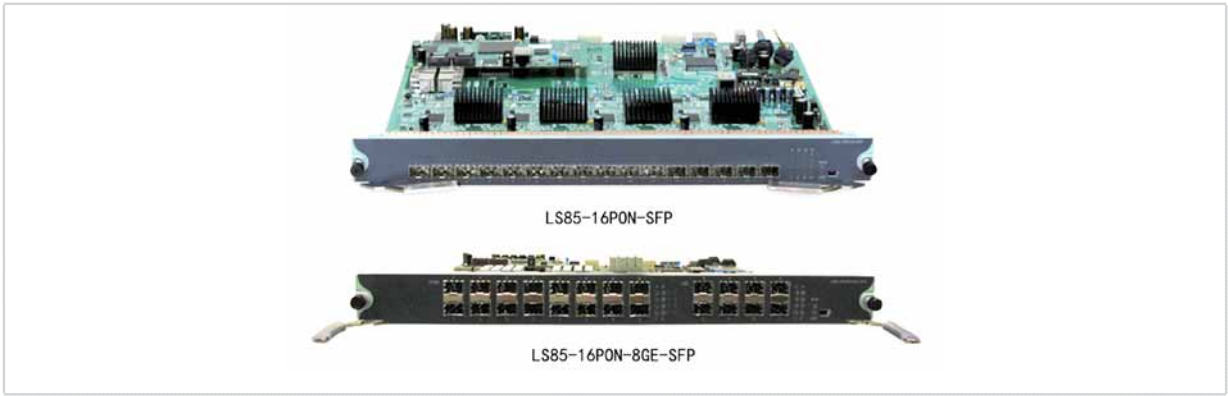
A-GEAR World Wide Manufacturing

Product Specification

A-GEAR S8500 OLT series

Carrier-Level Large-Capacity OLT



1. IIntroduction

A-GEAR S8500 OLT EPON is a new-generation hi-end multiservice OLT access device invented by A-GEAR for the convergence network. A-GEAR develops the EPON card on the workstation of the S8500 switches. This service card supports 16 PON ports, while S8500 OLT can support up to 128 PON ports, easily realizing the convergence of the hi-density OLT and the core switch.

A-GEAR S8500 OLT EPON adopts the BDROS operating system whose intelligent property is owned by A-GEAR, supports multiple services like MPLS, IPv6, network security, EPON non-source optical network, and provides continuous forwarding, graceful restarting and loop network protection, improving the work efficiency and guaranteeing the maximum running time.

The uplink bandwidth of S8500 OLT can be expanded through adding the GE/10GE service boards. ONU provides one kilometer of bandwidth access to residential users and enterprise

users. S8500 OLT supports the maximum coupling ratio, 1:64, and up to 8192 ONUs. Its transmission distance can reach 20 km.
S8500 OLT series includes S8510 (10 slots), S8506E (8 slots) and S8503 (3 slots). S8510 and S8506 support the control panel and power "1+1" redundancy, while S8503 supports only power "1+1" redundancy. S8500 OLT can be widely applied on the aggregation or access layer of carrier's MAN or NGB, or on the core of automatic power distribution, electricity information collection, intelligent power's service and PFTTH.

2. Main Characteristics

- **Carrier-level reliability:**
  The key modules of the system like the control unit and the power source can be backed up through the "1+1" mode. Meanwhile, the Hitless Protection System (HPS) secures the high reliability of A-GEAR S8500 OLT. After the redundancy control module is configured, the highest reliability can be reached. At the same time, the functions of A-GEAR S8500 OLT like VRRP, STP and LACP provide further reliability.
- **Advanced system architecture:**
  Based on the distributive and modularized idea, A-GEAR S8500 OLT uses the multi-processor-based treatment mechanism and adopts the crossbar switching architecture. This advanced system architecture guarantees the nice forwarding ability, the powerful service ability and the high expansibility.
- **Strong value-added service functions:**
  A-GEAR S8500 OLT has L2/L3/L4 wire-speed switching ability and advanced performances like QoS, MPLS, NAT, bandwidth control and multicast. Hence, it becomes the first option for being used in the core layer of the network or for network's value addition. Meanwhile, hardware-based flow classification, multicast, rate limitation and advanced QoS give strong supports for users to operate the value-added services.
- **Large capacity and high performance:**
  A-GEAR S8500 OLT supports the 952Mpps packet forwarding rate, contains 512K layer-3 routing information, 512K layer-2 MAC addresses, 4096 groups of VLANs and 8K security/access control policies, securing the wire-speed forwarding requirements.
- **High port density and wire-speed routing & switching:**
  A-GEAR S8500 OLT supports various interface types such as 10GE, GE, FE and EPON. High port density, wire-speed routing/switching can thus be really reached. The whole system provides up to 128 PON ports, 64 10G interfaces and 384 gigabit interfaces.
- **Powerful Security:**
  A-GEAR S8500 OLT supports the ACL security filter mechanism and the security control function based on users, addresses, applications or ports. MPLS VPN is also supported.
  A-GEAR S8500 OLT also supports the following security functions:
  Limiting bandwidth based on port priority or based on the flow's ingress/egress
  URPF
  Preventing DOS attacks
  SSH2.0 security management
  802.1x access authentication and transparent transversal

Binding VLAN ID to the MAC address, port number or IP address

Additionally, the system also has sound anti-virus mechanism, providing security to network operation.

