Industrial 8-Port 10/100/1000T + 2-Port 100/1G SFP + 2-Port 1G/2.5G SFP Managed Ethernet Switch



PLANET IGS-12040MT is a **fully-managed Gigabit fiber switch** usually designed for the industrial network. It features **8 10/100/1000BASE-T** copper ports, **2 100/1000BASE-X** SFP ports, **2 100/1000/2500BASE-X** SFP ports and redundant power system in an IP30 rugged but compact-sized case that can be installed in any difficult environment without space limitation. It provides user-friendly yet advanced **IPv6/IPv4 management** interfaces, abundant **L2/L4 switching functions** and Layer 3 static routing capability.

The IGS-12040MT can operate stably under the temperature range from **-40 to 75 degrees C** and allows either DIN-rail or wall mounting for efficient use of cabinet space. With **4 triple-speed SFP fiber ports**, it can flexibly extend the connection distance.



Network with Cybersecurity Helps Minimize Security Risks

The IGS-12040MT comes with enhanced cybersecurity to fend off cyberthreats and cyberattacks. It supports SSHv2 and TLSv1.2 protocols to provide strong protection against advanced threats. Served as a key point to transmit data to customer's critical equipment in a business network, the cybersecurity feature of the IGS-12040MT protects the switch management and enhances the security of the mission-critical network without any extra deployment cost and effort.

Physical Port

- 8 10/100/1000BASE-T RJ45 copper ports
- 2 100/1000BASE-X SFP port with SFP-type auto detection
- 2 100/1000/2500BASE-X SFP ports
- One RJ45 console interface for basic management and setup

Industrial Hardened Design

- Dual power input, redundant power with reverse polarity protection
  - DC 12 to 72 input or AC 24V input
  - Active-active redundant power failure protection
  - Backup of catastrophic power failure on one supply
  - Fault tolerance and resilience
- DIN-rail and wall-mountable designs
- IP30 aluminum case
- Supports 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

Industrial Protocol

- Modbus TCP for real-time monitoring in SCADA system
- IEEE 1588v2 PTP (Precision Time Protocol)

Digital Input and 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

Layer 3 IP Routing Features

- Supports maximum 32 static routes and route summarization

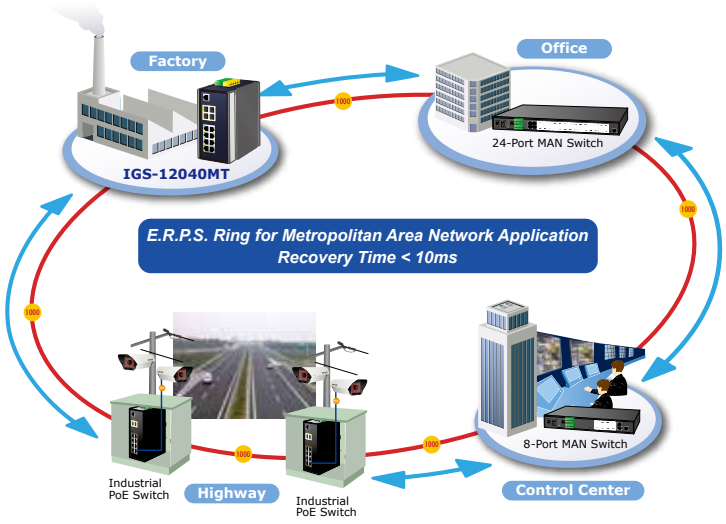
Layer 2 Features

- 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
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN



Redundant Ring, Fast Recovery for Surveillance System

The IGS-12040MT 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 **redundant** 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 10ms.



Modbus TCP Provides Flexible Network Connectivity for Factory Automation

With the supported **Modbus TCP/IP** protocol, the IGS-12040MT can easily integrate with **SCADA** systems, **HMI** systems and other data acquisition systems in factory floors. It enables administrators to remotely monitor the industrial Ethernet switch's **operating information**, **port information**, **communication status**, and **DI** and **DO** status, thus easily achieving enhanced monitoring and maintenance of the entire factory.

1588 Time Protocol for Industrial Computing Networks

The IGS-12040MT is ideal for telecom and Carrier Ethernet applications, supporting MEF service delivery and timing over packet solutions for IEEE 1588 and synchronous Ethernet.

