Ruijie RG-S6220

Data Center Switch Series Datasheet

Ruijie RG-S6220 Switch Series is designed to power next-generation data centers and cloud computing services. As a collection of 10 GE data center switches, the series offers non-blocking, unified, and virtualized switching performance with high transparency and sustainability. The RG-S6220 switches are the solid foundation for enterprise-sized cloud computing network solution.

HIGHLIGHTS

- Network Virtualization (VSU) Support
- Up to 48 x 10G Fiber/Copper Ports and 4 x 40G Fiber Ports
- Rich Next-Gen Data Center Features (DCB, FCoE, VEPA, TRILL)
- Advanced Layer 3 Routing Support
- Power and Fan Redundancy Support

The feature-rich RG-S6220 switches provide end-to-end Quality of Service (QoS), and excellent virtualization performance for next-generation data centers. The RG-S6220 switches are ideal acting as the access layer of super-large data center networks, the convergence or core layer of medium and small data center networks, the convergence layer of large campus networks, as well as the core layer of medium and small networks.

RG-S6220-24XS

RG-S6220-48XS4QXS

RG-S6220-48XT4QXS

PRODUCT FEATURES

Data Center Virtualization

The RG-S6220 series switches adopt the industry-leading Virtual Switch Unit 2.0 (VSU 2.0) technology to achieve unified network management, reduce network nodes and enhance network reliability. The RG-S6220 switches support an extensive array of virtualization features including Virtual Edge Bridging (VEB), Virtual Ethernet Port Aggregation (VEPA), Virtual Machine Discovery (VMD), and automatic migration of security policies. The failover time for link failure is within 50 to 200ms to guarantee uninterrupted operation for mission-critical applications. The cross-device link aggregation feature enables access to servers or switches to achieve active-active uplinks.

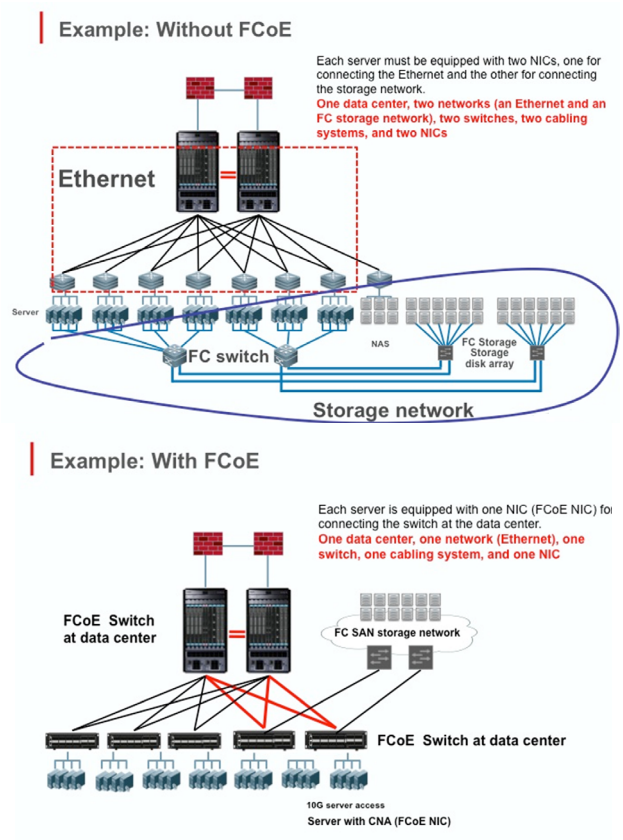
The RG-S6220 switches support VEPA feature under IEEE standards, which places the switching function of virtual switches back to network devices, enabling the next-generation data center

solution to better adapt to the virtualized computing environment. The RG-S6220 switches resolve the problem of low Ethernet efficiency caused by the CPU software and hence unifies the data center networks.

The RG-S6220 switches support VMD and automatic migration of security policies to effectively attain unified deployment of traffic security control policies in a large-scale server virtualization environment. A synchronous migration of corresponding security policies is enabled using data center management platform, data center switches, and virtual machine management and control platform. The measure effectively eliminates the network security loopholes in the virtualized server environment and hence reduces the maintenance workload.

