



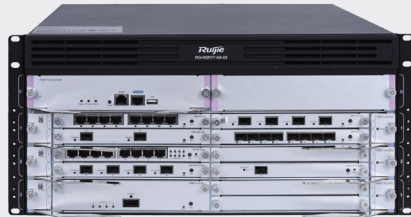
RG-RSR77-XA Series Routers



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Ruijie

Product Pictures



RG-RSR77-XA-03



RG-RSR77-XA-08

Product Overview

The RG-RSR77-XA series router is the next-generation high-end distributed router developed by Ruijie Networks for the cloud architecture and cloud service of the enterprise network.

Based on Ruijie-developed RGOS 12.X operating system, the RG-RSR77-XA series multi-service core router features high performance, high reliability, and high security. The RG-RSR77-XA series supports smooth upgrade and capacity expansion, providing strong support for live network services and coping with service development in the next five to ten years.

The chassis uses independent routing switching engines, switch fabric units (SFUs), and line cards, separating management, control, and data planes based on the high-performance multi-core platform and distributed architecture. The RG-RSR77-XA series adopts dual data planes, improving performance and ensuring nonstop services.

Characterized by high availability, high performance, multi-service, and high security, the RG-RSR77-XA series supports enterprise service operation and bearer network construction, enhancing network value and saving network construction cost. With a resilient and scalable architecture, the RG-RSR77-XA series can boost its performance by installing more line cards. What is more, traffic can be load balanced among line cards inside the chassis.

Based on Ruijie-developed RGOS 12.X operating system, the RG-RSR77-XA series provides various features. High-speed forwarding technologies such as the virtual Central Processing Unit (vCPU) and Ruijie Express Forwarding (REF) improve the router's multi-service processing capability. The distributed service line cards of the RG-RSR77-XA series have various types of ports and integrate features including Network Address Translation (NAT), Internet Protocol Flow Information Export (IPFIX), Internet Protocol Version 6 (IPv6), Border Gateway Protocol (BGP), IP Security (IPsec), Multi-Protocol Label Switching Virtual Private Network (MPLS VPN), and Hierarchical Quality of Service (H-QoS), and multicast features.

The RG-RSR77-XA series is available in two models: RG-RSR77XA-08 and RG-RSR77XA-03.

The RG-RSR77-XA series is mainly used as the core or aggregation node on a WAN of the government, finance, carrier, education, or large- and medium-sized enterprise network, egress of a large campus network, and an edge aggregation node of a data center. The RG-RSR77-XA series together with RG-RSR30-XA and RG-RSR20-XA series routers enables one-stop delivery of a WAN solution.

| Product Highlights

- Multi-service core router, supporting IP, MPLS, SR, IPsec, L2TP, and SRv6, with no limitations on service provisioning
- Multi-rate interfaces, including GE/10GE/40GE/100GE interfaces, meeting requirements of different network layers
- Hardware redundancy to ensure uninterrupted service: Key components such as supervisor modules, switch fabric modules, and power modules use redundancy design, and the RG-RSR77-XA-03 has no switch fabric module and integrates the supervisor module and switch fabric module.
- Y-shaped airflow design with power consumption lower than 0.5 W per Gbps, reducing overall energy consumption

| Product Features

Comprehensive Architecture Upgrade

Based on a resilient and scalable platform, the chassis of the RG-RSR77-XA series uses Clos non-blocking switching and advanced distributed multi-service processing architecture and provides 100GE and 40GE ports. The chassis uses independent SFUs and separated routing, service, and forwarding engines, separating management, control, and data planes. This further improves service availability.

Modular Compatibility

The RG-RSR77-XA series leverages the independent carrier card design and comes into two modular models: RG-RSR77-XA-08 and RG-RSR77-XA-03. The two models employ consistent hardware and software platforms with completely compatible line cards, adapting to application requirements at different network layers for constantly developing enterprises.

Energy-Saving Design

The RG-RSR77-XA series incorporates the energy-saving design. The chassis supports highly-efficient modular power modules, which improves the power system efficiency and reduces energy consumption of an equipment room.

The chassis adopts heat dissipation by isolating physical partitions. Intelligent fan modules support partition-based temperature control and multi-level speed regulation, saving energy and reducing noise. All these measures

greatly reduce energy consumption of air conditioners.

