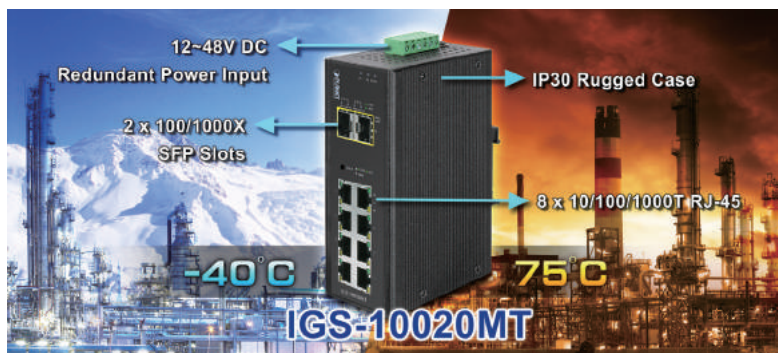


## Industrial L2+ 8-Port 10/100/1000T + 2 100/1000X SFP Managed Switch



PLANET IGS-10020MT 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 and redundant power system in an IP30 rugged but compact-sized case that can be installed in any difficult environment without space limitation. Within such favorable enclosure, it provides user-friendly yet advanced **IPv6/IPv4 management** interfaces, abundant **L2/L4 switching functions** and Layer 3 static routing capability. The IGS-10020MT 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 **2 dual-speed SFP fiber slots**, it can be flexibly applied to extend the connection distance.



### Cybersecurity Network Solution to Minimize Security Risks

The cybersecurity feature that virtually needs no effort and cost to have includes the protection of the switch management and the enhanced security of the mission-critical network. Both SSH and TLS protocols are utilized to provide strong protection against advanced threats. It includes a range of cybersecurity features such as **DHCP Snooping**, **IP Source Guard**, **ARP Inspection** Protection, **802.1x port-based** and **MAC-based** network access control, **RADIUS** and **TACACS+** user accounts management, **SNMPv3** authentication, and so on to complement it as an all-security solution. The network administrator can now construct highly-secure corporate networks with considerably less time and effort than before.

### Physical Port

- 8 10/100/1000BASE-T Gigabit Ethernet RJ45 ports
- 2 100/1000BASE-X mini-GBIC/SFP slots for SFP type auto detection

### Industrial Case / Installation

- IP30 aluminum case protection
- DIN-rail or wall-mount design
- Redundant power design
  - 12 to 48V DC, redundant power with polarity reverse protect function
  - AC 24V power adapter acceptable
- Supports 6000 VDC 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)

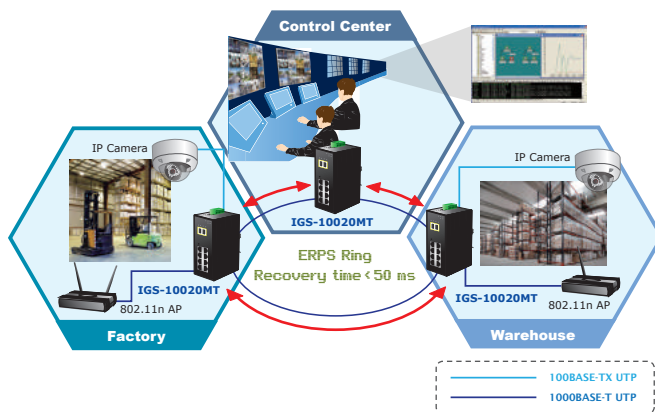
### Layer 2 Features

- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
  - Broadcast, Multicast and Unknown Unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Up to 255 VLANs groups, out of 4095 VLAN IDs
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN
  - 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), spanning tree by VLAN
  - BPDU Guard
- Supports **Link Aggregation**
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (static trunk)
  - Maximum 5 trunk groups, up to 10 ports per trunk group
  - Up to 20Gbps 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



### Redundant Ring, Fast Recovery for Surveillance System

The IGS-10020MT 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 certain simple Ring network, the recovery time of data link can be as fast as 10ms.