Unified Switching & Network Integration

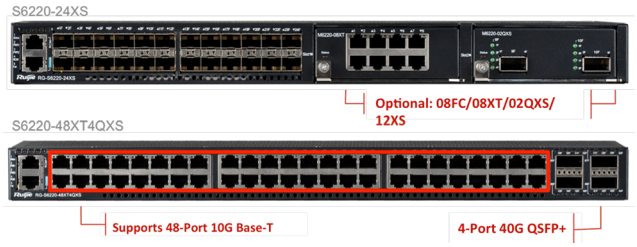
The RG-S6220 series switches enable Fibre Channel over Ethernet (FCoE) access and Ethernet access services. The RG-S6220 switches also provide a lossless Ethernet transmission performance for traditional IP SAN users, enhancing IP SAN reliability. The RG-S6220 switches reduce data center construction costs and complexity through easy integration of heterogeneous LAN and SAN networks. Different from traditional data center switches, the RG-S6220 switches truly support FCoE functions in terms of hardware chips, allowing easy construction that integrates IP SAN, FCoE networks and the Ethernet. The figure below illustrates infrastructure simplification with the FCoE deployment.



Network infrastructure is greatly simplified after FCoE deployment

Non-blocking Performance with Powerful Caching Capacity

The RG-S6220 series is a powerful collection of line-rate switches customized to power the next-generation data centers and cloud computing. Within the 1RU configuration, the series supports up to 48 x 10G fiber/copper ports and 4 x 40G fiber ports. The 24XS model also allows users to insert 2-port 40GE module, 12-port 10GE fiber module, or 8-port 10GE copper module into the expansion slots, offering ultra flexibility in network construction. All RG-S6220 switches employ an advanced cache scheduling mechanism to maximize the device's cache capability, ensuring truly non-blocking transmission in the increasingly demanding data center environment.



Ruijie RG-S6220 Series Switches - 24XS & 48XT4QXS Models

Cost-effective 10 GE Copper Port

The RG-S6220 switches provide 10 GE access through a high-density 10 GE Base-T port. The port supports the IEEE 802.3an standard and offers a 10 GE access bandwidth using the general RJ-45 twisted pair. The easy deployment of twisted pair keeps the original cabling of the data center in place with no disruption. It is also much more cost-effective than optical fiber. The RG-S6220 switches greatly minimize the construction costs of data centers.

IPv4/IPv6 Dual-Stack Multilayer Switching

The hardware of the RG-S6220 switches supports line-rate IPv4/IPv6 dual-stack multi-layer switching, and distinguishes and processes IPv4 and IPv6 protocol packets. The RG-S6220 switches also support multiple tunneling technologies including manually configured tunnels, automatic tunnels, ISATAP tunnels and so on. The switches provide flexible IPv6 inter-network communication solutions to be realized according the requirement plan and status quo of the IPv6 networks. The RG-S6220 switches are also applicable to an IPv4-only or IPv6-only network, or a hybrid of IPv4 and IPv6 network, fulfilling the transition requirements from IPv4 to IPv6 network.

The RG-S6220 switches support a wide range of IPv4 routing protocols including static routing, RIP, OSPF, and BGP4, which can be selected flexibly according to the network environment.

The RG-S6220 switches also support an abundant list of IPv6 routing protocols, such as static routing, RIPng, OSPFv3, and BGP4+, which can be selected flexibly either to upgrade the existing network to IPv6 network or to construct a new IPv6 network.

Carrier-Class Reliability Protection

The RG-S6220 switches support built-in redundant power modules and modularized fan components. All the interface boards, power modules, and fan modules are hot-pluggable to guarantee undisturbed switching operation. In addition, the RG-S6220 switches support fault detection and automatic alarms for the power and fan modules. The rotation speed of the fans automatically adjusts to the ambient temperature. The RG-S6220 switches further provide device-level and link-level reliability protection with the over-current, over-voltage, and overheating protection measures.