High-performance and Built-in Services

The distributed line cards of the RG-RSR77-XA series have built-in features including IPv6, BGP, IPsec, MPLS VPN, and QoS. When new service features need to be loaded, there is no need to purchase a software license or add a line card, maximizing user investment.

Powerful Route Processing Capability

The RG-RSR77-XA series supports various dynamic routing protocols to apply to different networks. Furthermore, it supports policy-based routing (PBR) to flexibly control and schedule network traffic, coping with routing demands of finance, government, and enterprise customers.

Based on the high-performance flow table and fast forwarding technologies, the RG-RSR77-XA series uses features such as GR, FRR, and BFD to accelerate convergence of traditional routing protocols, achieving rapid convergence on a large-sized network.

All-round MPLS VPN Functions

The RG-RSR77-XA series supports comprehensive MPLS VPN functions. It can function as the provider (P) or provider edge (PE) device, and delivers fully distributed Layer 3 VPN services. It provides a high-performance, secure, and hierarchical MPLS VPN solution.

The RG-RSR77-XA series 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.

The RG-RSR77-XA series provides fault location, MPLS ping, and MPLS traceroute to help users quickly locate failure points.

Full SRv6 Support

SRv6 supported by the RG-RSR77-XA series can be used with the Network Configuration Protocol (NETCONF), Topology-Independent Loop-free Alternate (TI-LFA), inter-AS E2E, and PCEP. The RG-RSR77-XA series supports BGP for SRv6 policies, Generalized SRv6 (G-SRv6), SRv6 OAM, SRv6 Policy, SRv6-BE, SRv6 GR, Non-Stop Routing (NSR) for SRv6, and Seamless Bidirectional Forwarding Detection (SBFD) for SRv6.

Carrier-Class Reliability

Redundancy of key modules: routing engines, SFUs, power modules in N+M mode, dual startup image files, and dual configuration files.

Hot swapping of key components: routing engines, carrier cards, line cards, power modules, and fan modules

Flexible Device Management

The RG-RSR77-XA series supports user-based hierarchical management and password protection, and applies the multi-core CPU technology to separate the control plane from the forwarding plane, allowing device management in any environment. It authenticates login users and grants users of different levels with different administrative permissions, ensuring device security.

Product Specifications

Hardware Specifications

Hardware Specifications	RG-RSR77-XA-03	RG-RSR77-XA-08
Port Specifications		
Module management port	RSR77-XA-03-CM: 1 x RJ45 console port 1 x 10/100/1000BASE-T RJ45 MGMT port	RSR77-XA-08-CM: 1 x RJ45 console port 1 x 10/100/1000BASE-T RJ45 MGMT port RSR77-XA-08-DSF & RSR77-XA-08-DSF II: 1 x RJ45 console port
Module slot	2 x supervisor module slots 3 x modular line card slots(A maximum of 12 modular port adapters are supported.) 4 x power module slots 1 x fan module slot	2 x supervisor module slots 8 x modular line card slots(A maximum of 32 modular port adapters are supported.) 4 x switch fabric module slots 4 x power module slots 2 x fan module slots
Module hot swapping	Supported	Supported
Supervisor module redundancy	1+1 redundancy	1+1 redundancy
Switch fabric module	2 x integrated switch fabric modules	4 x independent switch fabric modules

