# Industrial IP67-rated 6-Port 10/100/1000T Managed Ethernet Switch

Rugged, Space-saving and IP67 Industrial Managed Ethernet Switch

PLANET IGS-5227-6T Industrial Managed Ethernet Switch comes with an IP67-rated water-and dust-proof industrial case, and 6 10/100/1000T vibration-proof connectors, providing 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. The IGS-5227-6T can be easily mounted on a DIN rail or wall taking up less space. It provides a quick, safe, cost-effective and high-performance network solution to IP security surveillance for small businesses and enterprises.

IP67 Rugged Case

6 x Waterproof Gigabit RJ45

9~48V DC, 24V DC Waterproof Redundant Power Input
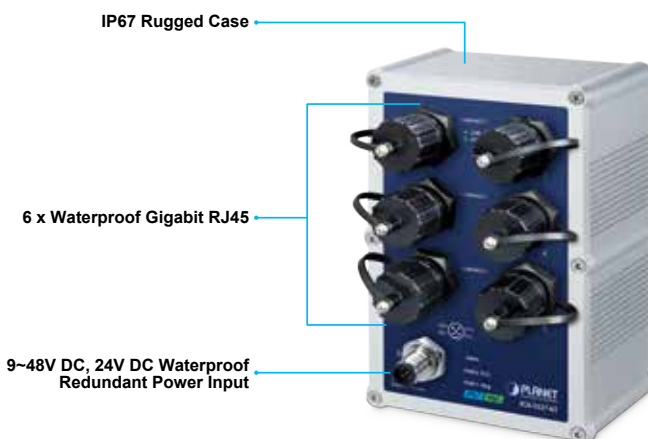
Waterproof and Dustproof RJ45 Ethernet Connectors and Shielded Plugs

The IGS-5227-6T is equipped with a 6-port 10/100/1000BASE-T auto-negotiation waterproof and dustproof RJ45 connector. These shielded RJ45 plugs can make the general UTP cable waterproof and dustproof. When connected to the waterproof and dustproof RJ45 connector, it provides tight and strong connection, and comes with the industrial protection rating of IP67 capable of withstanding humidity, dirt, dust, shock, vibrations, heat and cold.

Physical Port

- **6-port 10/100/1000BASE-T waterproof** and **dustproof** RJ45 copper

Hardware Conformance

- IP67-rated aluminum case
- Redundant power design
  - **9** to **48V** DC, redundant power with reverse polarity protection
  - Active-active redundant power failure protection
  - Backup of catastrophic power failure on one supply
  - Fault tolerance and resilience
  - 24V AC power input acceptable
- DIN-rail or wall-mount design
- Supports Ethernet ESD protection of 6000V DC
- -40 to 75 degrees C operating temperature

Industrial Protocol

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

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 that eliminates erroneous packets to optimize the network bandwidth
- Storm control support
  - Broadcast/Multicast/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
  - MAC-based VLAN
  - IP subnet-based VLAN
  - Voice VLAN

Environmentally Hardened Design

The IGS-5227-6T is able to protect itself from dust and water ingress, and to operate under the temperature range from **-40 to 75 degrees C**. All these features ensure the highest level of reliability for mission-critical applications in any difficult environment.


Dual Power Input for High Availability Network System

The IGS-5227-6T features a strong dual power input system (**Dual 9~48V DC**, **24V AC**) incorporated into customer's automation network to enhance system reliability and uptime. For example, when DC Power 1 fails to work, the hardware failover function will be activated automatically to keep powering the IGS-5227-6T via DC Power 2 alternatively without any loss of operation.

SMTP/SNMP Trap Event Alert

Though most NVR or camera management software offers SMTP email alert function, the IGS-5227-6T further 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 loss of power.

