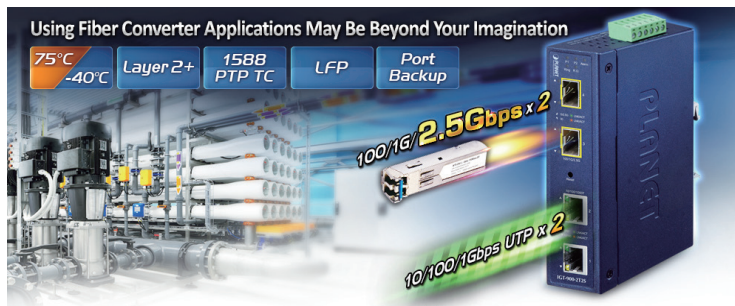


# Industrial 1-/2-Port 10/100/1000T + 1-/2-Port 100/1000/2500X SFP Managed Media Converter



## Supreme Managed Media Converter for Robust Environment

PLANET IGT-900-Series, the fully-managed Gigabit Media Converter for harsh environments, features 10/100/1000Mbps copper ports, 100/1000/2500X SFP ports and redundant power system in an IP30 rugged but compact-sized case. The IGT-900-Series can be installed in any difficult environment as it can operate stably under the temperature range from **-40 to 75 degrees C**. With such a slim enclosure, it does not need a big space to install. The switch features user-friendly yet advanced **IPv6/IPv4 management** interfaces, abundant **L2/L4 switching** functions and Layer 3 static routing capability. It allows either DIN-rail or wall mounting for efficient use of cabinet space. With SFP fiber slots, it can be flexibly applied to extend the connection distance.



Model	Description
IGT-900-1T1S	Industrial 1-port 10/100/1000T + 1-port 100/1000/2500X SFP Managed Media Converter
IGT-900-2T2S	Industrial 2-port 10/100/1000T + 2-port 100/1000/2500X SFP Managed Media Converter

## Port Backup mode, IGT-900-2T2S only

Via the managed interface, the IGT-900-2T2S can be configured port backup mode. when in the port backup mode, it provides rapid copper/fiber redundancy of link for highly critical Ethernet applications. The port backup mode also supports auto-recovering function. If the destination port of a packet is link down, it will forward the packet to the other port of the backup pair.

## Physical Port

- 1/2 10/100/1000BASE-T Gigabit Ethernet RJ45 ports
- 1/2 100/1000/2500BASE-X SFP ports for SFP type auto detection

## Industrial Protocol

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

## Industrial Case and Installation

- IP30 metal case
- DIN-rail or wall-mount design
- 24V AC, 9~48V DC, redundant power with reverse polarity protection
- Supports 6KV DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

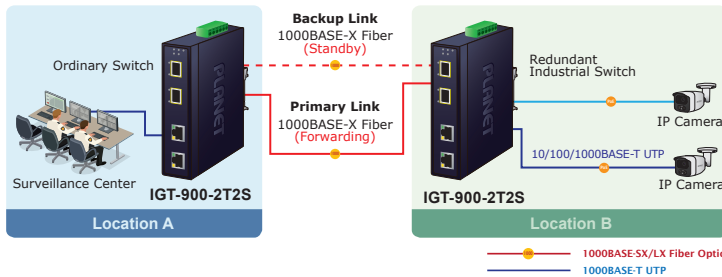
## Layer 3 IP Routing Features

- Supports maximum 32 static routes and route summarization
- Routing interface provides per VLAN routing mode

## Layer 2 Features

- Storm Control support
  - Broadcast/Multicast/Unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Supports provider bridging (VLAN Q-in-Q, IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Port Isolation
  - MAC-based VLAN
  - IP Subnet-based VLAN
  - Protocol-based VLAN
  - VLAN Translation
  - Voice VLAN
  - GVRP
- Supports **Spanning Tree Protocol**
  - IEEE 802.1D Spanning Tree Protocol (STP)

