# Industrial L2+ 20-Port 10/100/1000T + 4-Port TP/SFP Combo Managed Ethernet Switch

PLANET IGSW-24040T, an industrial Layer 2+ managed Gigabit Switch, features 24 10/100/1000Mbps ports and 4 shared SFP ports, and supports **static Layer 3 routing** in a 1U case. With a total **switch fabric of 48Gbps**, the IGSW-24040T can handle large amounts of data in a secure topology linking to an industrial backbone or high capacity servers. The IGSW-24040T is capable of providing non-blocking switch fabric and wire-speed throughput in the temperature range from **-40 to 75 degrees C** without any packet loss and CRC error. It greatly simplifies the tasks of upgrading the industrial LAN for catering to increasing bandwidth demands. Furthermore, it adopts user-friendly **"Front Access"** design for easy wiring and maintenance of the IGSW-24040T when placed in the cabinet.
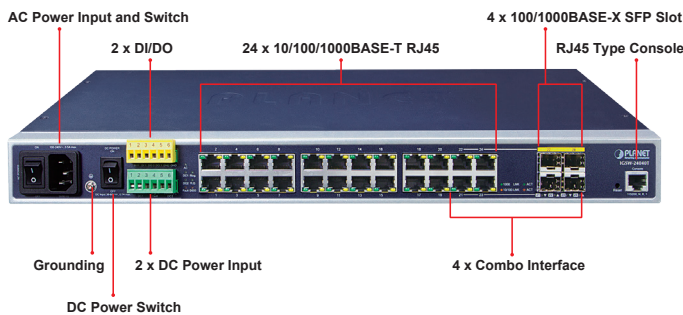
Cybersecurity Network Solution to Minimize Security Risks

The IGSW-24040T supports SSHv2 and TLS protocols to provide strong protection against advanced threats. It includes a range of cybersecurity features such as **DHCP Snooping**, **IP Source Guard**, **dynamic ARP Inspection** Protection, **802.1x port-based** network access control, **RADIUS** and **TACACS+** user accounts management, **SNMPv3** authentication, and so on to complement it as an all-security solution.

Physical Port

- **24-port 10/100/1000BASE-T** RJ45 copper
- **4 100/1000BASE-X mini-GBIC/SFP** slots, shared with Port-21 to Port-24 compatible with 100BASE-FX SFP
- RJ45 to RS232 DB9 console interface for basic management and setup

Hardware Conformance

- One 100 to 240V AC or dual 36 to 60V DC power input, redundant power with reverse polarity protection
  - Active-active redundant power failure protection
  - Backup of catastrophic power failure on one supply
  - Fault tolerance and resilience
- 19-inch rack-mountable design
- IP30 metal case
- Supports EFT protection for 6000V DC power and 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature for DC power input
- -10 to 60 degrees C operating temperature for AC power input

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

## Layer 3 IP Routing Features

- Supports maximum 32 static routes and route summarization

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/Multicast/Unknown unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Provides Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN

Redundant Ring, Fast Recovery for Critical Network Applications

The IGSW-24040T 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 and Spanning Tree Protocol (802.1s MSTP) into customer's network to enhance system reliability and uptime in various environments.
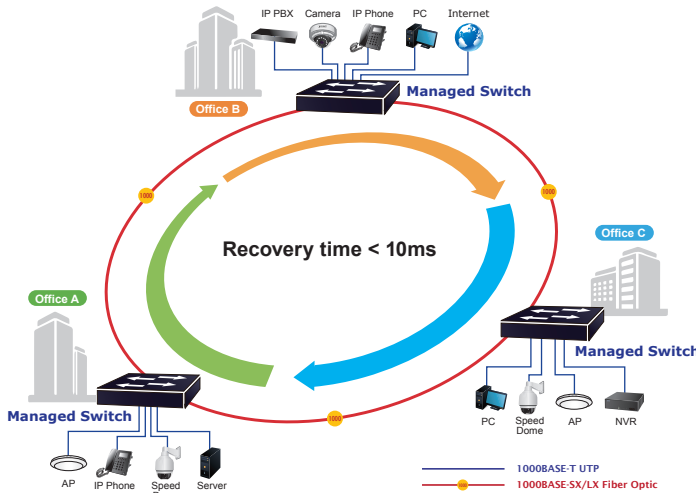

