CloudEngine S12700E Series Switches

Huawei CloudEngine S12700E series switches are new core switches designed for next-generation high-quality campus networks. These purpose-built switches help create a campus network that improves user experiences, reduces operating costs, and delivers unmatched security and trustworthiness for a fully connected, wireless era.

Product Overview

Huawei CloudEngine S12700E series switches ("S12700E switches") are flagship core switches in Huawei's CloudCampus portfolio. By building an intelligent campus core, these feature-rich switches help customers head towards a service experience-centric campus network that is intelligent and simplified.

S12700E switches stand out with massive capacity expansion and flexible service upgrade capabilities to protect customer investments and facilitate their long-term network evolution. Built on Huawei's high-performance Solar series chipsets, S12700E switches deliver up to 4.8 Tbit/s of single-slot bandwidth and 57.6 Tbit/s of switching capacity, six times that of the industry. S12700E switches also offer a broad range of line cards, including 100GE, 40GE, 10GE, and GE line cards, and provide up to 288 x 100GE ports, the unmatched port density in the industry. These give customers flexible choices to meet their capacity expansion and upgrade needs.

By integrating large-capacity WLAN AC capabilities, a single S12700E switch can manage up to 10,000 WLAN APs and 50,000 users. This capability, combined with free mobility functionality, achieves fully converged wired and wireless networks and policies, greatly simplifying network management with users and services at the core.

With a holistic set of reliability, security, and trusted features, S12700E switches are ideal for building a reliable, secure, and trustworthy campus core. By using a next-generation cell switching architecture, S12700E switches ensure lossless and non-blocking forwarding on core nodes and guarantee service quality in high-concurrency, large-capacity, and high-load environments.

Models and Appearances

The S12700E series is available in three models: S12700E-4, S12700E-8, and S12700E-12.

S12700E-4   S12700E-8   S12700E-12

Product Model	Product Description
S12700E-4	• A maximum of 96 x 100GE, 96 x 40GE, or 192 x 10GE ports • 4 slots for line cards, 2 slots for Switch Fabric Units (SFUs), 2 slots for Main Processing Units (MPUs), and 4 slots for power modules • Switching capacity: 19.2 Tbit/s • Forwarding performance: 14,400 Mpps
S12700E-8	• A maximum of 192 x 100GE, 192 x 40GE, or 384 x 10GE ports • 8 slots for line cards, 4 slots for SFUs, 2 slots for MPUs, and 6 slots for power modules • Switching capacity: 38.4 Tbit/s • Forwarding performance: 28,800 Mpps
S12700E-12*	• A maximum of 288 x 100GE, 288 x 40GE, or 576 x 10GE ports • 12 slots for line cards, 4 slots for SFUs, 2 slots for MPUs, and 6 slots for power modules • Switching capacity: 57.6 Tbit/s • Forwarding performance: 43,200 Mpps

Note: *S12700E-12 will be launched soon.

Features and Highlights

Switch Highlights

Fully Programmable Architecture

• Built on Solar series chipsets with a fully-programmable architecture, the S12700E adapts to the changing forwarding processes driven by protocol evolution and technology advances. It enables fast and flexible provisioning of new services simply by upgrading software, without having to replace hardware, thereby protecting customers' investment. In contrast,

traditional ASIC chips use a fixed forwarding architecture and follow a fixed forwarding process; as a result, new services cannot be provisioned until new hardware is developed to support the services, which may take 1 to 3 years.

Wired and Wireless Convergence

- By integrating WLAN AC capabilities, the S12700E allows enterprises to build a wireless network without additional WLAN AC hardware. Each S12700E switch can manage up to 10,000 APs. The S12700E provides up to 4 Tbit/s WLAN AC forwarding capacity, avoiding the performance bottleneck on independent WLAN AC devices. As such, organizations are well poised to cope with challenges in the high-speed wireless era.

- The S12700E supports the unified user management function that authenticates both wired and wireless users, ensuring a consistent user experience no matter whether they are connected to the network through wired or wireless access devices. The unified user management function supports various authentication methods, including PPPoE, 802.1X, MAC address, and Portal authentication, and is capable of managing users based on user groups, domains, and time ranges. These functions intuitively control user and service management and enable the transformation from device-centered management to user-centered management.

Refined Network Management

- Packet Conservation Algorithm for Internet (iPCA) changes the traditional method that uses simulated traffic for fault location. iPCA technology monitors network quality for any service flow at any network node, at any time, and without extra costs. It can quickly detect intermittent service interruptions and accurately identify faulty ports. This cutting-edge fault detection technology turns "extensive management" into "fine granular management."

- Super Virtual Fabric 2.0 (SVF 2.0) technology can not only virtualize fixed-configuration switches into modular switch line cards but also virtualize APs as switch ports. With this virtualization technology, a physical network with core/aggregation switches, access switches, and APs can be virtualized into a "super switch", offering the simplest network management solution.

- The S12700E series manages access switches in a similar way a WLAN AC manages APs, saving the trouble of laborious configuration on access switches. It manages access switches and APs uniformly, allowing them to connect to the network with zero configuration.

System Openness Capability

- The S12700E supports NETCONF/YANG through which users can perform automated configuration.

- The S12700E supports the Open Programmability System (OPS), an open programmable system based on the Python language. IT administrators can program the O&M functions of the S12700E through Python scripts to quickly innovate functions and implement intelligent O&M.

Secure and Trustworthy System

- Digital signatures of codes are used to identify software sources and the real identities of software developers to ensure that code is not tampered with after being signed. To protect software, the S12700E uses two levels of signature mechanisms: inner signature and outer signature.

- The S12700E supports secure boot based on the hardware trust root. Starting from the trusted hardware anchor, the software code to be loaded is checked level by level. This approach ensures that the MPUs, line cards, and SFUs are not intruded since the boot phase.

- The chipsets provide a secure Random Number Generator (RNG) module certified by NIST SP 800-90A and NIST SP 800-90B to generate true secure random numbers for system running, thereby ensuring secure and trustworthy encryption.

