# TITAN PRODUCTS DATASHEET

Full-scenario Optical Access Platforms
*Oriented to Future*

ZXA10 C600 Datasheet

ZXA10 C600 is a large-capacity optical access equipment based on the TITAN platform. It meets the full-scenario access needs of ultra-high bandwidth, big video, FMC and network re-architecture, and provides the integration of transmission and access, as well as carrier-class QoS and security.
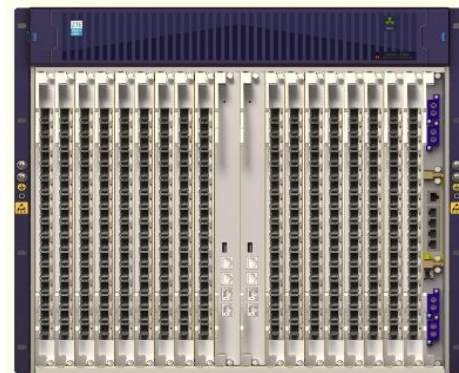
Key Features

System architecture

- Network Processor(NP) +CLOS switch fabric architecture
- Support control and forwarding planes separate.
- Support ISSU and NSR.
- SDN ready, support Netconf/YANG, VXLAN.

NP+CLOS
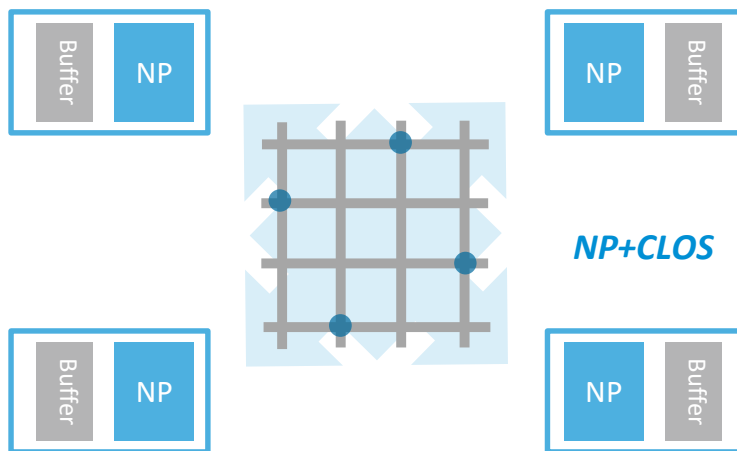
Access Features

- 272/256 GPON, 10G PON, Any-PON or Combo PON ports.
- Three generations of PON technologies and directions in one platform, and two generations PON(GPON and 10G PON) in one card.
- Support full services and scenarios access, such as big video, FMC, network re-architecture, etc.

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Hardware Features

Shelf configuration

- ETSI 21″ shelf: 23 slots, IEC19″ shelf: 21 slots.
- 17 slots(21″)/15 slots(19″) for universal line cards
- 2 slots for switch & control cards
- 2 slots for power cards
- 1 slot for clock synchronization card
- 1 slot for FAN module

System capability

- Switching capacity of backplane bus: 14 Tbit/s
- Switching and control card: 3.6 Tbit/s
- System switching capacity: 7.2 Tbit/s

Uplink interface card

- 16 * 10GE uplink per card
- 8 * 10GE uplink per card

Subscriber card density

- GPON card: 16 ports per card
- XG-PON card: 16 ports per card
- XGS-PON card: 16 ports per card
- XG-PON & GPON Combo PON card: 16 Combo PON ports per card
- XGS-PON & GPON Combo PON card: 16 Combo PON ports per card
- Any-PON card: 16 Any-PON ports per card
- 10G-EPON card: 16 ports per card
- 10GE P2P card: 16 ports per card
- GE/FE P2P card: 24/48 ports per card

Clock synchronization interfaces

- 2 * 120 Ω BITS clock input interface/1PPS+ToD time input interfaces.
- 1 * 120 Ω BITS clock output interface/1PPS+ToD time output interface.
- 1 * out-of-band NM interface.
- 1 * public/maintenance serial port

PON Features

GPON

- GPON is compliant to ITU G.984.x
- Support up to 1:128 optical split ratio
- Support OLS

XG-PON

- XG-PON is compliant to ITU G.987.x and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

