# 28-Port Gigabit Managed PoE Switch

## Product Highlights

- Complies with IEEE 802.1d, IEEE 802.1w, IEEE 802.1s, IEEE 802.1p, IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.3ab standards
- Supports DHCP Server, QoS, ACL control, supports SNMP V1/V2/V3, supports IGMP Snooping v1/v2;
- Support PoE watchdog, PoE port power supply and power configuration, PoE time management;
- Supports Spanning Tree Protocol STP/RSTP/MSTP, supports loop detection and self-healing
- Support remote loopback monitoring and control (802.3ah OAM)
- Support multiple VLAN partitions, including MAC VLAN, protocol VLAN;
- Supports IP address+MAC address+VLAN+port binding, supports DHCP Snooping, Supports IP source and DAI protection;
- Supports WEB, TELNET, CLI, SSH, SNMP, RMON management
- Compatible with IEEE802.3at (30W) and IEEE802.3af (15.4W)

## Hardware Features

| Description | Specification |
|---|---|
| Model | Electra-M224-1GB-370W |
| Interface | 24 *1G PoE ports<br>4*1G Combo ports<br>1 * Console port |
| Port Standard | IEEE802.3 (Ethernet)<br>IEEE802.3u (Fast Ethernet)<br>IEEE 802.3ab (Gigabit Ethernet)<br>IEEE 802.3z (Gigabit Ethernet Fiber Standard)<br>IEEE802.3x (Flow Control)<br>IEEE 802.3az (Efficient and Energy saving Ethernet)<br>IEEE 802.3ad (Link Aggregation)<br>IEEE 802.1AB LLDP/LLDP MED (Link Layer Discovery Protocol)<br>IEEE 802.1D Spanning Tree Protocol<br>IEEE 802.1w Rapid Spanning Tree Protocol<br>IEEE 802.1s Multiple Spanning Tree Protocol (Fast Spanning Tree)<br>IEEE 802.1Q (Virtual Local Area Network)<br>IEEE 802.1p (VLAN Tag)<br>IEEE 802.1X (User Authentication) |
| Bandwidth | 56Gbps |
| Packet Forwarding Rate | 41.66Mpps |
| Packet Buffer | 4.1Mbit |
| MAC Address Table | 8K |
| Jumbo Frame | 10Kbytes |
| VLAN | VLAN range 1-4094, maximum active VLAN is 256 |
| Transmission Method | Store and Forward |
| PoE Standard | IEEE802.3af (15.4W)<br>IEEE802.3at (30W) |
| PoE Port Output Voltage | DC 44-57V |
| PoE Ports | Port 1-24 PoE power output <30W |
| PoE Power Budget | 370W |
| Power Supply | AC 100-240V 50/60Hz<br>DC 52V 7.69A |
| Mainboard Power Consumption | 26.3W |

## Hardware Features

| Description | Specification |
|---|---|
| Structure Information | Product Dimensions :440*280*44mm<br>Packaging Dimensions : 500*365*85mm<br>Product Net Weight: 3.65KG<br>Product Gross Weight: 4.72KG |
| Packing Information | Carton Dimensions :520*445*385mm<br>Packing Quantity: 5PCS<br>Packing Weight: 24.6KG |
| Package Contents | Switch 1pcs, power cord 1pcs, manual 1pcs,certificate of qualification 1pcs |
| Fan Quantity | 0 |
| Installation | Desktop,Rack-mounting |
| Surge Protection | Port Surge: Common mode 6KV, differential mode 2KV<br>Electrostatic ESD: Air 4KV, Contact 2KV |
| Operating Temperature | 0~40°C |
| Storage Temperature | -40 °C to 70 °C |
| Operation Humidity | 10%~90%,non condensing |
| Storage Humidity | 5%~95%,non condensing |
| PWR | On: Powered on<br>Off: Powered off |
| 1-28 Green LED | On:10M/100M/1G Link normal<br>Off: Link blocked<br>Flashing: Data transmitting |
| SYS Green LED | Flashing: System startup in progress<br>On: The system is running normally |
| PoE Green LED | On: PoE powered on<br>Off: PoE powered off |
| RESET | Long press for 6 seconds to restore factory settings |

