

L2+ 24-Port 10/100/1000T + 4-Port 10G SFP+ Managed Switch with LCD touch screen



IPv6 Routing and 10G Ethernet Switch Solutions for SMBs

The Layer 2+ Managed Gigabit Switches with **LCD Touch Screen** support both IPv4 and IPv6 protocols and hardware Layer 3 static routing capability, and provide 24 10/100/1000Mbps Gigabit Ethernet ports and 4 10Gigabit SFP+ uplink slots. The Layer 2+ Managed Gigabit Switch series can handle extremely large amounts of data in a secure topology linking to a data center/service provider backbone or high capacity servers. They can work with a 10Gbps SFP+ server adapter to help SMBs build the 10Gbps Ethernet network providing 10Gbps NAS (Network Attached Storage) or heavy transmission of video streaming service at an affordable price.



Physical Port

- 24 10/100/1000BASE-T Gigabit RJ45 copper ports
- 4 10GBASE-SR/LR SFP+ slots, compatible with 1000BASE-SX/LX/BX SFP
- RJ45 console interface for switch basic management and setup

Layer 2 Features

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
 - Broadcast/Multicast/Unknown unicast
- Supports VLAN
 - IEEE 802.1Q tagged VLAN
 - Up to 255 VLANs groups, out of 4094 VLAN IDs
 - Supports provider bridging (VLAN Q-in-Q, IEEE 802.1ad)
 - Private VLAN Edge (PVE)
 - Protocol-based VLAN
 - MAC-based VLAN
 - Voice VLAN
- Supports Spanning Tree Protocol
 - IEEE 802.1D Spanning Tree Protocol
 - IEEE 802.1w Rapid Spanning Tree Protocol
 - IEEE 802.1s Multiple Spanning Tree Protocol, spanning tree by VLAN
 - BPDU Guard
- Supports Link Aggregation
 - 802.3ad Link Aggregation Control Protocol (LACP)
 - Cisco ether-channel (static trunk)
 - Maximum 14 trunk groups, up to 4 ports per trunk group
 - Up to 80Gbps bandwidth (full duplex mode)
- Provides port mirror (many-to-1)
- Port mirroring to monitor the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops
- Supports ERPS (Ethernet Ring Protection Switching)

Layer 3 Features

- IP interfaces (Max. 128 VLAN interfaces)
- Routing table (Max. 128 routing entries)
- Routing Protocols (IPv4/IPv6 software static routing)



Cybersecurity Network Solution to Minimize Security Risks

The new generation of Layer 2+ Managed Gigabit Switch series has the cybersecurity feature to protect the switch management and enhance the security for mission-critical network without extra deployment cost and effort. The Layer 2+ Managed Gigabit Switch expands its memory and upgrades the kernel of SSH and SSL protocols to provide strong protection against advanced threats. It includes a range of cybersecurity features such as DHCP Snooping, IP Source Guard, ARP Inspection Protection, 802.1x port-based and Mac-based network access control, RADIUS and TACACS+ user accounts management, SNMPv3 authentication, and so on to complement it as an all-security solution. The network administrator can now construct highly-secure corporate networks with considerably less time and effort than before.

Intuitive LCD Control

The Layer 2+ Managed Gigabit Switch series come with an intuitive touch panel on its front panel to greatly promote management efficiency in large-scale networks, such as enterprises, hotels, shopping malls, government buildings, and other public areas. It also features the following special management and status functions:

- IP address, VLAN and QoS configuration
- Port management and status, and SFP information
- Troubleshooting: Cable diagnostic and remote IP ping
- Maintenance: Reboot, factory default and save configuration



Redundant Ring, Fast Recovery for Critical Network Applications

The Layer 2+ Managed Gigabit Switch supports redundant ring technology and features strong, rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced **ITU-T G.8032 ERPS (Ethernet Ring Protection Switching) technology, Spanning Tree Protocol (802.1s MSTP)** and **dual power** input system into customer's industrial automation network to enhance system reliability and uptime in harsh factory environments. In a certain simple ring network, the recovery time of data link can be as fast as 20ms.