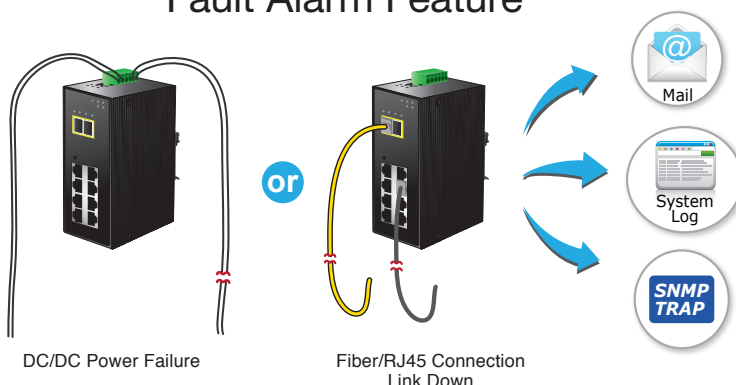
### SMTP/SNMP Trap Event Alert

The IGS-10020MT 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-10020MT 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



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)

### Layer 3 IP Routing Features

- Supports maximum 32 static routes and route summarization

### 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
- 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 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 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

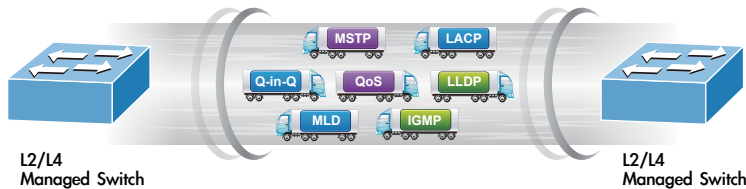
- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Telnet Command Line Interface
  - Web switch management
  - SNMP v1 and v2c switch management
  - SSH/TLS and SNMP v3 secure access

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

To help customers stay on top of their businesses, the IGS-10020MT 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-10020MT 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-10020MT provides 802.1Q tagged VLAN, and the VLAN groups allowed will be maximally up to 255. Via aggregation of supporting ports, the IGS-10020MT allows the operation of a high-speed trunk combining multiple ports. It enables a maximum of up to 10 trunk groups with 8 ports per trunk group, and supports fail-over as well.



- 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
- Network Time Protocol (NTP)
- SFP-DDM (Digital Diagnostic Monitor)
- Network Diagnostic
  - ICMPv6/ICMPv4 Remote Ping
  - Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
- PLANET Smart Discovery Utility for deployment management

**Efficient Management**

For efficient management, the IGS-10020MT is equipped with console, Web and SNMP management interfaces. With the built-in Web-based management interface, the IGS-10020MT offers an easy-to-use, platform-independent management and configuration facility. For text-based management, the IGS-10020MT can be accessed via Telnet and the console port. Moreover, it also offers secure remote management via any standard-based management software by supporting SNMPv3 connection which encrypts the packet content at each session.



**Powerful Security from Layer 2 to Layer 4**

The IGS-10020MT 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. With the private VLAN function, communication between edge ports can be prevented to ensure user privacy.