The RG-S6220 switches support an extensive family of link reliability technologies including Ruijie's industry-leading Rapid Ethernet Ring Protection (RERP) and Rapid Ethernet Uplink Protection (REUP) mechanisms. The RG-S6220 switches also feature Graceful Restart (GR) and Bidirectional Forwarding (BFD) mechanisms. All the measures ensure the network convergence time is unaffected even when the network bears abundant services and heavy traffic, and therefore ensure normal operation.

Flexible & Comprehensive Security Policies

The RG-S6220 switches feature multiple security measures, which effectively defend against and control virus flooding and hacker attacks. These measures include anti-DoS attack, anti-IP scanning, validity check of ARP packets on ports, and multiple hardware-based ACL policies.

The RG-S6220 switches support hardware-based IPv6 ACLs, which can easily control IPv6 users' access to edge devices even when IPv6 users exist within an IPv4 network. It allows coexistence of IPv4 and IPv6 users on the network and can control access permissions of IPv6 users, such as restricting access to sensitive resources on the network.

The RG-S6220 switches adopt Ruijie's industry-leading CPU Protection Policy (CPP) technology, which is an advanced hardware-based CPU protection mechanism, to distinguish data traffic destined to the CPU and process data according to queue priorities. The RG-S6220 switches implement bandwidth control to protect the CPU against unauthorized traffic consumption, malicious attacks and resource consumption and hence to ensure switch security. The hardware of the RG-S6220 switches allows flexible binding of a user IP address or a MAC address to a port or a switch to strictly control user access. The RG-S6220 switches support DHCP snooping, which allows only a DHCP response to a trusted port to prevent spoofing by unauthorized DHCP servers. Based on DHCP snooping, the RG-S6220 switches dynamically monitor ARP packets, check user IP addresses, and directly discard packets that do not comply with the bound entries. The RG-S6220 switches effectively defend against ARP spoofing and source IP address spoofing.

The RG-S6220 switches support Telnet access control based on source IP addresses. The measure prevents unauthorized users or hackers from attacking or controlling devices and thereby enhances security of the device NMS. The RG-S6220 switches also implement Secure Shell (SSH) and SNMPv3 to encrypt management information in Telnet and SNMP processes, thereby ensuring security of management device information and preventing hacker from waging attacks or controlling devices.

The RG-S6220 switches prevent unauthorized users from network access through multiple functions. These functions include multi-element binding, port security, time ACL, and bandwidth limit based on data traffic. The RG-S6220 switches highly strengthen access security and are perfect match for large-sized networks.

Advanced Management

The RG-S6220 switches support a family of management ports such as Console, RCMI (combo interface for MGMT and DCMI. The DCMI remotely performs device management/monitoring and controls power on/off), Out-of-Band Management, and USB ports. The switches also support SNMP v1/v2c/v3, a universal network management platform, and Ruijie's advanced BMC service management software. In addition, the RG-S6220 switches enable Command Line Interface (CLI), Web NMS, Telnet, and cluster management, which simplify device management and provide various encryption modes such as SSH2.0 and SSL to enhance network security.

The RG-S6220 switches support SPAN/RSPAN mirroring and multiple mirroring observation ports, offering users high visibility and transparency for easy maintenance. The RG-S6220 switches also provide a wide range of network traffic reports to help users optimize network structure and adjust resources deployment accordingly.