XGS-PON

- XGS-PON is compliant to ITU-T G.9807.1 and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

ZXA10 C600 Datasheet

- **Combo PON**
  - Each port integrates GPON optical module, XG-PON/XGS-PON optical module and WDM1r
  - Support up to 1:128 optical split ratio
  - Support OLS
  - Type B/C optical link protection
  - Support FEC
  - Support AES-128

L2/L3 Features

- **L2 Features**
  - Access control: MAC filtering, ACL
  - L2-port: physical Ethernet ports, logical Vports and aggregation ports, support L2 services and TPID configuration
  - VLAN: 1:1 VLAN, N:1 VLAN, flexible QinQ, VLAN bridge, TLS VLAN, M-VLAN, VLAN reuse
  - 512K MAC address, MAC address management, permanent MAC, MAC address aging/learning/query/number limit
  - Uplink protocol: STP/RSTP/MSTP, LACP

- **L3 Features**
  - Basic routing: unicast routing forwarding, static route, IP based load balance, ECMP
  - Dynamic routing: RIPv1/v2, OSPFv2, BGP4, IS-IS v2, Graceful Restart, MD5, etc.
  - DHCPv4: DHCP relay/proxy/snooping, Option 82, Option 60
  - L3 interfaces: VLAN L3 routing, Loopback
  - ARP: ARP protocol, ARP Proxy
  - IPv6 basic features and ND
  - Support BFD for IPv4/IPv6 routing protocol，including static/OSPF/ISIS/BGP.

QoS Features

- Queue & scheduling mechanism: SP, WRR/DWRR, and SP+WRR
- DSCP labeling and relabeling
- Traffic statistics
- H-QoS
- Stream classification, rate limiting, shaping and priority setting
- Congestion Avoidance: tail drop, color-based RED, WRED
- Configuration of CIR/PIR/CBS/PBS/CM, TrTCM(Two Rate Three Color Marker)

Multicast

- IGMP snooping, proxy, router (v1/v2/v3)
- MLD v1/v2
- MVLAN: 4K Multicast VLAN
- Multicast snooping/proxy, router modes
- Enabling and disabling protocols globally or based on VLAN.
- ASM/SSM mode based on IGMPv3 and MLDv2
- Less than 20 ms channel zapping delay
- SCB multicast forwarding and L3 multicast forwarding.
- PIM-SM, PIM-SSM

MPLS

- **MPLS basic function**
  - Label distribution using LDP
  - Label distribution mode configuration – DU/DoD
  - Label retention mode – Liberal/Conservative
  - Label control mode – Independent/ Ordered
  - LDP Extension for Inter - Area LSP
  - Explicit null configuration (PHP control)
  - Graceful Restart
  - MD5 encryption on LDP session
- **L2VPN - Ethernet VPLS/VPWS service**
- **MPLS OAM**

- **PWE3 basic function**
  - Dynamic PW
  - PW type configuration negotiation – ETH
  - VCCV configuration negotiation
  - Control word enable negotiation
  - PW ingress MPLS TC to AC VLAN CoS mapping
  - PW egress AC VLAN CoS to MPLS TC mapping
  - PSN VLAN on network side inherits CoS from MPLS label and AC VLAN
- **1:1 PW redundant protection**

Security Features

- **Network security**
  - Broadcast/multicast flooding rate limitation
  - Downstream ARP filtering
  - Forwarding panel protocol packet rate limit
  - DHCP anti-spoofing
  - Anti-DoS attacking
  - ARP/IP anti-spoofing
  - IP Source Guard
  - Basic ACL and IPv6 ACL

- **Service security**
  - DHCP service security
  - MAC address anti-drifting
  - Port isolation: Uplink port/User port
  - Broadcast packets separation based on VLAN

- **System security**
  - L4 port disable
  - CPU protocol packet rate limit and scheduling

OAM Features

- Management protocol and interface: CLI, Telnet/SSHv2, SNMP v1/v2/v3, IGMP/MLD proxy/snooping model, alarm and performance model
- Performance statistic and diagnosis

- Remote firmware download and upgrade
- Environment detecting, control and alarm
- Ethernet OAM: 802.1ag
- System fault auto-recovery and performance detection

