S5700 Series Gigabit Enterprise Switches

HUAWEI TECHNOLOGIES CO., LTD.

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Product Overview

The S5700 series gigabit enterprise switches (S5700 for short) are next-generation energy-saving switches developed by Huawei to meet the demand for high-bandwidth access and Ethernet multi-service aggregation. Based on the cutting-edge hardware and Huawei Versatile Routing Platform (VRP) software, the S5700 provides a large switching capacity and high-density GE ports to implement 10 Gbit/s upstream transmissions. The S5700 is for use in various enterprise network scenarios. For example, it can function as an access or aggregation switch on a campus network, a gigabit access switch in an Internet data center (IDC), or a desktop switch to provide 1000 Mbit/s access for terminals. The S5700 is easy to install and maintain, reducing workloads for network planning, construction, and maintenance. The S5700 uses advanced reliability, security, and energy conservation technologies, helping enterprise customers build a next generation IT network.

The S5700 is a 1 U high case-shaped device and comes in a standard version (SI), an enhanced version (EI), and an advanced version (HI). The SI version provides Layer 2 functions and basic Layer 3 functions. The EI version supports complex routing protocols and provides more functions than the SI version. In addition to the functions of EI, HI supports some advanced functions such as MPLS and hardware OAM.

Product Appearance

S5700-24TP-SI

- Twenty 10/100/1000Base-T ports and four GE combo ports
- Two models: AC model and DC model, supporting RPS (12 V redundant power supply)
- USB port
- Forwarding performance: 36 Mpps

S5700-24TP-PWR-SI

- Twenty 10/100/1000Base-T ports and four GE combo ports
- Double hot swappable AC power supplies
- PoE+
- USB port
- Forwarding performance: 36 Mpps

S5700-48TP-SI

- Forty-four10/100/1000Base-T ports and four GE combo ports
- Two models: AC model and DC model, supporting RPS (12 V redundant power supply)
- USB port
- Forwarding performance: 72 Mpps

S5700-48TP-PWR-SI

- Forty-four 10/100/1000Base-T ports and four GE combo ports
- AC power supply
- PoE+
- USB port
- Forwarding performance: 72 Mpps

S5700-28C-SI

- Twenty 10/100/1000Base-T ports and four GE combo ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- USB port
- Forwarding performance: 96 Mpps

S5700-28C-EI

- Twenty-four 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

S5700-28C-EI-24S

- Twenty 100/1000Base-X ports and four GE combo ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

S5700-28C-PWR-EI

- Twenty-four 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+, and 4x10GE SFP+ subcard
- Double hot swappable AC power supplies
- PoE+
- Forwarding performance: 96 Mpps

S5700-52C-SI

- Forty-eight 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- USB port
- Forwarding performance: 132 Mpps

S5700-52C-EI

- Forty-eight 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 132 Mpps

S5700-52C-PWR-EI

- Forty-eight 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable AC power supplies
- PoE+
- Forwarding performance: 132 Mpps

S5700-28C-HI

- Twenty-four 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

S5700-28C-HI-24S

- Twenty-four 10/100/1000Base-X ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

Product Features and highlights

Powerful support for services

- The S5700 supports IGMP v1/v2/v3 snooping, IGMP filter, IGMP fast leave, and IGMP proxy. It supports line-speed replication of multicast packets between VLANs, multicast load balancing among member interfaces of a trunk, and controllable multicast, meeting requirements for IPTV services and other multicast services.
- The S5700 provides the Multi-VPN-Instance CE (MCE) function to isolate users in different VLANs on a device, ensuring data security and reducing costs.
- The S5700HI switches are cost-effective case-shaped MPLS switches. They support MPLS and VLL functions and can be used as high-quality access devices to provide leased line services for enterprises.