Network-Level Reliability

- The S12700E uses link detection technologies such as hardware Eth-OAM and BFD, and adopts standard/standards-compatible link switching technologies like G.8032 and Smart Ethernet Protection (SEP). These technologies achieve end-to-end 50 ms hardware-level switchover and help build the most responsive campus network that provides the most reliable services.

- The S12700E supports High-speed Self Recovery (HSR) technology that implements end-to-end IP MPLS transmission network protection switchover within 50 ms, improving network reliability.

Easy Operation

The S12700E supports EasyDeploy that implements plug-and-play for newly deployed devices and centrally manages all devices running on the network. Typical Easy Deploy functions include the following:

- Implementing Zero Touch Provisioning (ZTP) to automatically load the boot files such as version files, configuration files, and patches

- Upgrading network devices and delivering configurations in batches

- Quickly replacing old devices with new ones that are plug-and-play without configuration

Intelligent Diagnosis

- The S12700E supports Open Intelligent Diagnosis System (OIDS). By integrating the device health monitoring and fault diagnosis functions – that are typically deployed on a Network Management System (NMS) – into the switch software, OIDS implements intelligent diagnosis on a single switch.

- After OIDS is deployed on a switch, the switch periodically collects and records the running information and automatically determines whether a fault occurs. If a fault occurs, the switch automatically locates the fault or helps locate the fault. All these merits increase fault locating efficiency of O&M staff while improving device maintainability.

Solution Benefits

Simplified Management

- Deployment automation: The S12700E supports VXLAN and BGP-EVPN, and builds a Unified Virtual Fabric (UVF) to automate deployment of up to 512 Virtual Networks (VNs). In this way, multiple service networks or tenant networks can be deployed and isolated from each other on the same physical network, truly achieving one network for multiple purposes.

- Service automation: The S12700E supports user- and policy-based free mobility.

Intelligent O&M

- The S12700E provides telemetry technology to collect device data in real time and send the data to Huawei campus network analyzer CampusInsight. The CampusInsight then analyzes network data based on the intelligent fault identification algorithm, accurately displays the real-time network status, effectively demarcates and locates faults in a timely manner, and identifies network problems that affect user experience, accurately guaranteeing user experiences.

- The S12700E supports a variety of intelligent O&M features for audio and video services, including the enhanced Media Delivery Index (eMDI). With the eMDI function, the switch can function as a monitored node to periodically conduct statistics and report audio and video service indicators to the CampusInsight platform. In this way, the CampusInsight platform can quickly demarcate audio and video service quality faults based on the results of multiple monitored nodes.

Big Data Security Collaboration

- The S12700E uses NetStream to collect campus network data and then reports such data to the Huawei Cybersecurity Intelligence System (CIS). The purposes of doing so are to detect network security threats, display the security posture across the entire network, and enable automated or manual response to security threats. The CIS then delivers the security policies to the Agile Controller which, subsequently, delivers such policies to the switch that will handle security events accordingly. All these ensure campus network security.

- The S12700E supports Encrypted Communication Analytics (ECA). Specifically, the S12700E uses built-in ECA probes to extract characteristics of encrypted streams based on NetStream sampling and Service Awareness (SA), generates metadata, and reports the metadata to Huawei CIS. The CIS then uses the AI algorithm to train the traffic model and compare characteristics of extracted encrypted traffic to identify malicious traffic. After that, the CIS displays detection results on the GUI, provides threat handling suggestions, and automatically isolates threats with the Agile Controller to ensure campus network security.

- The S12700E supports threat deception technology. Specifically, the S12700E functions as a sensor to detect threats such as IP address scanning and port scanning on a network and deceives threat traffic to the honeypot for further checks. The honeypot deeply interacts with the threat traffic initiator, records various application-layer attack methods of the initiator, and reports security logs to the CIS. The CIS analyzes security logs, determines that the suspicious traffic is an attack, generates an alarm, and provides handling suggestions. After the administrator confirms the alarm, the CIS delivers a policy to the Agile Controller. The Agile Controller then delivers the policy to the switch for security event processing, ensuring campus network security.

Licensing

The S12700E supports both the traditional feature-based licensing mode and the latest Huawei IDN One Software (N1 mode for short) licensing mode. The N1 mode is ideal for campus network deployments in enterprise private cloud mode, and greatly enhances the customer experiences in purchasing and upgrading software services with simplicity.

Software Package Features in N1 Mode

Switch Functions	N1 Basic Software	N1 Foundation Software Package	N1 Advanced Software Package
Basic network functions: Layer 2 functions, IPv4, IPv6, MPLS, SVF, and others	√	√	√
Basic network automation based on the Agile Controller: ➢ Basic automation: Plug-and-play, SSID, and AP group management ➢ Basic monitoring: Application visualization ➢ NE management: Image and topology management and discovery ➢ WLAN enhancement: Roaming and optimization for up to 128 APs	×	√	√
Advanced network automation and intelligent O&M: VXLAN, user access authentication, free mobility, and CampusInsight basic functions	×	×	√

Product Specifications

Functions and Features

Category	Service Features	S12700E-4	S12700E-8
User management	Unified user management	√	√
	PPPoE, 802.1X, MAC, and Portal authentication	√	√
	Traffic- and duration-based accounting	√	√
	User authorization based on user groups, domains, and time ranges	√	√
MAC address	Maximum number of MAC address entries	512K	512K
	Automatic MAC address learning and aging	√	√
	Static, dynamic, and blackhole MAC address entries	√	√
	Source MAC address filtering	√	√
	MAC address learning limiting based on ports and VLANs	√	√
VLAN	4K VLANs	√	√
	Access, trunk, and hybrid interface types; auto-negotiation of LNP link types	√	√