VxLAN

- **Basic VxLAN functions**
  - RFC7348
  - Learning/aging MAC and VTEP IP
  - Multiple AC type: port(PON port, vport), S-Vlan, S-Vlan+C-Vlan.
  - Support IPv6
  - VTEP port associated IGMP
  - ARP suppression

- **Configuration functions**
  - VLAN configuration
  - Status reporting
  - Information Query
  - Static MAC Configuration
  - ARP suppression Configuration

Environment

- Operating temperature: -40 ℃ ~ 65 ℃ for overall unit
- Starting up temperature: ≥ -25℃
- Operating humidity: 5% ~ 95%, non-condensing
- Altitude: ≤ 4000 m
- Air pressure: 70 kPa~106 kPa

Power Supply

- Working voltage: -48 V ($\pm$20%), or -60 V ($\pm$20%)

Dimensions

- 21" shelf: 486.1 mm (H) * 535 mm(21'') (W) * 288.5 mm (D)
- 19" shelf: 486.1 mm (H) * 482.6 mm(19'') (W) * 288.5 mm (D)
- 21" Empty shelf: 21 kg, full configuration: < 58 kg
- 19" Empty shelf: 18 kg, full configuration: < 52 kg

**ZTE**

ZXA10 C650 Datasheet

The ZXA10 C600 is a medium-capacity optical access equipment based on the TITAN platform. It meets the full-scenario access needs of ultra-high bandwidth, big video, FMC and network re-architecture, and provides the integration of transmission and access, as well as carrier-class QoS and security.

Key Features

• System architecture

- ➤ Network Processor(NP) +CLOS architecture
- ➤ Support control and forwarding planes separate.
- ➤ Support ISSU and NSR.
- ➤ SDN ready, support Netconf/YANG, VXLAN.

NP+CLOS
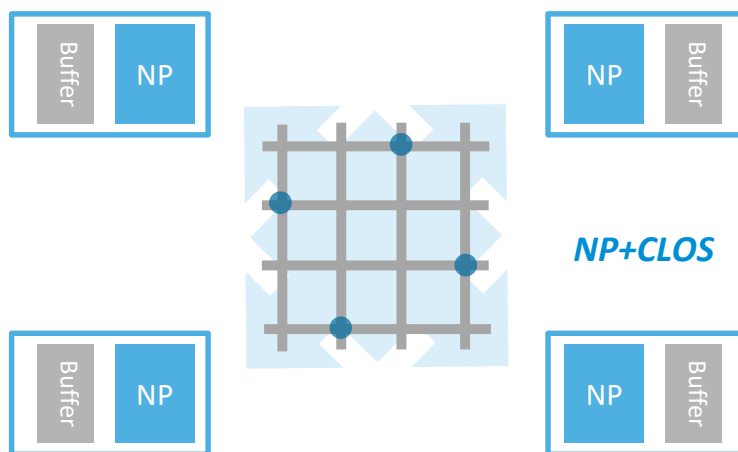
• Access Features

- ➤ 112 GPON, 10G PON, Any-PON or Combo PON ports.
- ➤ Three generations of PON technologies and directions in one platform, and two generations PON(GPON and 10G GPON) in one card.

ZXA10 C650 Datasheet

ZTE

Hardware Features

Shelf configuration

- Total 13 slots
- 7 slots for universal line cards
- 2 slots for switch & control cards
- 2 slots for power cards
- 1 slot for clock synchronization card

System capability

- Switching capacity of backplane bus: 6 Tbit/s
- Switching and control card: 3.6 Tbit/s
- System switching capacity: 7.2 Tbit/s

Uplink interface card

- 16 * 10GE uplink per card
- 8 * 10GE uplink per card

Subscriber card density

- GPON card: 16 ports per card
- XG-PON card: 16 ports per card
- XGS-PON card: 16 ports per card
- XG-PON & GPON Combo PON card: 16 Combo PON ports per card
- XGS-PON & GPON Combo PON card: 16 Combo PON ports per card
- Any-PON card: 16 Any-PON ports per card
- 10G-EPON card: 16 ports per card
- 10GE P2P card: 16 ports per card
- GE/FE P2P card: 24/48 ports per card

Clock synchronization interfaces

- 2 * 120 Ω BITS clock input interface/1PPS+ToD time input interfaces.
- 1 * 120 Ω BITS clock output interface/1PPS+ToD time output interface.
- 1 * out-of-band NM interface.
- 1 * public/maintenance serial port

