

# Rugged Switch with High Resilience

## DS310

### Industrial 8+2G L2 Managed Ethernet Switch

DS310 is an industrial L2 managed Ethernet switch equipped with 8 Fast Ethernet ports and 2 RJ45/SFP Gigabit Ethernet combo ports for uplink connection; prioritized stream such as video and VoIP are also optimized.

For the best traffic control, management side features LACP, VLAN, QinQ, IGMP snooping, QoS, and ITU-T G.8032 v1/v2 ERPS redundancy.



-40~75°C



## Features & Benefits

### High Throughput Ethernet Switching

- 10-port Ethernet, including 8-port Fast Ethernet and 2-port **RJ45/SFP Combo**
- Combo ports provide high flexibility of cable types and distances
- DDM function for high quality fiber connectivity monitoring
- **8K** MAC address table
- Stores and Forwards with non-blocking Switch Fabric

### ITU-T G.8032 v1/v2 ERPS Ring Redundancy

- An ITU standard Ring redundancy Protocol
- Provides sub-50ms protection and recovery switching for Ethernet traffic
- Interoperates with 3rd party industrial switch and still remains fast recovery time
- Interoperates with commercial switch instead of STP/RSTP
- Efficient network interconnection and topology with ERPS Chain, multiple chains

### IEC62443-4-2 Level 3 / 4 Cyber Security

- 802.1Q VLAN, Private VLAN
- Multi-Level\* user passwords
- HTTPS/SSH/SFTP\*, 256-bit encryption
- 802.1X MAB for non-802.1X compliant end devices
- RADIUS/TACACS+\* centralized password authentication

### Industrial IoT LAN & Cloud Management

- Various configuration paths, including CGI WebGUI, CLI, SNMP and RMON
- Support WoMaster Software Utilities: NetMaster Network Management System, ViewMaster for Configuration Management, ThingMaster\*, ThingMaster OTA\* for Remote Management on Cloud\*
- Support MQTT\* protocol, ready to use AWS/Azure, Private Cloud Agent\* for cloud management
- LLDP for topology control, auto-topology drawing
- USB for easy field configuration and firmware update

### Rugged Design for IP Surveillance

- Robust design protects from mechanical deformation
- Ribbed side panels for effective heat dissipation
- Wide operating temperature range **-40~75°C**
- IEC 61000-6-2/4 Heavy Industrial Environment
- EN50121-4 railway trackside EMC



## Interfaces

### Integrated Power Connector

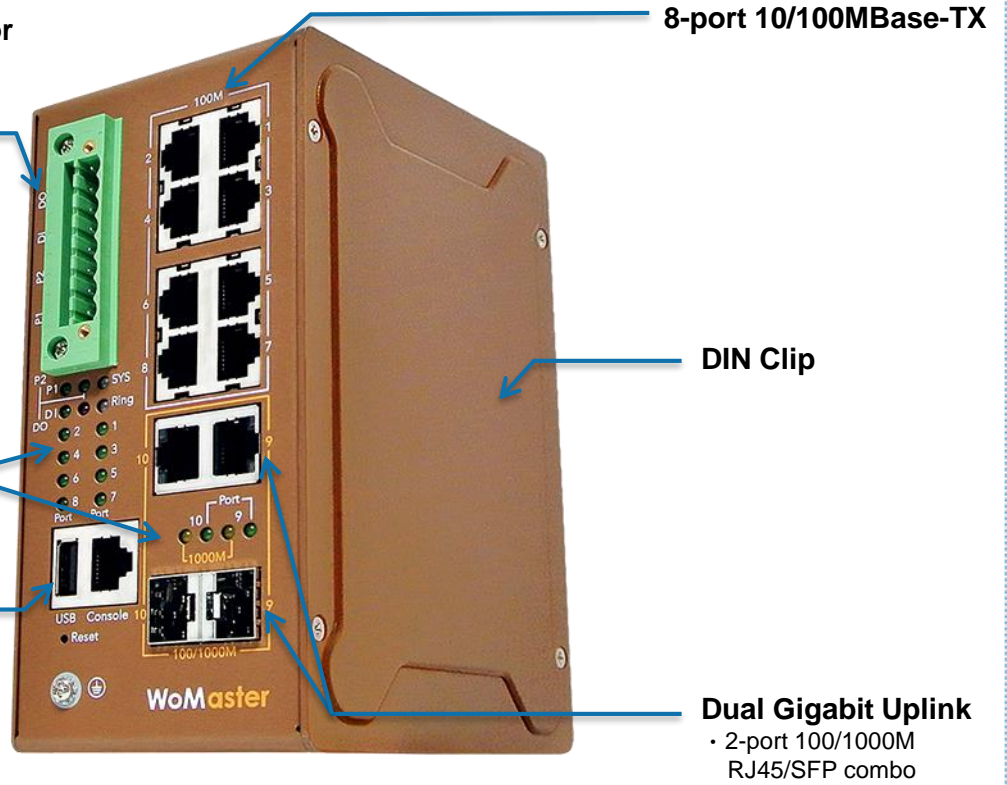
- 1 x 8-pin terminal block
- 4 pin for redundant power input
- 2 pin DI
- 2 pin DO
- Easy installation