Comprehensive reliability mechanisms

- Besides STP, RSTP, and MSTP, the S5700 supports enhanced Ethernet reliability technologies such as Smart Link and RRPP (Rapid Ring Protection Protocol), which implement millisecond-level protection switchover and ensure network reliability. It also provides Smart Link multi-instance and RRPP multi-instance to implement load balancing among links, optimizing bandwidth usage.
- The S5700 supports enhanced trunk (E-Trunk) that enables a CE to be dual-homed to two PEs (S5700s). E-Trunk greatly enhances link reliability between devices and implements link aggregation between devices. This improves reliability of access devices.
- The S5700 supports the Smart Ethernet Protection (SEP) protocol, a ring network protocol applied to the link layer on an Ethernet network. SEP can be used on open ring networks and can be deployed on upper-layer aggregation devices to provide fast switchover (within 50 ms), ensuring non-stop transmission of services. SEP features simplicity, high reliability, fast switchover, easy maintenance, and flexible topology, facilitating network

planning and management.

- The S5700 supports redundant power supplies, and can use an AC power supply and a DC power simultaneously. Users can choose a single power supply or use two power supplies to ensure device reliability.
- The S5700EI /HI supports VRRP, and can set up VRRP groups with other Layer 3 switches. VRRP provides redundant routes to ensure stable and reliable communication. Multiple equal-cost routes to an uplink device can be configured on the S5700 to provide route redundancy. When an active route is unreachable, traffic is switched to a backup route.
- The S5700 supports BFD, which provides millisecond-level fault detection for protocols such as OSPF, IS-IS, VRRP, and PIM to improve network reliability. Complying with IEEE 802.3ah and 802.1ag, the S5700 supports point-to-point Ethernet fault management and can detect faults in the last mile of an Ethernet link to users.
- The S5700HI provide 3.3-millisecond hardware-based Ethernet OAM function and Y.1731, which can quickly detect and locate faults. By using the Ethernet OAM technology and switchover technologies, the S5700 can provide millisecond-level protective switchover for networks.

Well-designed QoS policies and security mechanisms

- The S5700 implements complex traffic classification based on packet information such as the 5-tuple, IP preference, ToS, DSCP, IP protocol type, ICMP type, TCP source port, VLAN ID, Ethernet protocol type, and CoS. ACLs can be applied to inbound or outbound direction on an interface. The S5700 supports a flow-based two-rate three-color CAR. Each port supports eight priority queues and multiple queue scheduling algorithms such as WRR, DRR, SP, WRR+SP, and DRR+SP. All of these ensure the quality of voice, video, and data services.
- The S5700 provides multiple security measures to defend against Denial of Service (DoS) attacks, and attacks against networks or users. DoS attack types include SYN Flood attacks, Land attacks, Smurf attacks, and ICMP Flood attacks. Attacks to networks refer to STP BPDU/root attacks. Attacks to users include bogus DHCP server attacks, man-in-the-middle attacks, IP/MAC spoofing attacks, DHCP request flood attacks. DoS attacks that change the CHADDR field in DHCP packets are also attacks against users.
- The S5700 supports DHCP snooping, which generates user binding entries based on MAC addresses, IP addresses, IP address leases, VLAN IDs, and access interfaces of users. DHCP snooping discards invalid packets that do not match any binding entries, such as ARP spoofing packets and IP spoofing packets. This prevents man-in-the-middle attacks to campus networks that hackers initiate by using ARP packets. The interface connected to a DHCP server can be configured as a trusted interface to protect the system against bogus DHCP server attacks.
- The S5700 supports strict ARP learning, which prevents ARP spoofing attacks that will exhaust ARP entries. It also provides IP source check to prevent DoS attacks caused by MAC address spoofing, IP address spoofing, and MAC/IP spoofing.
- The S5700 supports centralized MAC address authentication, 802.1x authentication, and NAC. It authenticates users based on statically or dynamically bound user information such as the user name, IP address, MAC address, VLAN ID, access interface, and flag indicating whether antivirus software is installed. VLANs, QoS policies, and ACLs can be applied to users dynamically.

- The S5700 can limit the number of MAC addresses learned on an interface to prevent attackers from exhausting MAC address entries by using bogus source MAC addresses. This function minimizes packet flooding that occurs when MAC addresses of users cannot be found in the MAC address table.