AC and DC Redundant Power to Ensure Continuous Operation

The IGSW-24040T possesses a 100~240V AC power supply and dual 36~60V DC power supply utilized as redundant power supply to ensure its continuous operation. Its redundant power system is specifically designed to handle the demands of high-tech facilities requiring the highest power integrity. Furthermore, with the 36~60V DC power supply implemented, the IGSW-24040T can be applied as the telecom level device and placed in almost any difficult environment.

Digital Input and Digital Output for External Alarm

The IGSW-24040T helps the network administrators efficiently manage the unexpected network situations by providing Digital Input and Digital Output for external alarm device on the front panel. The Digital Input can be used to detect and log the status of the external devices such as door intrusion detector. The Digital Output could be used to send alarm whenever the IGSW-24040T has port link-down or power failure.

Digital Input
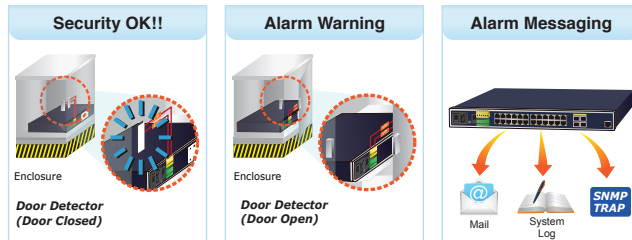
Digital Output
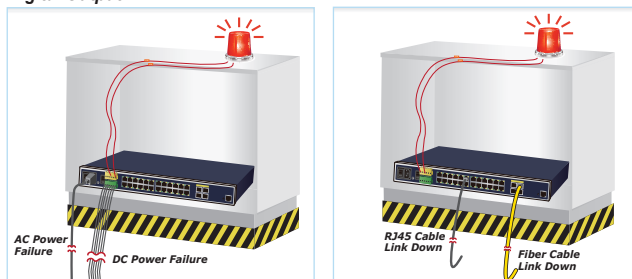
- MAC-based VLAN
- IP subnet-based VLAN
- Voice VLAN
- VLAN Translation
- GVRP
- Supports **Spanning Tree Protocol**
  - IEEE 802.1D Spanning Tree Protocol (STP)
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), spanning tree by VLAN
  - BPDU Guard
- Supports Link Aggregation
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (static trunk)
  - Maximum 12 trunk groups, with 8 ports for each trunk
  - Up to 16Gbps bandwidth (full duplex mode)
- Provides port mirror (many-to-1)
- Port mirroring monitors the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops
- Supports ERPS.(Ethernet Ring Protection Switching)
- IEEE 1588 and Synchronous Ethernet network timing, transparent clock mode
- 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

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
  - 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
- Traffic-policing on the switch port
- DSCP remarking

Multicast

- Supports IGMP snooping v1, v2 and v3
- Supports MLD snooping v1 and v2
- Querier mode support
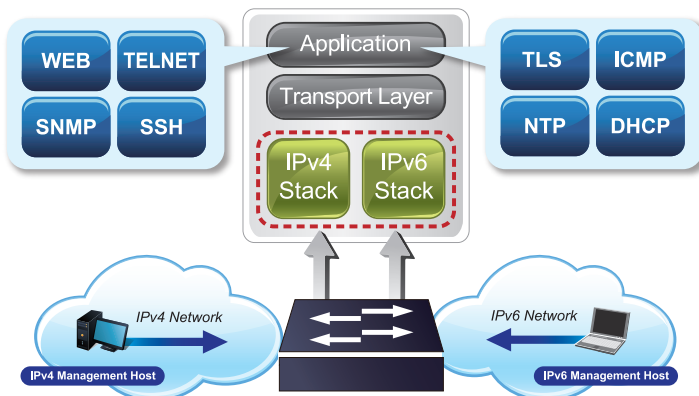
Effective Alarm Alert for Better Protection

The IGSW-24040T 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 to find where the problem is. It will help to save time and human resource.