### System LED

- 2 x Power
- 1 x System Status
- 1 x DO
- 1 x DI
- 1 x Ring Status
- 8 x Ethernet Port
- 2 x SFP Port
- 2 x SFP 1000M

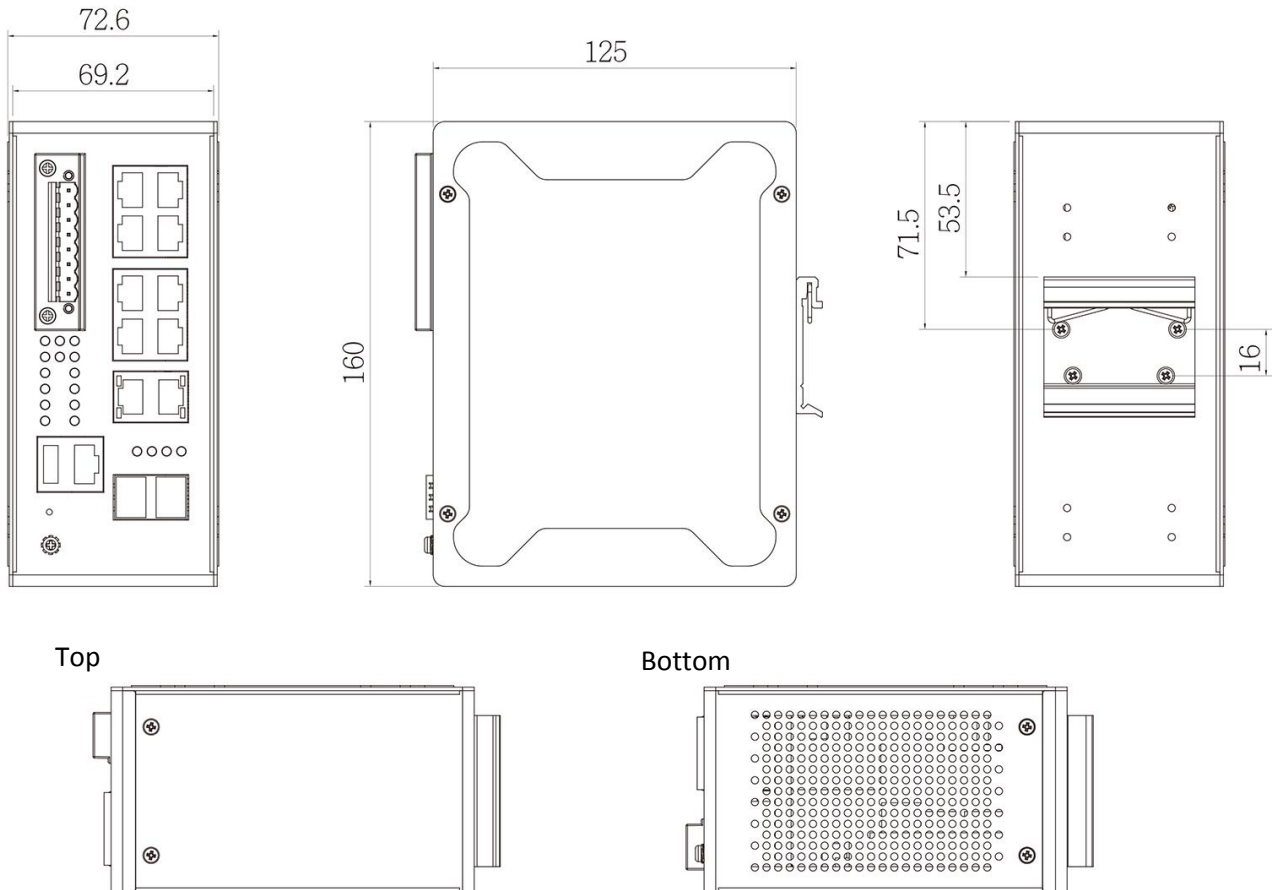
### Easy System Management

- USB for Configuration/Firmware update
- RS232 console



## Dimensions

(mm)



| Technology  |   |
|---|---|
| <b>Standard</b>   | IEEE 802.3 10Base-T Ethernet  |
|   | IEEE 802.3u 100Base-TX Fast Ethernet  |
|   | IEEE 802.3u 100Base-FX Fast Ethernet Fiber  |
|   | IEEE 802.3ab 1000Base-T Gigabit Ethernet copper   |
|   | IEEE 802.3z Gigabit Ethernet Fiber  |
|   | IEEE 802.3x Flow Control and back-pressure  |
|   | IEEE 802.1p Class of Service (CoS)  |
|   | IEEE 802.1Q VLAN and GVRP   |
|   | IEEE 802.1AB Link Layer Discovery Protocol (LLDP)   |
|   | IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)  |
|   | IEEE 802.1Q-2005 Multiple Spanning Tree Protocol (MSTP)   |
|   | IEEE 802.3ad Link Aggregation Control Protocol (LACP)   |
|   | IEEE 802.1x Port based Network Access Protocol  |
|   | IEEE 1588 Precision Time Protocol v2  |
| ITU-T G.8032 version 2 Ethernet ring protection switching(ERPSv2) |   |
| Performance & Scalability   |   |
| <b>Switch Technology</b>  | Store and Forward Technology with 5.6Gbps Non-Blocking Switch Fabric<br>Internal Packet Buffer: 1Mb<br>Forwarding rate: 10Base-T: 14,880pps, 100Base-TX/FX: 148,800pps,<br>1000Base-TX/FX: 1,488,100pps   |