SMTP/SNMP Trap Event Alert
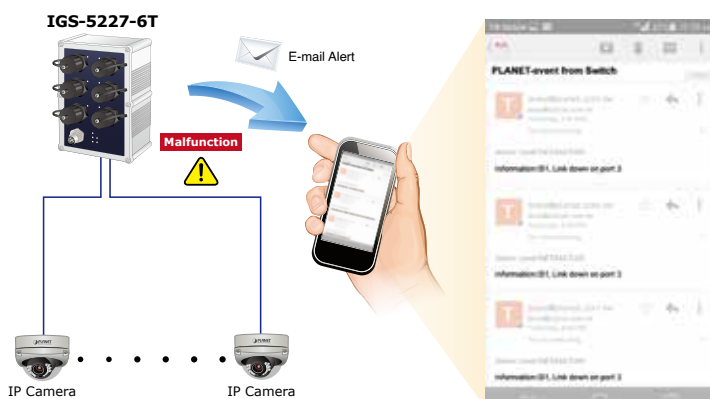
- – VLAN Translation
- – GVRP (GARP VLAN Registration Protocol)
- Supports **Spanning Tree Protocol**

  - – IEEE 802.1D Spanning Tree Protocol (STP)
  - – IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - – IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), spanning tree by VLAN
  - – BPDU Guard
- Supports **Link Aggregation**

  - – 802.3ad Link Aggregation Control Protocol (LACP)
  - – Cisco ether-channel (static trunk)
  - – Maximum 3 trunk groups, with 2 ports for each trunk
  - – Up to 4Gbps 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)
- 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
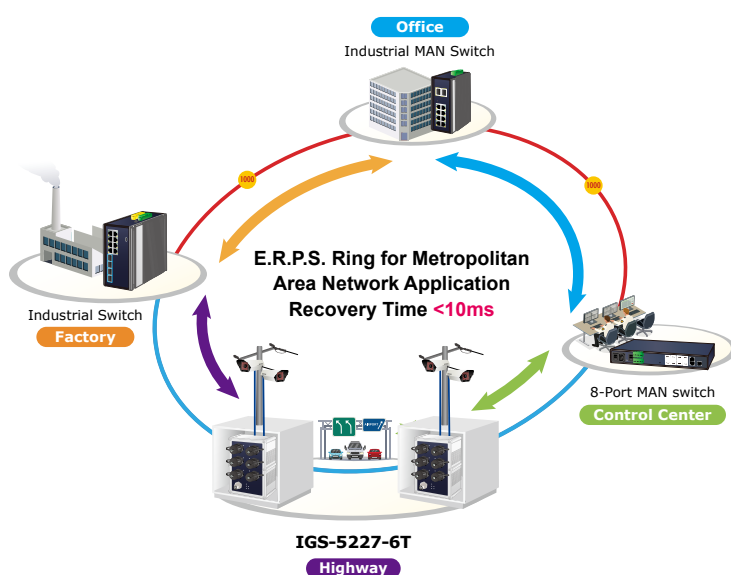
Quality of Service

- 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 IPv4 IGMP snooping v1, v2 and v3
- Supports IPv6 MLD snooping v1 and v2
- Querier mode support
- IPv4 IGMP snooping port filtering
- IPv6 MLD snooping port filtering
- MVR (Multicast VLAN Registration)

Fast Recovery for Critical Network Applications

The IGS-5227-6T 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 is within 10ms.

Office
Industrial MAN Switch

E.R.P.S. Ring for Metropolitan Area Network Application Recovery Time <10ms

Industrial Switch
Factory

8-Port MAN switch
Control Center

IGS-5227-6T
Highway

Network with Cybersecurity Helps Minimize Security Risks

The IGS-5227-6T 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-5227-6T protects the switch management and enhances the security of the mission-critical network without any extra deployment cost and effort.

IPv6/IPv4 Dual Stack

Supporting both IPv6 and IPv4 protocols, the IGS-5227-6T helps data centers, campuses, telecoms, and more to experience the IPv6 era with the lowest investment as its network facilities need not be replaced or overhauled if the IPv6 FTTx edge network is set up.