### Site to Site Port Backup



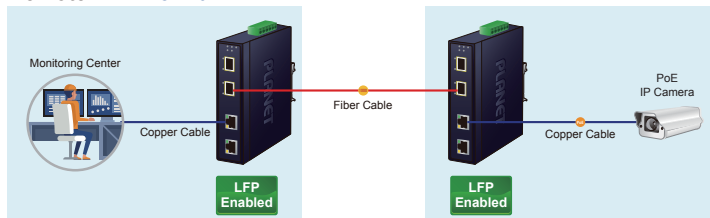
### Enhanced Smart Management Features

The IGT-900-Series provides auto MDI/MDI-X on its TP port and built-in Link Fault Pass-through function (LFP). The LFP function includes Link Loss Carry Forward (LLCF) and Link Loss Return (LLR), both of which can immediately alarm administrators the problem of the link media and provide efficient solution to monitoring the net.

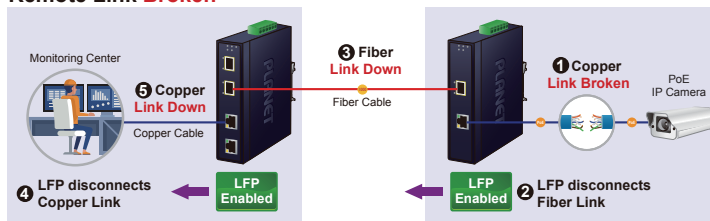
- LLCF means when a device connected to the converter and the TP line loses the link, the converter's fiber port will disconnect the link of transmission.
- LLR means when a device connected to the converter and the fiber line loses the link, the converter's fiber port will disconnect the link of transmission.

Therefore, the IGT-900-Series greatly supports the administrators to manage the network efficiently.

### Remote Link Normal



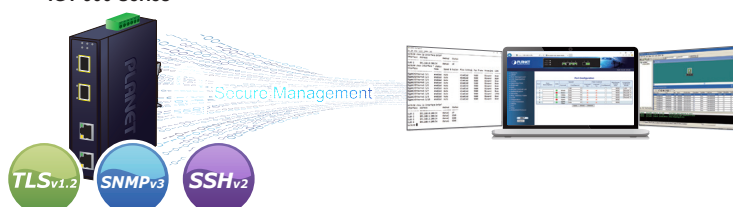
### Remote Link Broken



### Network with Cybersecurity Helps Minimize Security Risks

The IGT-900-Series comes with enhanced cybersecurity to fend off cyberthreats and cyberattacks. It supports SSHv2, TLSv1.2 and SNMPv3 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 IGT-900-Series protects the management and enhances the security of the mission-critical network without any extra deployment cost and effort.

### IGT-900 Series



- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP), spanning tree by VLAN
- BPDU Filtering/BPDU Guard
- Supports **Link Aggregation** (IGT-900-2T2S only)
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (static trunk)
  - Maximum 6 trunk groups with 4 ports per trunk group
  - Up to 5Gbps bandwidth (duplex mode)
- Provides port mirror (many-to-1)
- Port mirroring to monitor 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
- Link Layer Discovery Protocol (LLDP)
- IEEE 802.3ah OAM

### Link Fault Passthrough (LFP)

- The IGT-900-1T1S supports one group (**TP Port 1 and SFP Port 2**) LFP function.
- The IGT-900-2T2S supports two groups (**TP Port 1 and SFP Port 3, TP Port 2 and SFP Port 4**) LFP function.

### Port Backup (IGT-900-2T2S only)

- The IGT-900-2T2S supports two LFP groups (**TP Port 1 and SFP Port 3, and TP Port 2 and SFP Port 4**).

### 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/DSCP/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

### Redundant Ring, Fast Recovery for Critical Network Applications

The IGT-900-Series 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.

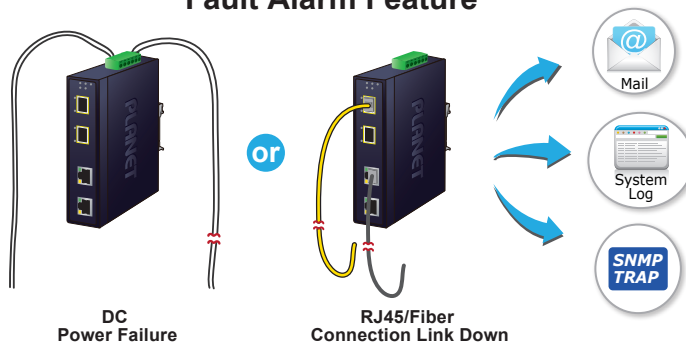
### SMTP/SNMP Trap Event Alert

The IGT-900-Series 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 IGT-900-Series 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.