| <b>Number of MAC Address</b>                                      | 8K  |
| <b>VLAN</b>   | 256 VLANs, VLAN ID 1~4094   |
| <b>IGMP Groups</b>  | 256   |
| <b>Traffic Prioritize</b>   | 4 Priority Queues per Port  |
| Interface   |   |
| <b>Ethernet Port</b>  | 8 x 10/100BaseTX RJ45, Auto Negotiation<br>2 x 100/1000M RJ45/SFP Combo, Auto Negotiation, SFP DDM  |
| <b>System LED</b>   | 2 x Power: Green<br>1 x System Status: Ready: Green On, Firmware Updating: Green Blinking<br>1 x DO: Red On<br>1 x DI : Green On<br>1 x Ring: Off: Ring disabled, Green On: Ring normal (Not RPL Owner),<br>Green Blinking: Ring normal (RPL Owner), Amber On: Ring abnormal,<br>Amber Blinking: Ring port fail |
| <b>Ethernet Port LED</b>  | Port: Link (Green On), Activity (Green Blinking)<br>1000M: Speed 1000M (Amber On) Speed 100M (Off)  |
| <b>Giga SFP LED</b>   | Port: Link (Green On), Activity (Green Blinking)<br>1000M: Speed 1000M (Amber On), Speed 100M (Off)   |
| <b>Reset</b>  | System Reboot(2-6 Seconds)/Default Settings Reset(over 7 Seconds)   |
| <b>Console</b>  | 1 x RJ45 based RS232 for System Configuration. Baud Rate: 115200.n.8.1  |
| <b>USB</b>  | 1 x USB for Configuration/Firmware Update   |
| <b>Watchdog</b>   | Hardware-based 10 seconds timer   |