Fault Alarm Feature

AC/DC Power Failure

or

RJ45/Fiber Connection Link Down

Mail

System Log

SNMP TRAP
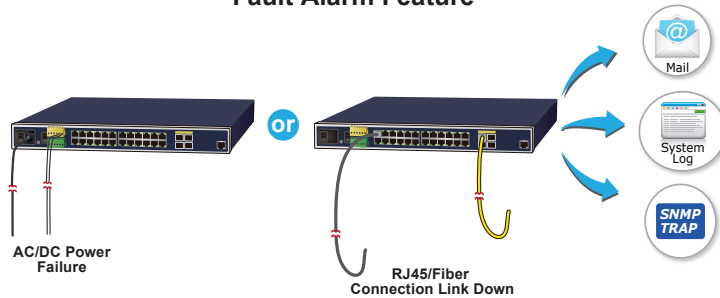
IPv6/IPv4 Dual Stack Management

Supporting both IPv6 and IPv4 protocols, the IGSW-24040T help the SMBs to step in the IPv6 era with the lowest investment as their network facilities need not be replaced or overhauled if the IPv6 FTTx edge network is set up.

WEB   TELNET   Application   TLS   ICMP

SNMP   SSH   Transport Layer   NTP   DHCP

IPv4 Stack   IPv6 Stack

IPv4 Network   IPv6 Network

IPv4 Management Host   IPv6 Management Host

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

The IGSW-24040T offers IPv4/IPv6 VLAN routing feature which allows to crossover different VLANs and different IP addresses for the purpose of having a highly-secured, flexible management and simpler networking application.

Robust Layer 2 Features

The IGSW-24040T can be programmed for advanced switch management functions such as dynamic port link aggregation, 802.1Q VLAN and **Q-in-Q VLAN**, **Multiple Spanning Tree protocol (MSTP)**, loop and **BPDU guard**, **IGMP snooping**, and **MLD snooping**. Via the link aggregation, the IGSW-24040T allows the operation of a high-speed trunk to combine with multiple ports, and supports fail-over as well. Also, the **Link Layer Discovery Protocol (LLDP)** is the Layer 2 protocol included to help discover basic information about neighboring devices on the local broadcast domain.

MSTP   QoS

Q-in-Q   LACP   LLDP

MLD   IGMP

L2/L4 Managed Switch   L2/L4 Managed Switch
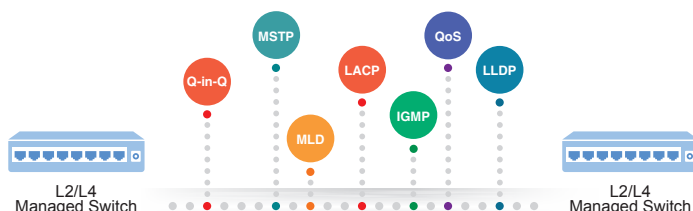
- • IGMP snooping port filtering
- • MLD snooping port filtering
- • MVR (Multicast VLAN Registration)

Security

- • Authentication
  - – IEEE 802.1x port-based/MAC-based network access authentication
  - – IEEE 802.1x authentication with guest VLAN
  - – Built-in RADIUS client to cooperate with the RADIUS servers
  - – RADIUS/TACACS+ users access authentication
- • Access Control List
  - – IP-based Access Control List (ACL)
  - – MAC-based Access Control List (ACL)
- • Source MAC/IP address binding
- • **DHCP Snooping** to filter distrusted DHCP messages
- • **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 and v2c switch management
  - – SSHv2, TLSv1.2 and SNMP v3 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 Server
- • 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)

Efficient Traffic Control

The IGSW-24040T is loaded with robust QoS features and powerful traffic management to enhance services to business-class data, voice, and video solutions. The functionality includes broadcast/multicast storm control, per port bandwidth control, IP DSCP QoS priority and remarking. They guarantee the best performance for VoIP and video stream transmission, and empower the enterprises to take full advantage of the limited network resources.