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

The IGS-5227-6T not only provides ultra high transmission performance, and excellent Layer 2 and Layer 4 technologies, but also Layer 3 IPv4/IPv6 VLAN routing feature which allows to cross over different VLANs and different IP addresses for the purpose of having a highly-secure, flexibly-managed and simple networking application.

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
- IPv4 and IPv6 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
  - 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** address/NTP management
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- Supports sFlow
- System Maintenance
  - Firmware upload/download via HTTP/TFTP
  - Reset button for system reboot or reset to factory default
  - Dual images
- IPv4 and IPv6 DHCP Relay
- DHCP relay and option 82
- DHCP Server Mode support
- User privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network diagnostic

Robust Layer 2 Features

The IGS-5227-6T 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 IGS-5227-6T allows the operation of a high-speed trunk to combine with multiple fiber ports and supports fail-over as well.
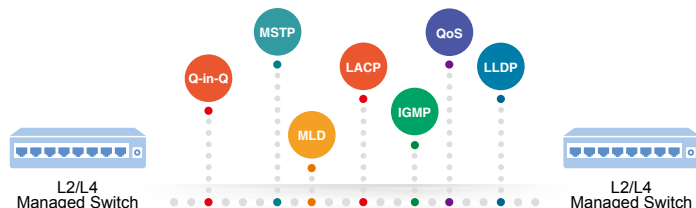
- Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
- ICMPv6/ICMPv4 remote ping
- SMTP/Syslog remote alarm
- PLANET Smart Discovery Utility for deployment management
- PLANET NMS/NMSViewerPro app for deployment management
- PLANET CloudViewerPro app for deployment management

Powerful Security from Layer 2 to Layer 4

The IGS-5227-6T 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-5227-6T 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.

Excellent Traffic Control

The IGS-5227-6T 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 particularly useful for multi-tenant units, multi-business units, Telco and network service providers' applications. It also empowers the industrial environment to take full advantage of the limited network resources and guarantees the best performance in VoIP and video conferencing transmission.

Efficient and Secure Management

For efficient management, the IGS-5227-6T L2+ Managed Switch is equipped with Command line, Web and SNMP management interfaces.
- With the built-in **Web-based** management interface, the IGS-5227-6T offers an easy-to-use, platform-independent management and configuration facility.
- By supporting the standard SNMP protocol, the switch can be managed via any SNMP-based management software.
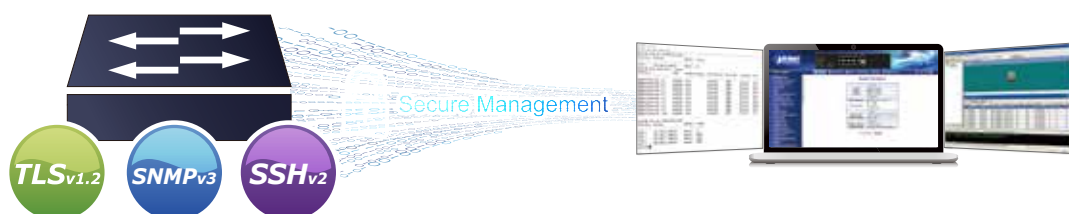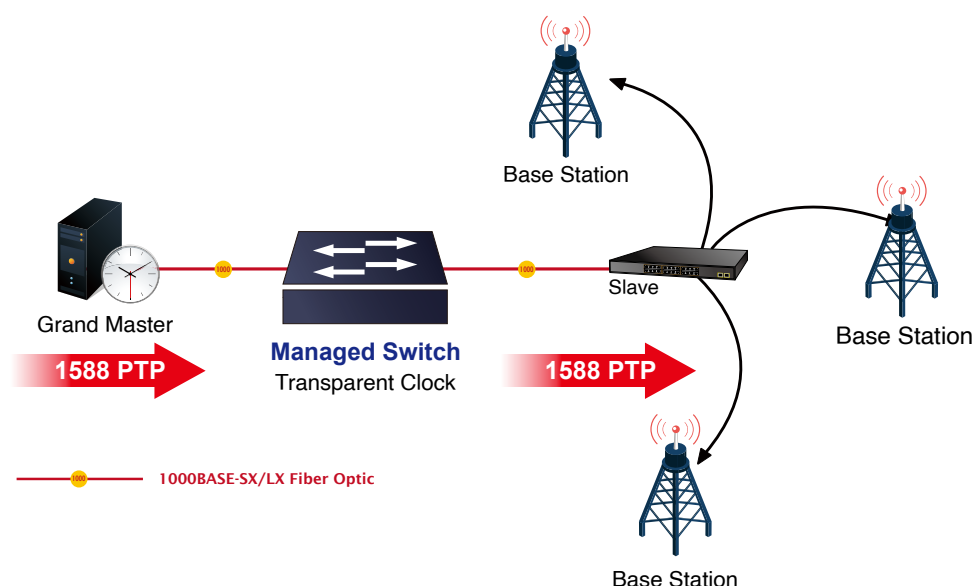
Remote Management Solution