PON Features

GPON

- GPON is compliant to ITU G.984.x
- Support up to 1:128 optical split ratio
- Support OLS

XG-PON

- XG-PON is compliant to ITU G.987.x and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

XGS-PON

- XGS-PON is compliant to ITU-T G.9807.1 and G.988
- Support up to 1:256 optical split ratio
- Support OLS
- Type B/C optical link protection
- Support FEC
- Support AES-128

ZXA10 C650 Datasheet

ZTE

- **Combo PON**
  - Each port integrates GPON optical module, XG-PON/XGS-PON optical module and WDM1r
  - Support up to 1:128 optical split ratio
  - Support OLS
  - Type B/C optical link protection
  - Support FEC
  - Support AES-128

L2/L3 Features

- **L2 Features**
  - Access control: MAC filtering, ACL
  - L2-port: physical Ethernet ports, logical Vports and aggregation ports, support L2 services and TPID configuration
  - VLAN: 1:1 VLAN, N:1 VLAN, flexible QinQ, VLAN bridge, TLS VLAN, M-VLAN, VLAN reuse
  - 512K MAC address, MAC address management, permanent MAC, MAC address aging/learning/query/number limit
  - Uplink protocol: STP/RSTP/MSTP, LACP

- **L3 Features**
  - Basic routing: unicast routing forwarding, static route, IP based load balance, ECMP
  - Dynamic routing: RIPv1/v2, OSPFv2, BGP4, IS-IS v2, Graceful Restart, MD5, etc.
  - DHCPv4: DHCP relay/proxy, Option 82, Option 60
  - L3 interfaces: VLAN L3 routing, Loopback
  - ARP: ARP protocol, ARP Proxy
  - IPv6 basic features and ND
  - Support BFD for IPv4/IPv6 routing protocol，including static/OSPF/ISIS/BGP.

QoS Features

- Queue & scheduling mechanism: SP, WRR/DWRR, and SP+WRR
- DSCP labeling and relabeling
- Traffic statistics
- H-QoS
- Stream classification, rate limiting, shaping and priority setting
- Congestion Avoidance: tail drop, color-based RED, WRED
- Configuration of CIR/PIR/CBS/PBS/CM, TrTCM(Two Rate Three Color Marker)

Multicast

- IGMP snooping, proxy, router (v1/v2/v3)
- MLD v1/v2
- MVLAN: 4K Multicast VLAN
- Multicast snooping/proxy, router modes
- Enabling and disabling protocols globally or based on VLAN.
- ASM/SSM mode based on IGMPv3 and MLDv2
- Less than 20 ms channel zapping delay
- SCB multicast forwarding and L3 multicast forwarding.
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MPLS

- **MPLS basic function**
  - Label distribution using LDP
  - Label distribution mode configuration – DU/DoD
  - Label retention mode – Liberal/Conservative
  - Label control mode – Independent/ Ordered
  - LDP Extension for Inter - Area LSP
  - Explicit null configuration (PHP control)
  - Graceful Restart
  - MD5 encryption on LDP session
- **L2VPN - Ethernet VPLS/VPWS service**
- **MPLS OAM**

- **PWE3 basic function**
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  - PW type configuration negotiation – ETH
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  - Control word enable negotiation
  - PW ingress MPLS TC to AC VLAN CoS mapping
  - PW egress AC VLAN CoS to MPLS TC mapping
  - PSN VLAN on network side inherits CoS from MPLS label and AC VLAN
- **1:1 PW redundant protection**

Security Features

- **Network security**
  - Broadcast/multicast flooding rate limitation
  - Downstream ARP filtering
  - Forwarding panel protocol packet rate limit
  - DHCP anti-spoofing
  - Anti-DoS attacking
  - ARP/IP anti-spoofing
  - IP Source Guard
  - Basic ACL and IPv6 ACL

- **Service security**
  - DHCP service security
  - MAC address anti-drifting
  - Port isolation: Uplink port/User port
  - Broadcast packets separation based on VLAN

- **System security**
  - L4 port disable
  - CPU protocol packet rate limit and scheduling

OAM Features

- Management protocol and interface: CLI, Telnet/SSHv2, SNMP v1/v2/v3, IGMP/MLD proxy/snooping model, alarm and performance model
- Performance statistic and diagnosis