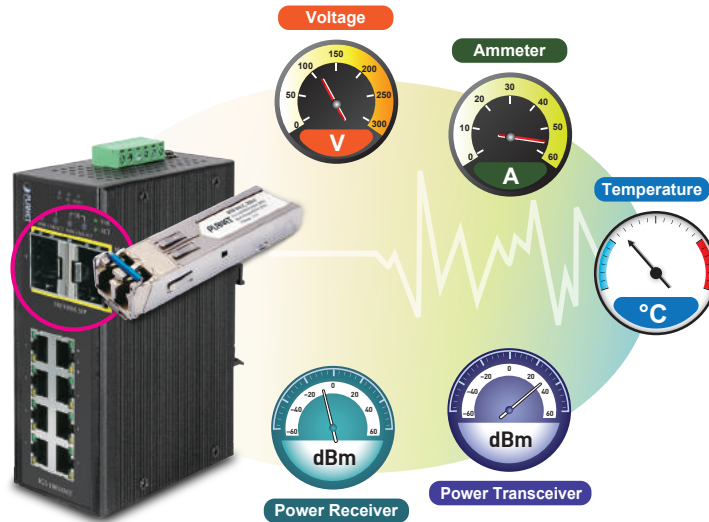
**Flexibility and Extension Solution**

The additional two mini-GBIC slots built in the IGS-10020MT support dual speed, 100BASE-FX and 1000BASE-SX/LX 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 (multi-mode fiber) to 10/40/80/120 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-10020MT 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.

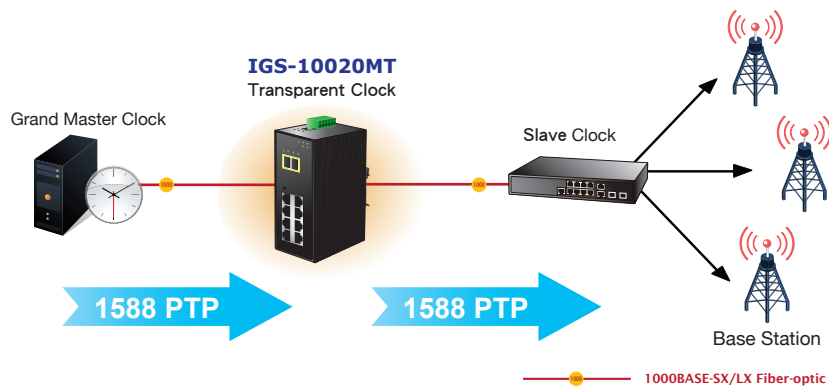
**Digital Diagnostic Monitor (DDM)**



*1588 Time Protocol for Industrial Computing Networks*

The IGS-10020MT 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 IGS10020MT can easily integrate with **SCADA** systems, **HMI** systems and other data acquisition systems in factory floors. It enables administrators to remotely monitor **the statuses of the industrial Ethernet switch, ports and communication**, thus easily achieving enhanced monitoring and maintenance of the entire factory.

*Environmentally Hardened Design*

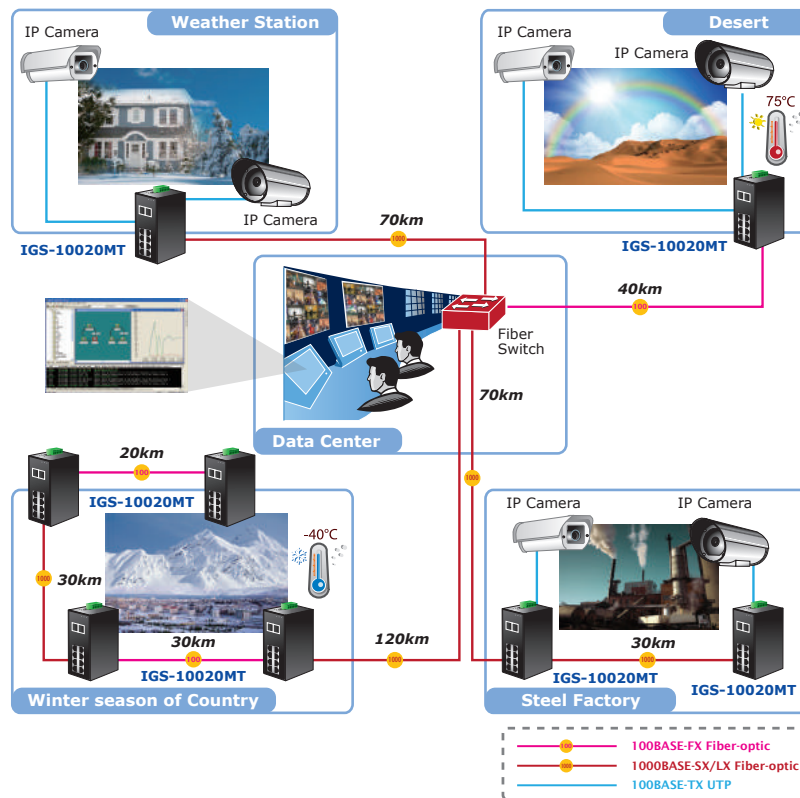
With IP30 aluminum industrial case protection, the IGS-10020MT provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets. It also possesses an integrated power supply source with a wide range of voltages (**12 to 48V 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-10020MT can be placed in almost any difficult environment.