PLANET's **Universal Network Management System** (UNI-NMS) and CloudViewerPro app support IT staff by remotely managing all network devices and monitoring PDs' operational statuses. Thus, they're designed for both the enterprises and industries where deployments of PDs can be as remote as possible, without having to go to the actual location once a bug or faulty condition is found. With the UNI-NMS or CloudViewerPro app, all kinds of businesses can now be speedily and efficiently managed from one platform.

NMS Controller

CloudViewerPro App

1588 Time Protocol for Industrial Computing Networks

The IGS-5227 series is ideal for telecom and Carrier Ethernet applications, supporting MEF service delivery and timing over packet solutions for IEEE 1588 and synchronous Ethernet.

Time Synchronization in Network

Base Station

Grand Master

Managed Switch
Transparent Clock

Slave

1588 PTP

1588 PTP

Base Station

Base Station

Base Station

━━━ 1000BASE-SX/LX Fiber Optic

Modbus TCP provides Flexible Network Connectivity for Factory Automation

With the supported Modbus TCP/IP protocol, the IGS-5227 series can easily integrate with SCADA systems, HMI systems and other data acquisition systems in factory floors. It enable administrators to remotely monitor the industrial Ethernet switch's operating information, port information and communication status, thus easily achieving enhanced monitoring and maintenance of the entire factory.