### Fault Alarm Feature



### Robust Layer 2 Features

The IGT-900-Series can be programmed for advanced Layer 2 switch management functions such as dynamic port link aggregation, 802.1Q tagged VLAN, Q-in-Q VLAN, private VLAN, Multiple Spanning Tree Protocol (MSTP), Layer 2 to Layer 4 QoS, bandwidth control, IGMP snooping and MLD snooping. Via the aggregation of supporting ports, the IGT-900-Series allows the operation of a high-speed trunk group that comes with multiple ports and supports fail-over as well.

### Efficient Management

For efficient management, the IGT-900-Series is equipped with CLI, Web GUI and SNMP management interfaces.

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

- 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)

### Security

- Authentication
  - 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
  - Guest VLAN assigns clients to a restricted VLAN with limited services
- 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
- IP address access management to prevent unauthorized intruder

### Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Web switch management
  - Telnet Command Line Interface
  - SNMP v1 and v2c switch management
  - SSHv2, TLSv1.2 and SNMP v3 secure access
- SNMP Management
  - Four RMON groups (history, statistics, alarms, and events)
  - SNMP trap for interface Link Up and Link Down notification

### Powerful Network Security

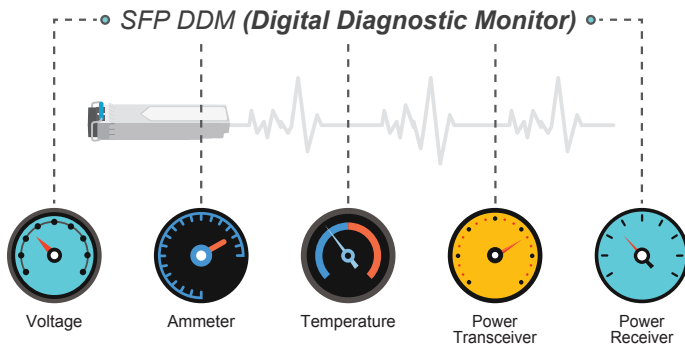
The IGT-900-Series offers comprehensive Layer 2 to Layer 4 **Access Control List (ACL)** for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP ports or defined typical network applications. Its protection mechanism 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 IGT-900-Series 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.

### Intelligent SFP Diagnosis Mechanism

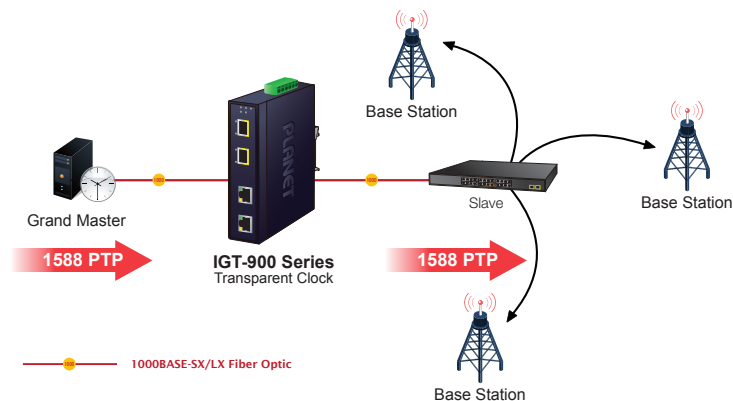
The IGT-900-Series supports SFP-DDM (digital diagnostic monitor) function that greatly helps network administrator to easily monitor real-time parameters of the SFP transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.