- **Supporting IPv6:**
  All IPv6 technologies are realized, including IPv4/IPv6 protocol stacks, and IPv4-to-IPv6 basic filtration technologies based on manual/automatic tunnel configuration or 6-to-4 tunnel. Meanwhile, the IPv6 static routing is realized and the dynamic routing protocols such as BGP4/BGP4+, RIPng and OSPFv3 are supported.
- **Supporting MPLS VPN on layer 2 or layer 3:**
  The layer-2 MPLS VPN supports the Martini protocol and the VPLS protocol, while the layer-3 MPLS VPN adopts RFC2547bis. Hence, A-GEAR S8500 OLT is well compatible with other main manufacturers' devices on the MPLS VPN service.
- **Uniform network management function:**
  A-GEAR S8500 OLT supports the RFC 1213 SNMP protocol. The internal network management mode adopts the Telnet-based configuration management or the SNMP-based configuration management, realizing uniform network management based on the Broad Director network management platform.

3. Technical Parameters

Attributes	S8503	S8506	S8510
Interface			
Expanded slot	One slot for the control panel and two slots for service modules	Two slots for the control panel and four slots for service modules	Two slots for the control panel and eight slots for service modules
Backplane bandwidth	1.2T	2.4T	3.2T
Exchange capacity	384Gbps	1.5Tbps	2.3T
Packet's forwarding rate	238Mpps	476 Mpps	952 Mpps
Maximum number of 10-gigabit ports	16	32	64
Maximum number of gigabit ports	96	192	384
Maximum number of 100M ports	96	192	384
Maximum number of PON ports	32	64	128
Hardware parameters			
CPU	RISC CPU (RISC 800MHz)		
Flash	16MB		

Attributes	S8503	S8506	S8510
Memory	A necessary 512MB memory, which can be expanded to 2GB		
MAC table	512K	512K	512K
VLAN table	4K	4K	4K
IP routing table	512K	512K	512K
EPON attributes			
Supporting IEEE 802.3ah EPON standards			
Complying with Chinese Telecom EPON interconnection standards and interconnecting ONU which is made by main communication factories			
Chinese telecom EPON standard, CTC2.1			
Standard OAM and expanded OAM management			
Supporting uplink/downlink encryption			
Simultaneous registration of up to 64 ONUs			
Upgrading single or multiple ONUs			
Supporting DBA			
Supporting the ONU authentication and the report of illegal ONU registration events			
Supporting backbone optical-fiber protection, "1+1" hand-in-hand protection, full protection, switchover delay of less than 50ms			
Software functions			
Supported network standard	IEEE 802.1D IEEE 802.3 IEEE 802.3u IEEE802.3ad IEEE 802.3x IEEE 802.3z IEEE802.1Q IEEE 802.1P IEEE 802.1w IEEE 802.1x		
STP	802.1D (STP), 802.1w (RSTP), 802.1s (MSTP)		
Routing protocol	static, RIPv1/2, OSPF, BGP		
MPLS	MPLS, MPLS VPN, MPLS TE		
Ipv6	IPv6 ND, IPv6 PMTU, IPv6 FIB, IPv6 ACL, NAT-PT, IPv6 tunnel, 6PE,Ipv6 static route, RIPng, OSPFv3, BGP4+		
Multicast protocols	IGMP, IGMP Snooping, IGMP Proxy, DVMRP, PIM-SM, PIM-DM, MSDP, MOSPF, MBGP		
QoS	Having 8 queues for each port and supporting 802.1p, ToS, port ID, DifferSev, WRR, SP, SWRR, flow shaping, VLAN-ACL-based flow classification		
ACL	Supporting standard ACL and extended ACL, IP ACL, and data filtration based on source/destination IP, layer-3 IP ID, layer-4 TCP/ UDP ID, IP priority, ToS or time range		
MAC operations	Supporting port/MAC bind, and MAC filter		
VLAN type	Supporting GVRP, PVLAN and VLAN Stacking (QinQ)		
Flow control	Supporting HOL block prevention, half-duplex backpressure and full-duplex IEEE 802.3x		
ARP	Support		

Attributes	S8503	S8506	S8510
DHCP	Supporting Client, Relay and Server		
Port aggregation	Supporting 802.3ad and load balance		
User's access	Supporting 802.1x		
AAA authentication	Supporting RADIUS		
Port mirror	Support		
Broadcast Storm Control	Support		
Security	Supporting active/standby switchover, hot swap, HSRP and VRRP		
Network management			
Console interface	CLI, WEB		
Console	RS-232		
Telnet	Support		
SNMP	v1, v2, v3		
SysLog	Support		
RMON	Group 1, group 2, group 3 and group 9		
MIB interface	Provide		
PON interface Attribute			
Wavelength of the optical module of the PON port	Downlink 1490nm; uplink 1310nm		
Rate	Symmetric uplink and downlink: 1.25G		
Average irradiating power of the PON port	+2dbm ~ +7dbm		
Optical reception sensibility of the PON port	-30dBm		
Maximum optical coupling ratio	1:64		
Physical specification			
Relative Humidity	10% ~ 90% no condensation		
Working temperature	0°C ~ 50°C		
Power source's characteristics	AC power: 200-240VAC, 50/60 Hz DC power: -48V		
Power redundancy	1+1 backup and hot swap		
Physical size (H x W x L) (mm)	266.4 × 482.6 × 548	399.7 × 482.6 × 548	533.1 × 482.6 × 548
Power consumption	600W	600W	1000W