Applications

High Availability Networking Solution for Surveillance System

The Switch has the capability to rapidly recover itself in case there are interruptions or external intrusions. As the ITU-T G.8032 ERPS is employed, the reliability and uptime of the network can be greatly enhanced. Thus, the IGS-5227-6T, with its redundant connection and high bandwidth, is ideal for building an IP-based surveillance infrastructure in public transportation.
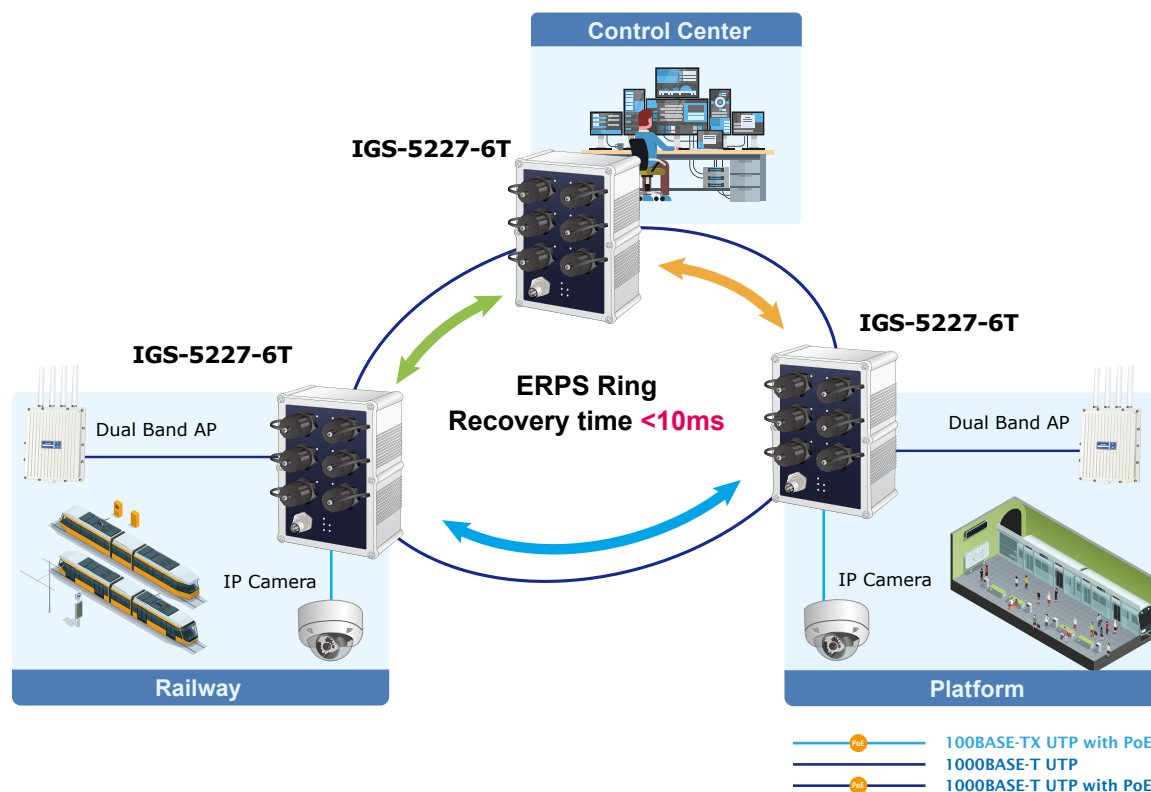
Layer 2+ VLAN Static Routing

With the built-in robust Layer 3 routing protocols, the IGS-5227-6T ensures reliable routing between VLANs and network segments. The routing protocols can be applied by VLAN interface with up to 32 routing entries. The IGS-5227-6T, certainly an ideal solution for industries, offers greater security, control and bandwidth conservation, and high-speed uplink.

Specifications

Product	IGS-5227-6T
Hardware Specifications	
Copper Ports	6 10/100/1000BASE-T waterproof and dustproof RJ45 auto-MDI/MDI-X ports
Power Connector	1 x M12, 5-pin A-coded male connector
Dimensions (W x D x H)	103 x 53 x 163 mm
Weight	1069g
Enclosure	IP67 aluminum case
Installation	Wall-mount kit or DIN-rail kit
Power Consumption	Max. 5.28 watts/18 BTU@48V DC input (System on) Max. 8.16 watts/27.82 BTU@48V DC input (Full loading)
Power Requirements	Dual 9~48V DC, 24V AC
ESD Protection	6KV DC
LED	System: 　DC1 (Green), DC2 (Green), Alarm (Red) 　Ring (Green), R.O. (Green) 10/100/1000T RJ45 Interfaces 　LNK/ACT (Green)
Switching Specifications	
Switch Architecture	Store-and-Forward
Switch Fabric	12Gbps/non-blocking
Throughput	8.9Mpps@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 RMirror – Remote Switched Port Analyzer (Cisco RSPAN) Supports up to 5 sessions
VLAN	IEEE 802.1Q tagged based VLAN IEEE 802.1ad Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN GVRP (GARP VLAN Registration Protocol) MRP 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 3 groups with 2 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) Supports BPDU Guard
IGMP Snooping	IPv4 IGMP snooping v1, v2, v3 IPv4 IGMP querier mode support Up to 255 multicast groups
MLD Snooping	IPv6 MLD snooping v1, v2 IPv6 MLD querier mode support Up to 255 multicast groups
Ring	Supports ERPS, and complies with ITU-T G.8032 Recovery time < 10ms @ 3 nodes Recovery time <50ms @ 16 nodes Supports major ring and sub-ring.

