

# Product Specification

16-Port 100/1000Base-X SFP + 8-Port 10/100/1000Base-T L2/L4  
Managed Metro Ethernet Switch

## MGSW-24160F

Version 1.0

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### Change History:

Revision:	Date:	Author:	Change List
1.0	2012/3/29	Norman Tsai	Initial release

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## 1. PRODUCT DESCRIPTION

### Multiple SFP Fiber Port Switch for Growing Long-Reach Networking of Enterprise, Telecoms and Campus

The MGSW-24160F is equipped with advanced management functions and provides **16 100/1000Mbps dual speed** SFP Fiber ports, and **8 10/100/1000Mbps TP** ports delivered in a rugged strong case. It is capable of providing non-blocking switch fabric and wire-speed throughput as high as **48 Gbps** in the temperature range from **-10 to 60 Degree C** without any packet loss and CRC error, which greatly simplifies the tasks of upgrading the enterprise LAN for catering to increasing bandwidth demands. The MGSW-24160F is specially designed for service provider to deliver profitable Ethernet network.

### Optimized Design for Metropolitan Area Network

By means of improving the technology of Optical Fiber Ethernet with high-flexible, high-extendable and easy-installation features, the data exchange speed of Optical Fiber is up to 1Gbps, and the distance of Gigabit Optical Fiber is up to 120km. Service provides, such as ISP and Telecom, install Metropolitan Area Network (MAN) based on Fiber technology to the WAN Internet Service. MGSW-24160F adopts "Front Access" design for technician wiring and maintain MGSW-24160F very easily in cabinet.

### AC and DC Redundant Power to ensure continuous operation

PLANET MGSW-24160F is equipped with one 100~240V AC power supply unit and one additional **DC 36 ~ 72V** power supply unit for redundant power supply installation. A redundant power system is also provided to enhance the reliability with either 100~240V AC power supply unit or DC 36 ~ 72V power supply unit. Redundant Power Systems are specifically designed to handle the demands of high tech facilities requiring the highest power integrity. Furthermore, with the 36~ 72V DC power supply implemented, the MGSW-24160F can be applied as the telecom level device that could be located at the electronic room.

### Digital Input and Digital Output for external Alarm

PLANET MGSW-24160F supports Digital Input, and Digital Output on the front panel, this external alarm offers technician use Digital Input to detect, and log external device status (, such as door intrusion detector ) then alarm. As Digital Output could be used to alarm if MGSW-24160F port link down, link up or power failure.

### Cost-effective IPv6 Managed Gigabit Switch solution for industrial

Nowadays, lots of electronic products or mobile devices can browse the Internet, which means the need of IP Address increases. However, the current IPv4 network infrastructure is not capable enough to provide IP Address to each single users/Clients. The situation forces the ISP to build up the **IPv6 (Internet Protocol version 6)** network infrastructure speedily. To fulfill the demand, PLANET releases the **IPv6 management Gigabit Ethernet Switch**. It supports both IPv4 and IPv6 management functions. It can work with original network structure (IPv4) and also support the new network structure (IPv6) in the future. With easy and friendly management interfaces and plenty of management functions included, the MGSW-24160F Managed Switch is the best choice for you to build the IPv6 FTTx edge service and for Industrial to connect with IPv6 network.

### Layer 2 / Layer 4 Full-functioned Managed Switch for Building Automation Networking

The MGSW-24160F Industrial Managed Ethernet Switch is ideal for applications in the factory data centers and distributions. It provides advanced Layer 2 to Layer 4 data switching and redundancy, Quality of Service traffic control, network access control and authentication, and Secure Management features to protect customer's industrial network connectivity with reliable switching recovery capability that is suitable for implementing fault tolerant and mesh network architectures.

### **Powerful Security**

The Managed Switch offers comprehensive Access Control List (ACL) for enforcing security to the edge. Its protection mechanisms also comprise of port-based 802.1x and MAC-based user and device authentication. The port-security is effective in limit the numbers of clients pass through, so that network administrators can now construct highly secured corporate networks with time and effort considerably less than before.