Category	Service Features	S12700E-4	S12700E-8
	Default VLAN	√	√
	VLAN switching	√	√
	QinQ and enhanced selective QinQ	√	√
	Dynamic VLAN assignment based on MAC addresses	√	√
ARP	Maximum number of ARP entries	256K	256K
	ARP Snooping	√	√
IP routing	Maximum number of IPv4 routing entries	512K	512K
	IPv4 dynamic routing protocols such as RIP, OSPF, IS-IS, and BGP	√	√
	IPv6 dynamic routing protocols such as RIPng, OSPFv3, ISISv6, and BGP4+	√	√
Multicast	Maximum number of multicast routing entries	128K	128K
	IGMPv1/v2/v3 and IGMP v1/v2/v3 Snooping	√	√
	PIM-DM, PIM-SM, and PIM-SSM	√	√
	MSDP and MBGP	√	√
	Fast-leave mechanism	√	√
	Multicast traffic control	√	√
	Multicast querier	√	√
	Multicast protocol packet suppression	√	√
	Multicast Call Admission Control (CAC)	√	√
	Multicast ACL	√	√
MPLS	Basic MPLS functions	√	√
	MPLS OAM	√	√
	MPLS TE	√	√
	MPLS VPN/VLL/VPLS	√	√
VXLAN	VXLAN distributed gateway and centralized gateway	√	√
	BGP-EVPN	√	√
	Configures VXLANs through NETCONF	√	√
QoS	Number of ACL rules	6K	6K
	Traffic classification based on Layer 2 headers, Layer 3 protocols, Layer 4 protocols, and 802.1p priority	√	√
	Actions such as ACL, Committed Access Rate (CAR), re-marking, and scheduling	√	√
	Queuing algorithms, such as PQ, WRR, DRR, PQ+WRR, and PQ+DRR	√	√
	Congestion avoidance mechanisms such as WRED and tail drop	√	√
	HQoS	√	√

Category	Service Features	S12700E-4	S12700E-8
	Traffic shaping	√	√
iPCA	Marks the real service packets to obtain real-time count of dropped packets and packet loss ratio	√	√
	Counts the number of dropped packets and packet loss ratio on devices and L2/L3 networks	√	√
SVF 2.0	Up to 4K clients (access switches and APs) virtualized into a single device	√	√
	Two layers of ASs allowed in an SVF system	√	√
	Third-party devices allowed between SVF parent and clients	√	√
Ring network protection	STP (IEEE 802.1d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s).	√	√
	SEP	√	√
	BPDU protection, root protection, and loop protection	√	√
	BPDU tunnel	√	√
	G.8032 Ethernet Ring Protection Switching (ERPS)	√	√
Reliability	Link Aggregation Control Protocol (LACP) and E-Trunk	√	√
	Virtual Router Redundancy Protocol (VRRP) and Bidirectional Forwarding Detection (BFD) for VRRP	√	√
	BFD for BGP/IS-IS/OSPF/static routes	√	√
	Non-Stop Forwarding (NSF) and Graceful Restart (GR) for BGP/IS-IS/OSPF/LDP	√	√
	TE Fast ReRoute (FRR) and IP FRR	√	√
	Eth-OAM 802.3ah and 802.1ag (hardware-based)	√	√
	High-speed Self Recovery (HSR)	√	√
	ITU-Y.1731	√	√
	Device Link Detection Protocol (DLDP)	√	√
	Smart Link	√	√
	Monitor Link	√	√
Configuration and maintenance	Easy Operation	√	√
	Terminal access services such as console port login, Telnet, and SSH	√	√
	Network management protocols, such as SNMPv1/v2/v3	√	√
	File uploading and downloading through FTP and TFTP	√	√
	BootROM upgrade and remote in-service upgrade	√	√
	Hot patches	√	√
	User operation logs	√	√
	Open Programmability System (OPS)	√	√
	Streaming Telemetry	√	√

Category	Service Features	S12700E-4	S12700E-8
	eMDI	√	√
Security and management	MAC address, Portal, 802.1X, and DHCP snooping-triggered authentication	√	√
	MACsec	√	√
	NAC	√	√
	RADIUS and HWTACACS authentication for login users	√	√
	Command line authority control based on user levels, preventing unauthorized users from using command configurations	√	√
	Defense against DoS attacks, Transmission Control Protocol (TCP) SYN Flood attacks, User Datagram Protocol (UDP) Flood attacks, broadcast storms, and heavy traffic attacks	√	√
	1K CPU hardware queues to implement hierarchical scheduling and protection for protocol packets on the control plane	√	√
	Remote Network Monitoring (RMON)	√	√
	Secure boot (need to use MPU that supports secure boot)	√	√
	Big data security collaboration	√	√
Wireless management (integrated WLAN AC): Basic WLAN services	Mesh networking	√	√
	N+N cold backup for devices with integrated WLAN AC functionality	√	√
	Hot backup for devices with integrated WLAN AC functionality in cluster mode	√	√
	WLAN terminal location	√	√
	Locating of interference sources	√	√
	Spectrum analysis function	√	√
	2.4G & 5G load balancing	√	√
	5G-prior access	√	√
Wireless management (integrated WLAN AC): AP management	Total number of managed APs	10K	10K
	An IPv4 network between an AP and a WLAN AC	√	√
	AP blacklist	√	√
	AP whitelist	√	√
	Sets the AP access control mode	√	√
	AP configuration and management	√	√
	AP energy saving	√	√
	AP LLDP topology awareness	√	√
	Adjustable priority of traffic on wired interfaces of APs	√	√
	Rate limiting on wired interfaces of APs	√	√
Wireless	User roaming within a WLAN AC	√	√

Category	Service Features	S12700E-4	S12700E-8
management (integrated WLAN AC): Wireless user management	AP-based user location	√	√
	User roaming between WLAN ACs	√	√
	802.1X authentication	√	√
	Portal authentication	√	√
	MAC address authentication	√	√
Wireless management (integrated WLAN AC): CAPWAP	Direct data forwarding on L2/L3 networks	√	√
	Tunnel-based data forwarding on L2/L3 networks	√	√
	Dual-link load balancing for CAPWAP tunnels	√	√
	CAPWAP tunnel encryption	√	√
Wireless management (integrated WLAN AC): RF management	802.11a/b/g/n	√	√
	802.11ac	√	√
	Sets RF interference monitoring and avoidance	√	√
	Detects co-channel interference, adjacent interference, and interference from other devices and STAs	√	√
	Automatically selects channels and power when APs go online	√	√
	Dynamic power and channel optimization	√	√
Wireless management (integrated WLAN AC): WLAN QoS	Mapping from wireless-side priority to wired-side priority	√	√
	Mapping from wireless-side priority to CAPWAP channel priority	√	√
	Rate limiting of upstream and downstream traffic on the air interface based on the VAP	√	√
	Rate limiting of upstream and downstream traffic on the air interface based on users	√	√
	SSID-based CAR	√	√
	CAR for WLAN users	√	√
Interoperability	Interoperable with VBST (compatible with PVST/PVST+/RPVST)	√	√
	Interoperable with LNP (similar to DTP)	√	√
	Interoperable with VCMP (similar to VTP)	√	√