Easy deployment and maintenance free

- The S5700 supports automatic configuration, plug-and-play, deployment using a USB flash drive, and batch remote upgrade. These capabilities simplify device management and maintenance and reduce maintenance costs. The S5700 supports SNMP v1/v2/v3 and provides flexible methods for managing devices. Users can manage the S5700 using the CLI, Web NMS, Telnet, and HGMP. The NQA function helps users with network planning and upgrades. In addition, the S5700 supports NTP, SSH v2, HWTACACS+, RMON, log hosts, and port-based traffic statistics.
- The S5700 supports GVRP GARP VLAN Registration Protocol , which dynamically distributes, registers, and propagates VLAN attributes to reduce manual configuration workloads of network administrators and to ensure correct VLAN configuration. In a complex network topology, GVRP simplifies VLAN configuration and reduces network communication faults caused by incorrect VLAN configuration.
- The S5700 supports MUX VLAN. MUX VLAN isolates Layer 2 traffic between interfaces in a VLAN. Interfaces in a subordinate separate VLAN can communicate with ports in the principal VLAN but cannot communicate with each other. MUX VLAN is usually used on an enterprise intranet to isolate user interfaces from each other but allow them to communicate with server interfaces. This function prevents communication between network devices connected to certain interfaces or interface groups but allows the devices to communicate with the default gateway.

PoE function

- The S5700 PWR can use PoE power supplies with different power levels to provide -48V DC power for powered devices (PDs) such as IP Phones, WLAN APs, and Bluetooth APs. In its role as power sourcing equipment (PSE), the S5700 PWR complies with IEEE 802.3af and 802.3at (PoE+) and can work with PDs that are incompatible with 802.3af or 802.3at. Each port provides a maximum of 30 W power, complying with IEEE 802.3at. The PoE+ function increases the maximum power of each port and implements intelligent power management for high-power consumption applications. This facilitates the use of PDs. PoE ports can work in power-saving mode. The S5700 PWR provides improved PoE solutions. Users can configure whether and when a PoE port supplies power.

High scalability

- The S5700 supports intelligent stacking (iStack). Multiple S5700s can be connected with stack cables to set up a stack, which functions as a virtual switch. A stack consists of a master switch, a backup switch, and several slave switches. The backup switch takes over services when the master switch fails, reducing service interruption time. Stacks support intelligent upgrade so that users do not need to change the software version of a switch when adding it to a stack. The iStack function allows users to connect multiple switches with stack cables to expand system capacity. These switches can be managed using a single IP address, which greatly reduces the costs of system expansion, operation, and maintenance. Compared with traditional networking technologies, iStack has advantages in scalability, reliability, and system architecture.

Various IPv6 features

- The S5700 supports IPv4/IPv6 dual stack and can migrate from an IPv4 network to an IPv6 network. S5700 hardware supports IPv4/IPv6 dual stack, IPv6 over IPv4 tunnels (including manual tunnels, 6to4 tunnels, and ISATAP tunnels), and Layer 3 line-speed forwarding. The S5700 can be deployed on IPv4 networks, IPv6 networks, or networks that run both IPv4 and IPv6. This makes networking flexible and enables a network to migrate from IPv4 to IPv6.