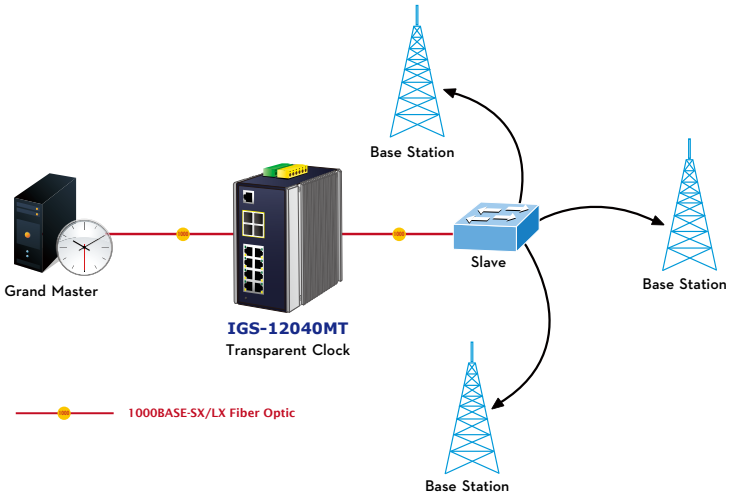
  - MAC-based VLAN
  - Voice VLAN
  - GVRP (GARP VLAN Registration Protocol)
- Supports **Spanning Tree Protocol**
  - IEEE 802.1D Spanning Tree Protocol (STP)
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) by VLAN
  - BPDU Guard
- Supports **Link Aggregation**
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (static trunk)
  - Maximum 6 trunk groups, up to 8 ports per trunk group
  - Up to 16Gbps bandwidth (duplex mode)
- Provides port mirror (many-to-1)
- Port mirroring of the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops
- Supports E.R.P.S. (Ethernet Ring Protection Switching)
- IEEE 1588 and Synchronous Ethernet network timing
- Compatible with Cisco Uni-directional link detection (UDLD) that monitors a link between two switches and blocks the ports on both ends of the link if the link fails at any point between the two devices
- Link Layer Discovery Protocol (LLDP)

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
  - IP TOS/DSC /IP Precedence
  - 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 IPv4 IGMP Snooping v1, v2 and v3
- Supports IPv6 MLD Snooping v1 and v2
- Querier mode support

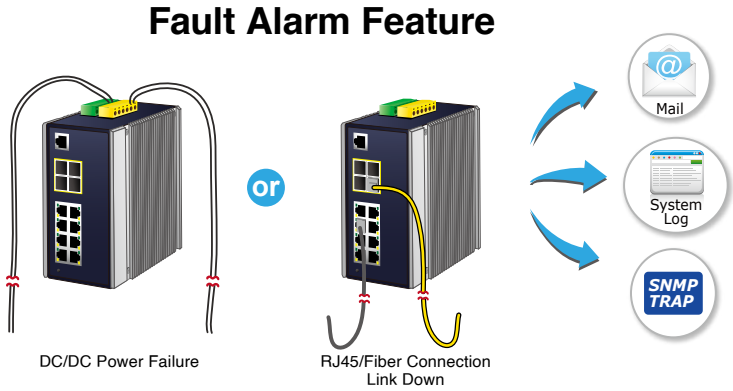


SMTP/SNMP Trap Event Alert

The IGS-12040MT provides 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.

Effective Alarm Alert for Better Protection

The IGS-12040MT supports a Fault Alarm feature which can alert the users when there is something wrong with the switches. With this ideal feature, the users would not have to waste time finding where the problem is. It will help to save time and human resource.



Digital Input and Digital Output for External Alarm

The IGS-12040MT supports Digital Input and Digital Output on its upper panel. The external alarm enables users to use Digital Input to detect external device's status (such as door intrusion detector), and send event alarm to the administrators. The Digital Output could be used to alarm the administrators if the IGS-12040MT port is link-down, link-up or power-dead.

- IPv4 IGMP Snooping port filtering
- IPv6 MLD Snooping port filtering
- MVR (Multicast VLAN Registration)

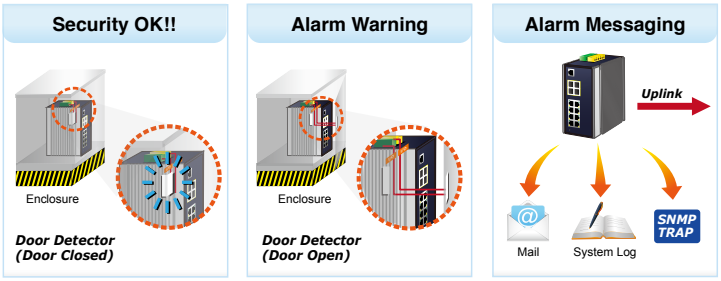
Security

- 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 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