Quality of Service

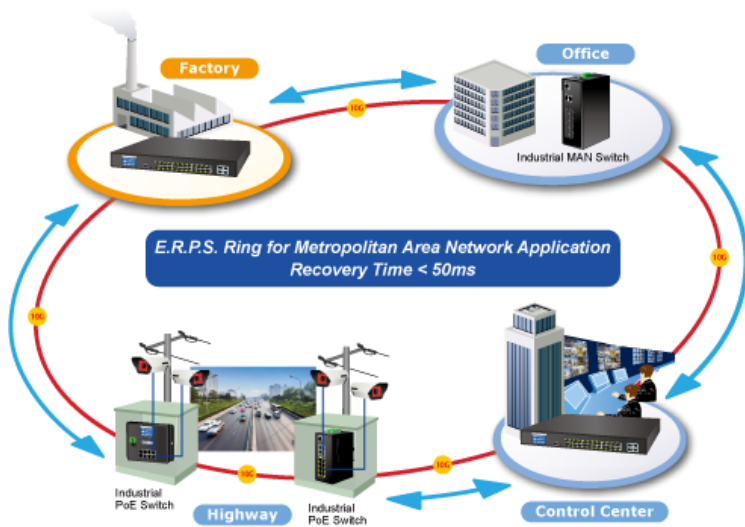
- Ingress Shaper and Egress Rate Limit per port bandwidth control
- 8 priority queues on all switch ports
- Traffic classification
 - IEEE 802.1p CoS
 - TOS/DSCP/IP precedence of IPv4/IPv6 packets
 - IP TCP/UDP port number
 - Typical network application
- Strict priority and Weighted Round Robin (WRR) CoS policies
- Supports QoS and In/Out bandwidth control on each port
- Traffic-policing on the switch port
- DSCP remarking

Multicast

- Supports IGMP snooping v1, v2 and v3
- Supports MLD snooping v1 and v2
- Querier mode support
- IGMP snooping port filtering
- MLD snooping port filtering
- Multicast VLAN Registration (MVR) support

Security

- Authentication
 - IEEE 802.1x port-based/MAC-based network access authentication
 - Built-in RADIUS client to cooperate with the RADIUS servers
 - TACACS+ login users access authentication
 - RADIUS/TACACS+ users access authentication
- Access Control List
 - IP-based Access Control List (ACL)
 - MAC-based Access Control List
- Source MAC/IP address binding
- DHCP Snooping to filter untrusted DHCP messages
- Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- IP Source Guard prevents IP spoofing attacks
- IP address access management to prevent unauthorized intruder



Cost-effective 10Gbps Uplink Capacity

10G Ethernet is a big leap in the evolution of Ethernet. The two 10G SFP+ slots of the Layer 2+ Managed Gigabit Switch series support **dual-speed 10GBASE-SR/LR** or **1000BASE-SX/LX**, meaning the administrator now can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission distance or the transmission speed required to extend the network efficiently. They greatly support SMB network to achieve the maximum performance of 10Gbps in a cost-effective way because the 10GbE interface usually could be available in Layer 3 Switch but Layer 3 Switch could be too expensive to SMBs.

Redundant AC/DC Power Supply to Ensure Continuous Operation

The Layer 2+ Managed Gigabit Switch is particularly equipped with one 100~240V AC power supply unit and one 36~60V DC power supply unit to provide an enhanced reliable and scalable redundant power supply. The continuous power system is specifically designed to fulfill the demands of high-tech facilities requiring the highest power integrity. With the 36~60V DC power supply, the Layer 2+ Managed Gigabit Switch is able to act as a telecom-level device that can be located in the electronic room.