Powerful Security

PLANET IGSW-24040T offer comprehensive **IPv4/IPv6** Layer 2 to Layer 4 **Access Control List (ACL)** for enforcing security to the edge. They 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. Their protection mechanism also comprises **802.1X port-based** user and device authentication, which can be deployed with RADIUS and TACACS+ to ensure the port level security and block illegal users. With the **protected port** function, communication between edge ports can be prevented to guarantee user privacy. Furthermore, **Port security** function allows to limit the number of network devices on a given port

- – 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 deployment management
- • PLANET NMS system and CloudViewer for deployment management

Friendly and Secure Management

For efficient management, the IGSW-24040T is equipped with **web**, **Telnet** and **SNMP** management interfaces.

- ■ With the built-in **Web-based** management interface, the IGSW-24040T offers an easy-to-use, platform-independent management and configuration facility.
- ■ For **text-based** management, the switches can be accessed via Telnet and the console port.
- ■ By supporting the standard SNMP, the switches can be managed via any standard management software

Moreover, the IGSW-24040T offers secure remote management by supporting **SSHv2**, **TLSv1.2** and **SNMP v3** connections which encrypt the packet content at each session.
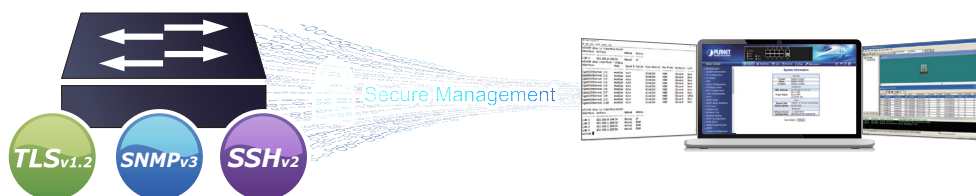
Flexibility and Long-distance Extension Solution

The IGSW-24040T provide 4 built-in Gigabit SFP interfaces supporting **100BASE-FX/1000BASE-SX/LX SFP** (small form-factor pluggable) fiber transceiver to uplink to backbone switch and monitoring center in long distance. 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 IGSW-24040T 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.

SFP DDM *(Digital Diagnostic Monitor)*

Voltage	Ammeter	Temperature	Power Transceiver	Power Receiver
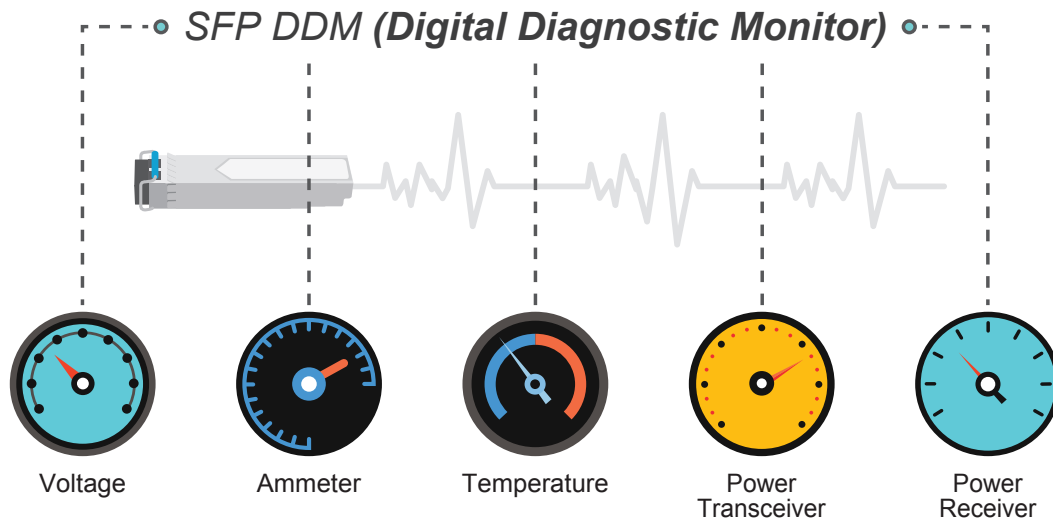
Applications

Redundant Ring, Fast Recovery for Critical Network Applications

The IGSW-24040T 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 20ms.