TECHNICAL SPECIFICATIONS

Model	RG-S6220-24XS	RG-S6220-48XT4QXS	RG-S6220-48XS4QXS
Ports	24 fixed 10G SFP+ ports	48 fixed 10GBASE-T ports 4 40G QSFP+ Ports	48 fixed 10G SFP+ ports 4 40G QSFP+ ports
Expansion Slots	2	N/A	N/A
Modular Power Slots	2		
Fan Slots	4		
Expansion Modules	12-port 10G SFP+ module 8-port 10GBASE-T module 2-port 40G QSFP+ module	N/A	N/A
Management Ports	1 console port 1 MGMT port for 10/100/1000M BASE-T out-of-band management 1 USB 2.0 port		
Switching Capacity	1.28Tbps		
Packet Forwarding Rate	960Mpps		
Max. Number of 10GE Ports	48		
Max. Number of 40GE Ports	4		
Port Buffer	9MB		
ARP Table	Up to 16K		
MAC Address	Up to 128K		
Routing Entries	Up to 16K		
Routing Table Size (IPv4/IPv6)	Up to 16K/8K		
Multicast Entries (IPv4/IPv6)	Up to 2,048		
ACL Entries	Up to 1,500		
VLAN	4K 802.1q VLANs, Port-based VLAN, Protocol-based VLAN, Private VLAN, QinQ, IP subnet-based VLAN, GVRP		
QinQ	Basic QinQ, Flexible QinQ		
Link Aggregation	Support LACP		
Port Mirroring	Many-to-one mirroring, One-to-many mirroring, Flow-based mirroring, Over devices mirroring, VLAN-based mirroring, AP-port mirroring, RSPAN		
Spanning Tree Protocols	IEEE802.1d STP, IEEE802.1w RSTP, Standard 802.1s MSTP, Port fast, BPDU filter, BPDU guard, TC guard, TC protection, ROOT guard		
DHCP	DHCP server, DHCP client, DHCP snooping, DHCP relay, IPv6 DHCP snooping, IPv6 DHCP client, IPv6 DHCP relay		
Multiple Spanning Tree (MST) Instances	65 (0~64)		
Maximum Aggregation Port (AP)	Up to 128		
Virtual Routing and Forwarding (VRF) Instances	Up to 1,024		
Data Center Unified Network Features	Data Center Bridging (DCB) features: 802.1Qau: Congestion Notification (CN / QCN); 802.1Qaz: Enhanced Transmission Selection (ETS and DCBX); 802.1Qbb: Priority-based Flow Control (PFC) Unified Switching: Fibre Channel over Ethernet (FCoE) Virtualization: Virtual Ethernet Port Aggregator (VEPA); Virtual Switch Unit (VSU); Transparent Interconnection of Lots of Links (TRILL)		

