

# L2+ 16-Port 100/1000BASE-X SFP + 8-Port 10/100/1000BASE-T Managed Metro Ethernet Switch



### Multiple SFP Fiber Port Switch for Long-Reach Network

PLANET MGSW-24160F is ideal for all long-reach network customers, such as enterprises, telecoms, campuses and service providers as it comes with advanced management functions, and 16 100/1000Mbps dual speed SFP Fiber ports and 8 10/100/1000Mbps TP ports with a rugged case. It is capable of providing non-blocking switch fabric and wire-speed throughput of as high as 48Gbps without any packet loss and CRC error. Thus, it is certainly a must for those who want to further upgrade their existing network infrastructures to a level where bandwidth demands can be met. Furthermore, it adopts user-friendly "Front Access" design for easy wiring and maintenance of the MGSW-24160F when placed in the cabinet.

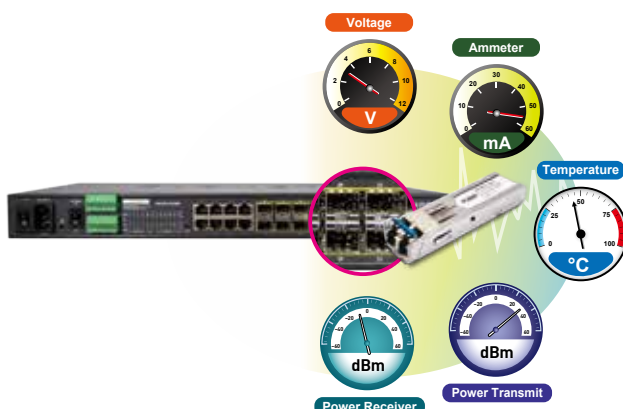
### Flexibility and Extension Solution

The 16 mini-GBIC slots built in the MGSW-24160F support dual speed as it features 100BASE-FX and 1000BASE-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules. The administrator can flexibly choose the suitable SFP transceiver when considering transmission distance and speed. The distance can be extended from 550 meters to 2km for multi-mode fiber, and up to 10/20/30/40/50/70/120 kilometers for single-mode fiber or WDM fiber. The MGSW-24160F is well suited for applications within the enterprise data centers and distributions.

### Intelligent SFP Diagnosis Mechanism

The MGSW-24160F supports SFP-DDM (Digital Diagnostic Monitor) function that greatly helps network administrator to easily monitor real-time parameters of the SFP, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

### Digital Diagnostic Monitor (DDM)



### Physical Port

- 16 100/1000BASE-X mini-GBIC/SFP slots
- 8 10/100/1000BASE-T RJ45 copper ports
- RJ45 to RS232 DB9 console interface for basic management and setup

### Hardware Conformance

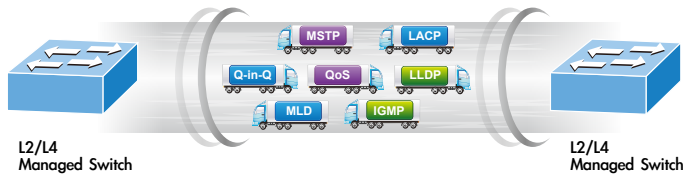
- 36 to 60V DC, redundant power with polarity reverse protect function
- 0 to 60 degrees C operating temperature
- 19-inch rack-mountable
- Relay alarm for port breakdown, power failure
- Two built-in thermal fans

### 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 / Unicast / Unknown unicast
- Supports VLAN
  - IEEE 802.1Q tagged VLAN
  - Up to 255 VLANs groups, out of 4095 VLAN IDs
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN
  - MAC-based VLAN
  - IP subnet-based VLAN
  - Voice VLAN
- Supports Spanning Tree Protocol
  - STP, IEEE 802.1D Spanning Tree Protocol
  - RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
  - MSTP, IEEE 802.1s Multiple Spanning Tree Protocol, spanning tree by VLAN
  - BPDU Guard
- Supports Link Aggregation
  - 802.3ad Link Aggregation Control Protocol (LACP)

### Robust Layer 2 Features

The MGSW-24160F can be programmed for advanced switch management functions such as dynamic port link aggregation, Q-in-Q VLAN, private VLAN, Multiple Spanning Tree Protocol (MSTP), Layer 2 to Layer 4 QoS, bandwidth control and IGMP/MLD Snooping. Via the link aggregation of supporting ports, the MGSW-24160F allows the operation of a high-speed trunk to combine with multiple fiber ports and supports fail-over as well.



### Powerful Security

The MGSW-24160F offers a comprehensive layer 2 to layer 4 Access Control List (ACL) for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP ports 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. The MGSW-24160F also provides DHCP Snooping, IP Source Guard and Dynamic ARP Inspection functions to prevent IP spoofing from attack and discard ARP packets with invalid MAC address. The network administrators can now construct highly-secured corporate networks with considerably less time and effort than before.

### Excellent Traffic Control

The MGSW-24160F is loaded with powerful traffic management and QoS features to enhance connection services by telecoms and ISPs. The QoS features include wire-speed Layer 4 traffic classifiers and bandwidth limit that are particular useful for multi-tenant unit, multi-business unit, Telco, or network service provider's applications. It also empowers the enterprises to take full advantage of the limited network resources and guarantees the best performance in VoIP and video conferencing transmission.