Hardware Specifications

Item	S12700E-4	S12700E-8
Switching capacity	19.2 Tbit/s	38.4 Tbit/s
Forwarding performance	14,400 Mpps	28,800 Mpps
MPU slots	2	2
SFU slots	2	4
LPU slots	4	8

Item	S12700E-4	S12700E-8
Fan trays	2	4
Buffering capacity	Up to 200 ms data buffering per port	Up to 200 ms data buffering per port
Redundancy design	MPU, SFU, power module, and fan module	MPU, SFU, power module, and fan module
Virtualization	CSS service port clustering	CSS service port clustering
Dimensions (H x W x D)	441.7 mm x 442 mm x 489 mm, 10 U	663.95 mm x 442 mm x 489 mm, 15 U
Weight (empty chassis)	24.5 kg	42 kg
Operating voltage	DC: –40 V to –72 V AC: 90 V to 290 V	
Maximum power consumption	≤ 2200 W	≤ 4400 W
Operating temperature	• –60 m to +1800 m: 0°C to 45°C • 1800 m to 4000 m: The maximum operating temperature decreases by 1°C each time the altitude increases by 220 m. • 4000 m: 0°C to 35°C	
Relative humidity	5% to 95% (non-condensing)	
Heat dissipation mode	Left-to-rear airflow, air-cooled heat dissipation, and intelligent fan speed adjustment	

Hardware Introduction

MPU

The Main Processing Unit (MPU) provides the control and management planes for the entire system. The control plane is mainly responsible for protocol processing, service processing, route calculation, forwarding control, service scheduling, traffic statistics, and system security. The management plane provides functions like monitoring the system running status, monitoring the environment, processing logs and alarms, loading the system, and upgrading the system.

The following table lists the MPU supported by Huawei S12700E series switches.

Card Name	Description	Supported Version
LST7MPUE0000	S12700E main processing unit E	V200R019C00 and later versions

Interface Card

An interface card, or called LPU, processes all traffic on the network data plane of a switch. The S12700E supports a broad set of interface cards that offer varying numbers of 100GE, 40GE, 10GE, and GE ports. Customers can flexibly select them as required.

Card Name	Description	Supported Version
LST7G48TX5E0	48-port 10/100/1000BASE-T interface card (X5E, RJ45)	V200R019C00 and later versions
LST7G48TX5S0	48-port 10/100/1000BASE-T interface card (X5S, RJ45)	V200R019C00 and later versions
LST7G48SX6E0	48-port 1000M Ethernet optical interface card (X6E, SFP)	V200R019C00 and later versions

Card Name	Description	Supported Version
LST7G48SX6S0	48-port 1000M Ethernet optical interface card (X6S, SFP)	V200R019C00 and later versions
LST7X24BX6E0	24-port 10GBASE-X and 24-port 1000BASE-X interface card (X6E, SFP+)	V200R019C00 and later versions
LST7X24BX6S0	24-port 10GBASE-X and 24-port 1000BASE-X interface card (X6S, SFP+)	V200R019C00 and later versions
LST7X48SX6E0	48-port 10GBASE-X interface card (X6E, SFP+)	V200R019C00 and later versions
LST7X48SX6S0	48-port 10GBASE-X interface card (X6S, SFP+)	V200R019C00 and later versions
LST7C06HX6E0	6-port 100GE Ethernet optical interface card (X6E, QSFP28)	V200R019C00 and later versions
LST7C06HX6S0	6-port 100GE Ethernet optical interface card (X6S, QSFP28)	V200R019C00 and later versions

Power Module

Power Module Backup Modes

The S12700E power modules support the backup mode. Three power module configuration modes are recommended: N+N backup, N+1 backup, and N+0 without backup. The value of N is determined by the maximum power required by the system. N multiplied by the maximum output power of each power module must be larger than the maximum power required by the system. The system can automatically identify the backup mode, without the need of manual configuration through CLIs.

Assume that the maximum power required by the system is 4,000 W. If two 2,200 W power modules are installed, the backup mode is 2+0 without backup. If three 2,200 W power modules are installed, the backup mode is 2+1 backup. If four 2,200 W power modules are installed, the backup mode is 2+2 backup.

The S12700E supports 2,200 W DC and 3,000 W AC power modules. The following table lists the maximum output power of the entire system in different backup modes.

Types of Power Module	Backup Mode	Maximum Output Power of the S12700E-4	Maximum Output Power of the S12700E-8
2,200 W DC power module	N+N backup	A maximum of four (2+2) 2,200 W DC power modules can be configured, providing the maximum power supply capability of 4,400 W.	A maximum of six (3+3) 2,200 W DC power modules can be configured, providing the maximum power supply capability of 6,600W.
	N+1 backup	A maximum of four (3+1) 2,200 W DC power modules can be configured, providing the maximum power supply capability of 6,600 W.	A maximum of six (5+1) 2,200 W DC power modules can be configured, providing the maximum power supply capability of 11,000 W.
	N+0 without backup	A maximum of four (4+0) 2,200 W DC power modules can be configured, providing the maximum power supply capability of 8,800 W.	A maximum of six (6+0) 2,200W DC power modules can be configured, providing the maximum power supply capability of 12,000 W.
3,000 W AC power module	N+N backup	A maximum of four (2+2) 3,000 W AC power modules can be configured, providing the maximum power supply capability of 6,000 W.	A maximum of six (3+3) 3,000 W AC power modules can be configured, providing the maximum power supply capability of 9,000 W.
	N+1 backup	A maximum of four (3+1) 3,000 W AC power modules can be configured, providing the maximum power supply capability of 9,000 W.	A maximum of six (5+1) 3,000 W AC power modules can be configured, providing the maximum power supply capability of 12,000 W.