### 1588 Time Protocol for Industrial Computing Networks

The IGT-900-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



### Modbus TCP Provides Flexible Network Connectivity for Factory Automation

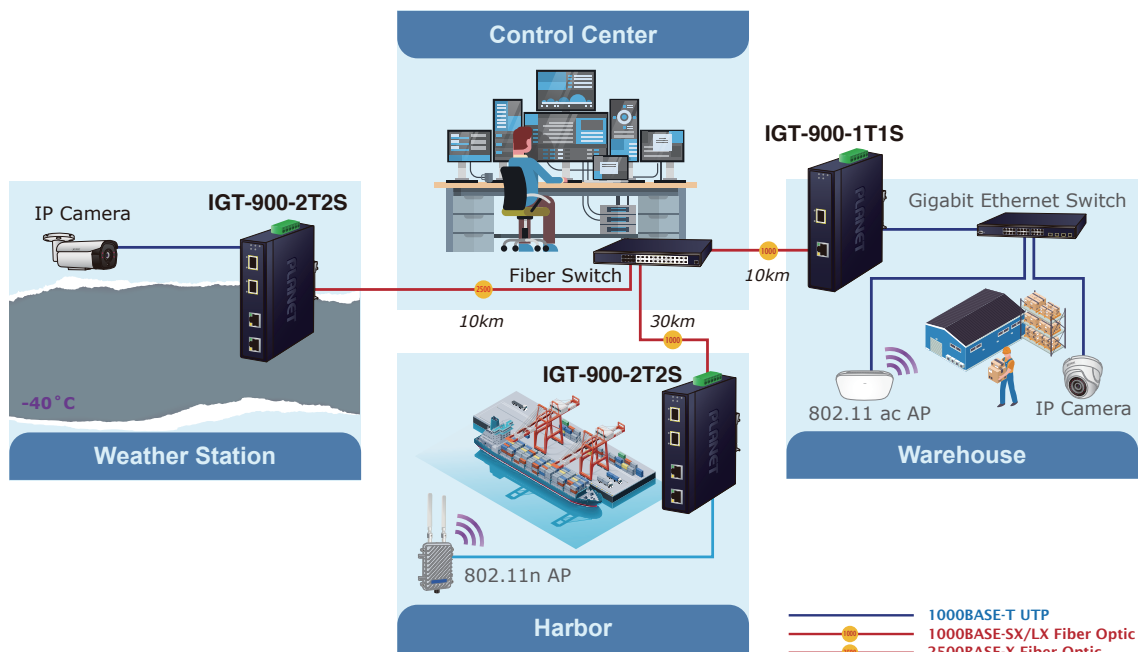
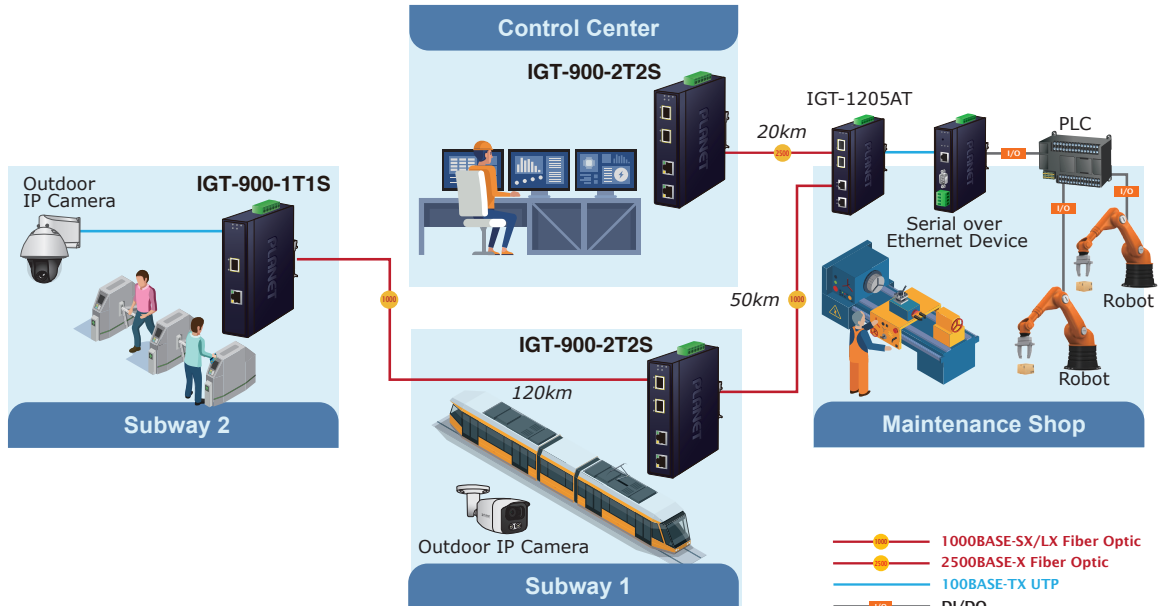
With the supported **Modbus TCP/IP** Protocol, the IGT-900-Series can easily integrate with **SCADA** systems, **HMI** systems and other data acquisition systems in factory floors. It enables administrators to remotely monitor the industrial Ethernet switch's **operating information**, **port information** and **communication status**, thus easily achieving enhanced monitoring and maintenance of the entire factory.