Product Specifications

Item	S5700-SI				S5700-EI			S5700-HI	
	S5700-24TP-SI/ S5700-24TP-PWR-SI	S5700-28C-SI	S5700-48TP-SI/ S5700-48TP-PWR-SI	S5700-52C-SI	S5700-28C-EI/ S5700-28C-PWR-EI	S5700-28C-EI-24S	S5700-52C-EI/ S5700-52C-PWR-EI	S5700-28C-HI	S5700-28C-HI-24S
1000M port	20*10/100 /1000Base-TX, 4*GE Combo		44*10/ 100/ 1000 Base-TX, 4*GE Combo	48*10/ 100/ 1000 Base-TX	24*10/ 100/ 1000 Base-TX	20*100/ 1000 Base-X, 4*GE Combo	48*10/ 100/ 1000 Base-TX	24*10/ 100/ 1000 Base-TX	24*100 /1000 Base-X
Extended slot	The S5700TP provides an extended slot for a stack card The S5700-28C and S5700-52C provide two extended slots, one for an uplink subcard and the other for a stack card. The S5700HI provides an extended slot for an uplink subcard								
MAC address table	IEEE 802.1d compliance 32 K MAC address entries on the S5700EI and S5700HI, 16 K MAC address entries on the S5700SI MAC address learning and aging Static, dynamic, and blackhole MAC address entries Packet filtering based on source MAC addresses								
VLAN	4 K VLANs Guest VLAN and voice VLAN VLAN assignment based on MAC addresses, protocols, IP subnets, policies, and ports 1:1 and N:1 VLAN Mapping								
Reliability	RRPP ring topology and RRPP multi-instance Smart Link tree topology and Smart Link multi-instance, providing the millisecond-level protection switchover SEP BFD for OSPF, BFD for IS-IS, BFD for VRRP, and BFD for PIM (S5700EI and S5700HI) STP, RSTP, and MSTP BPDU protection, root protection, and loop protection E-Trunk								
MPLS features	Not supported							MPLS MPLS VLL	
IP routing	Static routing, RIPv1, RIPv2, and ECMP				Static routing, RIPv1, RIPv2, OSPF, IS-IS, BGP, and ECMP				
IPv6 features	Neighbor Discovery (ND) Path MTU (PMTU) IPv6 ping, IPv6 tracert, and IPv6 Telnet 6to4 tunnel, ISATAP tunnel, and manually configured tunnel ACLs based on the source IPv6 address, destination IPv6 address, Layer 4 ports, or protocol type MLD v1/v2 snooping								

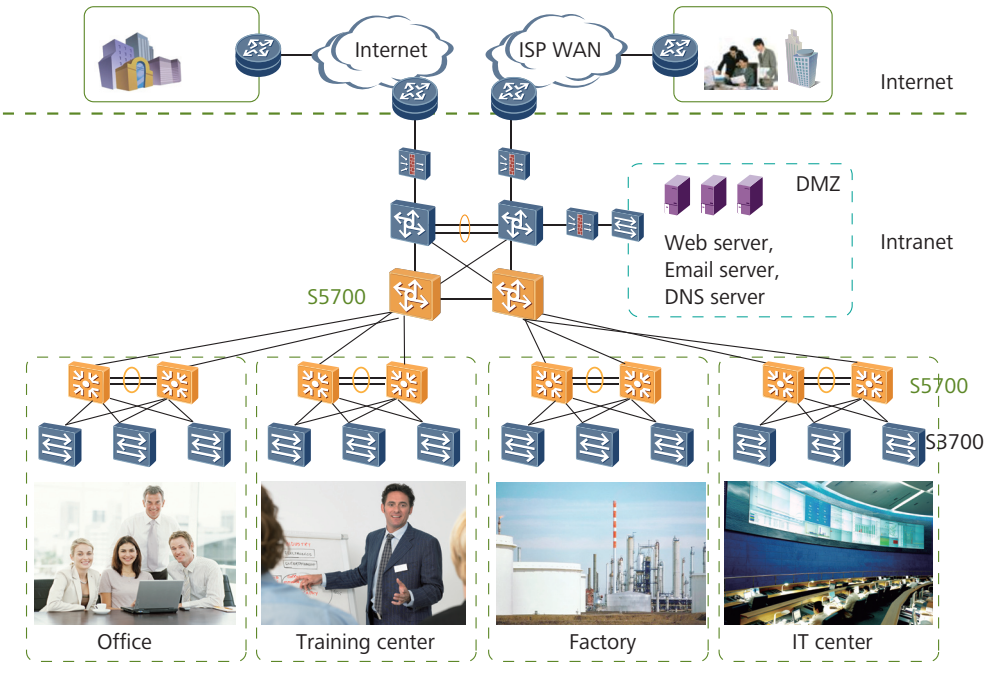
Item	S5700-SI				S5700-EI			S5700-HI	
	S5700-24TP-SI/ S5700-24TP-PWR-SI	S5700-28C-SI	S5700-48TP-SI/ S5700-48TP-PWR-SI	S5700-52C-SI	S5700-28C-EI/ S5700-28C-PWR-EI	S5700-28C-EI-24S	S5700-52C-EI/ S5700-52C-PWR-EI	S5700-28C-HI	S5700-28C-HI-24S
multicast	IGMP v1/v2/v3 snooping and IGMP fast leave Multicast forwarding in a VLAN and multicast replication between VLANs Multicast load balancing among member ports of a trunk Controllable multicast Port-based multicast traffic statistics				IGMP v1/v2/v3 snooping and IGMP fast leave Multicast forwarding in a VLAN and multicast replication between VLANs Multicast load balancing among member ports of a trunk Controllable multicast Port-based multicast traffic statistics IGMP v1/v2/v3, PIM-SM, PIM-DM, and PIM-SSM				
QoS/ACL	Rate limiting on packets sent and received by an interface Packet redirection Port-based traffic policing and two-rate three-color CAR Eight queues on each port WRR, DRR, SP, WRR+SP, and DRR+SP queue scheduling algorithms WRED (supported by the S5700HI) Re-marking of the 802.1p priority and DSCP priority Packet filtering at Layer 2 to Layer 4, filtering out invalid frames based on the source MAC address, destination MAC address, source IP address, destination IP address, port number, protocol type, and VLAN ID Rate limiting in each queue and traffic shaping on ports								
Security	User privilege management and password protection DoS attack defense, ARP attack defense, and ICMP attack defense Binding of the IP address, MAC address, interface, and VLAN Port isolation, port security, and sticky MAC Blackhole MAC address entries Limit on the number of learned MAC addresses 802.1x authentication and limit on the number of users on an interface AAA authentication, RADIUS authentication, HWTACACS+ authentication, and NAC SSH v2.0 Hypertext Transfer Protocol Secure (HTTPS) CPU defense Blacklist and whitelist								
OAM	Supports							Hardware implementation EFM OAM CFM OAM Y.1731 performance test supports hardware-level delay and jitter detection	
Management and maintenance	Stacking (The S5700HI do not support this function) MAC Forced Forwarding (MFF) Virtual cable test Port mirroring and RSPAN (remote port mirroring) Remote configuration and maintenance by using Telnet SNMP v1/v2/v3 RMON Web NMS HGMP System logs and alarms of different levels GVRP MUX VLAN 802.3az EEE (supported by the S5700HI)								