Solution for IPv6 Networking

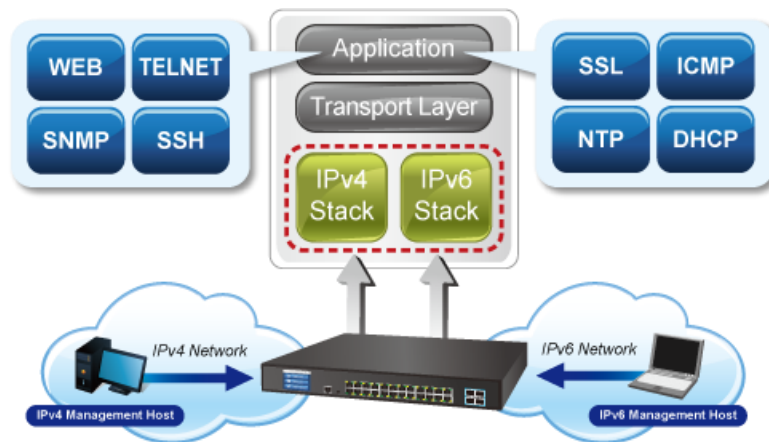
With the IPv6/IPv4 dual stack and other management functions with user-friendly interfaces, the Layer 2+ Managed Gigabit Switch series are the best choices for IP surveillance, VoIP and wireless service providers to deploy the IPv6 network. More importantly, they help SMBs upgrade their network infrastructures to the IPv6 era without any monetary investment.

Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
 - Console/Telnet Command Line Interface
 - Web switch management
 - SNMP v1, v2c, and v3 switch management
 - SSH/SSL secure access
 - 2.4-inch color LCD touch screen
- Four RMON groups (history, statistics, alarms, and events)
- IPv6 IP address/NTP/DNS management
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System Maintenance
 - Firmware upload/download via HTTP/TFTP
 - Reset button for system reboot or reset to factory default
 - Dual images
- DHCP Relay
- DHCP Option 82
- User Privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network Diagnostic
 - ICMPv6/ICMPv4 remote ping
 - Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
- SFP-DDM (Digital Diagnostic Monitor)
- SMTP/Syslog remote alarm
- SNMP trap for interface Link Up and Link Down notification
- System Log
- Reset button for system reboot or reset to factory default
- Smart Discovery Utility for deployment management

Redundant Power System

- Redundant 100~240V AC/36~60V DC dual power
- Active-active redundant power failure protection
- Backup of catastrophic power failure on one supply
- Fault tolerance and resilience

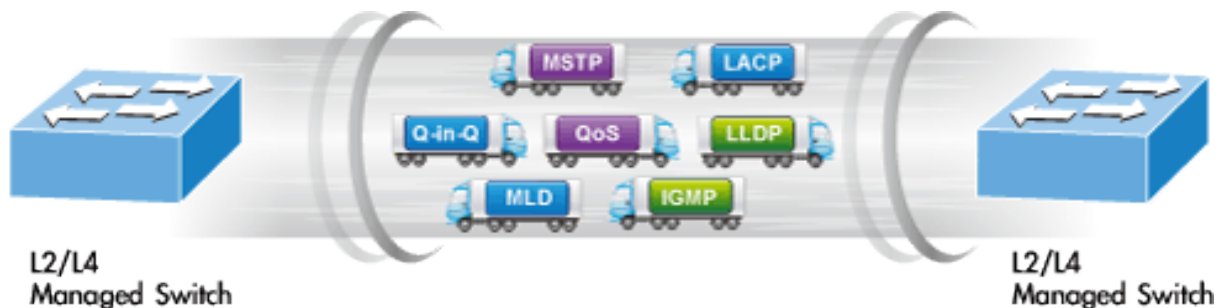


IPv4/IPv6 VLAN Routing for Secure and Flexible Management

To help customers stay on top of their businesses, the Layer 2+ Managed Gigabit Switch series not only provides ultra high transmission performance and excellent Layer 2 technologies, but also offers IPv4/IPv6 VLAN routing feature which allows to cross over different VLANs and different IP addresses for the purpose of having a highly-secure, flexible management and simpler networking application.

Robust Layer 2 Features

The Layer 2+ Managed Gigabit Switch series can be programmed for advanced switch management functions, such as dynamic port link aggregation, **Q-in-Q VLAN**, **Multiple Spanning Tree Protocol (MSTP)**, Layer 2/4 QoS, bandwidth control and **IGMP/MLD snooping**. The Layer 2+ Managed Gigabit Switch series allows the operation of a high-speed trunk combining multiple ports. It consists of a maximum of 9 trunk groups with 2 ports for each group, and supports connection fail-over as well.