## Applications

### Industrial Area Manageable Switch for Data Collection and Forwarding

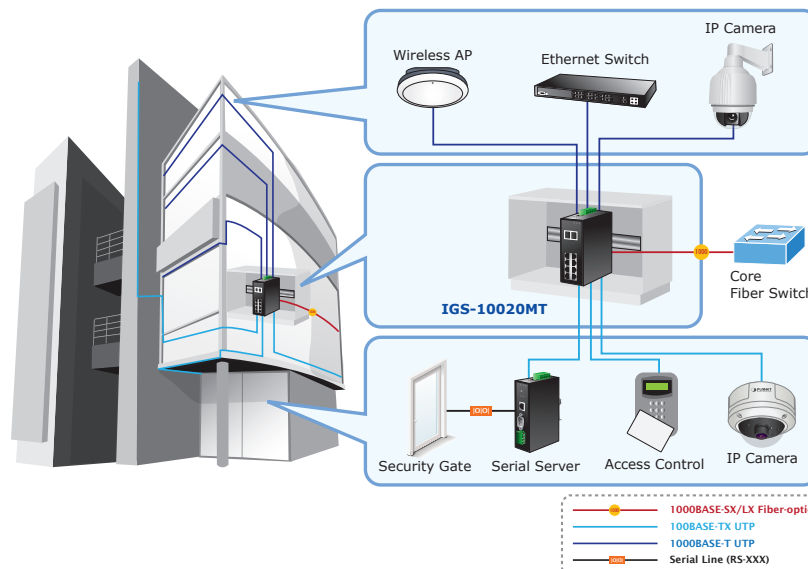
The IGS-10020MT offers **high performance and high reliability** to make sure the continuous industrial operation in harsh environments such as traffic control cabinets, factory floors, and the outdoor places where temperature is extremely low or high. With a non-blocking design and desktop size, the installation of the IGS-10020MT is easy and helpful to build a Gigabit high-bandwidth network quickly.

To further expand the current network, the IGS-10020MT provides advanced Web and SNMP management interface to fulfill this kind of demand. With its built-in Web-based management function, the IGS-10020MT offers an easy-to-use, platform-independent management and configuration facility. It supports standard Simple Network Management Protocol (SNMP) that makes the managed switch able to be monitored via any standard-based management software. By adopting the IGS-10020MT which complies with all the requirements of industrial applications, customers may enjoy high reliability, fast recovery capability, and safe Ethernet network operation.