Types of Power Module	Backup Mode	Maximum Output Power of the S12700E-4	Maximum Output Power of the S12700E-8
	N+0 without backup	A maximum of four (4+0) 3,000 W AC power modules can be configured, providing the maximum power supply capability of 9,000 W.	A maximum of six (6+0) 3,000 W AC power modules can be configured, providing the maximum power supply capability of 12,000 W.

Power Module Specifications

The following table lists the specifications of each power module.

Parameter		2,000 W DC Power Module	3,000 W AC Power Module
Dimensions (H x W x D)		41 mm × 393 mm × 130 mm	41 mm × 417.4 mm × 130 mm
Weight		< 2.5 kg	< 3.0 kg
AC input	Rated input voltage	-48 V DC/-60 V DC	220 V AC/110 V AC; 50/60 Hz
	Rated input voltage range	-40 V DC to -72 V DC	200 V AC to 240 V AC (rated input voltage: 220 V AC)/100 V AC to 130 V AC (rated input voltage: 110 V AC); 47 Hz to 63 Hz
	Maximum input voltage range	-40 V DC to -72 V DC	90 V AC to 290 V AC; 47 Hz to 63 Hz (When the input voltage range is 90 V AC to 175 V AC, the maximum output power of the power module is reduced by half.) The maximum current of the power cable used by the 3,000 W AC power module is 16 A. When the 220 V input is used, the minimum voltage cannot be lower than 200 V. When the 110 V input is used, the minimum voltage cannot be lower than 100 V.
	Maximum input current	60 A	16 A
High-voltage DC input	Rated input voltage	-	240 V DC
	Maximum input voltage range	-	190 V DC to 290 V DC
	Maximum input current	-	14 A
Output	Maximum output current	42 A	56.1 A (rated input voltage: 220 V AC)/28.1 A (rated input voltage: 110 V AC)
	Maximum output power	2,200 W	3,000 W (rated input voltage: 220 V AC or 240 V DC)/1,500 W (rated input voltage: 110 V AC)
Hot swap		Supported	Supported
Environment parameters		• Operating temperature: 0°C to 45°C • Operating relative humidity: 5%RH to 95%RH, non-condensing	• Operating temperature: 0°C to 45°C • Operating relative humidity: 5%RH to 95%RH, non-condensing

Parameter	2,000 W DC Power Module	3,000 W AC Power Module
	• Storage temperature: -40°C to +70°C • Storage relative humidity: 5%RH to 95%RH, non-condensing	• Storage temperature: -40°C to +70°C • Storage relative humidity: 5%RH to 95%RH, non-condensing
Power module code	W2PSD2200 PDC-2200WF	PAC3KS54-CB PAC3KS54-CE

Networking and Applications

In an Enterprise Campus Network

The S12700E can be deployed at the core layer of an enterprise campus network. With the integrated WLAN AC functionality, the S12700E enables customers to build wireless networks at lowered costs without additional WLAN AC hardware. By providing up to 4 Tbit/s WLAN AC forwarding capacity, the S12700E eliminates the performance bottleneck on independent WLAN ACs and gets customers ready for the Wi-Fi 6 era. The S12700E truly achieves wired and wireless convergence and delivers consistent user experiences through unified device, user, and service management.

In a College Campus Network

The S12700E can be deployed at the core layer of a college campus network. With unified user management functionality, the S12700E reduces network construction costs by removing the need to purchase new BRAS hardware. Its compelling HQoS feature delivers granular user and service management. The S12700E stands out with wired and wireless convergence and delivers consistent user experiences through unified device, user, and service management.

In a Bearer Network for Video Conferencing, Desktop Cloud, and Video Surveillance Applications

The S12700E can be deployed on a bearer network for video conferencing, desktop cloud, and video surveillance applications. Designed with a large buffering capacity, the S12700E prevents packet loss upon traffic bursts, delivering high-quality, smooth video streams. Million-level table entries provided by the S12700E allow access from a large number of terminals and deliver unmatched resilience needed for IPv6 and IoT evolution. Employing end-to-end hardware reliability and iPCA technologies, the S12700E offers a highly reliable, high-quality, scalable video conferencing and surveillance solution.

On a MAN

The S12700E can be deployed at the core or aggregation layer of the broadcasting and education MAN. Standing out with 3M FIB entries, the S12700E is ideal for large routing applications on core nodes of the MAN. The S12700E also supports comprehensive L2/L3 MPLS VPN functions and provides a highly reliable, secure, and scalable MAN bearer solution.

In an Enterprise Data Center

The S12700E can be deployed at the core or aggregation layer of an enterprise data center. Coming with high-bandwidth high-density cards, the S12700E delivers massive data throughput needed for core and aggregation nodes in the data center. As such, customers can leverage the S12700E to build a data center network with high performance, high reliability, and low latency.

Safety and Regulatory Compliance

The following table lists the safety and regulatory compliance of the S12700E.