Hardware Specifications	RG-RSR77-XA-03	RG-RSR77-XA-08
System Specifications		
Switching capacity	1.2 Tbps	3.2 Tbps
Packet forwarding rate	72 Mpps	192 Mpps
ARP table size	40,000 (Modular port adapter)	40,000 (Modular port adapter)
Number of IPv4 unicast routes	2,600,000	2,600,000
Number of IPv4 multicast routes	2,048	2,048
Number of IPv6 unicast routes	1,000,000	1,000,000
Number of IPv6 multicast routes	1,024	1,024
Number of IGMP Groups	1,000	1,000
Number of MLD Groups	1,000	1,000
Number of ACEs	32,000	32,000
Dimensions and Weight		
Unit dimensions (W x D x H)	442 mm×500 mm×219.5 mm (17.40 in. x 19.69 in. x 8.64 in.) The depth of the chassis with the cable management bracket is 555 mm (21.85 in.)	442 mm x 606.7 mm x 442.5 mm (17.40 in. x 23.89 in. x 17.42 in.) The depth of the device with the cable management bracket is 670.1 mm (26.38 in.).
Rack height	5 RU	10 RU
Unit weight	12.5 kg (27.56 lbs)	43.55 kg (96.01 lbs)
Power Supply and Consumption		
Power supply	4 x power modules(N+M redundancy)	4 x power modules(N+M redundancy)
Power input	RG-PA460-RI (AC input): - Rated input voltage: 100 V AC to 240 V AC, 50 Hz to 60 Hz - Maximum input voltage: 90 V to 290 V AC, 45 Hz to 65 Hz - Maximum input current: 6 A	RG-PA1600I (AC Input): - Rated input voltage: 100 V to 240 V AC, 50Hz~60Hz - Max. input voltage: 90 V to 290V AC, 47Hz to 63Hz - Max. input current: 16 A RG-PD600I (DC Input): - Rated input voltage: -48 V to -60 V DC - Max. input voltage: -38 V to -75 V DC - Max. input current: 20 A

Hardware Specifications	RG-RSR77-XA-03	RG-RSR77-XA-08
Power output	RG-PA460-RI (AC input): ● Output voltage: 12 V ● Maximum output current: 36 A	RG-PA1600I: ● 90V to 176V AC Input: Output Voltage: 12 V DC Maximum output current: 100 A ● 176V to 290V AC Input: Output Voltage: 12 V DC Maximum output current: 133.4 A RG-PD600I: ● DC Input: Output voltage: 12 V DC Maximum output current: 50 A
Maximum output power	RG-PA460-RI: ● 90 V AC to 290 V AC: 460W	RG-PA1600I: 90 V AC to 176 V AC, 1200 W 176 V to 290 V AC, 1600 W RG-PD600I: 600 W
Module power consumption	Supervisor module: ● RSR77-XA-03-CM: < 50 W Line card: ● RSR77-XA-SIP3 (modular line card): < 180 W ● NM-4XS-KB: < 14 W ● NM-2XS-KA: < 11 W ● NM-8GT-G: < 7 W ● NM-8SFP-G: < 16 W ● DNM-1CQ-KC: < 21 W Fan module: ● FAN: < 216 W	Supervisor module: ● RSR77-XA-08-CM: < 70 W Switch fabric module: ● RSR77-XA-08-DSF: < 87 W ● RSR77-XA-08-DSF II: < 160 W Line card: ● RSR77-XA-SIP3 (modular line card): < 180 W ● NM-4XS-KB: < 14 W ● NM-2XS-KA: < 11 W ● NM-8GT-G: < 7 W ● NM-8SFP-G: < 16 W ● DNM-1CQ-KC: < 21 W Fan module: ● M10C-FAN: < 216 W
Environment and Reliability		
Mean time between failure (MTBF)	216,000 hours (24 years)	342,000 hours (39 years)
Temperature	Operating temperature: 0°C to 45°C (32°C to +113°C) Storage temperature: -40°C to 70°C (-40°F to +158°F)	
Humidity	Operating humidity: 10% RH to 90% RH (non-condensing) Storage humidity: 5% RH to 95% RH (non-condensing)	
Altitude	● Maximum operating altitude: 4,000 m (13123.36 ft.) ● Maximum storage altitude: 5,000 m (16404.20 ft.) ● Long-term operating altitude: 45°C (113°F) at an altitude of 1800 m (5905.51 ft.)	
Acoustic noise	Noise in room temperature: ≤ 70 dB Maximum noise: < 77 dB	35°C (95°F): 60 dB 50°C (122°F): 75 dB

Software Specifications

RG-RSR77-XA Series	
Model	Description
Ethernet switching	Jumbo frame length: 1,578 bytes
	802.3az EEE
	LLDP/LLDP-MED
IP service	Static and dynamic ARP
	DHCP server, DHCP relay, and DHCP client
	FTP, TFTP, FTPv6, and TFTPv6
	NTP, SNTP, and NTPv6
	NAT
	Strict and loose RPF uRPF ignoring default routes
	ND
	FTP, TFTP, FTPv6, and TFTPv6
	DNS
	IPv4/IPv6 VRF
	DHCP server, DHCPv6 client, and DHCPv6 relay
	ND and ND snooping
	IPv6 GRE tunnel
IP routing	IPv4 and IPv6 static routing, and static blackhole routes
	RIP v1/v2 and RIPng
	OSPFv2 and OSPFv3
	IS-ISv4 and IS-ISv6
	BGP and BGP4+