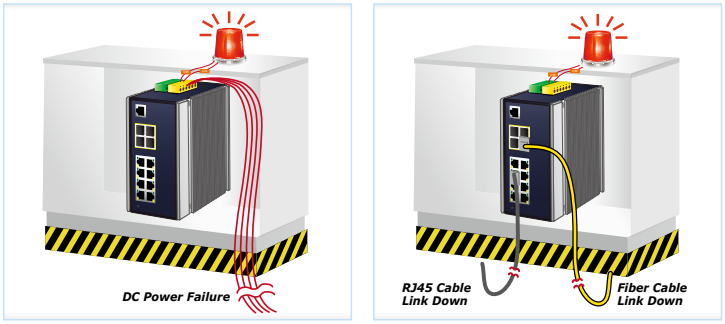
Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Console / Telnet Command Line Interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSHv2 and TLSv1.2 secure access
- SNMP Management
  - Four RMON groups (history, statistics, alarms, and events)
  - SNMP trap for interface Link Up and Link Down notification
- **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 and DHCP Option 82
- DHCP Server
- User Privilege levels control

Digital Input



Digital Output



- Network Time Protocol (NTP)
- Network Diagnositc
  - ICMPv6/ICMPv4 Remote Ping
  - Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
  - SFP-DDM (Digital Diagnostic Monitor)
- SMTP, syslog and SNMP trap remote alarm
- System Log
- PLANET NMS system and Smart Discovery Utility for deployment management

Layer 3 IPv4 and IPv6 Software VLAN Routing for Secure and Flexible Management

To help customers stay on top of their businesses, the IGS-12040MT not only provides high transmission performance and excellent Layer 2 technologies, but also IPv4/IPv6 software 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 IGS-12040MT can be programmed for advanced switch management functions such as dynamic port link aggregation, Q-in-Q VLAN, private VLAN, Rapid Spanning Tree Protocol, Layer 2 to Layer 4 QoS, bandwidth control and IGMP snooping. The IGS-12040MT provides 802.1Q tagged VLAN, and the VLAN groups allowed will be maximally up to 4K. Via aggregation of supporting ports, the IGS-12040MT allows the operation of a high-speed trunk combining multiple ports. It enables a maximum of up to 6 trunk groups with 8 ports per trunk group, and supports fail-over as well.



Efficient Management

For efficient management, the IGS-12040MT is equipped with console, Web and SNMP management interfaces.

- With the built-in Web-based management interface, the IGS-12040MT offers an easy-to-use, platform-independent management and configuration facility.
- For text-based management, it can be accessed via Telnet and the console port.
- For standard-based monitor and management software, it offers SNMPv3 connection which encrypts the packet content at each session for secure remote management.

Powerful Security from Layer 2 to Layer 4

The IGS-12040MT offers 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.

Advanced IP Network Protection

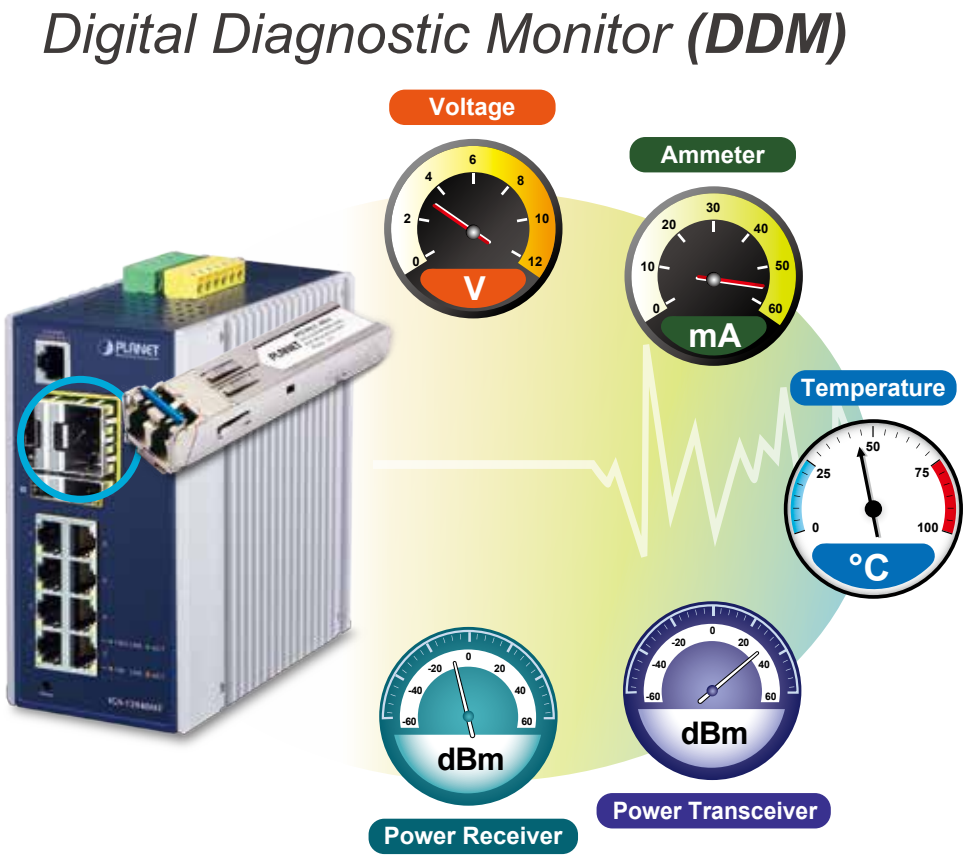
The IGS-12040MT also provides **DHCP Snooping**, **IP Source Guard** and **Dynamic ARP Inspection** functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