|   |   |
|---|---|
| <b>Power Input, Digital Input, Digital Output</b> | 8-Pin Removable Terminal Block Connector<br>4 Pins for Redundant Power<br>4 Pins for DI, DO (Relay Alarm)<br>Digital Output: Dry Relay Output with 0.5A /24V DC<br>Digital Input with Photo-Coupler Isolation<br>Digital High: DC 11V~30V<br>Digital Low: DC 0V~10V |
| <b>Power Requirement</b>                          |   |
| <b>Input Voltage</b>                              | 24/48VDC(18~60VDC)  |
| <b>Reverse Polarity Protect</b>                   | Yes   |
| <b>Input Current</b>                              | 0.15A@48V   |
| <b>Power Consumption</b>                          | Max 7.2W@48VDC full traffic, suggest to reserve 15% tolerance   |
| <b>Software</b>                                   |   |
| <b>Management</b>                                 | CGI WebGUI, Command Line Interface (CLI), IPv4/IPv6(RFC2460), Telnet, SNMP v1/v2c/v3, SNMP Trap/Informs*, RMON, LLDP, DHCP server/client/Option 82, TFTP, System Log, SMTP  |
| <b>Traffic Management</b>                         | Flow Control, Rate Control, Port Mirror, CoS, QoS, RFC 2474 DiffServ  |
| <b>Filter</b>                                     | IGMP Snooping v1/v2/v3, IGMP Snooping Fast-Leave/Immediate-Leave, IGMP Query, GMRP, IEEE802.1Q VLAN, QinQ, GVRP, Private VLAN   |
| <b>Security</b>                                   | IEEE 802.1X/RADIUS, Port MAC Secure Learning, TLS v1.2, HTTPs/SSH   |
| <b>Advanced Security</b>                          | TACACS+*, Multi-user authentication*, IEEE802.1x MAB, SFTP*   |
| <b>Redundancy</b>                                 | ERPSv2, STP/RSTP/MSTP, Loop Protection, Port Trunk/802.3ad LACP   |
| <b>Time Management</b>                            | NTP, IEEE 1588 Precision Time Protocol v2   |
| <b>IIoT Industrial Protocol</b>                   | Modbus TCP, EtherNet/IP*, MQTT*, RESTful API*   |
| <b>Private Cloud</b>                              | ThingsMaster*, ThingMaster OTA*   |
| <b>Public Cloud</b>                               | AWS Agent*, Azure Agent*  |
| <b>Utility</b>                                    | ViewMaster, NetMaster   |
| <b>MIB</b>  | ERPS MIB, MIB-II, Ethernet-like MIB*, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RMON MIB Group 1, 2, 3, 9*, WoMaster Private MIB  |
| <b>Mechanical</b>                                 |   |
| <b>Installation</b>                               | DIN Rail  |
| <b>Enclosure Material</b>                         | Steel Metal with Aluminum   |
| <b>Dimension</b>                                  | 82.2 x 160 x 125 mm (W x H x D) / without DIN Rail Clip   |
| <b>Ingress Protection</b>                         | IP31  |
| <b>Weight</b>                                     | 1.4KG (device) / 1.8KG (full package)   |
| <b>Package</b>                                    | 240(W)x200(L)x130(H)mm (package)<br>16pcs / carton 410(W)x 550(L)x490(H)mm (1.5KG)  |
| <b>Environmental</b>                              |   |
| <b>Operating Temperature &amp; Humidity</b>       | -40°C~75°C , 0%~95% Non- Condensing   |
| <b>Storage Temperature</b>                        | -40°C~85°C  |
| <b>Hi-Pot Insulation</b>                          | AC1.5KV   |
| <b>MTBF</b>                                       | >200,000 hours  |
| <b>Warranty</b>                                   | 5 years   |