RG-RSR77-XA Series	
Model	Description
IP routing	Routing policies
	BGP4, BGP4+, and MP-BGP
	IPv4 VRRP v2/v3 and IPv6 VRRP v3
	IPv4 and IPv6 PBR
Multicast	IGMP v1/v2/v3
	Static multicast routing
	PIM-DM, PIM-SM, PIM-SSM, PIM-SSMv6, PIM-SMv6, and other multicast routing protocols
	MSDP for inter-domain multicast
	MLDv1/v2
MPLS/SR	Basic MPLS functions
	MPLS forwarding
	6PE/6VPE interconnection with IPv4/IPv6 MPLS backbone network
	MPLS MIB (RFC 1273, 4265, 4382)
	L3VPN
	LSP
	LDP
ACL and QoS	Standard IP ACLs
	Extended IP ACLs
	Extended MAC ACLs
	IPv6 ACLs
	Applying ACLs to interfaces
	MPLS QoS
	HQoS
Security	Multiple AAA modes
	RADIUS authentication, authorization, and accounting
	TACACS+

RG-RSR77-XA Series	
Model	Description
Security	Attack defense
	Password security
	RNFP
	CPP
	FPM
	PKI
	IPsec VPN(AES-128, AES-256)
	VPDN
	SSHv1 and SSHv2
	Global IP-MAC binding
	Login authentication and password security
Reliability	BFD
	GR
	DLDP
	ECMP
	NSR
	Hot swapping
NMS and maintenance	SPAN and ERSPAN
	SNMP v1/v2/v3
	System operation logging
	IPFIX
	Command line configuration through console, AUX Modem, Telnet, and SSH
	RMON (1, 2, 3, 9)
	NETCONF
	CWMP
	gRPC