Flexibility and Extension Solution

The additional four SFP ports built in the IGS-12040MT support multi-speed, **100BASE-FX**, **1000BASE-SX/LX** and **2500BASE-X** SFP (Small Form-factor Pluggable) fiber-optic modules, meaning the administrator now can flexibly choose the suitable SFP transceiver according to not only the transmission distance but also the transmission speed required. The distance can be extended from 550 meters to 2 kilometers (multi-mode fiber) and up to above 10/20/40/60/80/120 kilometers (single-mode fiber or WDM fiber). They are well suited for applications within the enterprise data centers and distributions.

Intelligent SFP Diagnosis Mechanism

The IGS-12040MT 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.



Environmentally Hardened Design

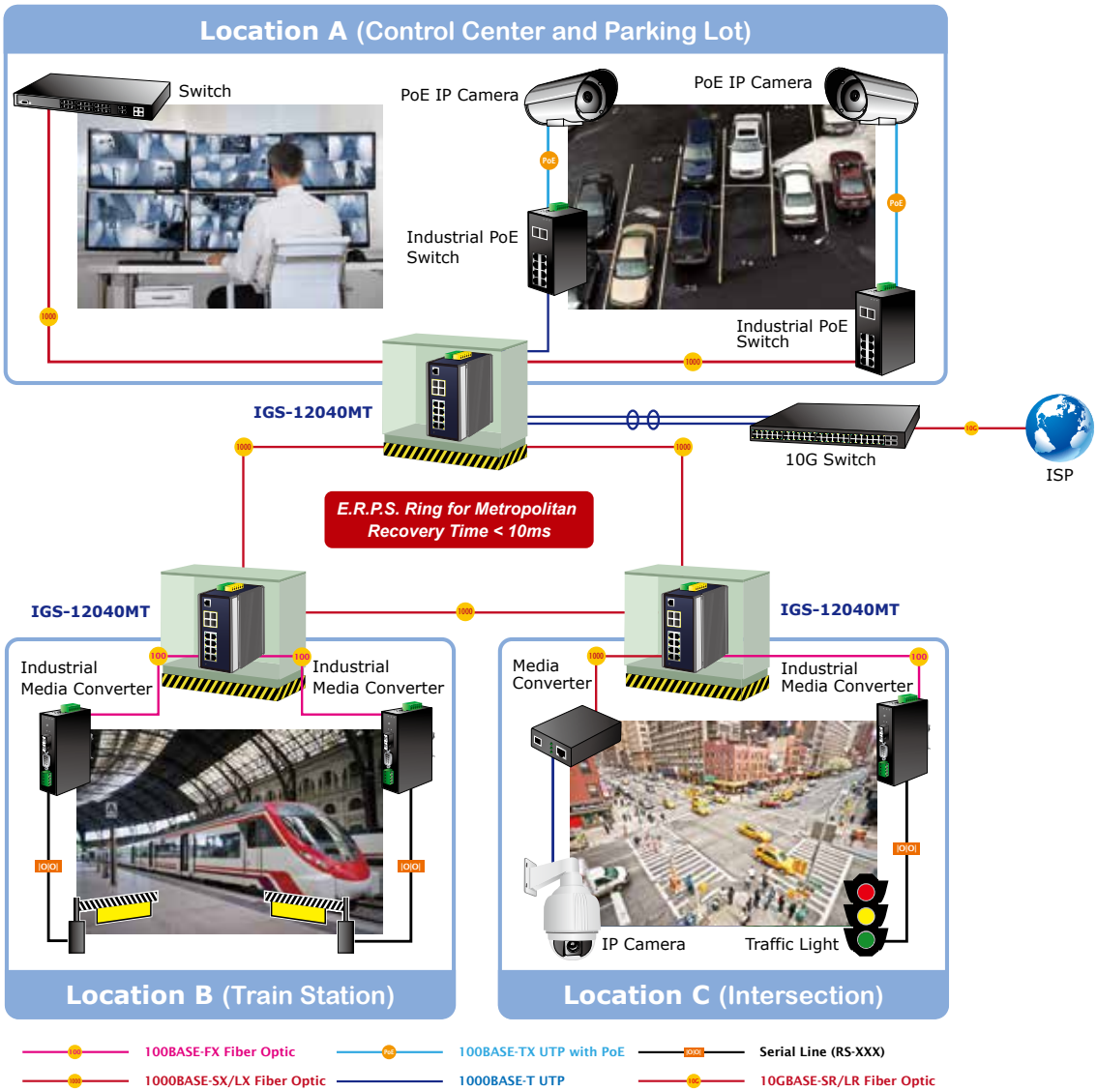
With IP30 aluminum industrial case protection, the IGS-12040MT provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb side traffic control cabinets. It also possesses an integrated power supply source with a wide range of voltages (**12 to 72V DC** or **24V AC**) for worldwide high availability applications requiring dual or backup power inputs. Being able to operate under the temperature range from **-40 to 75 degrees C**, the IGS-12040MT can be placed in almost any difficult environment.