## 2. PRODUCT FEATURES

### ➤ **Physical Port**

#### **MGSW-24160F**

- **16 100/1000Base-X SFP mini-GBIC slots**
- **8-Port 10/100/1000Base-T** Gigabit Ethernet RJ-45
- **RS-232** DB9 console interface for Switch basic management and setup

### ➤ **Hardware Conformance**

- 36 to 72V DC, redundant power with polarity reverse protect function
- -10 to 60 Degree C operating temperature
- 19-inch Rack-mountable
- Relay alarm for port breakdown, power failure
- Two Thermal FAN built-in

### ➤ **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, broadcast storm control and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support:
  - Broadcast / Multicast / Unknown-Unicast
- Support VLAN
  - IEEE 802.1Q Tagged VLAN
  - Up to 255 VLANs groups, out of 4094 VLAN IDs
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Voice VLAN
- Support 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
- Support Link Aggregation
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (Static Trunk)
  - Maximum 12 trunk groups, up to 16 ports per trunk group
  - Up to 32Gbps bandwidth(Duplex Mode)
- Provide Port Mirror (many-to-1)
- Port Mirroring to monitor the incoming or outgoing traffic on a particular port

➤ **Quality of Service**

- Ingress Shaper and Egress Rate Limit per port bandwidth control
- 4 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 policies on the switch port
- QoS Control List Wizard makes QoS creation and configuration easier and more quickly
- DSCP remarking

➤ **Multicast**

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

➤ **Security**

- IEEE 802.1x Port-Based / MAC-Based network access authentication
- Built-in RADIUS client to co-operate with the RADIUS servers
- TACACS+ login users access authentication
- RADIUS / TACACS+ users access authentication
- IP-Based Access Control List (ACL)
- MAC-Based Access Control List
- Source MAC / IP address binding
- DHCP Snooping to filter un-trusted DHCP messages
- Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- IP Source Guard prevents IP spoofing attacks
- Auto DoS rule to defend DoS attack
- IP address access management to prevent unauthorized intruder

➤ **Management**

- Switch Management Interfaces
  - Console / Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management

- SSH / SSL secure access

- 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
- Firmware upload/download via HTTP / TFTP
- DHCP Relay and Option 82
- User Privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) Protocol
- Cable Diagnostic technology provides the mechanism to detect and report potential cabling issues
- Reset button for system reboot or reset to factory default
- PLANET Smart Discovery Utility for deploy management
- ICMPv6

➤ **Redundant Power System**

- 100~240V AC / 36~ 72V DC Dual power redundant
- 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)
- Integrate sensors into auto alarm system
- Transfer alarm to IP network via email and SNMP trap

### 3. PRODUCT SPECIFICATION

#### 3.1 MAIN COMPONENT

<b>Switch ASIC:</b>	Vitesse VSC7405	X1
<b>Gigabit Fiber PHY:</b>	Vitesse VSC8658	X2
<b>Gigabit Ethernet PHY:</b>	Vitesse VSC8538	X1
<b>CPU:</b>	ARM926EJ (integrated with VSC7405)	X1
<b>Flash:</b>	MX29LV128DBT2C (16Mbytes)	X1
<b>DDR RAM:</b>	Elpida D5116ADTA (64Mbytes / 512Mbits)	X1
<b>SRAM</b>	IDT71V124SA15TYG (128Kbytes / 1Mbits)	X1
<b>Open frame power supply</b>	12V DC, 5.4A	X1