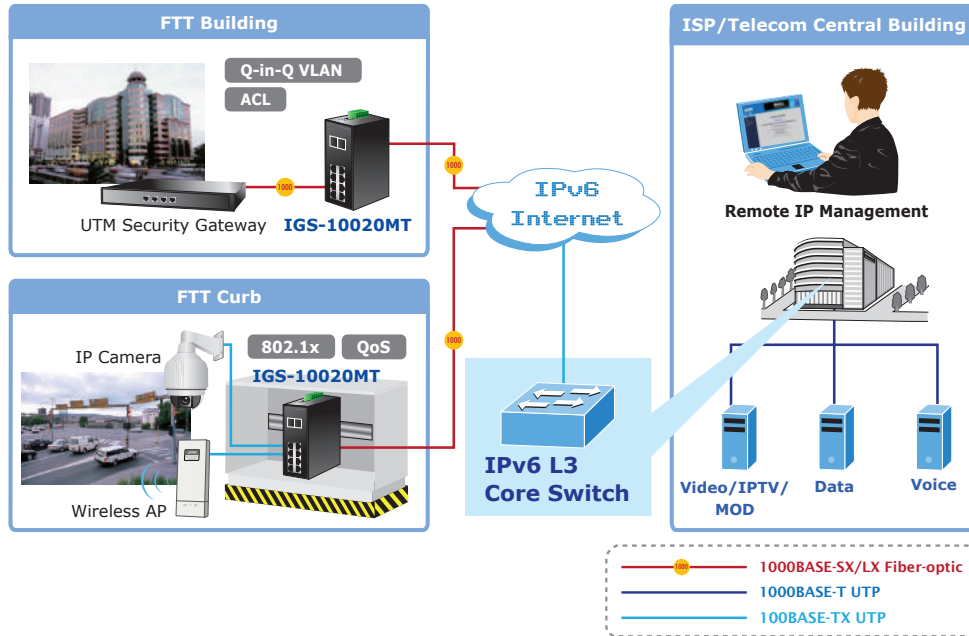
### Security Building Automation Switch

The IGS-10020MT 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-secure corporate networks with considerably less time and effort than before.



**FTTx / MAN Edge Switch**

The IGS-10020MT provides a high-performance edge service for FTTx network solutions, such as FTTH (Fiber to the Home) or FTTC (Fiber to the Curb) for ISPs and FTTB (Fiber to the Building) for enterprises.

