in enterprise networks and campus networks.

High Reliability

The Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), and MSTP help the RG-S5760-X 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-S5760-X 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.

The switches support hardware-based dual boot systems. Two flash chips are used to store boot software (system boot programs) to achieve hardware-level boot redundancy and prevent switch startup failures caused by flash chip faults.

Superior Multiservice Support Features

Supports IPv4 and IPv6 multicast functions, including rich multicast protocols such as IGMP Snooping, IGMP, MLD, PIM, PIM for IPv6.

Supports the Internet Group Management Protocol (IGMP) source IP address checking to guard against illegal multicast sources and improve network security.

Supports rich Layer 3 service features such as Equal-cost Multipath routing (ECMP) to meet communication needs of different link planning.

Advanced QoS Policies

Supports multilayer traffic classification and flow control capabilities such as MAC traffic, IP traffic, and application traffic that implement multiple traffic policies such as refined bandwidth control and forwarding priorities; supports the provision of services according to the corresponding QoS level.

The QoS guarantee system with DiffServ at its core supports complete QoS policies such as 802.1p, IP TOS, Layers 2 through 7 filter, SP, and WRR.

Energy Efficiency

The RG-S5760-X 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.

Easy Network Maintenance

The RG-S5760-X 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 and Telnet and other methods to manage and maintain devices conveniently.

The switches support OpenFlow and NETCONF interfaces, which enable the switches to support the software defined network (SDN) via upgrade. This substantially reduces network maintenance costs while greatly simplifying network management.

Technical Specifications

Item	Description		
Model	RG-S5760C-24GT8XS-X	RG-S5760C-24SFP/8GT8XS-X	RG-S5760C-48GT4XS-X
Basic Features			
Fixed Ports	24x 10/100/1000BASE-T, 8 x 1G/10G SFP+ ports, 2 power module slots	24 x Gigabit SFP ports (ports 1-16 are 100M/1000M SFP ports), 8 10/100/1000BASE-T ports (combo), 8 x 1G/10G SFP+ ports, 2 power module slots	48x 10/100/1000BASE-T, 4 x 1G/10G SFP+ ports, 2 power module slots
Management Port	1 MGMT port, 1 console port, and 1 USB port, compliant with USB2.0 standard		
Expansion Slot	Single expansion slot is reserved to for service modules.		
Switching Capacity	880 Gbps/7.92 Tbps		
Packet Forwarding Rate	426 Mpps/600 Mpps	426 Mpps/600 Mpps	402 Mpps/600 Mpps
MAC Address	64K		
ARP Table	24K		
Routing Table Size (IPv4/IPv6)	24K (IPv4/IPv6)		
Product Features			
VLAN	The following are supported: 4K 802.1Q VLAN Port based VLAN Private VLAN Voice VLAN GVRP		

Item	Description		
Model	RG-S5760C-24GT8XS-X	RG-S5760C-24SFP/8GT8XS-X	RG-S5760C-48GT4XS-X
QinQ	Basic QinQ Flexible QinQ		
Link Aggregation	LACP(802.3ad)		
Spanning Tree	The following are supported: STP, RSTP, and MSTP		
DHCP	The following are supported: DHCP Server DHCP Client DHCP Snooping DHCP Relay IPv6 DHCP Server IPv6 DHCP Snooping IPv6 DHCP Client IPv6 DHCP Relay		
Multiple Spanning Tree Protocol (MSTP) Instances	64		
Maximum Aggregation Port (AP)	128		
IPv6 Basic Protocol	IPv6 addressing, Neighbor Discovery (ND), ICMPv6, stateless auto-configuration, and Path MTU Discovery		
IP Routing	The following are supported: Static routing RIP and RIPng OSPFv2, OSPFv3, IS-ISv4, and IS-ISv6 BGP4, and BGP4+ Equivalent routing Packet-based load balancing, and flow-based load balancing MCE		