| Standard       |   |
|----------------|---|
| <b>Safety</b>  | EN60950-1 Compliant   |
| <b>EMC</b>     | EN61000-6-2/EN61000-6-4   |
| <b>EMI</b>     | CISPR 22, FCC part 15B Class A  |
| <b>EMS</b>     | EN61000-4-2 ESD: 8KV(Air), 6KV(Contact)<br>EN61000-4-3 RS: 20V/m(80M~1GHz), 10V/m(1.4G~2.1GHz), 5V/m(2.1G~2.5GHz)<br>EN61000-4-4 EFT: 2KV (Power, Signal Port, GND)<br>EN61000-4-5 Surge: Power: 2KV/1KV(Line to Ground/Line to Line), Signal Port: 2KV(Line to Ground)<br>EN61000-4-6 CS: 10Vrms(Power, Signal Port)<br>EN61000-4-8 Magnetic Field: 30A/m continues /300A for 1~3s |
| <b>Railway</b> | EN50121-4   |



## Ordering Information

| Model Name   | Description                                |
|--------------|--|
| <b>DS310</b> | Industrial 8+2G L2 Managed Ethernet Switch |
|              | <b>Package List</b>                        |
|              | 1 x Product Unit (Without SFP transceiver) |
|              | 1 x 8-pin Removable Terminal Connector     |
|              | 1 x Attached Din Clip                      |
|              | 1 x Quick Installation Guide               |



## Optional Accessory

| Item            |  |
|-----------------|--|
| MK-D1-2         | Wall-mounting kit with 2 plates and 8 screws                           |
| CBL-RJ45F9-1.5M | Serial RS232 console cable RJ45 to DB9 Female 1.5Meter                 |
| PSD60-48        | 60W/48VDC DIN-rail power supply  |
| SFPGEM05        | SFP, 1000Mbps, LC, multi, 550M, 0~70°C                                 |
| SFPGEM05T       | SFP, 1000Mbps, LC, multi, 550M, -40~85°C                               |
| SFPGEM05D       | SFP, 1000Mbps, LC, multi, DDM, 550M, 0~70°C                            |
| SFPGEM05DT      | SFP, 1000Mbps, LC, multi, DDM, 550M, -40~85°C                          |
| SFPGEM2         | SFP, 1000Mbps, LC, multi, 2KM, 0~70°C                                  |
| SFPGEM2T        | SFP, 1000Mbps, LC, multi, 2KM, -40~85°C                                |
| SFPGEM2D        | SFP, 1000Mbps, LC, multi, DDM, 2KM, 0~70°C                             |
| SFPGEM2DT       | SFP, 1000Mbps, LC, multi, DDM, 2KM, -40~85°C                           |
| SFPGES10        | SFP, 1000Mbps, LC, single, 10KM, 0~70°C                                |
| SFPGES10T       | SFP, 1000Mbps, LC, single, 10KM, -40~85°C                              |
| SFPGES10D       | SFP, 1000Mbps, LC, single, DDM, 10KM, 0~70°C                           |
| SFPGES30        | SFP, 1000Mbps, LC, single, 30KM, 0~70°C                                |
| SFPGES30T       | SFP, 1000Mbps, LC, single, 30KM, -40~85°C                              |
| SFPGES30D       | SFP, 1000Mbps, LC, single, DDM, 30KM, 0~70°C                           |
| SFPXGM03D       | SFP+, 10Gbps, LC, multi, DDM, 300M, 0~70°C                             |
| SFPXGS10D       | SFP+, 10Gbps, LC, single, DDM, 10KM, 0~70°C                            |
| SFPGES10-A      | SFP, 1000Mbps, LC, single, 10KM, BiDi TX-1310nm RX-1550nm, 0~70°C      |
| SFPGES10-B      | SFP, 1000Mbps, LC, single, 10KM, BiDi TX-1550nm RX-1310nm, 0~70°C      |
| SFPGES10T-A     | SFP, 1000Mbps, LC, single, 10KM, BiDi TX-1310nm RX-1550nm, -40~85°C    |
| SFPGES10T-B     | SFP, 1000Mbps, LC, single, 10KM, BiDi TX-1550nm RX-1310nm, -40~85°C    |
| SFPGES10D-A     | SFP, 1000Mbps, LC, single, DDM, 10KM, BiDi TX-1310nm RX-1550nm, 0~70°C |
| SFPGES10D-B     | SFP, 1000Mbps, LC, single, DDM, 10KM, BiDi TX-1550nm RX-1310nm, 0~70°C |