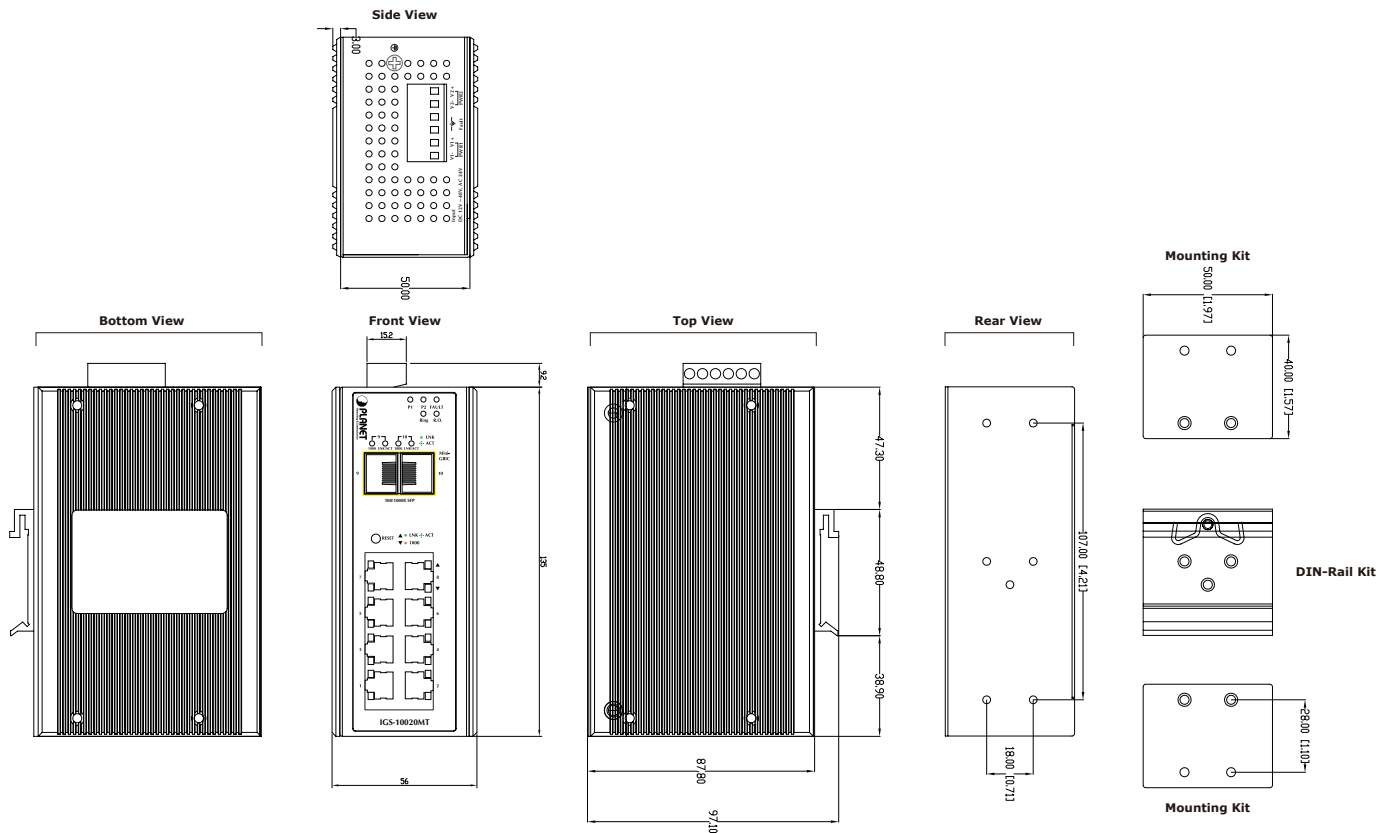


## Specifications

Model	IGS-10020MT	
<b>Hardware Specifications</b>		
Copper Ports	8 10/ 100/1000BASE-T RJ-45 Auto-MDI/MDI-X ports	
SFP/mini-GBIC Slots	2 1000BASE-SX/LX/BX SFP interfaces (Port-9 and Port-10) Compatible with 100BASE-FX SFP	
Switch Architecture	Store-and-Forward	
Switch Fabric	20Gbps/non-blocking	
Throughput (packet per second)	14.8Mpps	
Address Table	8K entries, automatic source address learning and ageing	
Shared Data Buffer	512 kilobytes	
Flow Control	IEEE 802.3x pause frame for full duplex. Back pressure for half duplex	
Jumbo Frame	9Kbytes	
Reset Button	< 5 sec: System reboot > 5 sec: Factory Default	
ESD Protection	6KV DC	
Enclosure	IP30 aluminum metal 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 @ DC 24V	
LED Indicator	System: Power 1 (Green) Power 2 (Green) Fault Alarm (Green) Ring (Green) R.O. (Green)	Per 10/100/1000T RJ-45 Ports: LNK/ACT (Green) 1000 (Orange) Per SFP Interface: LNK/ACT (Green) 1000 (Orange)
Dimensions (W x D x H)	56 x 87.8 x 135 mm	
Weight	720g	
Power Requirements	Dual 12~48V DC 24V AC	
Power Consumption	10 watts/34BTU (full loading)	
<b>Layer 2 function</b>		
Basic Management Interfaces	Web Browser, Remote Telnet, SNMP v1, v2c	
Secure Management Interface	SSH, TLS, SNMP v3	

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 tagged 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) Up to 255 VLAN groups, out of 4095 VLAN IDs	
Link Aggregation	IEEE 802.3ad LACP / static trunk Support 5 trunk groups with 10 ports per trunk	
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	
IGMP Snooping	IGMP (v1/v2/V3) Snooping, up to 255 multicast groups IGMP Querier mode support	
MLD Snooping	MLD (v1/v2) Snooping, up to 255 multicast groups MLD Querier mode support	
Access Control List	IP-based ACL / MAC-based ACL Up to 123 entries	
Bandwidth Control	Per port bandwidth control Ingress: 500Kb~80Mbps Egress: 64Kb~80Mbps	
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 RFC3411 SNMP-Frameworks-MIB IEEE 802.1X PAE LLDP MAU-MIB
<b>Layer 3 Function</b>		
IP Interfaces	Max. 8 VLAN interfaces	
Routing Table	Max. 32 routing entries	
Routing Protocols	IPv4 software static routing IPv6 software static routing	
<b>Standards Conformance</b>		
Regulation Compliance	FCC Part 15 Class A, CE	EN 50121-1, EN 50121-4
Stability Testing	IEC60068-2-32 (free fall) IEC60068-2-27 (shock) IEC60068-2-6 (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 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 FRC 3810 MLD version 2 ITU G.8032 ERPS Ring
<b>Environment</b>		
Operating	Temperature: -40 ~ 75 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	
Storage	Temperature: -40 ~ 75 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	