Item	S5700-SI				S5700-EI			S5700-HI	
	S5700-24TP-SI/ S5700-24TP-PWR-SI	S5700-28C-SI	S5700-48TP-SI/ S5700-48TP-PWR-SI	S5700-52C-SI	S5700-28C-EI/ S5700-28C-PWR-EI	S5700-28C-EI-24S	S5700-52C-EI/ S5700-52C-PWR-EI	S5700-28C-HI	S5700-28C-HI-24S
Operating environment	Operating temperature: 0°C–50°C (long term); -5°C–55°C (short term) Relative humidity: 10%–90% (non-condensing)								
Input voltage	AC: Rated voltage range: 100 V to 240 V AC, 50/60 Hz Maximum voltage range: 90 V to 264 V AC, 50/60 Hz DC: Rated voltage range: –48 V to –60 V, DC Maximum voltage range: –36 V to –72 V DC Note: PoE-support switches do not use DC power supplies.								
Dimensions (W x D x H)	442 mm x 220 mm x 43.6 mm	442 mm x 420 mm x 43.6 mm						442 mm x 220 mm x 43.6 mm	
Power consumption	Non-POE: < 40 W POE: < 455 W (POE power: 370 W)	< 56 W	Non-POE: < 64 W POE: < 907 W (POE power: 740 W)	< 78 W	Non-POE: < 60 W POE: < 472 W (POE power: 370 W)	< 63 W	Non-POE: < 88 W POE: < 930 W (POE power: 740 W)	< 93 W	