Powerful Security

The Layer 2+ Managed Gigabit Switch series offers a comprehensive **Layer 2 to Layer 4 access control list (ACL)** for enforcing security to the edge. It can be used to restrict to network access by denying packets based on source and destination IP address, TCP/UDP port number or defined typical network applications. Its protection mechanism also comprises **802.1x Port-based** and **MAC-based** user and device authentication. With the **private VLAN** function, communication between edge ports can be prevented to ensure user privacy.

Enhanced Security and Traffic Control

The Layer 2+ Managed Gigabit Switch series also provides **DHCP Snooping**, **IP Source Guard** and **Dynamic ARP Inspection** functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrator can now construct highly-secure corporate networks with considerably less time and effort than before.

SMTP/SNMP Trap Event Alert

The Layer 2+ Managed Gigabit Switch series provide event alert function to help to diagnose the abnormal device owing to whether or not there is a break of the network connection, or the rebooting response.

User-friendly Secure Management

For efficient management, the Layer 2+ Managed Gigabit Switch managed switch series is equipped with console, web and SNMP management interfaces. With the built-in web-based management interface, the Layer 2+ Managed Gigabit Switch series offers an easy-to-use, platform independent management and configuration facility. The Layer 2+ Managed Gigabit Switch series supports SNMP and it can be managed via any management software based on the standard SNMP v1 or v2 Protocol. For reducing product learning time, the Layer 2+ Managed Gigabit Switch series offers **Cisco-like command** via Telnet or console port and customer doesn't need to learn new command from these switches. Moreover, the Layer 2+ Managed Gigabit Switch series offers the remotely secure management by supporting **SSH**, **SSL** and **SNMP v3** connection where the packet content can be encrypted at each session.



Intelligent SFP/SFP+ Diagnosis Mechanism

The series support **SFP-DDM (Digital Diagnostic Monitor)** function that greatly helps network administrator to easily monitor real-time parameters of the SFP and SFP+ transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

Digital Diagnostic Monitor (DDM)