Control Center

Up to 120km

Mountain

Industrial Switch

-40°C

Industrial Switch

Redundant Connection (ERPS)

Up to 120km

Up to 120km

Up to 120km

75°C

Industrial Switch

Factory

—— 1000BASE-SX/LX Fiber Optic
—— 1000BASE-T UTP
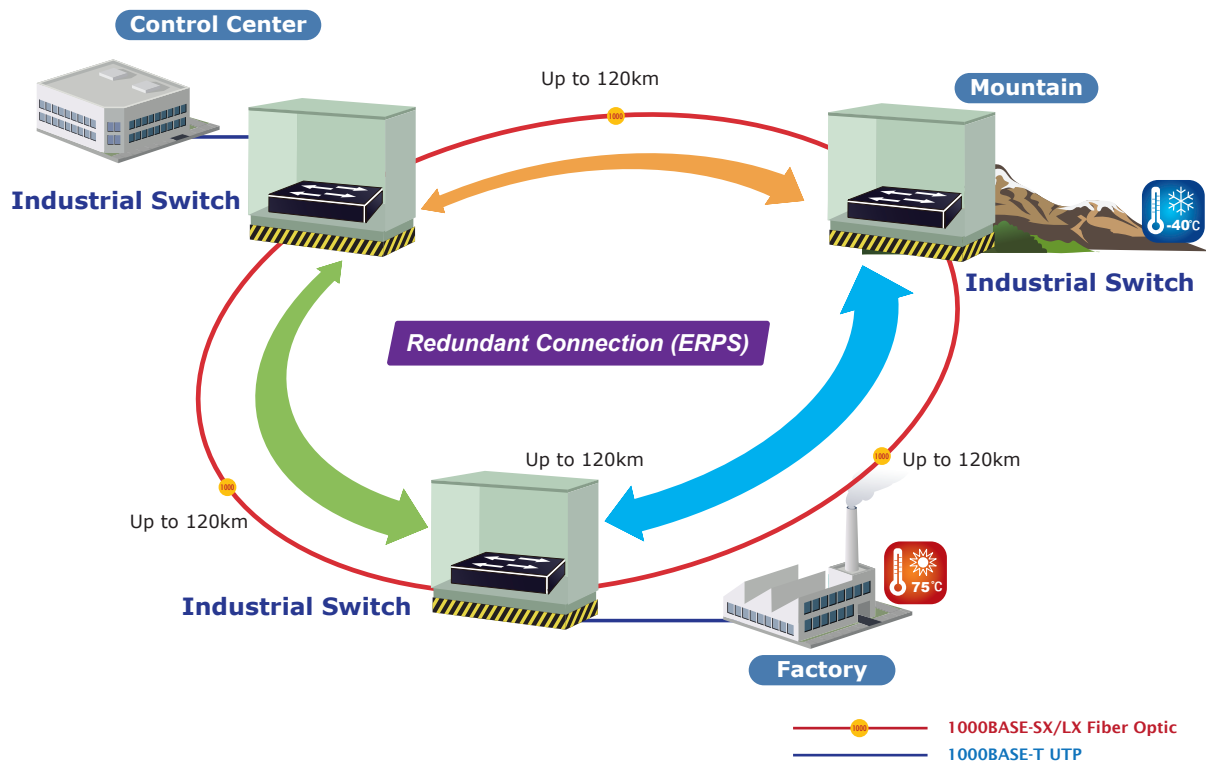
Layer 3 VLAN Routing Application

With the built-in, robust Layer 3 routing protocols, the IGSW-24040T ensures reliable routing between VLANs and network segments. The routing protocols can be applied by VLAN interface with up to 32 routing entries. The IGSW-24040T, certainly an ideal solution for industries, offers greater security, control and bandwidth conservation, and high-speed uplink.