- 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
  - Reset button for system reboot or reset to factory default
  - Dual Images
- DHCP Relay and DHCP Option82
- DHCP Server
- User Privilege levels control
- NTP (Network Time Protocol)
- UPnP
- Network Diagnostic
  - 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
- Local system Log
- PLANET Smart Discovery Utility for deployment management
- PLANET NMS system and CloudViewer for deployment management

## Applications

### Hardened Environment Application

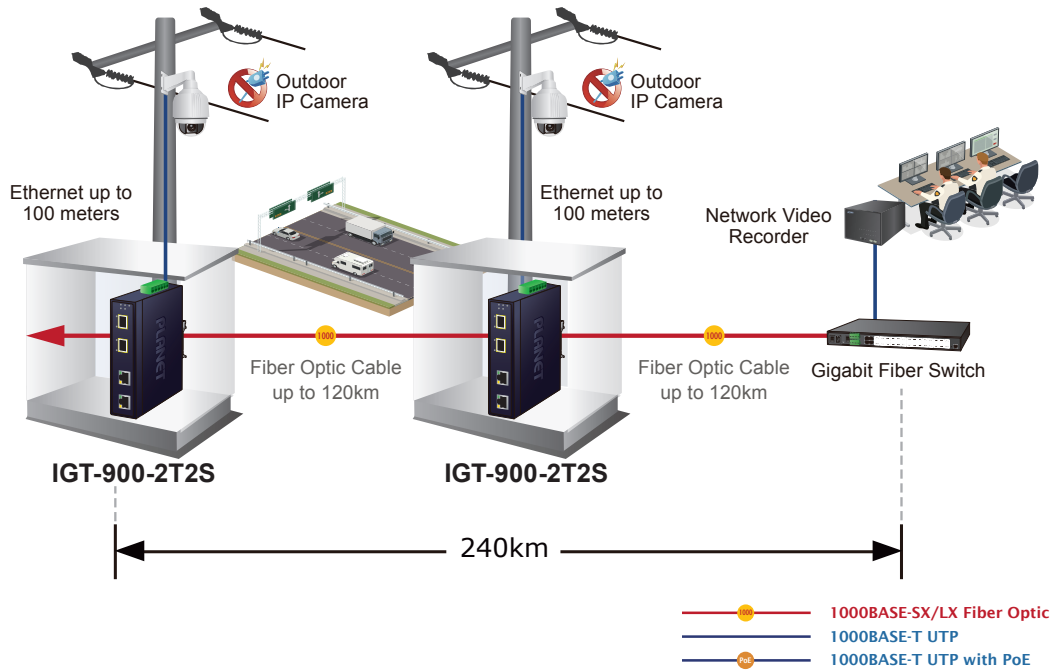
PLANET IGT-900-Series offers full port Gigabit speed. It provides very high reliability and security features to make sure the continuous operation in harsh environments such as transportations, factories, outdoors and places where extremely low or high temperatures can be experienced. Moreover, the IGT-900-Series is also compatible with **100Mbps**, **1000Mbps** and **2500Mbps** SFP transceivers to provide a strong, stable and long-distance connection and flexible industrial networking deployment.