Safety and regulatory compliance of the S12700E series

Certification Category	Specification
Safety	• IEC 60950-1 • EN 60950-1 • UL 60950-1 • CSA C22.2 No 60950-1 • AS/NZS 60950.1 • BS EN 60950-1 • CNS 14336-1
Electromagnetic Compatibility (EMC)	• CISPR22 Class A • CISPR24 • EN55022 Class A • EN55024 • ETSI EN 300 386 Class A • CFR 47 FCC Part 15 Class A • ICES 003 Class A • AS/NZS CISPR22 Class A • VCCI Class A • IEC61000-6-2 • IEC61000-6-4 • IEC61000-4-2 • ITU-T K 20 • ITU-T K 21 • ITU-T K 44 • CNS13438
Environment	• RoHS • REACH • WEEE
Laser safety	• IEC60825-1 • IEC60825-2 • EN60825-1 • EN60825-2

📖 NOTE

• EMC: electromagnetic compatibility
• CISPR: International Special Committee on Radio Interference
• EN: European Standard
• ETSI: European Telecommunications Standards Institute
• CFR: Code of Federal Regulations
• FCC: Federal Communication Commission
• IEC: International Electrotechnical Commission
• AS/NZS: Australian/New Zealand Standard
• VCCI: Voluntary Control Council for Interference
• UL: Underwriters Laboratories
• CSA: Canadian Standards Association

- IEEE: Institute of Electrical and Electronics Engineers
- RoHS: restriction of the use of certain hazardous substances
- REACH: Registration Evaluation Authorization and Restriction of Chemicals
- WEEE: Waste Electrical and Electronic Equipment

MIB and Standards Compliance

Supported MIBs

The following table lists the MIBs supported by the S12700E series.

MIBs supported by the S12700E series

Category	Specification
Public MIB	- BGP4-MIB - BRIDGE-MIB - DISMAN-NSLOOKUP-MIB - DISMAN-PING-MIB - DISMAN-TRACEROUTE-MIB - ENTITY-MIB - EtherLike-MIB - IF-MIB - IP-FORWARD-MIB - IPMCAST-MIB - IPv6-ICMP-MIB - IPv6-MIB - IPv6-TCP-MIB - IPv6-UDP-MIB - ISIS-MIB - LAG-MIB - LLDP-EXT-DOT1-MIB - LLDP-EXT-DOT3-MIB - LLDP-MIB - MGMD-STD-MIB - MPLS-FTN-STD-MIB - MPLS-L3VPN-STD-MIB - MPLS-LDP-GENERIC-STD-MIB - MPLS-LDP-STD-MIB - MPLS-LSR-STD-MIB - MPLS-TE-STD-MIB - MSDP-MIB - NOTIFICATION-LOG-MIB - NQA-MIB - OSPF-MIB - OSPF-TRAP-MIB - P-BRIDGE-MIB - PIM-BSR-MIB

Category	Specification
	- PIM-STD-MIB
	- Q-BRIDGE-MIB
	- RFC1213-MIB
	- RIPv2-MIB
	- RMON2-MIB
	- RMON-MIB
	- SAVI-MIB
	- SNMP-FRAMEWORK-MIB
	- SNMP-MPD-MIB
	- SNMP-NOTIFICATION-MIB
	- SNMP-TARGET-MIB
	- SNMP-USER-BASED-SM-MIB
	- SNMPv2-MIB
	- SNMP-VIEW-BASED-ACM-MIB
	- TCP-MIB
	- UDP-MIB
	- VRRP-MIB
	- VRRPv3-MIB
Huawei-proprietary MIB	- HUAWEI-AAA-MIB
	- HUAWEI-ACL-MIB
	- HUAWEI-ALARM-MIB
	- HUAWEI-ALARM-RELIABILITY-MIB
	- HUAWEI-BASE-TRAP-MIB
	- HUAWEI-BFD-MIB
	- HUAWEI-BGP-VPN-MIB
	- HUAWEI-BRAS-RADIUS-MIB
	- HUAWEI-BRAS-SRVCFG-EAP-MIB
	- HUAWEI-BRAS-SRVCFG-STATICUSER-MIB
	- HUAWEI-BULKSTAT-MIB
	- HUAWEI-CBQOS-MIB
	- HUAWEI-CCC-MIB
	- HUAWEI-CONFIG-MAN-MIB
	- HUAWEI-CLOCK-MIB
	- HUAWEI-CPU-MIB
	- HUAWEI-DAD-MIB
	- HUAWEI-DC-TRAP-MIB
	- HUAWEI-DATASYNC-MIB
	- HUAWEI-DEVICE-MIB
	- HUAWEI-DHCPR-MIB
	- HUAWEI-DHCPS-MIB
	- HUAWEI-DHCP-SNOOPING-MIB
	- HUAWEI-DIE-MIB
	- HUAWEI-DNS-MIB
	- HUAWEI-DLDP-MIB

Category	Specification
	• HUAWEI-ERPS-MIB
	• HUAWEI-ERRORDOWN-MIB
	• HUAWEI-ENERGYMNGT-MIB
	• HUAWEI-EASY-OPERATION-MIB
	• HUAWEI-ENTITY-EXTENT-MIB
	• HUAWEI-ENTITY-TRAP-MIB
	• HUAWEI-ETHARP-MIB
	• HUAWEI-ETHOAM-MIB
	• HUAWEI-E-TRUNK-MIB
	• HUAWEI-FLASH-MAN-MIB
	• HUAWEI-FTP-MIB
	• HUAWEI-FWD-RES-TRAP-MIB
	• HUAWEI-GARP-APP-MIB
	• HUAWEI-GTL-MIB
	• HUAWEI-GTSM-MIB
	• HUAWEI-HGMP-MIB
	• HUAWEI-HQOS-MIB
	• HUAWEI-HWTACACS-MIB
	• HUAWEI-IF-EXT-MIB
	• HUAWEI-INFOCENTER-MIB
	• HUAWEI-IPFPM-MIB
	• HUAWEI-IPLPM-MIB
	• HUAWEI-IPMCAST-MIB
	• HUAWEI-IPPOOL-MIB
	• HUAWEI-IPSESSION-MIB
	• HUAWEI-IPV6-MIB
	• HUAWEI-ISOLATE-MIB
	• HUAWEI-KOMPELLA-MIB
	• HUAWEI-L2IF-MIB
	• HUAWEI-L2MAM-MIB
	• HUAWEI-L2MULTICAST-MIB
	• HUAWEI-L2VLAN-MIB
	• HUAWEI-L2VPN-MIB
	• HUAWEI-LDT-MIB
	• HUAWEI-LSP-PING-TRACE-TRAP-MIB
	• HUAWEI-LINE-MIB
	• HUAWEI-LLDP-MIB
	• HUAWEI-MAC-AUTHEN-MIB
	• HUAWEI-MDNS-RELAY-MIB
	• HUAWEI-MEMORY-MIB
	• HUAWEI-MFF-MIB
	• HUAWEI-MFLP-MIB
	• HUAWEI-MGMD-STD-MIB
	• HUAWEI-MPLS-EXTEND-MIB