### Efficient and Secure Management

With built-in Web-based management interface, the MGSW-24160F L2+ Managed Switch offers an easy-to-use, platform-independent management and configuration facility which includes Console, Web and SNMP management interfaces. The SNMP can be managed via any management software based on the standard of SNMP protocol. For reducing product learning time, it offers Cisco-like command via Telnet or console port and customer does not need to learn new console command. Moreover, it also offers secure remote management by supporting SSH, SSL and SNMP v3 connections which encrypt the packet content at each session.

- 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

### 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
- IPv6 address / NTP 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 and option 82
- User privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network diagnostic
  - SFP-DDM (Digital Diagnostic Monitor)
  - Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
  - ICMPv6 / ICMPv4 remote ping
- SMTP / Syslog remote alarm
- Four RMON groups (history, statistics, alarms and events)
- SNMP trap for interface link up and link down notification
- System Log
- PLANET Smart Discovery Utility for deploy management

### Redundant Power System

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

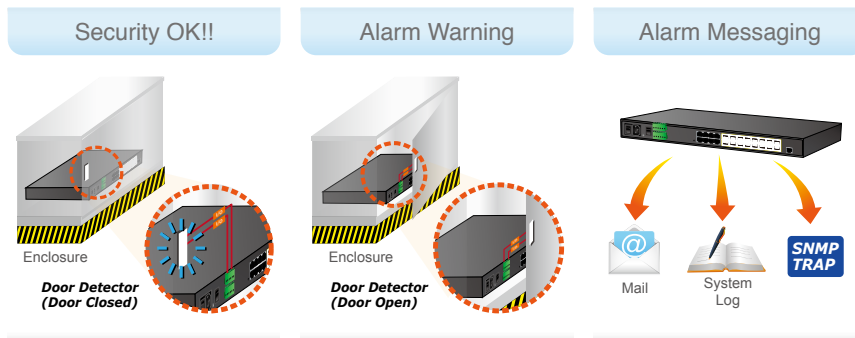
### Digital Input / Digital Output

- 2 Digital Input (DI)
- 2 Digital Output (DO)
- Integrates sensors into auto alarm system
- Transfers alarm to IP network via email and SNMP trap

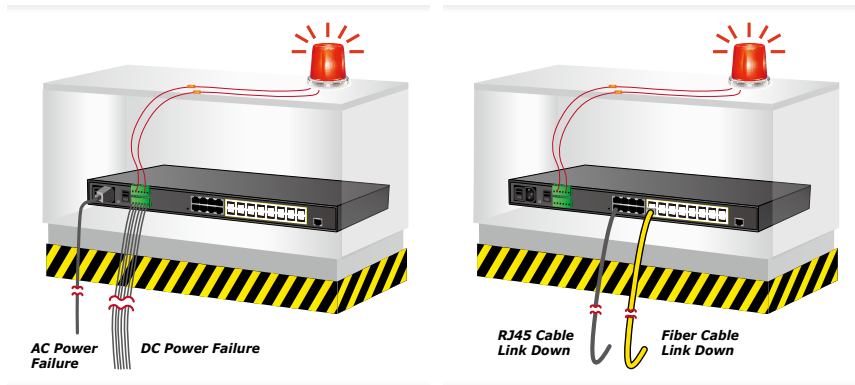
*Enhanced Protection via Digital Input and Digital Output*

The MGSW-24160F features digital input and digital output functions that greatly help the administrator efficiently react to the emergency events. The digital input can be set up to indicate urgent events and send the messages or alarm to the network system once an unusual event is detected by an external device such as door or window open detector. The digital output function can define the immediate response such as port failure or power failure to the related urgent events.

**Digital Input**



**Digital Output**



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	
<b>Layer 3 Functions</b>		
IP Interfaces	Max. 128 VLAN interfaces	
Routing Table	Max. 32 routing entries	
Routing Protocols	IPv4 hardware static routing IPv6 hardware static routing	
<b>Management</b>		
Basic Management Interfaces	Console / Telnet / Web browser / SNMP v1, v2c	
Secure Management Interfaces	SSH, SSL, SNMPv3	
SNMP MIBs	RFC 1213 MIB-II RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2819 RMON MIB (Group 1, 2, 3 and 9) RFC 2737 Entity MIB	RFC 2618 RADIUS Client MIB RFC 2863 IF-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
<b>Standards Conformance</b>		
Regulation 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 802.3x 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 RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP version 1 RFC 2236 IGMP version 2 RFC 3376 IGMP version 3 RFC 2710 MLD version 1 RFC 3810 MLD version 2
<b>Environment</b>		
Operating	Temperature: 0 ~ 60 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	

## Ordering Information

MGSW-24160F	L2+ 16-Port 100/1000BASE-X SFP + 8-Port 10/100/1000BASE-T Managed Metro Ethernet Switch
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## Related Products Information

MGSD-10080F	8-Port 100/1000X SFP + 2-Port 10/100/1000T Managed Metro Ethernet Switch
MGSW-28240F	24-Port 100/1000BASE-X SFP + 4-Port 10G SFP+ L2/L4 Managed Metro Ethernet Switch
GS-5220-16S8C / GS-5220-16S8CR	L2+ 24-Port 100/1000X SFP + 8-Port Shared TP Managed Switch
GS-5220-44S4C	L2+ 44-Port 100/1000BASE-X SFP + 4-Port Gigabit TP/SFP Managed Switch with Hardware Layer3 IPv4/IPv6 Static Routing
GS-5220-46S2C4X	L2+ 46-Port 100/1000BASE-X SFP + 2-Port Gigabit TP/SFP + 4-Port 10G SFP+ Managed Switch with Hardware Layer3 IPv4/IPv6 Static Routing