#### 3.2 FUNCTION SPECIFICATION

<b>Product</b>	<b>MGSW-24160F</b>
<b>Hardware Specification</b>	
<b>SFP/mini-GBIC Slots</b>	16 1000Base-SX/LX/BX SFP interfaces, from port9 to port16 Compatible with 100Base-FX SFP
<b>Copper Ports</b>	8 10/ 100/1000Base-T RJ-45 Auto-MDI/MDI-X ports
<b>Console Port</b>	1 x RS-232 DB9 serial port (115200, 8, N, 1)
<b>Switch Processing Scheme</b>	Store-and-Forward
<b>Switch Throughput@64Bytes</b>	35.7Mpps
<b>Switch Fabric</b>	48Gbps / non-blocking
<b>Address Table</b>	8K entries, automatic source address learning and ageing
<b>Share data Buffer</b>	1392 kilobytes
<b>Flow Control</b>	IEEE 802.3x Pause Frame for Full-Duplex Back pressure for Half-Duplex
<b>Jumbo Frame</b>	10Kbytes
<b>Reset Button</b>	< 5 seconds: System reboot > 10 seconds: Factory Default
<b>LED</b>	Power, DC1, DC2, Fault, Link/Act and speed per Gigabit port
<b>DI/DO</b>	2 Digital Input (DI): Level 0: -24~2.1V ( $\pm 0.1V$ ) Level 1: 2.1~24V ( $\pm 0.1V$ ) Input Load Current: 10mA max. 2 Digital Output (DO): Open collector to 24VDC, 100mA max. load
<b>Layer 2 Function</b>	

<b>Port configuration</b>	Port disable / enable Auto-Negotiation 10/100/1000Mbps full and half duplex mode selection Flow Control disable / enable Bandwidth control on each port Power saving mode control
<b>Port Status</b>	Display each port's speed duplex mode, link status, Flow control status. Auto negotiation status, trunk status.
<b>VLAN</b>	802.1Q Tagged Based VLAN Port-Based VLAN Q-in-Q Private VLAN Edge (PVE) Up to 256 VLAN groups, out of 4094 VLAN IDs
<b>Port trunking</b>	IEEE 802.3ad LACP / Static Trunk Support 12 groups of 16-Port trunk support
<b>QoS</b>	Traffic classification based, Strict priority and WRR 4-level priority for switching - Port Number - 802.1p priority - 802.1Q VLAN tag DSCP/TOS field in IP Packet Policy-Based QoS
<b>IGMP Snooping</b>	IGMP (v1/v2) Snooping, up to 255 multicast Groups IGMP Querier mode support
<b>Access Control List</b>	IP-Based ACL / MAC-Based ACL Up to 256 entries
<b>Management</b>	
<b>Basic Management Interfaces</b>	Console, Telnet, Web Browser, SNMPv1, v2c and v3
<b>Secure Management Interface</b>	SSH, SSL, SNMP v3
<b>SNMP MIBs</b>	RFC-1213 MIB-II IF-MIB RFC-1493 Bridge MIB RFC-1643 Ethernet MIB RFC-2863 Interface MIB RFC-2665 Ether-Like MIB RFC-2819 RMON MIB (Group 1) RFC-2737 Entity MIB RFC-2618 RADIUS Client MIB RFC-2933 IGMP-STD-MIB () RFC3411 SNMP-Frameworks-MIB IEEE802.1X PAE LLDP MAU-MIB



Standards Conformance	
<b>Regulation Compliance</b>	FCC Part 15 Class A, CE
<b>Standards Compliance</b>	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
Environment	
<b>Operating</b>	Temperature:        -10 ~ 60 Degree C for DC power input. -10 ~ 60 Degree C for AC power input. Relative Humidity:   5 ~ 95% (non-condensing)
<b>Storage</b>	Temperature:        -10 ~ 70 Degree C Relative Humidity:   5 ~ 95% (non-condensing)