VLAN Routing Applications

Finance Department
VLAN100 Domain B 192.168.10.x/24

Sales Department
VLAN300 Domain A 192.168.30.x/24

550m

450m

Control Center
VLAN1 Domain 192.168.0.x

MKT Department
VLAN200 Domain C 192.168.20.x/24

200m

NAS Storage
Server Rack

IGSW-24040T

1000BASE-SX/LX Fiber Optic
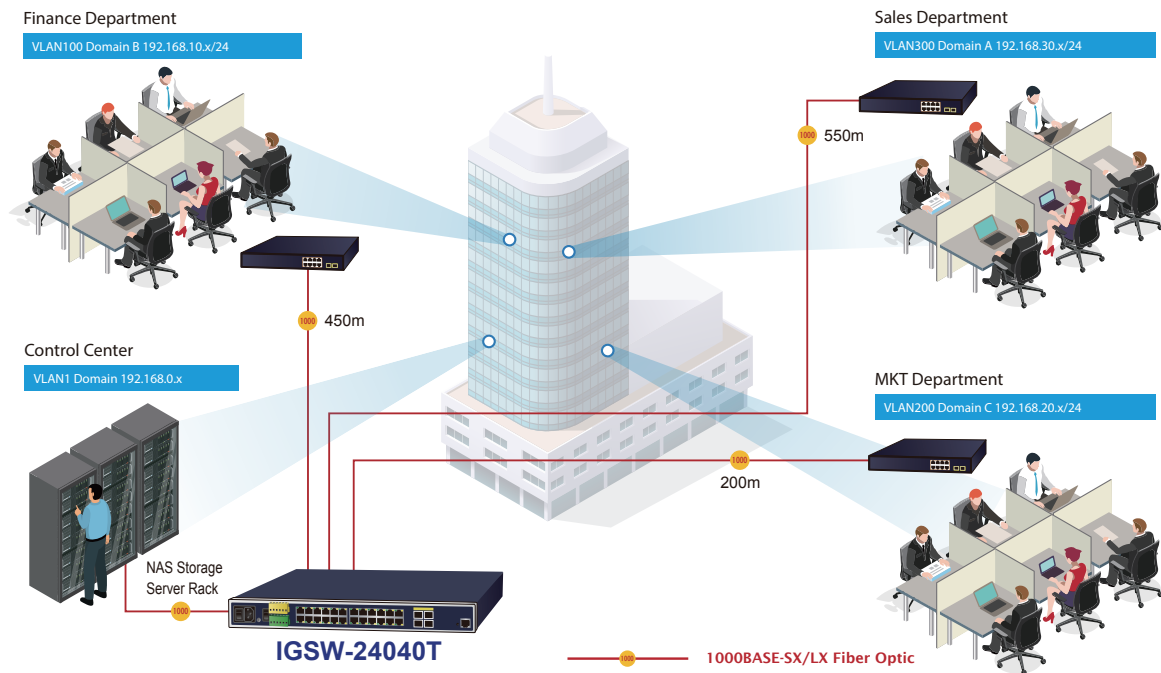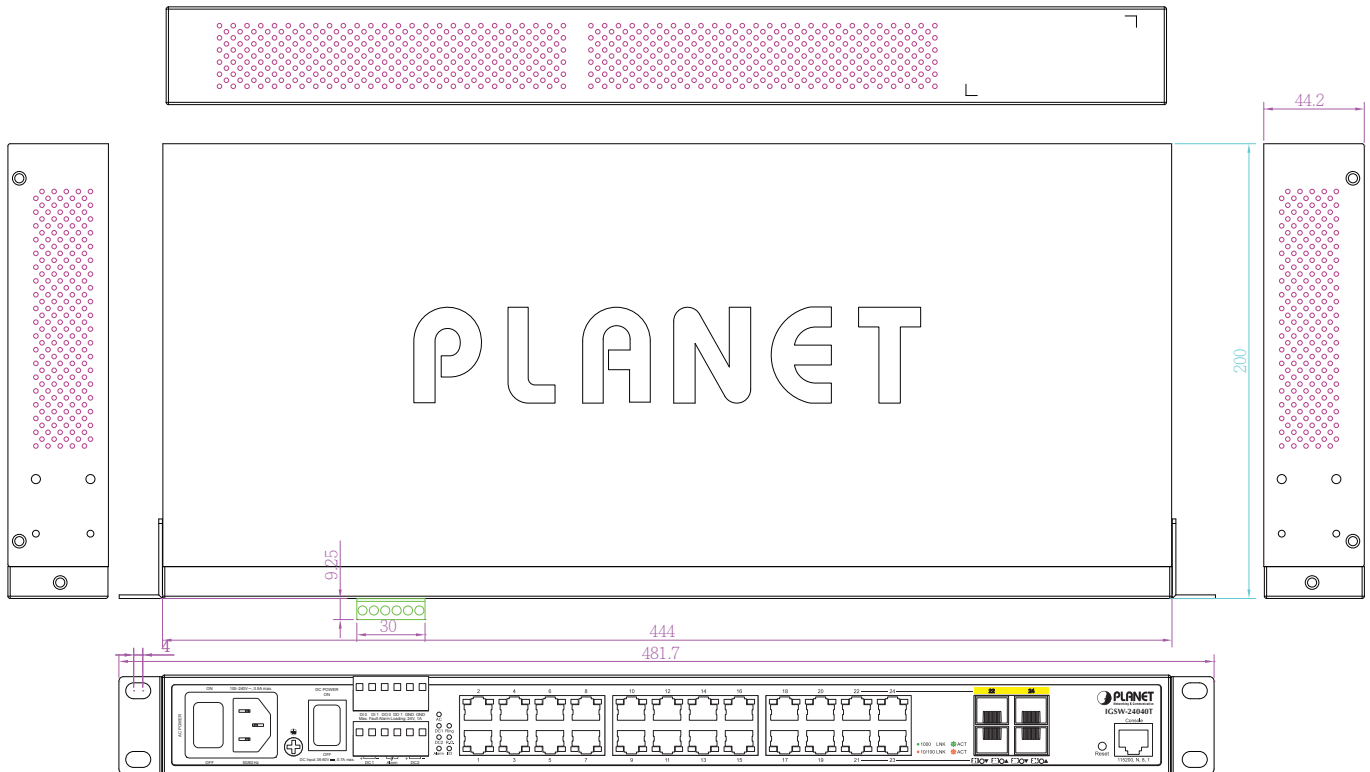
Specifications