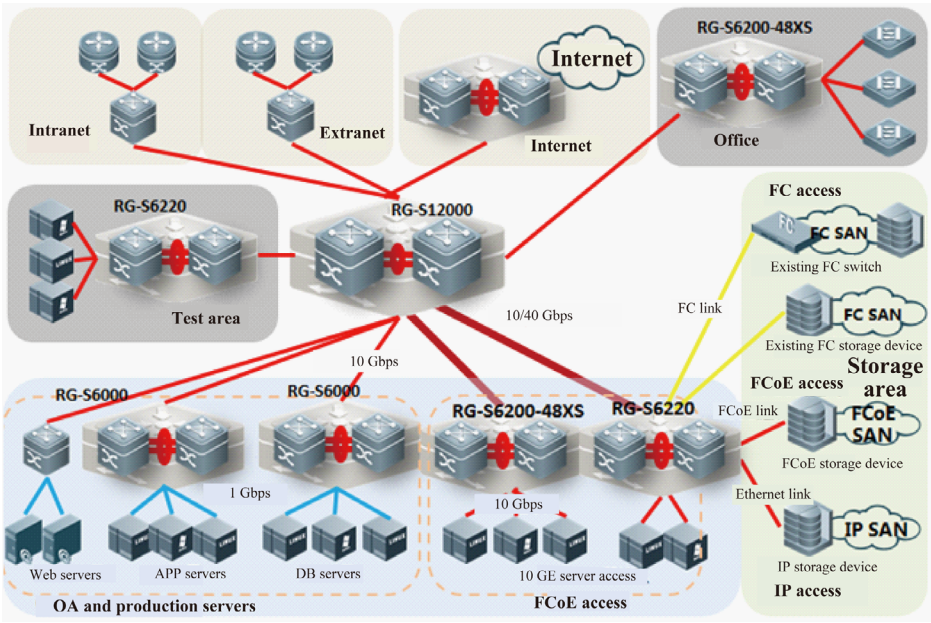
Model	RG-S6220-24XS	RG-S6220-48XT4QXS	RG-S6220-48XS4QXS
VSU (Virtual Switch Unit)	Support (up to 9 stack members)		
L2 Features	MAC, ARP, VLAN, Basic QinQ, Felix QinQ, Link aggregation, Mirroring, STP, RSTP, MSTP, Broadcast storm control, IGMP v1/v2/v3 snooping, IGMP filter, IGMP fast leave, MLD snooping, DHCP, Jumbo frame, RLDP, LLDP, REUP, G.8032 ERPS		
Layer 2 Protocols	IEEE802.3 (10BASE-T), IEEE802.3u (100BASE-T), IEEE802.3z (1000BASE-X), IEEE802.3ab (1000BASE-T), IEEE802.3ae (10GBASE-T), IEEE802.3an (10GBASE-T), IEEE802.3ak, IEEE802.3an, IEEE802.3x, IEEE802.3ad (link aggregation), IEEE802.1p, IEEE802.1x, IEEE802.1Q, IEEE802.1D (STP), IEEE802.1w (RSTP), IEEE802.1s (MSTP), IGMP Snooping, Jumbo Frame (9Kbytes), IEEE802.1ad (QinQ and flexible QinQ), GVRP		
Layer 3 Features	Static routing, Equal-Cost Multi-Path Routing (ECMP), OSPF, OSPF v3, BGP, BGP4+, RIP, RIPng, IS-IS v4, MCE		
Layer 3 Protocols (IPv4)	BGP4, OSPFv2, RIPv1, RIPv2, MBGP, LPM routing, Policy-based routing, Route-policy, ECMP, WCMP, VRRP, IGMP v1/v2/v3, DVMRP, PIM-SSM/SM/DM, MSDP, Any-RP		
IPv4 Features	Static routing, RIP, OSPF, BGP4, VRRP, Equal-cost routing, Policy-based routing, GRE tunnel		
IPv6 Features	Static routing OSPFv3, BGP4+, MLDv1/v2, VRRPv3, Equal-cost routing, Policy-based routing, Manual tunnel, Auto tunnel, ISATAP tunnel		
Basic IPv6 Protocols	Neighbor Discovery (ND), DNSv6, DHCPv6, ICMPv6, ACLv6, SNMPv6, Ping/Traceroute v6, RADIUS v6, Telnet/SSH v6, FTP/TFTP v6, NTP v6, VRRP for IPv6		
IPv6 Routing Protocols	Static routing, Equal-cost routing, Policy routing, OSPFv3, RIPng, BGP4+, MLDv1/v2, PIM-SMv6, Manual tunnels, Automatic tunnels, ISATAP tunnels		
IPv6 Tunnel Features	Manual tunnel, Auto tunnel, ISATAP		
Multicast	IGMP v1/v2/v3, IGMP v1/v2/v3 snooping, IGMP proxy, IGMP filter, IGMP fast leave, Multicast routing protocols (PIM-DM, PIM-SM, PIM-SSM), MLD snooping, MLD, PIM for IPv6, MSDP, Multicast static routing		
MPLS	MPLS forwarding; MPLS L3 VPN; As P, PE or CE device		
G.8032	Support		
ACE Capacity	1,500		
ACL	Standard/Extended/Expert ACL, Extended MAC ACL, ACL 80, IPv6 ACL, ACL logging, ACL counter, ACL remark		
QoS	EXP priority mapping based on, 802.1p, DSCP, and IP Precedence; ACL traffic classification; Priority marking/remarking; Multiple queue scheduling mechanisms, such as SP, WRR, DRR, SP+WRR, and SP+DRR		
IPv6 ACL	Support		
Reliability	VSU (virtualization technology for virtualizing multiple devices into 1); GR for RIP/OSPF/BGP; BFD detection; ERPS (G.8032); REUP dual-link fast switching technology; RLDP (Rapid Link Detection Protocol); 1+1 power redundancy; Hot-swappable power module		
Security	Network Foundation Protection Policy (NFPP); CPU Protection (CPP); DoS protection; Detection of unauthorized data packets; Data encryption; IP source guard; RADIUS / TACACS+; IPv4 / IPv6 ACL packet filtering based on standard or extended VLANs; Plaintext authentication and MD5 cipher-text authentication of OSPF, RIPv2, and BGPv4 packets; Telnet login through limited IP addresses and the password mechanism; uRPF; Broadcast packet suppression; DHCP snooping; Anti-gateway ARP spoofing; ARP check		
Manageability	SNMP; Telnet; Console; Hardware support RCMI (combo interface for DCMI and MGMT); Web; RMON (1, 2, 3, 9); SSHv1/v2; FTP/TFTP for file upload and download management; NTP clock; Syslog; RSPAN		
OAM	802.1AG		
Smart Temperature Control	Auto fan speed adjustment; Fan malfunction alerts; Fan status check		
Smart Power Supply	Support power control and management		