Item	Description		
Model	RG-S5760C-24GT8XS-X	RG-S5760C-24SFP/8GT8XS-X	RG-S5760C-48GT4XS-X
Multicast	The following are supported: IGMP v1, v2, v3, and IGMP proxy IGMP v1, v2 and v3 Snooping IGMP filtering, and IGMP fast-leave PIM-DM, PIM-SM, and PIM-SSM MLD Snooping, and MLD PIM for IPv6		
MPLS	MPLS L3VPN		
ACL& QoS	ACL	The following flexible and diversified hardware ACLs are supported: Standard IP ACLs (IP-based hardware ACL) 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 Ethernet type, MAC address, IP address, TCP/UDP port ID, protocol type, and time) ACL80 IPv6 ACLs	
	QoS	The following are supported: Port traffic identification Port traffic rate limiting 802.1p/DSCP/ToS traffic classification Eight priority queues per port SP, DRR, SP+DRR, RED/WRED queue scheduling mechanisms	
Security Features	The following are supported: 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 Broadcast storm suppression Hierarchical management of administrators and password protection RADIUS and TACACS+		

| Item	Description		
Model	RG-S5760C-24GT8XS-X	RG-S5760C-24SFP/8GT8XS-X	RG-S5760C-48GT4XS-X
Security Features	AAA for device login management SSH BPDU Guard IP Source Guard CPP, and NFPP Port protection		
Management Features	SNMP, CLI (Telnet/Console), RMON, SSH, Syslog, NTP/SNTP, SNMP over IPv6, IPv6 MIB support for SNMP, SSHv6, Telnet v6, FTP/TFTP v6, DNS v6, NTP for v6, and Traceroute v6 This switch supports sFlow, and samples its traffic information by using the random sampling technology of data flows.		
High Reliability	The following are supported: VSU (virtualization technology, which virtualizes multiple devices into one), GR for RIP/OSPF/BGP and other routing protocols, BFD detection, ERPS (G.8032), REUP, RLDP, power supply 1+1 backup, and the hot-swappable function supported on the power supply		
Zero Configuration	CPE WAN Management Protocol (CWMP(TR069))		
PoE	Unsupported		
Physical Features			
Dimensions (W × D × H)	442 mm × 340 mm × 44 mm		
Rack Height	1RU		
MTBF (hours)	>200K		
Power Supply	AC input: Rated voltage range: 100 V to 240 V Maximum voltage range: 90 V to 264 V Frequency: 50/60 Hz HVDC input: Rated voltage range: 240 V Maximum voltage range: 192 V to 288 V		

Item	Description		
Model	RG-S5760C-24GT8XS-X	RG-S5760C-24SFP/8GT8XS-X	RG-S5760C-48GT4XS-X
Power Consumption (full load)	60 W	77 W	70 W
Fan	2 built-in fans Fan speed regulating and alarm function		
Temperature Alarm	Supported		
Temperature	Operating temperature: 0oC to 45oC(without an expansion card), 0oC to 40oC (with an expansion card) Storage temperature: -40oC to 70oC		
Relative Humidity	Operating humidity: 5% to 95%(no condensation) Storage humidity: 5% to 95%		
Operating Altitude	500m to 5,000m		
Lightening Protection on Communication Port	6kV (Common Mode)		
Lightning Protection on Power Port	Common Mode 6KV/Differential Mode 6KV		

Typical Applications

- The RG-S5760-X series switches can be used in the convergence layer of large networks, core layer of medium- and small-sized networks, and access layer of the server cluster. They can provide L3 full gigabit access to networks in buildings of large enterprises or parks.
- The four to eight fixed 10G SFP ports allow customers to smoothly upgrade the current 1000M uplinks used to connect to backbone network to 10G uplinks, thereby maximizing the return on investment.
- The abundant security management mechanisms provide robust network security defense, high-security connection control, and effective network access control.
- Sound management policies are available to help manage bandwidth so as to guarantee the bandwidth required by voice services, multicast audio and video services, video on demand, and other key services.

Scenario 1

The RG-S5760-X series switches serve as aggregation switches on large campus networks. They provide high-performance 10G links from the convergence layer to the core layer and higher bandwidth for access devices, and therefore can cope with increasing information volumes of access users.
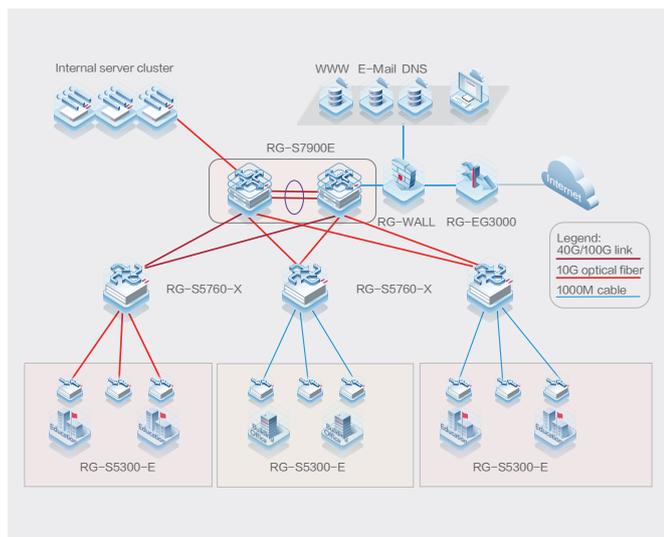
Scenario 2