Product	IGSW-24040T
Hardware Specifications	
Hardware Version	3
Copper Ports	24 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	4 100/1000BASE-X SFP interfaces, shared with Port-21 to Port-24 Compatible with 100BASE-FX SFP transceiver
Console	1 x RS232-to-RJ45 serial port (115200, 8, N, 1)
SDRAM	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 1 & 2, Pin 3/4 for DO 1 & 2, Pin 5/6 for GND
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC
DI/DO	2 Digital Input (DI): Level 0: -24~2.1V Level 1: 2.1~24V Max. input current: 10mA 2 Digital Output (DO): Open collector to 24VDC, 100mA
Dimensions (W x D x H)	440 x 200 x 44.5 mm, 1U height
Weight	2788g
Power Consumption	Max. 19.7 watts/67.2 BTU
Power Requirements – AC	AC 100~240V, 50/60Hz 0.5A
Power Requirements – DC	DC 36~60V, 0.7A
EFT Protection	6KV DC
ESD Protection	6KV DC

LED	System:
	   AC (Green), DC1 (Green), DC2 (Green), Alarm (Red)
	   Ring (Green), R.O. (Green), DI/DO (Red)
	10/100/1000T RJ45 Interfaces (Port 1 to Port 24):
	   1000Mbps LNK/ACT (Green)
	   10/100Mbps LNK/ACT (Orange)
	100/1000Mbps SFP Combo Interfaces (Port 21 to Port 24):
	   1000Mbps LNK/ACT (Green)
	   100Mbps LNK/ACT (Orange)