## Dimensions



Unit: mm

## Ordering Information

IGS-10020MT	Industrial L2+ 8-Port 10/100/1000T + 2-Port 100/1000X SFP Managed Switch (-40~75 degrees C)
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## Related Products

IGS-5225-4T2S	Industrial L2+ 4-Port 10/100/1000T + 2-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C)
IGS-12040MT	Industrial L2+ 8-Port 10/100/1000T + 4-Port 100/1000X SFP Managed Ethernet Switch (-40~75 degrees C)
IGS-10020PT	Industrial L2+ 8-Port 10/100/1000T 802.3at PoE + 2-Port 100/1000X SFP Managed Switch (-40~75 degrees C)
IGS-10020HPT	Industrial L2+ 8-Port 10/100/1000T 802.3at PoE + 2-Port 100/1000X SFP Managed Switch (-40~75 degrees C)
IGS-801M	8-Port 10/100/1000Mbps Managed Industrial Ethernet Switch (-40~75 degrees C)
IGS-10080MFT	Industrial 8 100/1000X SFP + 2-Port 10/100/1000T Managed Switch (-40 ~ 75 degrees C)



## Available Modules for IGS-10020MT

• 1000Mbps SFP transceiver modules

MGB-GT	SFP-Port 1000BASE-T Module
MGB-SX	SFP-Port 1000BASE-SX mini-GBIC module - 550m
MGB-SX2	SFP-Port 1000BASE-SX mini-GBIC module - 2km
MGB-LX	SFP-Port 1000BASE-LX mini-GBIC module - 20km
MGB-L40	SFP-Port 1000BASE-LX mini-GBIC module - 40km
MGB-L80	SFP-Port 1000BASE-LX mini-GBIC module - 80km
MGB-L120	SFP-Port 1000BASE-LX mini-GBIC module - 120km
MGB-LA10	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 10km
MGB-LB10	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 10km
MGB-LA20	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 20km
MGB-LB20	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 20km
MGB-LA40	SFP-Port 1000BASE-LX (WDM,TX:1310nm) mini-GBIC module - 40km
MGB-LB40	SFP-Port 1000BASE-LX (WDM,TX:1550nm) mini-GBIC module - 40km
MGB-TSX	SFP-Port 1000BASE-SX mini-GBIC module - 550m (-40 ~ 75 degrees C)
MGB-TLX	SFP-Port 1000BASE-LX mini-GBIC module - 10km (-40 ~ 75 degrees C)
MGB-TL40	SFP-Port 1000BASE-LX mini-GBIC module - 40km (-40 ~ 75 degrees C)
MGB-TL80	SFP-Port 1000BASE-LX mini-GBIC module - 80km (-40 ~ 75 degrees C)

• 100Mbps SFP transceiver modules

MFB-FX	SFP-Port 100BASE-FX Transceiver (1310nm) - 2km
MFB-F20	SFP-Port 100BASE-FX Transceiver (1310nm) - 20km
MFB-F40	SFP-Port 100BASE-FX Transceiver (1310nm) - 40km
MFB-F60	SFP-Port 100BASE-FX Transceiver (1310nm) - 60km
MFB-FA20	SFP-Port 100BASE-BX Transceiver (WDM,TX:1310nm) - 20km
MFB-FB20	SFP-Port 100BASE-BX Transceiver (WDM,TX:1550nm) - 20km
MFB-TFX	SFP-Port 100BASE-FX Transceiver (1310nm) - 2km (-40 ~ 75 degrees C)
MFB-TF20	SFP-Port 100BASE-FX Transceiver (1310nm) - 20km (-40 ~ 75 degrees C)