# Software Features

| Description | Specification |
|---|---|
| L2+ Function | |
| IPv4 | IPv4 VLAN Interface<br>IPv4 Static Routes<br>ARP |
| IPv6 | IPv6 VLAN Interface<br>IPv6 Static Routes<br>IPv6 ND |
| L2 Function | |
| Port | Port Switch configuration<br>Port Description configuration<br>Port Speed configuration<br>Port Duplex configuration<br>Port Flow Control configuration<br>Jumbo Frame,Up to 10K<br>EEE<br>Fiber Module(DDM) |
| Link Aggregation | Supports load balance policy; Base on MAC and IP-MAC |
| Storm Control | Boardcast suppression<br>Unknown Multicast<br>Unknown Unicast |
| Port Mirroring | One to one monitor<br>Many to one monitor<br>Ingress/Egress/Both<br>Up to 4 session groups |
| Port Security | MAC Address Constraints<br>Port Security MAC Address<br>Protect/Restrict/Shutdown |
| Port Isolation | Support |
| Port Rate-limit | Support |
| Loopback Detection | Support |

## Software Features

| Description | Specification |
|---|---|
| VLAN | Access/Trunk/Hybrid<br>VLAN Tunnel (Q-in-Q Tunnel)<br>VLAN range 1-4094, maximum active VLAN is 256<br>Voice VLAN<br>MAC VLAN<br>Surveillance VLAN<br>Protocol VLAN<br>GVRP |
| MAC Address | Dynamic MAC address<br>Static MAC address<br>Filtering MAC Address |
| Spanning Tree Protocol | STP/RSTP/MSTP<br>BPDU Filter<br>BPDU Guard<br>Edge Port |
| LLDP | LLDP<br>LLDP MED |
| Multicast | IGMP Snooping<br>IGMP V1/V2/V3<br>Router Port<br>Static IGMP group address<br>IGMP groups filtering<br>Querier<br>MLD Snooping<br>MVR |
| QoS | Traffic classification based, Strict priority and WRR<br>Port Priority<br>802.1P Priority<br>IP TOS Priority<br>IP DSCP Priority |

## Software Features

| Description | Specification |
|---|---|
| ERPS | Only SFP port |
| PoE | |
| PoE Configuration | PoE Temperature<br>PoE Type/Level/Power/Voltage/Current query<br>PoE Switch Configuration<br>PoE Watchdog Configuration<br>PoE power AF/AT adaptation |
| PoE Schedule | Support |
| PoE Port Timer Reboot | Support |
| Services | |
| DHCP | DHCP Server<br>IP Pool<br>Static Binding<br>Port Static Binding<br>DHCP Relay |
| Access Protocol | HTTP<br>HTTPS<br>Telnet<br>SSHv2<br>Manager ACL<br>Session Timeout<br>Password Retry Count<br>Silent Time |
| Security | |
| AAA | RADIUS<br>TACACS+<br>802.1X<br>Base on port/MAC/local/WEB |
| DHCP Snooping | Global/VLAN<br>Option 82<br>Circuit ID |

## Software Features

| Description | Specification |
|---|---|
| IP Source Guard | Support |
| Dynamic ARP Inspection | Support |
| DoS | Support |
| ACL | MAC ACL<br>IPv4 ACL<br>IPv6 ACL |
| Diagnostics | |
| Syslog | Logging Message<br>Remote Server |
| Ping | Support |
| Traceroute | Support |
| Copper Test | Support |
| UDLD | Support |
| Port Statistics | Support |
| Equipment Management | |
| Manager Access | Console<br>HTTP/HTTPS<br>Telnet<br>SSH<br>SNMP |
| Manager IP | Static Address<br>DHCP Client<br>Supports IPv4 and IPv6 address<br>Manager VLAN<br>DNS |
| Time Synchronization | SNTP<br>Manual Time |
| SNMP | V1/V2C/V3<br>Community<br>V3 User<br>Group<br>Trap Host |