Applications

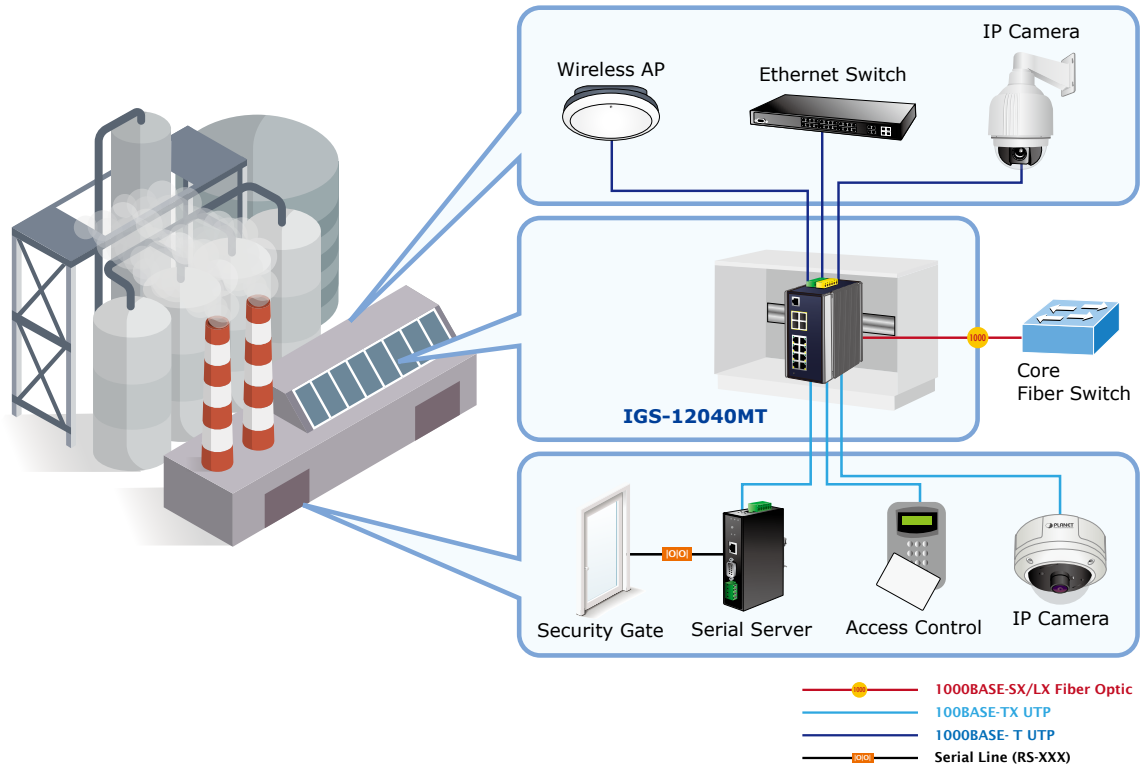
FTTx / MAN Edge Switch

To improve the technology of Optical Fiber Ethernet with highly-flexible, highly-extendable and easy-to-install features, the IGS-12040MT offers up to 2.5Gbps data exchange speed via Optical Fiber interface and the transmission distance can be extended to 120km. The IGS-12040MT is the ideal solution for service providers such as ISPs and telecoms to build Metropolitan Area Network (MAN) based on the fiber technology.



Security Building Automation Switch

The IGS-12040MT offers 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. The network administrators can now construct highly-secured corporate networks with considerably less time and effort than before.