The RG-S5760-X series switches serve as core switches on small- and medium-sized enterprise networks. With the VSU technology, the switches can help simplify the network architecture and substantially improve the reliability and efficiency of the network system.
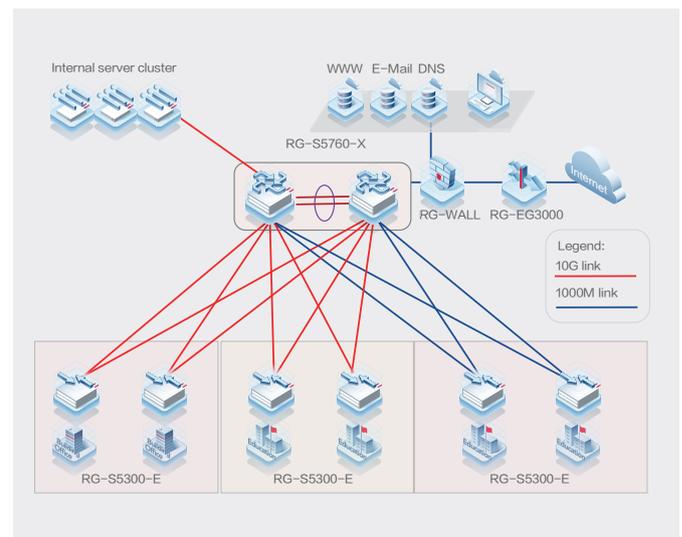
Ordering Information

Model	Description
RG-S5760C-24GT8XS-X	24 x 10/100/1000BASE-T, 8 x 1G/10G SFP+ ports, reserved expansion slots, 2 built-in fixed fans, 2 power module slots (at least 1 RG-PA150IB-F power modules needed)
RG-S5760C-48GT4XS-X	48 x 10/100/1000BASE-T, 4 x 1G/10G SFP+ ports, reserved expansion slots, 2 built-in fixed fans, 2 power module slots (at least 1 RG-PA150IB-F power modules needed)
RG-S5760C-24SFP/8GT8XS-X	24 x 1000M SFP ports (ports 1-16 are 100M/1000M SFP ports), 8 x 10/100/1000BASE-T ports (combo), 8 x 1G/10G SFP+ ports, reserved expansion slots, 2 built-in fixed fans, 2 power module slots (at least 1 RG-PA150IB-F power modules needed)
RG-PA150IB-F	150W AC power module
Mini-GBIC-GT	1000BASE-TX, SFP Transceiver (100m)
MINI-GBIC-SX-MM850	1000BASE-SX, SFP Transceiver, SM (850nm, 500m, LC).
MINI-GBIC-LX-SM1310	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC)
MINI-GBIC-LH40-SM1310	1000BASE-LH, SFP Transceiver, SM (1310nm, 40km, LC)
MINI-GBIC-ZX50-SM1550	1000BASE-ZX50, SFP Transceiver, SM (1550nm, 50km, LC)
MINI-GBIC-ZX80-SM1550	1000BASE-ZX80, SFP Transceiver, SM (1550nm, 80km, LC)
MINI-GBIC-ZX100-SM1550	1000BASE-ZX100, SFP Transceiver, SM (1550nm, 100km, LC).
XG-SFP-SR-MM850	10GBASE-SR, SFP+ Transceiver, MM (850nm, 300m, LC)
XG-SFP-LR-SM1310	10GBASE-SR, SFP+ Transceiver (1310nm, 10km, LC)
XG-SFP-ER-SM1550	10GBASE-SR, SFP+ Transceiver (1550nm, 40km, LC)
XG-SFP-AOC1M	10GBASE SFP+ Optical Stack Cable (included both side transceivers) , 1 Meter
XG-SFP-AOC3M	10GBASE SFP+ Optical Stack Cable (included both side transceivers) , 3 Meters
XG-SFP-AOC5M	10GBASE SFP+ Optical Stack Cable (included both side transceivers) , 5 Meters

(*) indicates future support.

Ruijie Networks Co., Ltd.

For further information, please visit our website https://www.ruijienetworks.com