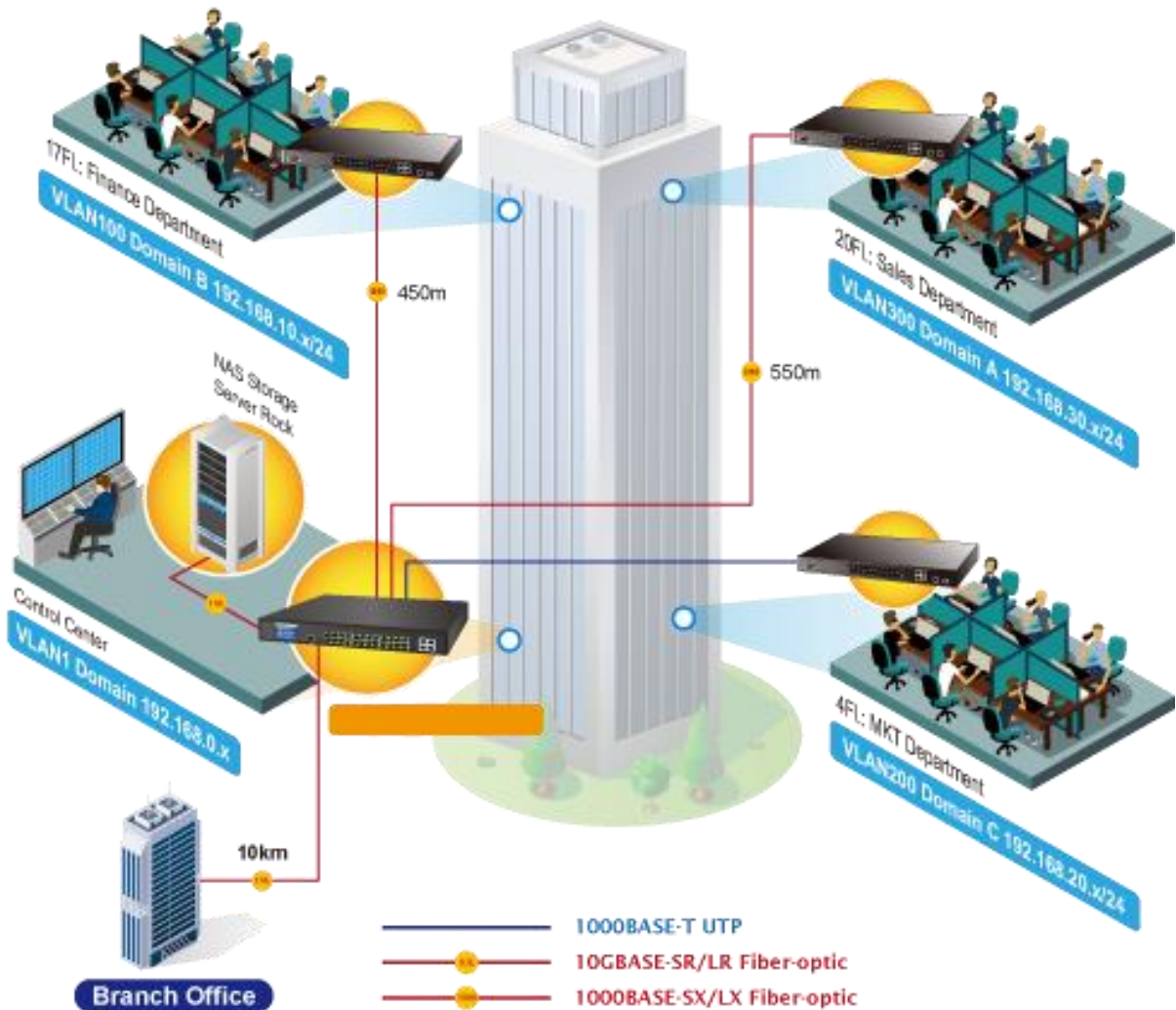


Applications

Layer 2+ VLAN Static Routing and 10G Uplink Application

With the built-in robust IPv4 / IPv6 Layer 3 traffic routing protocols, the Layer 2+ Managed Gigabit Switch series ensure reliable routing between VLANs and network segments. The routing protocols can be applied by VLAN interface with up to 128 routing entries. The Layer 2+ Managed Gigabit Switch series are certainly a cost-effective and ideal solution for enterprises.

VLAN Routing + 10G Uplink Applications



Specifications

| Hardware Specifications | | | | | | | |
|-------------------------------|--|---------------------------|-----------------------|----------------------------|--|---|-----------------|
| Copper Ports | 24 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports | | | | | | |
| SFP+ Slots | 4 10GBASE-SR/LR SFP+ interfaces (Port-25 to Port-28) Compatible with 1000BASE-SX/LX/BX SFP transceiver | | | | | | |
| Console | 1 x RS232-to-RJ45 serial port (115200, 8, N, 1) | | | | | | |
| Switch Architecture | Store-and-Forward | | | | | | |
| Switch Fabric | 128Gbps/non-blocking | | | | | | |
| Throughput | 95.23Mpps@64Bytes | | | | | | |
| Address Table | 16K entries, automatic source address learning and aging | | | | | | |
| Shared Data Buffer | 32M bits | | | | | | |
| Flow Control | IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex | | | | | | |
| Jumbo Frame | 10K bytes | | | | | | |
| Reset Button | < 5 sec: System reboot > 5 sec: Factory default | | | | | | |
| Dimensions (W x D x H) | 440 x 300 x 56 mm, 1.25U height | | | | | | |
| Weight | 3.7kg | | | | | | |
| LED | System: SYS (Green) AC/PWR (Green) DC (Green) (Redundant Power model Only) Ring (Green) Ethernet Interfaces (Port-1 to Port-24): 1000 LNK/ACT (Green), 10/100 LNK/ACT (Orange) 1/10G SFP+ Interfaces (Port-25 to Port-28): 1G (Green), 10G (Orange) | | | | | | |
| Power Consumption | <table border="1"> <thead> <tr> <th>Non Redundant Power model</th> <th>Redundant Power model</th> </tr> </thead> <tbody> <tr> <td>Max. 35.1 watts/119.77 BTU</td> <td>AC: Max. 35.3 watts/120.45 BTU DC: Max. 33.3 watts/113.62 BTU</td> </tr> </tbody> </table> | Non Redundant Power model | Redundant Power model | Max. 35.1 watts/119.77 BTU | AC: Max. 35.3 watts/120.45 BTU DC: Max. 33.3 watts/113.62 BTU | | |
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| AC 100~240V, 50/60Hz, 2A | AC 100~240V, 50/60Hz, 2A | | | | | | |
| - | DC 36~60V, 1.5A | | | | | | |
| ESD Protection | 6KV DC | | | | | | |
| Fan | 2 | | | | | | |
| Layer 2 Management Functions | | | | | | | |
| Port Configuration | Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable | | | | | | |
| Port Status | Display each port's speed duplex mode, link status, flow control status, auto-negotiation status, trunk status | | | | | | |
| Port Mirroring | TX/RX/Both Many-to-1 monitor | | | | | | |
| VLAN | 802.1Q tagged-based VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN registration) Up to 255 VLAN groups, out of 4095 VLAN IDs | | | | | | |
| Link Aggregation | IEEE 802.3ad LACP/static trunk 14 groups with 4 port per trunk | | | | | | |
| Spanning Tree Protocol | IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) | | | | | | |
| QoS | Traffic classification based, strict priority and WRR 8-level priority for switching: - Port number | | | | | | |