- Remote firmware download and upgrade
- Environment detecting, control and alarm
- Ethernet OAM: 802.1ag
- System fault auto-recovery and performance detection

VxLAN

- **Basic VxLAN functions**
  - RFC7348
  - Learning/aging MAC and VTEP IP
  - Multiple AC type: port(PON port, vport), S-Vlan, S-Vlan+C-Vlan.
  - Support IPv6
  - VTEP port associated IGMP
  - ARP suppression

- **Configuration functions**
  - VLAN configuration
  - Status reporting
  - Information Query
  - Static MAC Configuration
  - ARP suppression Configuration

Environment

- Operating temperature: -40 ℃ ~ 65 ℃ for overall unit
- Starting up temperature: ≥ -25℃
- Operating humidity: 5% ~ 95%, non-condensing
- Altitude: ≤ 4000 m
- Air pressure: 70 kPa~106 kPa

Power Supply

- Working voltage: -48 V ($\pm$20%), or -60 V ($\pm$20%)

Dimensions

- 263.9 mm (H) * 482.6 mm (W) * 285.3 mm (D)
- Shelf weight (empty): 12 kg
- Full configuration: <30 kg

ZXA10 C620 Datasheet

ZXA10 C620 is a 2U high capacity optical access equipment based on TITAN platform. It meets the full-scenario access needs of ultra-high bandwidth, big video, FMC and network re-architecture, and provides the integration of transmission and access, as well as carrier-class QoS and security.
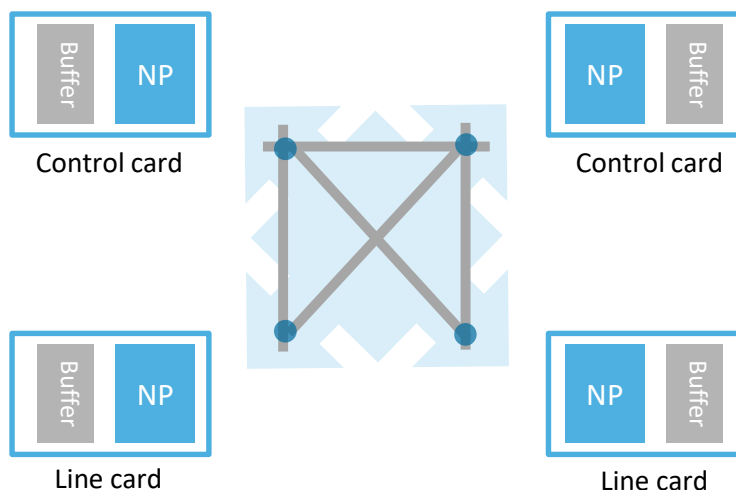
DC Shelf:

AC Shelf:

💡 Key Features

● System architecture

- ➢ Programmable Network Processor(NP)
- ➢ Support control and forwarding planes separate.

● Access Features

- ➢ 32 GPON, 10G PON, Any-PON or Combo PON ports.
- ➢ Three generations of PON technologies and directions, and two generations PON(GPON and XG(S)-PON) in one card.
- ➢ Support full services and scenarios access, such as big video, 5G bearing, Access office re-architecture, etc.

ZTE

Hardware Features

Shelf configuration

- Total 6 slots (AC) / 7 slots (DC)
- 2 slots for service cards
- 2 slots for switch & control cards
- 1 slot for AC power card / 2 slots for DC power cards
- 1 slot for fan module

System capability

- Switching capacity of backplane bus: 1.8 Tbit/s
- Switching and control card: 240 Gbit/s
- System switching capacity: 480 Gbit/s

Uplink interface card

- 4 * 10GE/GE uplink per card (on switching and control card

Subscriber card density

- GPON card: 16 ports per card
- XGS-PON card: 16 ports per card
- XG-PON card: 16 ports per card
- XG-PON & GPON Combo PON card: 16 Combo PON ports per card
- XGS-PON & GPON Combo PON card: 16 Combo PON ports per card
- Any-PON card: 16 Any-PON ports per card
- 10G-EPON card: 16 ports per card
- P2P card:16 ports 10GE SFP+/GE SFP, or 24 CSFP P2P GE/FE (supports 48-port)