*Fiber-Optic Link Capability Enables Extension of Network Deployment*

The mini-GBIC SFP slots built in the IGT-900-Series support dual speed as it features 100BASE-FX and 1000/2500BASE-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules. Now the administrator 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 2km (multi-mode fiber) and up to 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.

## Extending Ethernet Distance





## Specifications

Product	IGT-900-1T1S	IGT-900-2T2S
Hardware Version	V1	
Copper Ports	1 10/100/1000BASE-T RJ45 auto-MDI/MDI-X port	2 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP Fiber Ports	1 100/1000/2500BASE-X SFP interfaces (Port-2)	2 100/1000/2500BASE-X SFP interfaces (Port-3and Port-4)
RAM	512MBytes	
Flash Memory	64MBytes	
Reset Button	< 5 sec: System reboot > 5 sec: Factory default	
ESD Protection	6KV DC	
Enclosure	IP30 aluminum case	
Installation	DIN-rail kit and wall-mount kit	
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	
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC	
Dimensions (W x D x H)	32 x 87 x 135 mm (W x D x H)	
Weight	273g	390g
Power Requirements	Dual 9~48V DC, 24V AC	
Power Consumption	AC Input Max. 8 watts/24BTU (Ethernet Full Loading)	AC Input Max. 10 watts/24BTU (Ethernet Full Loading)
	DC Input Max. 4.6 watts/24BTU (Ethernet Full Loading)	DC Input Max. 6.5 watts/24BTU (Ethernet Full Loading)
LED Indicator	System: Power 1 (Green) Power 2 (Green) Fault Alarm (Red) Ring (Green) Ring Owner (Green) Per 10/100/1000T RJ45Ports: 1000 LNK/ACT (Green) 10/100 LNK/ACT (Amber) Per SFP Interface: 10/100 LNK/ACT (Amber) 1G/2.5G LNK/ACT (Green)	
<b>Switching</b>		
Switch Architecture	Store-and-Forward	
Switch Fabric	7Gbps/non-blocking	14Gbps/non-blocking
Throughput (packet per second)	5.21Mpps@ 64 bytes packet	10.42Mpps@ 64 bytes packet
Address Table	4K entries, automatic source address learning and aging	
Shared Data Buffer	4Mbits	
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex	
Jumbo Frame	9K bytes	
<b>Layer 3 Functions</b>		
IP Interfaces	Max. 8 VLAN interfaces	
Routing Table	Max. 32 routing entries	
Routing Protocols	IPv4 software static routing IPv6 software static routing	
<b>Layer 2 Function</b>		
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, trunk status	
Port Mirroring	TX / RX / Both Many-to-1 monitor	
VLAN	IEEE 802.1Q tag-based VLAN IEEE 802.1ad Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN VLAN Translation Voice VLAN MVR (Multicast VLAN Registration) GVRP Up to 4K VLAN groups, out of 4094 VLAN IDs	