4. Order Information

Model	Description
A-GEAR S8500 OLT	
LS8510-Chassis	Chassis of the S8510 10-gigabit routing switches (10 expanded slots, two of which are fixed for inserting MSU; including one AC power source, up to two power sources)
LS8506-Chassis	Chassis of the S8506 10-gigabit routing switches (6 expanded slots, two of which are fixed for inserting the control panel; including one AC power source, up to two power sources)
LS8503-Chassis	Chassis of the S8503 10-gigabit routing switches (3 expanded slots, one of which is fixed for inserting the control panel; including one AC power source, up to two power sources)
LS85-MSU-I/II/III/IV/V	MCU: UltraEngine I/II/III/IV/V
LS85-PWR-AC-1000	220V AC power-source module (S8510)
LS85-PWR-AC-600	220V AC power-source module (S8506, S8503)
LS85-PWR-DC	DC -48VAC power-source module
Standard service boards	
LS85-8PON-SFP	Service board with 8 OLT EPON interfaces (excluding the OLT SFP optical module)
LS85-8PON-8GE-SFP	Service board with 16 OLT EPON interfaces and 8 gigabit SFP optical interfaces (excluding the OLT SFP optical module)
LS85-16PON-SFP	Service board with 16 OLT PON interfaces (excluding OLT SFP optical module)
LS85-16PON-8GE-SFP	Service board with 16 OLT EPON interfaces and 8 gigabit SFP optical interfaces (excluding the OLT SFP optical module)
LS85-16GPON-8GE-SFP	Service board with 16 OLT GPON ports and 8 gigabit SFP optical ports (excluding the OLT SFP optical module)
LS85-48FE-TX	Service board with 48 10/100M Ethernet interfaces (RJ45)
LS85-24FESFP-4GE	Ethernet interface module with 24 100M ports (SFP) and 4 gigabit electrical/optical ports
LS85-12GE-Combo	Ethernet interface module (TX/SFP) with 12 gigabit electrical/optical ports
LS85-24GE-SFP	Ethernet interface module with 20 gigabit ports (SFP) and 4 gigabit electrical/optical ports
LS85-24GE-TX	Ethernet interface module with 24 10/100/1000M ports (RJ45)
LS85-48GE-TX	48-port 10/100/1000M Ethernet interface module (RJ45)
LS85-1TE-XFP	Module with one 10G-Ethernet interface (XFP)
LS85-2TE-XFP	Module with 2 10G-Ethernet interfaces (XFP)

Model	Description
LS85-4TE-XFP	Module with 4 10G interfaces (XFP)
LS85-8TE-XFP	Module with 8 10G-Ethernet interface (XFP)
Power source specially for the Broadcast, TV & Film industry	
LS85-GDPWA1000	A private power source for the Broadcast, TV & Film industry, AC 220V input voltage, 1000W maximum power consumption
LS85-GDPWA600	A private power source for the Broadcast, TV & Film industry, AC 220V input voltage, 600W maximum power consumption
LS85-GDPWD1000	A private power source for the Broadcast, TV & Film industry, AC -48V input voltage, 1000W maximum power consumption
MCU specially for the Broadcast, TV & Film industry	
LS85-GDMCUA	MCU of type A
LS85-GDMCUB	MCU of type B
LS85-GDMCUC	MCU of type C
EPON wire card specially for the Broadcast, TV & Film industry	
LS85-GD8PSFP	EPON interface board for the Broadcast, TV & Film industry, having 8 OLT EPON interfaces (excluding the OLT SFP optical module)
LS85-GD8P8GSFP	EPON interface board for the Broadcast, TV & Film industry, having 8 OLT EPON interfaces and 8 gigabit SFP optical interfaces (excluding the OLT SFP optical module)
LS85-GD16PSFP	EPON interface board for the Broadcast, TV & Film industry, having OLT EPON interfaces (excluding the OLT SFP optical module)
LS85-GD16P8GSFP	EPON interface board for the Broadcast, TV & Film industry, having 16 OLT EPON interfaces and 8 gigabit SFP optical interfaces (excluding the OLT SFP optical module)
LS85-GD16GP8GSFP	GPON interface board for the Broadcast, TV & Film industry, having 16 OLT EPON interfaces and 8 gigabit SFP optical interfaces (excluding the OLT SFP optical module)
EPON optical module	
OLT-GSFP-20	OLT SFP module, 20km, 1490nm TX wavelength, 1310nm RX wavelength, SC interface