Management & Maintenance

- 1 out-of-band management interface
- 1 maintenance serial interface
- 1 Environmental detection serial interface
- 1 clock interface provided by SPUFS
- 1 line card debugging serial interface

PON Features

GPON

- Compliant to ITU G.984.x, G.988
- Support up to 1:128 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km maximum physical distance : 60 km

XG-PON

- Compliant to ITU G.987.x and G.988
- Support up to 1:256 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km maximum physical distance : 60 km

ZTE

XGS-PON

- Compliant to ITU G.9807 and G.988
- Support up to 1:256 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km maximum physical distance : 60 km

Combo PON

- Each port integrates GPON optical module, XG-PON/XGS-PON optical module and WDM1r
- Support up to 1:128 optical split ratio
- Support OLS (Optical Line Supervision)
- Support optical link protection
- Support downstream/upstream FEC
- Supports AES-128 encryption
- Maximum logical distance: 60 km
- Maximum differential distance: 40 km maximum physical distance : 60 km

L2/L3 Features

L2 Features

- Access control: MAC filtering, ACL
- L2-port: Physical Ethernet ports, logical Vports and aggregation ports, support L2 services and TPID configuration
- 128K mac address, 1:1 VLAN, N:1 VLAN and TLS VLAN, VLAN translation, VLAN stacking, flexible QinQ
- Permanent MAC, MAC address aging/learning/query/number limit
- Uplink protocol: STP/RSTP/MSTP, LACP

L3 Features

- Basic routing: unicast routing forwarding, static route, IP based load balance, ECMP
- Dynamic routing: RIPv1/v2, OSPFv2/v3, BGP4, IS-IS v2, graceful restart, MD5, etc.
- DHCPv4: DHCP relay/proxy, Option 82, Option 60
- ARP: ARP protocol, ARP Proxy
- IPV4 host route table: 64K
- IPV6 host route table: 64K

QoS Features

- Supports SP, WRR, and SP+DWRR queue scheduling on Ethernet ports, PON ports, and Vports
- DSCP labeling and relabeling
- Traffic statistics
- H-QoS

- Stream classification, rate limiting, shaping and priority setting
- Congestion Avoidance: tail drop, color-based RED, WRED
- Configuration of CIR/PIR/CBS/PBS/CM, TrTCM(Two Rate Three Color Marker)

ZTE

Security Features

- **System security**
  - L4 port disable
  - CPU protocol packet rate limit and scheduling

- **Service security**
  - MAC address anti-drifting
  - DHCP service security
  - Port isolation: Uplink port/User port
  - Broadcast packets separation based on VLAN

- **Network security**
  - Broadcast/multicast flooding rate limitation
  - Forwarding panel protocol packet rate limit
  - Downstream ARP filtering
  - DHCP anti-spoofing
  - Anti-DoS attack
  - ARP/IP anti-spoofing
  - IP Source Guard
  - ACL

OAM Features

- Management protocol and interface: CLI, Telnet/SSHv2, SNMP v1/v2/v3, IGMP/MLD proxy/snooping model, Alarm and performance model
- Performance statistic and diagnosis

- Remote firmware download and upgrade
- Environment detecting, control and alarm
- Ethernet OAM: 802.1ag/Y.1731
- System fault auto-recovery and performance detection

Multicast

- IGMP v1/v2/v3, IGMP snooping, IGMP proxy, SPR, and Router
- MLD v1/v2
- Multicast VLAN: 4K
- IGMP multicast group quantity: 4K

- ASM/SSM mode based on IGMPv3 and MLDv2
- Supports SCB multicast forwarding and L3 multicast forwarding
- Global or VLAN protocol enable or disable

Power Supply

- DC Working voltage: -48 V ($\pm$20%), or -60 V ($\pm$20%)
- AC Working voltage: 100V ~ 240V

Environment

- Operating temperature-40 ℃ ~ 65 ℃ for overall unit
- Starting up temperature ≥ -25℃
- Operating humidity: 5% ~ 95%, non-condensing
- Altitude: ≤ 4000 m
- Air pressure: 70 kPa~106 kPa

Dimensions

- Shelf: 88.1 mm x 482.6 mm x 283.5 mm (Height × Width × Depth)

Weight

- Empty chassis: 3.93 kg
- Full configuration: < 13 kg