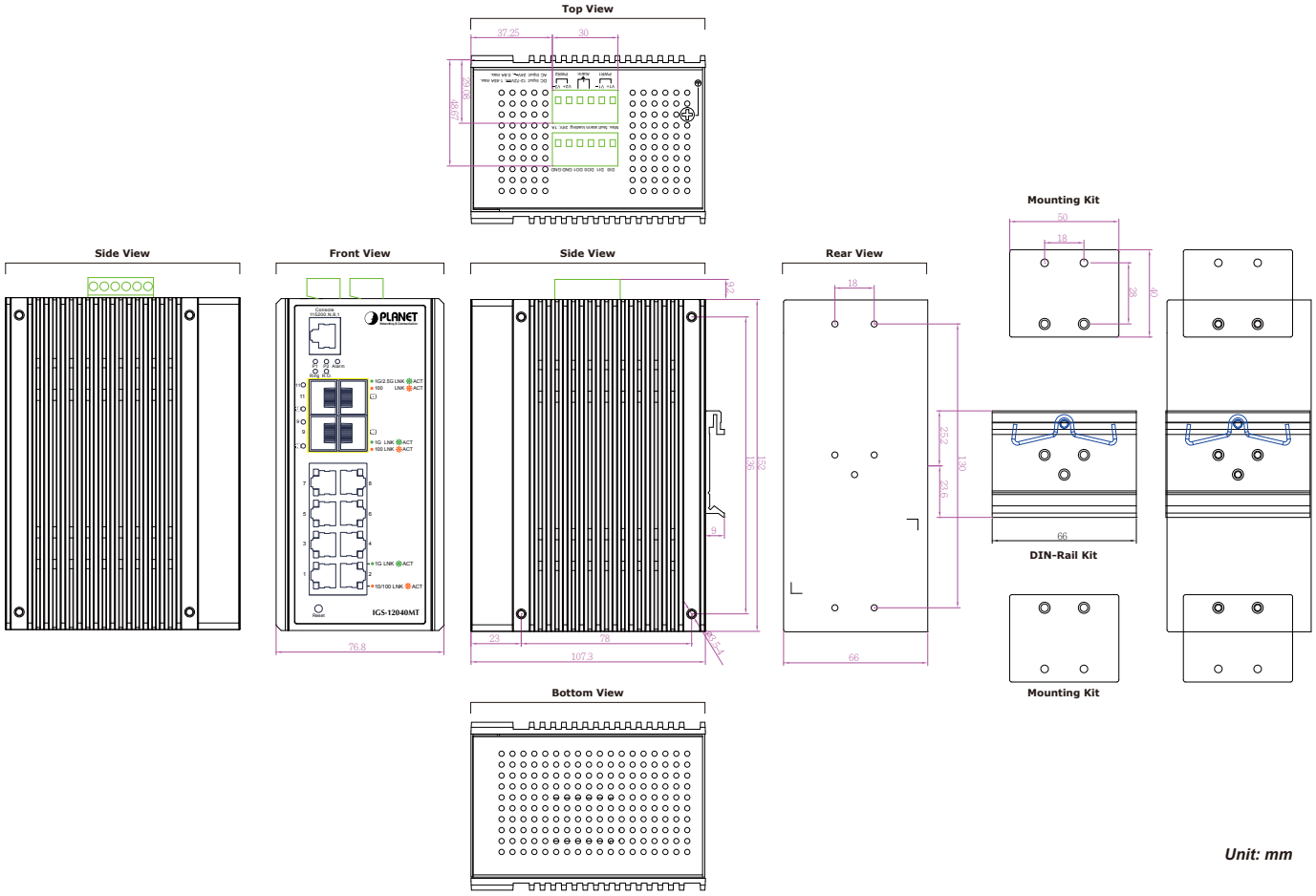
Specifications

Model Name	IGS-12040MT
Hardware Specifications	
Copper Ports	8 10/100/1000BASE-T RJ45 Auto-MDI/MDI-X ports
SFP Ports	2 100/1000BASE-SX/LX/BX SFP interfaces (Port-9 and Port-10) Compatible with 100BASE-FX SFP 2 100/1000/2500BASE-X SFP interfaces (Port-11 and Port-12) Compatible with 100BASE-FX and 2500BASE-X SFP
Console	1 x RJ45 serial port (115200, 8, N, 1)
DRAM	128MBytes
Flash Memory	64MBytes
Reset Button	< 5 sec: System reboot > 5 sec: Factory Default
Connector	Removable 6-pin terminal block for power input Pin 1/2 for Power 1; Pin 3/4 for fault alarm; Pin 5/6 for Power 2 Removable 6-pin terminal block for DI/DO interface Pin 1/2 for DI 0 & DI 1; Pin 3/4 for DO 0 & DO 1; Pin 5/6 for GND
Alarm	One relay output for power failure. Alarm Relay current carry ability: 1A @ 24V AC
Digital Input (DI)	2 Digital Input (DI): Level 0: -24V~2.1V (±0.1V) Level 1: 2.1V~24V (±0.1V) Input Load to 24V DC, 10mA max.
Digital Output (DO)	2 digital output: Open collector to 24VDC, 100mA
Enclosure	IP30 aluminum case
Installation	DIN-rail kit and wall-mount kit
Dimensions (W x D x H)	76 x 107 x 152 mm
Weight	1,010g
Power Requirements	DC 12V to 72V AC 24V
Power Consumption	6.5 watts / 22.18BTU (System on) 12 watts / 40.95BTU (Full loading)
ESD Protection	6KV DC
LED Indicator	System: Power 1 (Green) Power 2 (Green) Fault Alarm (Red) Ring (Green) R.O. (Green) Per 10/100/1000T RJ45 Port: 1000 LNK/ACT (Green) 10/100 LNK/ACT (Amber) Per SFP Interface: 1000/2500 LNK/ACT (Green) 100 LNK/ACT (Amber)
Switching Specifications	
Switch Architecture	Store-and-Forward
Switch Fabric	30Gbps / non-blocking
Throughput (packet per second)	22.32Mpps@64Bytes
Address Table	8K entries, automatic source address learning and ageing
Shared Data Buffer	4Mbits
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex
Jumbo Frame	9Kbytes
Layer 2 Management Functions	
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow Control disable / enable Power saving mode control
Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status and trunk status.
Port Mirroring	TX/RX/Both Many to 1 monitor
VLAN	802.1Q tag-based VLAN, up to 255 VLAN groups Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN Registration) GVRP Up to 4K VLAN groups, out of 4095 VLAN IDs

Link Aggregation	IEEE 802.3ad LACP / Static Trunk Support 6 groups of 8-port trunk support
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol
IGMP Snooping	IPv4 IGMP (v1/v2 /v3) Snooping IPv4 IGMP Querier mode support Up to 255 multicast Groups