Applications

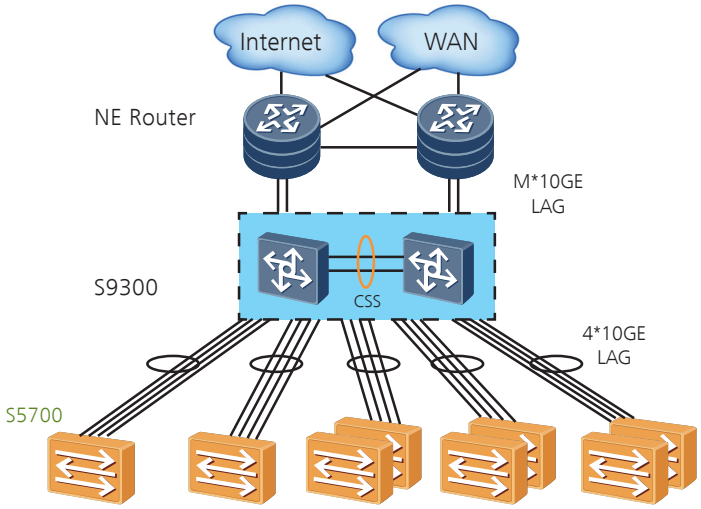
On Large-sized Enterprise Networks

The S5700 can function as an access device on a large-sized enterprise network or an aggregation device on a small- or medium-sized campus network. It supports link aggregation and dual-homing to improve network reliability.



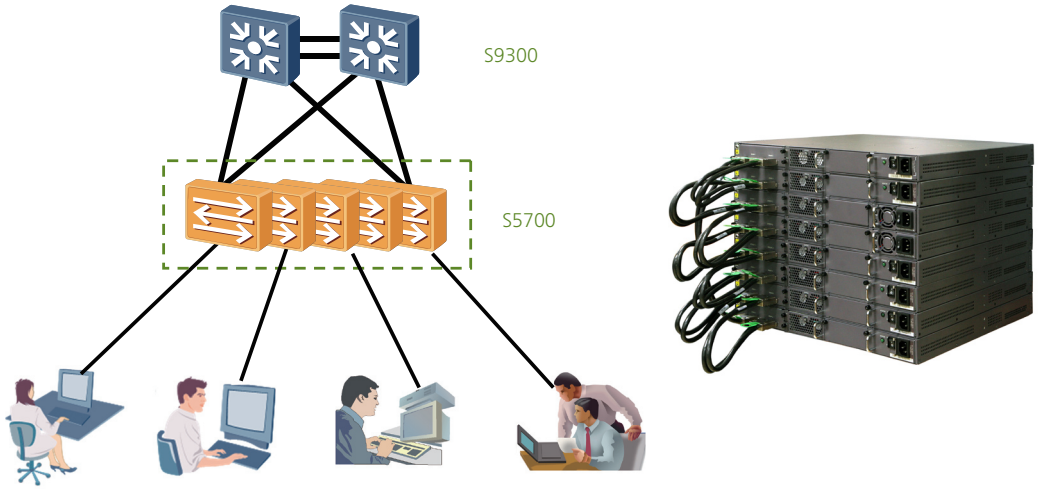
In Data Centers

The S5700 can be used in a data center. It connects to gigabit servers and aggregates traffic from the servers to uplink devices through trunk links. If multiple servers are available, an S5700 stack can be used to facilitate network maintenance and improve network reliability.



1000 Mbit/s Access Rate for Terminals

Several S5700s can constitute a stack to provide 1000 Mbit/s access rate for terminals. Only four pairs of optical fibers are required to connect the stack to uplink devices. This reduces the number of optical fibers and ports needed on uplink devices and enhances network reliability.



Product List

Product Description
S5700-28C-HI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-28C-HI-24S (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-24TP-SI-AC (input voltage: 220 V AC)
S5700-24TP-SI-DC (input voltage: –48 V DC)
S5700-48TP-SI-AC (input voltage: 220 V AC)
S5700-48TP-SI-DC (input voltage: –48 V DC)
S5700-28C-SI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-28C-EI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-52C-SI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-52C-EI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-28C-EI-24S (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-24TP-PWR-SI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
S5700-48TP-PWR-SI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
S5700-28C-PWR-EI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
S5700-52C-PWR-EI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
4*GE SFP subcard
2*10GE SFP+ subcard
4*10GE SFP+ subcard
Stack card
250 W PoE power supply unit
500 W PoE power supply unit

For more information, visit http://www.huawei.com/enterprise/ or contact the Huawei local sales office.

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