| | |
|-------------------------------------|--|
| | - 802.1p priority - 802.1Q VLAN tag - DSCP/ToS field in IP packet |
| IGMP Snooping | IGMP (v1/v2/v3) snooping, up to 255 multicast groups IGMP querier mode support |
| MLD Snooping | MLD (v1/v2) snooping, up to 255 multicast groups MLD querier mode support |
| Access Control List | IP-based ACL/MAC-based ACL Up to 256 entries |
| Bandwidth Control | Per port bandwidth control Ingress: 100Kbps~1000Mbps Egress: 100Kbps~1000Mbps |
| Layer 3 Functions | |
| IP Interfaces | Max. 128 VLAN interfaces |
| Routing Table | Max. 128 routing entries |
| Routing Protocols | IPv4 software static routing IPv6 software static routing |
| Management | |
| Basic Management Interfaces | Console; Telnet; Web browser; SNMP v1, v2c; 2.4-inch color LCD touch screen |
| Secure Management Interfaces | SSH, SSL, SNMP v3 |
| SNMP MIBs | RFC 1213 MIB-II RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2618 RADIUS Client MIB RFC 2665 Ether-Like MIB RFC 2737 Entity MIB RFC 2819 RMON MIB (Groups 1, 2, 3 and 9) RFC 2863 IF-MIB RFC 2863 Interface MIB RFC 2933 IGMP-STD-MIB RFC 3411 SNMP-Frameworks-MIB RFC 4292 IP Forward MIB RFC 4293 IP MIB RFC 4836 MAU-MIB IEEE 802.1X PAE LLDP |
| Standards Conformance | |
| Regulatory Compliance | FCC Part 15 Class A, CE |
| Standards Compliance | IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX/100BASE-FX IEEE 802.3z Gigabit SX/LX IEEE 802.3ab Gigabit 1000T IEEE 802.3ae 10Gb/s Ethernet IEEE 802.3x flow control and back pressure IEEE 802.3ad port trunk with LACP IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol IEEE 802.1p Class of Service IEEE 802.1Q VLAN tagging IEEE 802.1x Port Authentication Network Control IEEE 802.1ab LLDP ITU-T G.8032 Ethernet Ring Protection Switching RFC 768 UDP RFC 791 IP RFC 792 ICMP RFC 793 TFTP RFC 1112 IGMP v1 RFC 2068 HTTP RFC 2236 IGMP v2 RFC 2710 MLD v1 RFC 3376 IGMP v3 RFC 3810 MLD v2 |
| Environment | |
| Operating | Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing) |
| Storage | Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing) |