### 3.3 PHYSICAL SPECIFICATIONS:

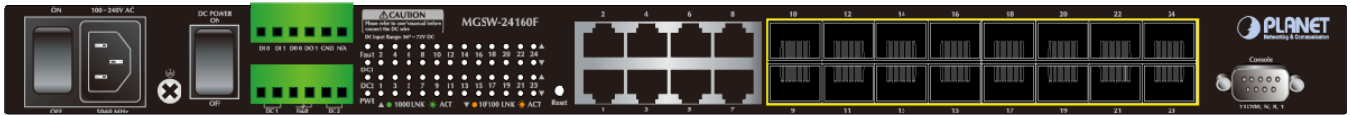
**Dimensions:**

440 x 200 x 44.5 mm, 1U high

**Weight:**

3.0kg

### ■ Front Panel:



### ■ Rear Panel:



### ■ LED definition

#### ■ System

LED	Color	Function
DC1	Green	Lights to indicate that the Switch is powered on by DC1 input.
DC2	Green	Lights to indicate that the Switch is powered on by DC2 input.
Fault	Green	Lights to indicate that Switch AC/DC or port has failed.
PWR	Green	Lights to indicate that the Switch is powered on. Blink to indicate the System is running under booting procedure.

#### ■ 10/100/1000Base-T interfaces

LED	Color	Function
1000 LNK/ACT	Green	<b>Lights:</b> To indicate the link through that port is successfully established with speed <b>1000Mbps</b> .
		<b>Blink:</b> To indicate that the switch is actively sending or receiving data over that port.
		<b>Off:</b> If L10/100 NK/ACT LED light-> indicate that the port is operating at 10Mbps or 100Mbps. If LNK/ACT LED Off -> indicate that the port is link down.
10/100 LNK/ACT	Orange	<b>Lights:</b> To indicate the link through that port is successfully established with speed 10Mbps or 100Mbps.
		<b>Blink:</b> To indicate that the switch is actively sending or receiving data over that port.
		<b>Off:</b> If 1000 LNK/ACT LED light-> indicate that the port is operating at 1000Mbps If 1000 LNK/ACT LED Off -> indicate that the port is link down.

■ 1000Base-SX/LX SFP interfaces (Shared Port-21~Port-24)

LED	Color	Function
LNK/ACT	Green	<b>Lights:</b> To indicate the link through that SFP port is successfully established.
		<b>Off:</b> To indicate that the SFP port is link down

### 3.4 ENVIRONMENTAL SPECIFICATION

**Operating:**

Temperature: -10°C ~ 60 Degree C  
 Relative Humidity: 5% ~ 95% (non-condensing)

**Storage:**

Temperature: -10°C ~ 70 Degree C  
 Relative Humidity: 5% ~ 95% (non-condensing)

### 3.5 ELECTRICAL SPECIFICATION

**AC Power Consumption:**

System On	Current (A)	Watts	BTU/hr
110V AC	0.21	15	51.47
220V AC	0.18	17	58.33
240V AC	0.15	17	58.33

Full Loading	Current (A)	Watts	BTU
110V AC	0.7	45W	154.4
220V AC	0.35	32W	109.8
240V AC	0.32	32W	109.8

**DC Power Consumption:**

System On	Current (A)	Watts	BTU
36V DC	0.46	16.56	56.82
48V DC	0.46	22.08	75.76
60V DC	0.30	18	61.76
72V DC	0.27	19.44	66.7

Full Loading	Current (A)	Watts	BTU
36V DC	1.1	39.6	135.87
48V DC	0.92	44.16	151.51
60V DC	0.73	43.8	150.28
72V DC	0.7	50.4	172.92

### 3.6 REGULATORY COMPLIANCE

FCC Class A, CE

### 3.7 REALIABILITY

MTBF > 100,000Hrs

### 3.8 BASIC PACKAGING

- MGSW-24160F X1
- User's Manual X1
- Quick Installation Guide X1
- AC Power Cord X1
- RS232 Cable X1
- Rubber Feet X4
- Two rack-mounting brackets with attachment screws X2

### 3.9 PACKING DIMENSION

**Dimension:** 520mm (W) x 450mm (D) x 90mm (H)

**Weight:** 20kg

5 pcs in one carton