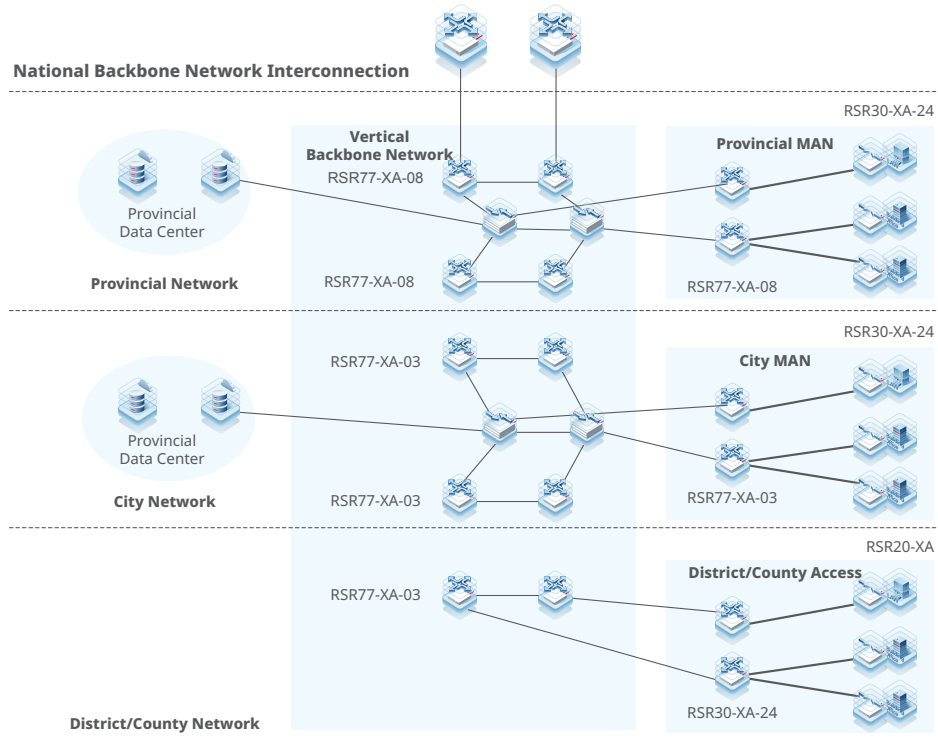
Protocol Compliance

RG-RSR77-XA Series	
Organization	Standards and Protocol
IETF	RFC 1157 A Simple Network Management Protocol (SNMP) RFC 1305 Network Time Protocol Version 3 (NTP) RFC 1349 Internet Protocol (IP) RFC 1350 TFTP Protocol (revision 2) RFC 1519 CIDR RFC 1591 Domain Name System Structure and Delegation RFC 1643 Ethernet Interface MIB RFC 1757 Remote Network Monitoring (RMON) RFC 1812 Requirements for IP Version 4 Router RFC 1901 Introduction to Community-based SNMPv2 RFC 1902-1907 SNMP v2 RFC 1918 Address Allocation for Private Internet RFC 2131 Dynamic Host Configuration Protocol (DHCP) RFC 2132 DHCP Options and BOOTP Vendor Extensions RFC 2571 SNMP Management Frameworks RFC 2863 The Interfaces Group MIB RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only) RFC 3046 DHCP Option82 RFC 3417 (SNMP Transport Mappings) RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP) RFC 4022 MIB for TCP RFC 768 User Datagram Protocol (UDP) RFC 783 TFTP Protocol (revision 2) RFC 792 Internet Control Message Protocol (ICMP) RFC 793 Transmission Control Protocol (TCP) RFC 813 Window and Acknowledgement Strategy in TCP RFC 815 IP datagram reassembly algorithms RFC 826 Ethernet Address Resolution Protocol (ARP) RFC 854 Telnet Protocol RFC 959 File Transfer Protocol (FTP) RFC 1058 Routing Information Protocol (RIP) RFC 1583 OSPF Version 2 RFC 1981 Path MTU Discovery for IP version 6 RFC 1997 BGP Communities Attribute RFC 2236 IGMP RFC 2328 OSPF Version 2 RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option

RG-RSR77-XA Series	
Organization	Standards and Protocol
IETF	RFC 2439 BGP Route Flap Damping RFC 2460 Internet Protocol, Version 6 (IPv6) RFC 2461 Neighbor Discovery for IP Version 6 (IPv6) RFC 2462 IPv6 Stateless Address Auto configuration RFC 2463 Internet Control Message Protocol for IPv6 (ICMPv6) RFC 2545 Use of BGP 4 Multiprotocol Extensions for IPv6 Inter Domain Routing RFC 2711 IPv6 Router Alert Option RFC 2787 Definitions of Managed Objects for the Virtual Router Redundancy Protocol RFC 2918 Route Refresh Capability for BGP 4 RFC 2934 Protocol Independent Multicast MIB for IPv4 RFC 3065 Autonomous System Confederation for BGP RFC 3101 OSPF Not so stubby area option RFC 3137 OSPF Stub Router Advertisement sFlow RFC 3509 Alternative Implementations of OSPF Area Border Routers RFC 3513 IP Version 6 Addressing Architecture RFC 3623 Graceful OSPF Restart RFC 3768 VRRP RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6 RFC 3973 PIM Dense Mode RFC 4271 A Border Gateway Protocol 4 (BGP 4) RFC 4273 Definitions of Managed Objects for BGP 4 RFC 4360 BGP Extended Communities Attribute RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP) RFC 4486 Subcodes for BGP Cease Notification Message RFC 4552 Authentication/Confidentiality for OSPFv3 RFC 4724 Graceful Restart Mechanism for BGP RFC 4750 OSPFv2 MIB partial support no SetMIB RFC 4760 Multiprotocol Extensions for BGP 4 RFC 4940 IANA Considerations for OSPF RFC 5065 Autonomous System Confederation for BGP RFC 5187 OSPFv3 Graceful Restart RFC 5340 OSPFv3 for IPv6 RFC 5492 Capabilities Advertisement with BGP 4
IEEE	IEEE 802.2 Logical Link Control IEEE 802.1ab Link Layer Discovery Protocol IEEE 802.1ad Provider Bridges IEEE 802.1ax/IEEE802.3ad Link Aggregation IEEE 802.1D Media Access Control (MAC) Bridges IEEE 802.1Q Virtual Bridged Local Area Networks (VLAN) IEEE 802.3ad Link Aggregation Control Protocol (LACP) IEEE Std 802.3x Full Duplex and flow control