MLD Snooping	IPv6 MLD (v1/v2) Snooping IPv6 MLD Querier mode support Up to 255 multicast Groups
Bandwidth Control	Per port bandwidth control Ingress: 500 Mbps ~1000Mbps Egress: 500 Mbps ~1000Mbps
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
RING	Supports ERPS, and complies with ITU-T G.8032 Recovery time < 10ms
Synchronization	IEEE 1588v2 PTP (Precision Time Protocol) - Peer-to-peer transparent clock - End-to-end transparent clock
Security Functions	
Access Control List	IP-based ACL/MAC-based ACL ACL based on: - MAC Address - IP Address - Ethertype - Protocol Type - VLAN ID - DSCP - 802.1p Priority Up to 256 entries
Security	Port security IP source guard Dynamic ARP inspection Command line authority control based on user level
AAA	RADIUS client TACACS+ client
Network Access Control	IEEE 802.1x port-based network access control MAC-based authentication Local/RADIUS authentication
Layer 3 Functions	
IP Interfaces	Max. 8 VLAN interfaces
Routing Table	Max. 32 routing entries
Routing Protocols	IPv4 software static routing IPv6 software static routing
Switch Management	
Basic Management Interfaces	Console; Telnet; Web browser; SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLS v1.2, SNMPv3
System Management	Firmware upgrade by HTTP protocol through Ethernet network Configuration upload/download through HTTP Remote Syslog System log LLDP protocol NTP PLANET Smart Discovery Utility

SNMP MIBs	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, 2, 3 and 9) RFC 2737 Entity MIB RFC 2618 RADIUS Client MIB RFC 2933 IGMP-STD-MIB RFC 3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-MIB
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Stability Testing	IEC 60068-2-32 (free fall) IEC 60068-2-27 (shock) IEC 60068-2-6 (vibration)
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 802.1ad Q-in-Q VLAN stacking IEEE 802.1X Port Authentication Network Control IEEE 802.1ab LLDP IEEE 802.3ah OAM IEEE 802.1ag Connectivity Fault Management(CFM) IEEE 1588 PTPv2 RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP v1 RFC 2236 IGMP v2 RFC 3376 IGMP version 3 RFC 2710 MLD version 1 RFC 3810 MLD version 2 ITU-T G.8032 ERPS Ring ITU-T Y.1731 Performance Monitoring
Environment	
Operating	Temperature: -40 ~ 75 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -40 ~ 85 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

Dimensions



Unit: mm

Ordering Information

IGS-12040MT	Industrial 8-Port 10/100/1000T + 2-Port 100/1G SFP + 2-Port 1G/2.5G SFP Managed Ethernet Switch