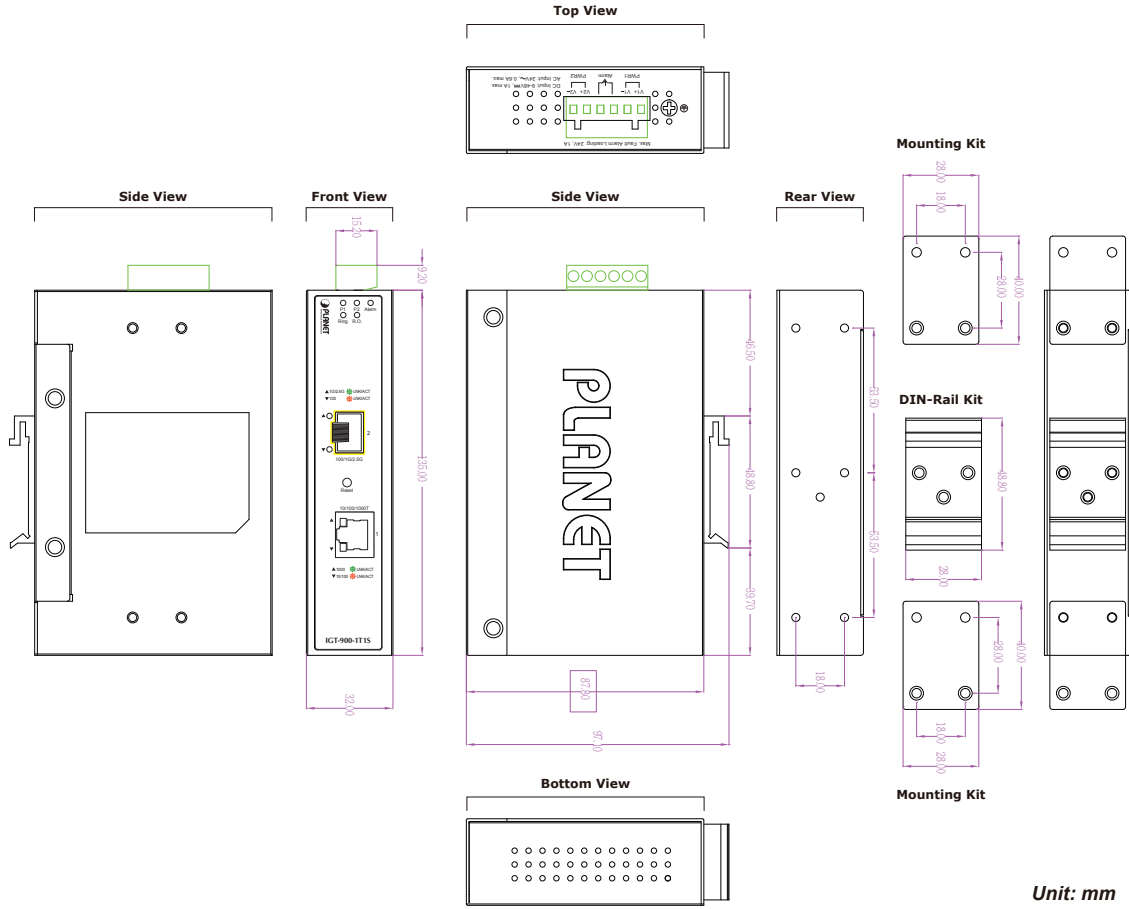
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 6 trunk groups with 4 ports per trunk group (Only for IGT-900-2T2S)
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol
IGMP Snooping	IPv4 IGMP (v1/v2/v3) 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: 500Kb~1000Mbps Egress: 500Kb~1000Mbps
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
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
<b>Security Functions</b>	
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
<b>Switch Management</b>	
Basic Management Interfaces	Telnet; Web browser; SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLS v1.2, SNMP v3
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 PLANET CloudViewer app
Event Management	Remote syslog Local system log SMTP