Typical Applications

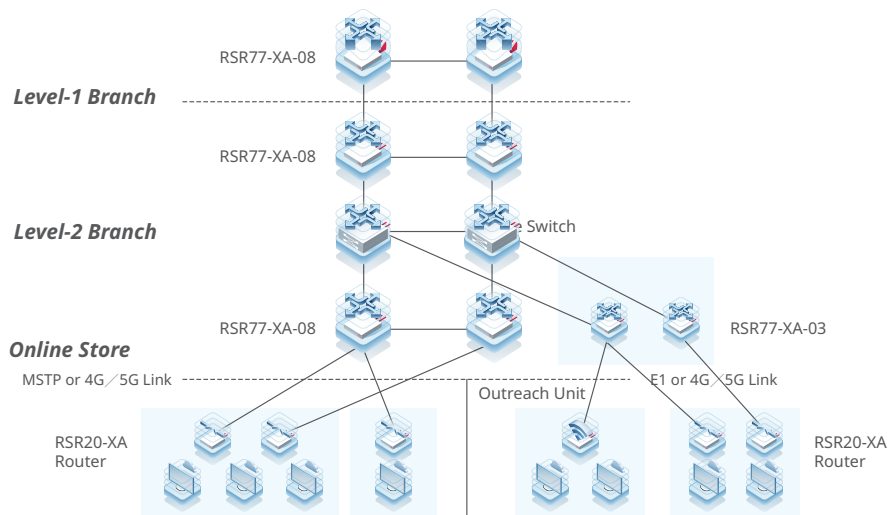
E-government Network



Characteristics:

The RG-RSR77-XA series core router supports the MPLS VPN solution for the government industry. It caters to application requirements of e-government intranet and internet.

Financial Backbone Network



Characteristics:

The RG-RSR77-XA series core router can aggregate services of a large number of branches and delivers high performance even in the case of multi-service. It copes with service requirements of backbone networks of banking, insurance, postal savings bank, and other financial subsectors.

Ordering Guide

Perform the following steps to configure an RG-RSR77-XA series router:

- Select the chassis and supervisor engine based on the specific product model.
- Select switch fabric modules based on service requirements.
- Select power modules based on power supply requirements. At least one power module is required.
- Select line cards and function modules based on service requirements.

Ordering Information

Chassis and Supervisor Modules

Model	Description
RG-RSR77-XA-03	RG-RSR77-XA-03 chassis
RG-RSR77-XA-08	RG-RSR77-XA-08 chassis
RSR77-XA-03-CM	RG-RSR77-XA-03 routing switching module
RSR77-XA-08-CM	RG-RSR77-XA-08 routing module
RSR77-XA-08-DSF	RG-RSR77-XA-08 switch fabric module (40 Gbps supported by a single switch fabric module)
RSR77-XA-08-DSF II	RG-RSR77-XA-08 switch fabric module (200 Gbps supported by a single switch fabric module)

Power Modules

Model	Description
RG-PA1600I	RG-RSR77-XA-08, 1600 W AC power module
RG-PA460-RI	RG-RSR77-XA-03, 460 W AC power module
RG-PD600I	RG-RSR77-XA-08, 600 W DC power module

Modular Line Cards

Model	Description
RSR77-XA-SIP3	NM/DNM modular line card (Each modular line card supports up to four NM modular port adapters or two DNM modular port adapters)

Modular Port Adapters

Model	Description
NM-2XS-KA	2-port 10GE Ethernet interface module, requiring additional SFP+ modules
NM-4XS-KB	4-port 10GE Ethernet interface module, requiring additional SFP+ modules
NM-8SFP-G	8-port 1GE Ethernet optical interface module, requiring additional SFP modules
NM-8GT-G	8-port 1GE Ethernet electrical interface module
DNM-1CQ-KC	1-port 100GE/40GE Ethernet interface module

Note: The item marked with the asterisk (*) will be available in the future.

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.

More Information

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

- Ruijie Networks official website: <https://www.ruijienetworks.com/>
- Online support: <https://www.ruijienetworks.com/support>
- Hotline support: <https://www.ruijienetworks.com/support/hotline>
- Email support: service_rj@ruijienetworks.com



Ruijie Networks Co., Ltd.

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