Model	RG-S6220-24XS	RG-S6220-48XT4QXS	RG-S6220-48XS4QXS
Other Protocols	DHCP client, DHCP relay, DHCP server, DNS client, UDP helper, ARP proxy, Syslog		
Dimensions (W x D x H) (mm)	440 × 480 × 44	440 × 500 × 44	440 × 420 × 44
Rack Height	1RU		
Weight (incl. 4 fan modules and 2 power modules)	9.5kg	11kg	9kg
MTBF	>200K hours		
Power Supply	AC input: Rated voltage range: 100V to 240V AC Maximum voltage range: 90V to 264V AC Frequency: 50/60Hz Rated current: 5.29A to 2.2A HVDC input: Input voltage range: 192V to 290V DC Input current range: 2.66A to 2.03A		
Power Consumption	<160 W (w/o expansion modules) <260 W (w/ expansion modules)	<450 W	<250 W
Temperature	Operating temperature: 0°C to 45°C		
	Storage temperature: -40ºC to 70ºC		
Humidity	10% to 90%RH (non-condensing)		
Operating Altitude	-500m to 5,000m		

TYPICAL APPLICATIONS

Typical Application 1

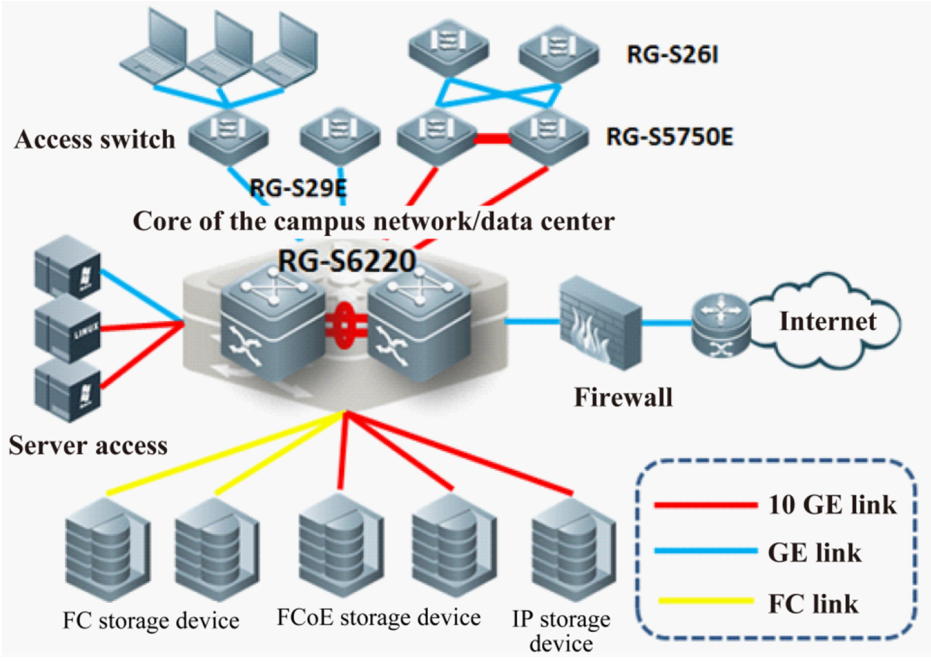
Topology display of the Large High-Performance Data Center Solution (United Access of FCoE/iSCSI Storage) is shown in the below figure:



Large High-Performance Data Centre Solution

Typical Application 2

Topology display of Medium/Small Data Center or Core Layer of a Campus Network is shown in the below figure:



Medium/Small Data Center or Core Layer of a Campus Network

ORDERING INFORMATION

1. Host, expansion cards, fans, and power modules

Model	Description
RG-S6220-24XS	24 fixed 10G SFP+ Ports, 2 Expansion Slots, 2 Power Slots, 4 Fan Slots (Power and fan modules sold separately)
RG-S6220-48XT4QXS	48 fixed 10GBASE-T Ports, 4 40G QSFP+ Ports, 2 Power Slots, 4 Fan Slots (Power and fan modules sold separately)
RG-S6220-48XS4QXS	48 fixed 10G SFP+ Ports, 4 40G QSFP+ Ports, 2 Power Slots, 4 Fan Slots (Power and fan modules sold separately)
M6220-12XS	Expansion Module with 12 10G SFP+ ports
M6220-08XT	Expansion Module with 8 10GBASE-T ports
M6220-02QXS	Expansion Module with 2 40G QSFP+ ports
M6220-FAN-F	Fan Module, front-to-rear airflow, support 3+1 redundancy
RG-M6220-AC460E-F	S6220 Power Supply Module, 460W, support 1+1 redundancy

2. Optional 40G and 10G fiber modules

Model	Description
40G-QSFP-SR-MM850	40G SR Fiber Module for QSFP+ ports, 100m (OM3) / 150m (OM4) (8 cores, 850nm)
40G-QSFP-LSR-MM850	40G SR Fiber Module for QSFP+ ports, 300m (OM3) / 400m (OM4) (8 or 12 cores, 850nm)
40G-QSFP-LR4-SM1310	40G LR Single-mode Fiber Module for QSFP+ ports, 10km (LC) (2 cores, 1310nm)
XG-SFP-SR-MM850	10G SR Fiber Module for SFP+ ports, 300m
XG-SFP-LR-SM1310	10G LR Fiber Module for SFP+ ports, 10km
XG-SFP-ER-SM1550	10G ER Fiber Module for SFP+ ports, 40km
XG-SFP-ZR-SM1550	10G ZR Fiber Module for SFP+ ports, 80km

3. 40 GE and Gigabit copper cables

Model	Description
40G-QSFP-STACK3M	40G Copper Cable for QSFP+, 3m
XG-SFP-CU1M	10GBASE-CU SFP+ Cable, 1m
XG-SFP-CU3M	10GBASE-CU SFP+ Cable, 3m
XG-SFP-CU5M	10GBASE-CU SFP+ Cable, 5m

4. Gigabit optical modules

Model	Description
Mini-GBIC-SX	1000BASE-SX, SFP Transceiver, MM (850nm, 550m, LC)
Mini-GBIC-LX	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC)
Mini-GBIC-GT	1000BASE-TX, SFP Transceiver (100m)
Mini-GBIC-LH40	1000BASE-LH, SFP Transceiver, SM (1310nm, 40km, LC)
Mini-GBIC-ZX50	1000BASE-ZX, SFP Transceiver, SM (1550nm, 50km, LC)
Mini-GBIC-ZX80	1000BASE-ZX, SFP Transceiver, SM (1550nm, 80km, LC)
Mini-GBIC-ZX100	1000BASE-ZX, SFP Transceiver, SM (1550nm, 100km, LC)

Ruijie Networks
Innovation Beyond Networks

Beijing
Fax： (8610) 6815-4205
Phone： (8610) 5171-5996
Email: info@ruijienetworks.com
Address： 11/F, East Wing, ZhongYiPengao Plaza, No. 29 Fuxing Road, Haidian District, Beijing 100036, China

Malaysia
Fax： (603) 2181-1071
Phone： (603) 2181-1071
Email: sales-MY@ruijienetworks.com
Address： Office Suite 19-12-3A, Level 12, UOA Center, No. 19 Jalan Pinang, 50450 Kuala Lumpur, Malaysia

Hong Kong
Fax： (852) 3620-3470
Phone： (852) 3620-3460
Email： sales-HK@ruijienetworks.com
Address: Unit 09, 20/F, Millennium City 2, 378 Kwun Tong Road, Kowloon, Hong Kong

OEM Cooperation Division
Phone: (8610) 5171-5995
Email: OEM@ruijienetworks.com
Address： 11/F, East Wing, ZhongYiPengao Plaza, No. 29 Fuxing Road, Haidian District, Beijing 100036, China

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