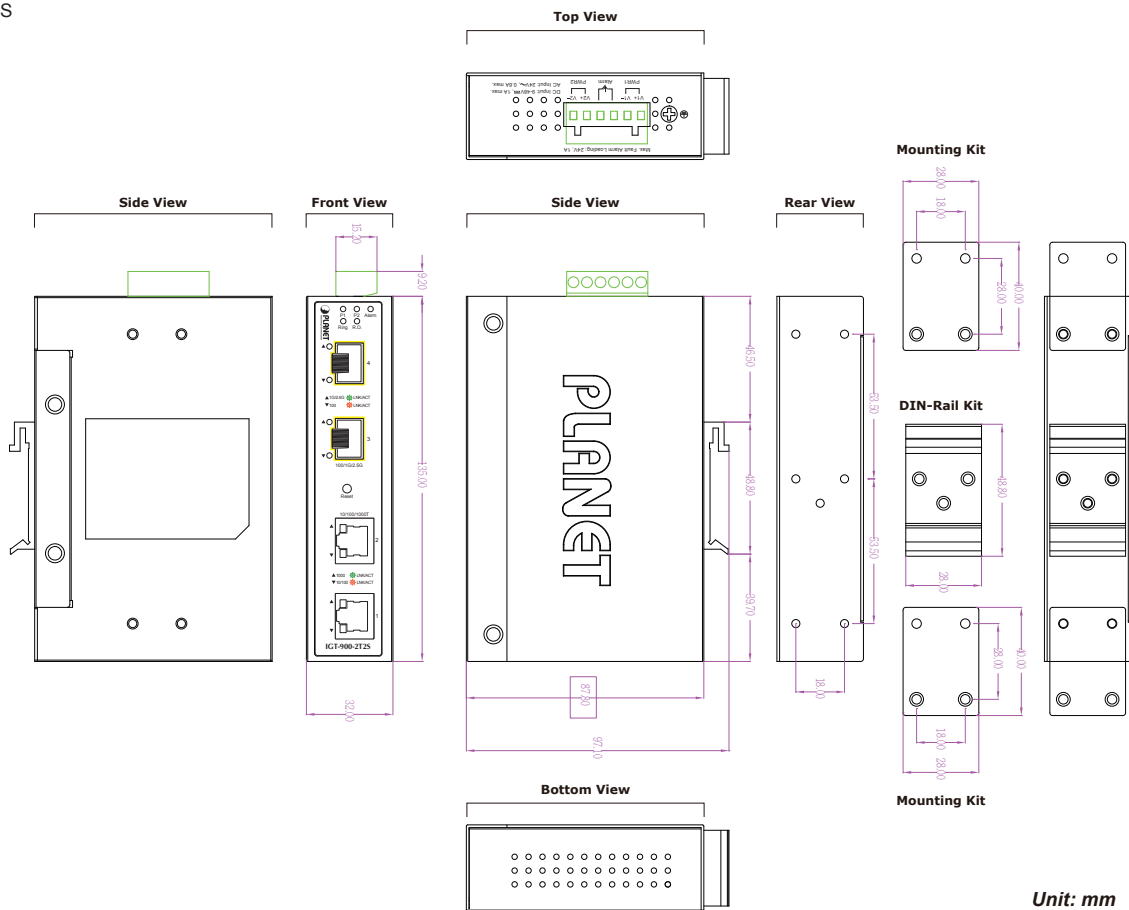
SNMP MIBs	<p>RFC 1213 MIB-II  RFC 2863 IF-MIB  RFC 1493 Bridge MIB  RFC 1643 Ethernet MIB  RFC 2863 Interface MIB  RFC 2665 Ether-Like MIB  RFC 2737 Entity MIB  RFC 2819 RMON MIB (Groups 1, 2, 3 and 9)  RFC 2618 RADIUS Client MIB  RFC 3411 SNMP-Frameworks-MIB  IEEE 802.1X PAE  LLDP  MAU-MIB</p>
<b>Standards Conformance</b>	
Regulatory Compliance	FCC Part 15 Class A, CE
Stability Testing	<p>IEC60068-2-32 (free fall)  IEC60068-2-27 (shock)  IEC60068-2-6 (vibration)</p>
Standards Compliance	<p>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 (IGT-900-2T2S only)  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 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</p>
<b>Environment</b>	
Operating Temperature	-40 ~ 75 degrees C
Storage Temperature	-40 ~ 85 degrees C
Humidity	5 ~ 95% (non-condensing)

## Dimensions

■ IGT-900-1T1S



■ IGT-900-2T2S



## Ordering Information

IGT-900-1T1S	Industrial 1-port 10/100/1000T + 1-port 100/1000/2500X SFP Managed Media Converter
IGT-900-2T2S	Industrial 2-port 10/100/1000T + 2-port 100/1000/2500X SFP Managed Media Converter

## Related Products

IGT-805AT	Industrial 10/100/1000BASE-T to 100/1000BASE-X SFP Media Converter
IGT-815AT	Industrial Compact 100/1000BASE-X to 10/100/1000BASE-T Media Converter
IGT-2205AT	Industrial 2-port 10/100/1000T to 2-port 100/1000/2500X SFP Media Converter

## Available Modules

MGB2G-Series Transceiver	2500BASE-SX/LX Transceiver
MGB-Series Transceiver	1000BASE-SX/LX Transceiver
MFB-Series Transceiver	100BASE-FX SFP Transceiver

## Related Power Supply

PWR-75-48	48V, 75W Din-Rail Power Supply (NDR-75-48, adjustable 48-56V DC Output)
PWR-40-24	40W 24V DC Single Output Industrial DIN-rail Power Supply (-20 ~ 70 degrees C)