Category	Specification
	• HUAWEI-MPLSLDP-MIB
	• HUAWEI-MPLSLSR-EXT-MIB
	• HUAWEI-MPLSOAM-MIB
	• HUAWEI-MSDP-MIB
	• HUAWEI-MSTP-MIB
	• HUAWEI-MULTICAST-MIB
	• HUAWEI-NETSTREAM-MIB
	• HUAWEI-NTPV3-MIB
	• HUAWEI-OSPFV2-MIB
	• HUAWEI-OSPFV3-MIB
	• HUAWEI-PERFORMANCE-MIB
	• HUAWEI-PIM-BSR-MIB
	• HUAWEI-PIM-STD-MIB
	• HUAWEI-PERFMGMT-MIB
	• HUAWEI-PORT-MIB
	• HUAWEI-PORTAL-MIB
	• HUAWEI-PWE3-MIB
	• HUAWEI-PWE3-TNL-MIB
	• HUAWEI-QINQ-MIB
	• HUAWEI-RIPv2-EXT-MIB
	• HUAWEI-RM-EXT-MIB
	• HUAWEI-RRPP-MIB
	• HUAWEI-RSVPTE-MIB
	• HUAWEI-SECURITY-MIB
	• HUAWEI-SEP-MIB
	• HUAWEI-SMARTLINK-MIB
	• HUAWEI-SNMP-EXT-MIB
	• HUAWEI-SSH-MIB
	• HUAWEI-STACK-MIB
	• HUAWEI-SWITCH-L2MAM-EXT-MIB
	• HUAWEI-SWITCH-SRV-TRAP-MIB
	• HUAWEI-SYS-MAN-MIB
	• HUAWEI-TASK-MIB
	• HUAWEI-TCP-MIB
	• HUAWEI-TFTPC-MIB
	• HUAWEI-TRNG-MIB
	• HUAWEI-TUNNEL-MIB
	• HUAWEI-TUNNEL-TE-MIB
	• HUAWEI-UNIMNG-MIB
	• HUAWEI-USC-MIB
	• HUAWEI-VPLS-EXT-MIB
	• HUAWEI-VPLS-TNL-MIB
	• HUAWEI-VPN-DIAGNOSTICS-MIB
	• HUAWEI-VRRP-EXT-MIB

Category	Specification
	• HUAWEI-WLAN-DEVICE-MIB • HUAWEI-WLAN-QOS-MIBB • HUAWEI-WLAN-RADIO-MIB • HUAWEI-WLAN-SECURITY-MIB • HUAWEI-WLAN-SERVICE-MIB • HUAWEI-WLAN-SYS-MIB • HUAWEI-WLAN-UPDATE-MIB • HUAWEI-WLAN-WIDS-MIB • HUAWEI-XQOS-MIB

📖 **NOTE**

For more information about MIBs supported by the S12700E series, visit
https://support.huawei.com/enterprise/en/switches/s12700e-pid-250450822

Standard Compliance

The following table lists the standards that the S12700E complies with.

Standard compliance list of the S12700E series

Standard Organization	Standard or Protocol
IETF	• RFC 768 User Datagram Protocol (UDP) • RFC 792 Internet Control Message Protocol (ICMP) • RFC 793 Transmission Control Protocol (TCP) • RFC 826 Ethernet Address Resolution Protocol (ARP) • RFC 854 Telnet Protocol Specification • RFC 951 Bootstrap Protocol (BOOTP) • RFC 959 File Transfer Protocol (FTP) • RFC 1058 Routing Information Protocol (RIP) • RFC 1112 Host extensions for IP multicasting • RFC 1157 A Simple Network Management Protocol (SNMP) • RFC 1256 ICMP Router Discovery • RFC 1305 Network Time Protocol Version 3 (NTP) • RFC 1349 Internet Protocol (IP) • RFC 1493 Definitions of Managed Objects for Bridges • RFC 1542 Clarifications and Extensions for the Bootstrap Protocol • RFC 1643 Ethernet Interface MIB • RFC 1757 Remote Network Monitoring (RMON) • RFC 1901 Introduction to Community-based SNMPv2 • RFC 1902-1907 SNMP v2 • RFC 1981 Path MTU Discovery for IP version 6 • RFC 2131 Dynamic Host Configuration Protocol (DHCP) • RFC 2328 OSPF Version 2 • RFC 2453 RIP Version 2 • RFC 2460 Internet Protocol, Version 6 Specification (IPv6) • RFC 2461 Neighbor Discovery for IP Version 6 (IPv6) • RFC 2462 IPv6 Stateless Address Auto configuration

Standard Organization	Standard or Protocol
	• RFC 2463 Internet Control Message Protocol for IPv6 (ICMPv6) • RFC 2474 Differentiated Services Field (DS Field) • RFC 2740 OSPF for IPv6 (OSPFv3) • RFC 2863 The Interfaces Group MIB • RFC 2597 Assured Forwarding PHB Group • RFC 2598 An Expedited Forwarding PHB • RFC 2571 SNMP Management Frameworks • RFC 2865 Remote Authentication Dial In User Service (RADIUS) • RFC 3046 DHCP Option82 • RFC 3376 Internet Group Management Protocol, Version 3 (IGMPv3) • RFC 3513 IP Version 6 Addressing Architecture • RFC 3579 RADIUS Support For EAP • RFC 4271 A Border Gateway Protocol 4 (BGP-4) • RFC 4760 Multiprotocol Extensions for BGP-4 • draft-grant-tacacs-02 TACACS+
IEEE	• IEEE 802.1D Media Access Control (MAC) Bridges • IEEE 802.1p Virtual Bridged Local Area Networks • IEEE 802.1Q Virtual Bridged Local Area Networks • IEEE 802.1ad Provider Bridges • IEEE 802.2 Logical Link Control • IEEE Std 802.3 CSMA/CD • IEEE Std 802.3ab 1000BASE-T specification • IEEE Std 802.3ad Aggregation of Multiple Link Segments • IEEE Std 802.3ae 10GE WEN/LAN Standard • IEEE Std 802.3x Full Duplex and flow control • IEEE Std 802.3z Gigabit Ethernet Standard • IEEE802.1ax/IEEE802.3ad Link Aggregation • IEEE 802.3ah Ethernet in the First Mile. • IEEE 802.1ag Connectivity Fault Management • IEEE 802.1ab Link Layer Discovery Protocol • IEEE 802.1D Spanning Tree Protocol • IEEE 802.1w Rapid Spanning Tree Protocol • IEEE 802.1sMultiple Spanning Tree Protocol • IEEE802.1x Port based network access control protocol
ITU	• ITU SG13 Y.17ethoam • ITU SG13 QoS control Ethernet-Based IP Access • ITU-T Y.1730 ETH OAM performance monitor • ITU-T Y.1731 ETH OAM performance monitor • ITU-T Y.1710 Requirements for OAM functionality for MPLS networks • ITU-T Y.1711 Operation and maintenance mechanism for MPLS networks • ITU-T Y.1720 Protection switching for MPLS networks
ISO	• ISO 10589IS-IS Routing Protocol
MEF	• MEF 2 Requirements and Framework for Ethernet Service Protection