## Software Features

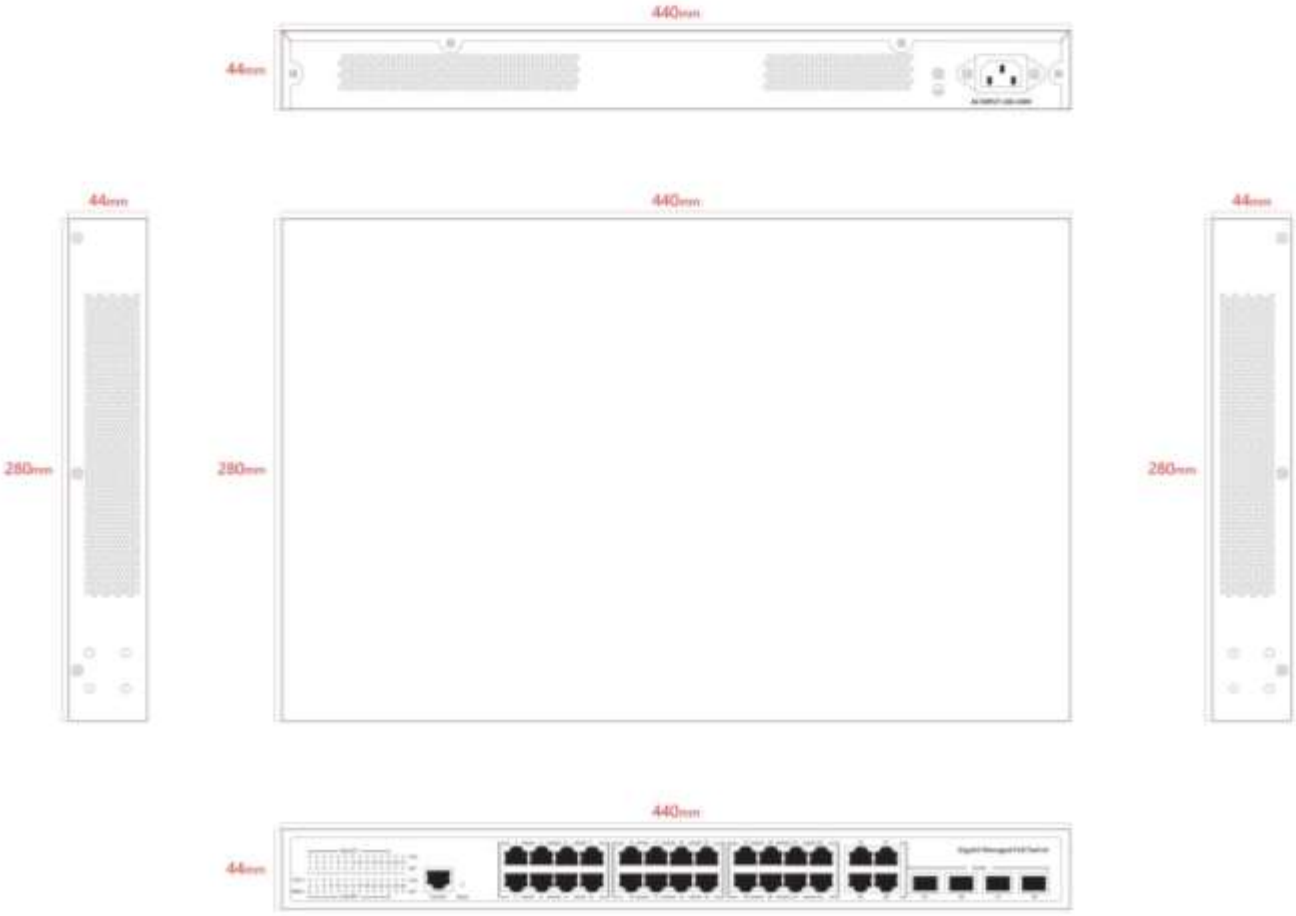
| Description | Specification |
|---|---|
| SNMP MIB | RFC 1213 MIB-II<br>RFC 1493 Bridge MIB<br>RFC 1643 Ethernet MIB<br>RFC 2819 RMON MIB (Groups 1, 2, 3 and 9)<br>RFC 2863 Interface MIB<br>LLDP<br>Private MIB |
| RMON | Statistics<br>History Configuration<br>Event Configuration<br>Alarm Configuration |
| User Management | Support |
| Firmware Management | Firmware upgrade |
| Configuration Management | Upload and download |
| Save | Support |
| Restart | Support |
| Factory Defaults | Support |

| Standard Compliance |
|---|
| 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 |
| IEEE 802.3af Power over Ethernet |
| IEEE 802.3at Power over Ethernet Plus |
| RFC 768 UDP |
| RFC 793 TFTP |
| RFC 791 IP |

## Software Features

| Description | Specification |
|---|---|
| RFC 792 ICMP | |
| RFC 2068 HTTP | |
| RFC 1112 IGMP v1 | |
| RFC 2236 IGMP v2 | |
| RFC 3376 IGMP v3 | |
| RFC 2710 MLD v1 | |
| FRC 3810 MLD v2 | |

## Product Structure Diagram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