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

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

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

Security Functions

Access Control List	IPv4/IPv6 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, up to 256 entries Dynamic ARP inspection, up to 1K entries Command line authority control based on user level Static MAC address, up to 64 entries
AAA	RADIUS client TACACS+ client
Network Access Control	IEEE 802.1x port-based network access control MAC-based authentication Local/RADIUS authentication

Management

Basic Management Interfaces	Telnet/Web browser/SNMP v1, v2c
Secure Management Interfaces	SSHv2,TLSv1.2, SNMP v3
System Management	Firmware upgrade by HTTP protocol through Ethernet network Configuration upload/download through HTTP LLDP protocol NTP PLANET Smart Discovery Utility PLANET NMS PLANET NMSViewerPro App PLANET CloudViewerPro App
Event Management	Remote syslog System log SMTP
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
Certification	EN50155

Stability Testing	IEC60068-2-32 (free fall)	
	IEC60068-2-27 (shock)	
	IEC60068-2-6 (vibration)	
Standards Compliance	IEEE 802.3 10BASE-T	IEEE 802.1ag Connectivity Fault Management (CFM)
	IEEE 802.3u 100BASE-TX	IEEE 802.3az Energy Efficient Ethernet (EEE)
	IEEE 802.3ab Gigabit 1000T	RFC 768 UDP
	IEEE 802.3x flow control and back pressure	RFC 783 TFTP
	IEEE 802.3ad port trunk with LACP	RFC 791 IP
	IEEE 802.1D Spanning Tree Protocol	RFC 792 ICMP
	IEEE 802.1w Rapid Spanning Tree Protocol	RFC 2068 HTTP
	IEEE 802.1s Multiple Spanning Tree Protocol	RFC 1112 IGMP v1
	IEEE 802.1p Class of Service	RFC 2236 IGMP v2
	IEEE 802.1Q VLAN tagging	RFC 3376 IGMP v3
	IEEE 802.1X Port Authentication Network Control	RFC 2710 MLD v1
	IEEE 802.1ab LLDP	RFC 3810 MLD v2
Environment		
Operating	Temperature: -40 ~ 75 degrees C	
	Relative Humidity: 5 ~ 95% (non-condensing)	
Storage	Temperature: -40 ~ 80 degrees C	
	Relative Humidity: 5 ~ 95% (non-condensing)	

Dimensions

Dimensions (W x D x H): 103 x 53 x 163 mm

Ordering Information

IGS-5227-6T	Industrial IP67-rated 6-Port 10/100/1000T Managed Ethernet Switch (-40~75 degrees C)

Related Products

IGS-5227X-4P2T	Industrial IP67-rated 4-Port 10/100/1000T 802.3at PoE+ 2-Port 10/100/1000T Managed Ethernet Switch
IGS-5227-6MT-X	Industrial IP67-rated 6-Port 10/100/1000T M12 Managed Ethernet Switch (-40~75 degrees C, X-coded M12)
IGS-604HPT-RJ	Industrial IP67-rated 4-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T Managed Ethernet Switch (-40~75 degrees C)
IGS-604HPT-M12	Industrial IP67-rated 4-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T Managed Ethernet Switch (-40~75 degrees C)
ISW-800T-M12	Industrial IP67-rated 8-Port 10/100Mbps M12 Ethernet Switch (-40~75 degrees C)
ISW-808PT-M12	Industrial IP67 8-Port 10/100TX M12 802.3at PoE+ Switch
WGS-5225-8MT	Industrial L2+ 8-Port 10/100/1000T M12 Wall-mount Managed Switch

IGS-5227-6T