Switching Specifications	
Switch Architecture	Store-and-Forward
Switch Fabric	48Gbps/non-blocking
Throughput	35.71Mpps@64Bytes
Address Table	8K entries, automatic source address learning and aging
Shared Data Buffer	4M bits
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	9K bytes
Layer 2 Management Functions	
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable
Port Status	Display each port's speed duplex mode, link status, flow control status, auto-negotiation status, trunk status
Port Mirroring	TX/RX/Both Many-to-1 monitor
VLAN	802.1Q tagged based VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN IP Subnet-based VLAN MVR (Multicast VLAN registration) Up to 4K VLAN groups, out of 4095 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP/static trunk 12 groups with 8 port per trunk
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)
IGMP Snooping	IGMP (v1/v2/v3) snooping IGMP querier mode support Up to 255 multicast groups
MLD Snooping	MLD (v1/v2) snooping MLD querier mode support Up to 255 multicast groups

Bandwidth Control	Per port bandwidth control
	  Ingress: 100Kbps~1000Mbps
	  Egress: 100Kbps~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 Supports Major ring and sub-ring Recovery time < 10ms @ 3 units Recovery time < 50ms @ 16 units

Synchronization	IEEE 1588v2 PTP(Precision Time Protocol)
	  - Peer-to-peer transparent clock
	  - End-to-end transparent clock

Security Functions

Access Control List	IPv4/IPv6 IP-based ACL/MAC-based ACL IPv4/IPv6 IP-based ACE/MAC-based ACE Up to 256 entries
Port Security	IEEE 802.1X – Port-based authentication Built-in RADIUS client to co-operate with RADIUS server RADIUS/TACACS+ user access authentication
MAC Security	IP-MAC port binding MAC filter Static MAC address
Enhanced Security	DHCP Snooping and DHCP Option82 STP BPDU guard, BPDU filtering and BPDU forwarding DoS attack prevention ARP inspection IP source guard

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

Management

Basic Management Interfaces	Console/Telnet/Web browser/SNMP v1, v2c	
Secure Management Interfaces	SSHv2, TLS v1.2, SNMP v3	
System Management	Firmware upgrade by HTTP/TFTP protocol through Ethernet network LLDP protocol SNTP PLANET Smart Discovery Utility PLANET NMS System/CloudViewer	
Event Management	Remote/Local Syslog System log	
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

Standards Conformance

Regulatory 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	IEEE 1588v2 RFC 768 UDP RFC 783 TFTP RFC 793 TCP 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 ITU G.8032 ERPS Ring

Environment

Operating	Temperature: -10 ~ 60 degrees C for AC power input -40 ~ 75 degrees C for DC power input Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -40 ~ 80 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

Dimensions

44.2

200

9.25

30

4

444

481.7

Unit: mm

Ordering Information

IGSW-24040T	Industrial L2+ 20-Port 10/100/1000T + 4-Port TP/SFP Combo Managed Ethernet Switch (-40~75 degrees C)

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(V2)	YES	1000	LC	Multi Mode	550m	850nm	0 ~ 60 degrees C
MGB-SX2(V2)	YES	1000	LC	Multi Mode	2km	1310nm	0 ~ 60 degrees C
MGB-LX(V2)	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(V2)	YES	1000	LC	Single Mode	120km	1550nm	0 ~ 60 degrees C

Gigabit Ethernet Transceiver (1000BASE-BX, Single Fiber Bi-directional SFP)

Model	DDM	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-LA10(V2)	YES	1000	WDM(LC)	Single Mode	10km	1310nm	1550nm	0 ~ 60 degrees C
MGB-LB10(V2		1000	WDM(LC)	Single Mode	10km	1550nm	1310nm	0 ~ 60 degrees C
MGB-LA20(V2)	YES	1000	WDM(LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 degrees C
MGB-LB20(V2)		1000	WDM(LC)	Single Mode	20km	1550nm	1310nm	0 ~ 60 degrees C
MGB-LA40(V2)	YES	1000	WDM(LC)	Single Mode	40km	1310nm	1550nm	0 ~ 60 degrees C
MGB-LB40(V2)		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 100Mbps Modules

Fast Ethernet Transceiver (100BASE-X SFP)

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

FC CE

IGSW-24040T