Related PoE Products

IGS-10020MT	Industrial L2+ 8-Port 10/100/1000T + 2-Port 100/1000X SFP Managed Ethernet Switch
IGS-20040MT	Industrial L2+ 16-Port 10/100/1000T + 4-Port 100/1000X SFP Managed Ethernet Switch
IGS-5225-8P4S	Industrial L2+ 8-Port 10/100/1000T 802.3at PoE + 4-Port 100/1000X SFP Managed Ethernet Switch
IGS-5225-8P2T2S	Industrial L2+ 8-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T + 4-Port 100/1000X SFP Managed Ethernet Switch
IGS-5225-8T2S2X	Industrial L3 8-Port 10/100/1000T + 2-Port 100/1000X SFP + 2-Port 10G SFP+ Managed Ethernet Switch
IGS-6325-8T8S	Industrial L3 8-Port 10/100/1000T + 8-Port 100/1000X SFP Managed Ethernet Switch
IGS-6325-8T8S4X	Industrial L3 8-Port 10/100/1000T + 8-Port 100/1000X SFP + 4-Port 10G SFP+ Managed Ethernet Switch

Available 1000Mbps Modules

Gigabit Ethernet Transceiver (1000BASE-X SFP)

Model	DDM	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MGB-GT	--	1000	Copper	--	100m	--	0 ~ 60 degrees C
MGB-SX	YES	1000	LC	Multi Mode	550m	850nm	0 ~ 60 degrees C
MGB-SX2	YES	1000	LC	Multi Mode	2km	1310nm	0 ~ 60 degrees C
MGB-LX	YES	1000	LC	Single Mode	20km	1310nm	0 ~ 60 degrees C
MGB-L40	YES	1000	LC	Single Mode	40km	1310nm	0 ~ 60 degrees C
MGB-L80	YES	1000	LC	Single Mode	80km	1550nm	0 ~ 60 degrees C
MGB-L120	YES	1000	LC	Single Mode	120km	1550nm	0 ~ 60 degrees C

Gigabit Ethernet Transceiver (1000BASE-X SFP)

Model	DDM	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-LA10	YES	1000	WDM(LC)	Single Mode	10km	1310nm	1550nm	0 ~ 60 degrees C
MGB-LB10		1000	WDM(LC)	Single Mode	10km	1550nm	1310nm	0 ~ 60 degrees C
MGB-LA20	YES	1000	WDM(LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 degrees C
MGB-LB20		1000	WDM(LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 degrees C
MGB-LA40	YES	1000	WDM(LC)	Single Mode	40km	1310nm	1550nm	0 ~ 60 degrees C
MGB-LB40		1000	WDM(LC)	Single Mode	40km	1550nm	1310nm	0 ~ 60 degrees C
MGB-LA80	YES	1000	WDM(LC)	Single Mode	80km	1490nm	1550nm	0 ~ 60 degrees C
MGB-LB80		1000	WDM(LC)	Single Mode	80km	1550nm	1490nm	0 ~ 60 degrees C

Available 2500Mbps Modules

2.5 Gigabit Ethernet Transceiver (2.5GBASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MGB-2GTSR	2.5G	LC	Multi Mode	300m	850nm	-40 ~ 75 degrees C

2.5G Gigabit Ethernet Transceiver (2.5GBASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-2GTLA20	2.5G	WDM(LC)	Single Mode	20km	1310nm	1550nm	-40 ~ 75 degrees C
MGB-2GTLB20	2.5G	WDM(LC)	Single Mode	20km	1550nm	1310nm	-40 ~ 75 degrees C

Available 100Mbps Modules

Fast Ethernet Transceiver (100BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.	Operating Temp.
MFB-FX	100	LC	Multi Mode	2km	1310nm	0 ~ 60 degrees C	0 ~ 60 degrees C
MFB-F20	100	LC	Single Mode	20km	1310nm	0 ~ 60 degrees C	0 ~ 60 degrees C
MFB-F40	100	LC	Single Mode	40km	1310nm	0 ~ 60 degrees C	0 ~ 60 degrees C
MFB-F60	100	LC	Single Mode	60km	1310nm	0 ~ 60 degrees C	0 ~ 60 degrees C
MFB-F120	100	LC	Single Mode	120km	1310nm	0 ~ 60 degrees C	0 ~ 60 degrees C

Fast Ethernet Transceiver (100BASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MFB-FA20	100	WDM(LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 degrees C
MFB-FB20	100	WDM(LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 degrees C

PLANET Technology Corporation

11F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

Tel: 886-2-2219-9518 Fax: 886-2-2219-9528

Email: sales@planet.com.tw www.planet.com.tw

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