Standard Organization	Standard or Protocol
	• MEF 9 Abstract Test Suite for Ethernet Services at the UNI
	• MEF 10.2 Ethernet Services Attributes Phase 2
	• MEF 11 UNI Requirements and Framework
	• MEF 13 UNI Type 1 Implementation Agreement
	• MEF 15 Requirements for Management of Metro Ethernet Phase 1 Network Elements
	• MEF 17 Service OAM Framework and Requirements
	• MEF 20 UNI Type 2 Implementation Agreement
	• MEF 23 Class of Service Phase 1 Implementation Agreement
	• Xmodem XMODEM/YMODEM Protocol Reference

Ordering Information

S12700E Basic Configuration	
LE2BN66ED000	N66E DC assembly cabinet (eight 60 A outputs, maximum 2,200 W per output, 600 mm × 600 mm × 2,200 mm)
LE2BN66EA000	N66E AC assembly cabinet (four 16 A outputs, maximum 2,500 W per output, 600 mm × 600 mm × 2,200 mm)
ET1BS12704E0	S12700E-4 assembly chassis
ET1BS12708E0	S12700E-8 assembly chassis
FAN-770A-B	Fan tray (-5degC–55degC, 48 V, 400 W, 2, indoors, VA)

Main Processing Unit	
LST7MPUE0000	S12700E main processing unit E

Centralized Monitoring Unit	
EH1D200CMU00	Centralized monitoring unit

Switch Fabric Unit	
LST7SFUEX100	S12700E switch fabric unit E (X1)

100G Ethernet Optical Interface Cards	
LST7C06HX6E0	6-port 100GE QSFP28 interface card (X6E, QSFP28)
LST7C06HX6S0	6-port 100GE QSFP28 interface card (X6S, QSFP28)

10GE Optical Interface Cards	
LST7X48SX6E0	48-port 10GE SFP+ interface card (X6E, SFP+)
LST7X48SX6S0	48-port 10GE SFP+ interface card (X6S, SFP+)

10GE/1000M Ethernet Optical Interface Cards	
LST7X24BX6E0	24-port 10GE SFP+ and 24-port GE SFP interface card (X6E, SFP+)
LST7X24BX6S0	24-port 10GE SFP+ and 24-port GE SFP interface card (X6S, SFP+)

Gigabit Ethernet Optical Interface Cards	
LST7G48SX6E0	48-port GE SFP interface card (X6E, SFP)
LST7G48SX6S0	48-port GE SFP interface card (X6S, SFP)

Gigabit Ethernet Electrical Interface Cards	
LST7G48TX5E0	48-port 10/100/1000BASE-T interface card (X5E, RJ45)
LST7G48TX5S0	48-port 10/100/1000BASE-T Interface card (X5S, RJ45)

Power Module	
PDC-2200WF	2,200 W DC power module
W2PSD2200	2,200 W DC power module
PAC3KS54-CB	3,000 W AC power module (black)
PAC3KS54-CE	3,000 W AC power module (black)

Software	
LST7MPUE0000	S12700E V200R019C00 MPUE Mainframe Software

License	
N1-S127E-F-Lic	N1-CloudCampus, Foundation, S127E Series, Per Device
N1-S127E-F-SnS1Y	N1-CloudCampus, Foundation, S127E Series, SnS, Per Device, 1 Year
N1-S127E-A-Lic	N1-CloudCampus, Advanced, S127E Series, Per Device
N1-S127E-A-SnS1Y	N1-CloudCampus, Advanced, S127E Series, SnS, Per Device, 1 Year
N1-S127E-FToA-Lic	N1-Upgrade-Foundation to Advanced, S127E, Per Device
N1-S127E-FToA-SnS1Y	N1-Upgrade-Foundation to Advanced, S127E, SnS, Per Device, 1 Year

License	
N1-AC1.0-AM-15-Lic	N1-CloudCampus, Access Management - AC1.0, 15 Terminals
N1-AC1.0-AM-15-SnS1Y	N1-CloudCampus, access management - AC1.0, Software Subscription and Assurance Annual Fee, 15 Terminals, 1 Year
CI-X7MSwitch-U	CampusInsight-Network Intelligent Analysis Upgrade Package - X7 Series Modular Switches, Per Device
CI-X7MSwitch-U-SnS1Y	CampusInsight-Network Intelligent Analysis Upgrade Package - X7 Series Modular Switches, Annual Software Subscription and Assurance Fee, One Year for Each Device

More Information

For more information about Huawei campus switches, visit http://e.huawei.com or contact us in the following ways:

- Visiting our global service hotline website: http://e.huawei.com/en/service-hotline

- Logging in to the Huawei Enterprise technical support website: http://support.huawei.com/enterprise/

- Sending an email to our enterprise customer service mailbox: support_e@huawei.com

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