

Industrial L3 8-Port 10/100/1000T + 2-Port 1G/2.5G SFP + 2-Port 10G SFP+ Managed Ethernet Switch



Advanced Layer 3 Manageable Solution for Hardened Environment

PLANET IGS-5225-8T2S2X is an industrial Layer 3 managed Gigabit Switch that features 8 10/100/1000Mbps copper ports, 2 additional 1G/2.5G SFP ports and 2 10G SFP+ ports, and supports static Layer 3 routing in a rugged IP30 aluminum case for stable operation in heavy industrial demanding environments.

With 10Gbps uplink, the IGS-5225-8T2S2X can handle extremely large amounts of data in a secure topology linking to an enterprise backbone or high capacity servers.

Being able to operate under wide temperature range from -40 to 75 degrees C, the IGS-5225-8T2S2X can be placed in almost any difficult environment. The IGS-5225-8T2S2X also allows either DIN-rail or wall mounting for efficient use of cabinet space.



Cybersecurity Network Solution to Minimize Security Risks

The cybersecurity features that virtually need no effort and cost to have include the protection of the switch management and the enhanced security of the mission-critical network. Both SSHv2 and TLSv1.2 protocols are utilized to provide strong protection against advanced threats. 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
- 2 100/1000/2500BASE-X SFP slots for SFP type auto detection
- 2 10GBASE-SR/LR SFP+ slots, backward compatible with 1G/2.5GBASE-X SFP
- One RJ45 console interface for basic management and setup

Industrial Protocol

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

Industrial Case and Installation

- IP30 aluminum case
- DIN-rail and wall-mount designs
- Redundant power
 - 9~48V DC, redundant power with reverse polarity protection
 - 24V AC power input acceptable
- Supports 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

Digital Input and Digital Output

- 2 Digital Input (DI)
- 2 Digital Output (DO)
- Integrate sensors into auto alarm system
- Transfer alarm to IP network via email and SNMP trap

Layer 3 IP Routing Features

- IPv4 dynamic routing protocol supports RIPv1/v2 and OSPFv2
- IPv6 dynamic routing protocol supports OSPFv3
- IPv4/IPv6 hardware static routing
- Routing interface provides per VLAN routing mode

Layer 2 Features

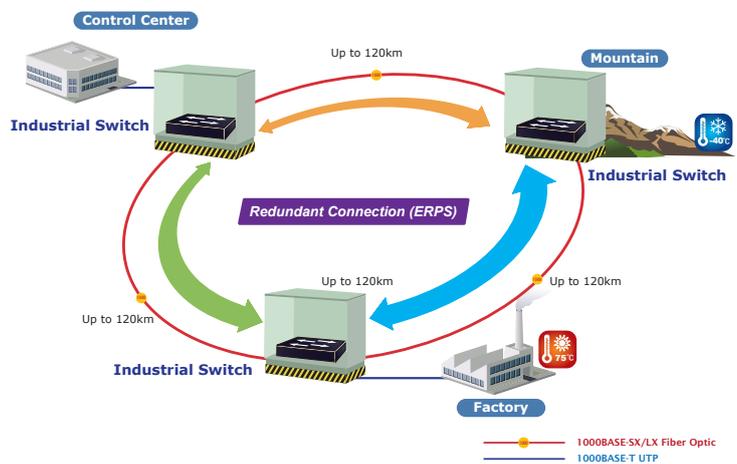
- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance of Store-and-Forward architecture, and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support



Redundant Ring, Fast Recovery for Critical Network Applications

The IGS-5225-8T2S2X 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.

The IGS-5225-8T2S2X also protects customer's industrial network connectivity with switching recovery capability that is used for implementing fault tolerant ring and mesh network architectures. If the Industrial network is interrupted accidentally, the fault recovery time could be as fast as 10ms to quickly bring the network back to normal operation.



Layer 3 Network Routing Support

The IGS-5225-8T2S2X allows administrators to boost network efficiency by configuring Layer 3 IPv4/IPv6 VLAN static routing manually or automatically through the Routing Information Protocol (RIP) or Open Shortest Path First (OSPF) settings.

- The RIP uses hop count as a routing metric and prevents routing loops by setting a limit on the number of hops allowed in a path from source to destination.
- The OSPF is an interior dynamic routing protocol for autonomous systems based on link state. The protocol creates a database of link states by exchanging link states among Layer 3 switches and then uses the Shortest Path First algorithm to generate a route table based on that database.

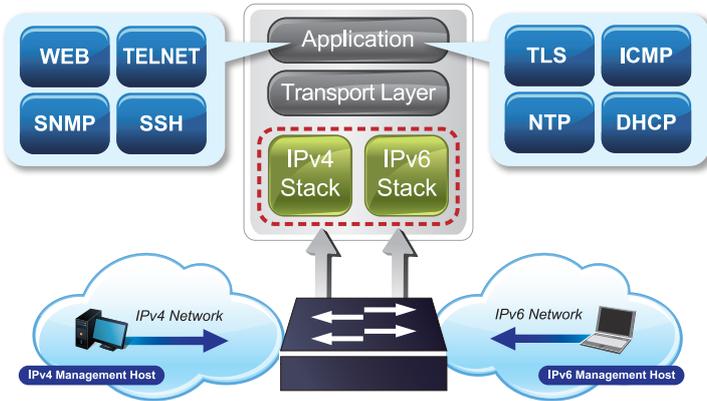
- Broadcast/Multicast/Unicast
- Supports **VLAN**
 - IEEE 802.1Q tagged VLAN
 - Up to 4K VLANs groups, out of 4095 VLAN IDs
 - Supports provider Bridging (VLAN Q-in-Q, IEEE 802.1ad)
 - Private VLAN Edge (PVE)
 - Port Isolation
 - MAC-based VLAN
 - Protocol-based VLAN
 - Voice VLAN
 - VLAN Translation
 - 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 6 trunk groups with 12 ports per trunk group
 - Up to 24Gbps 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 G.8032 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) and LLDP-MED
- Link OAM

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

IPv6/IPv4 Dual Stack Management

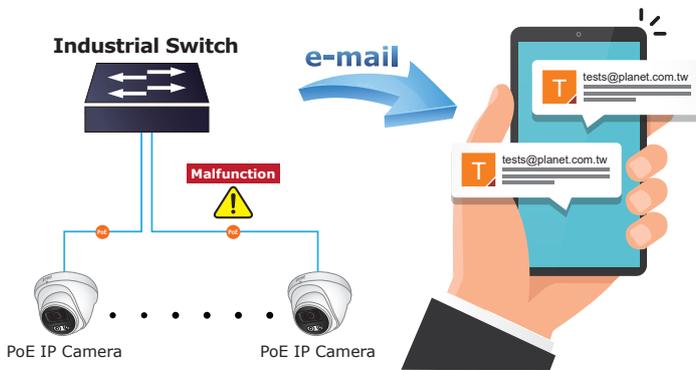
Supporting both IPv6 and IPv4 protocols, the IGS-5225-8T2S2X helps the SMBs to step in the IPv6 era with the lowest investment as its network facilities need not be replaced or overhauled if the IPv6 FTTx edge network is set up.



SMTP/SNMP Trap Event Alert

The IGS-5225-8T2S2X 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.

SMTP/SNMP Trap Event Alert



Effective Alarm Alert for Better Protection

The IGS-5225-8T2S2X 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



- Supports QoS and In/Out bandwidth control on each port
- Traffic-policing policies 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
- Multicast VLAN Registration (MVR) support

Security

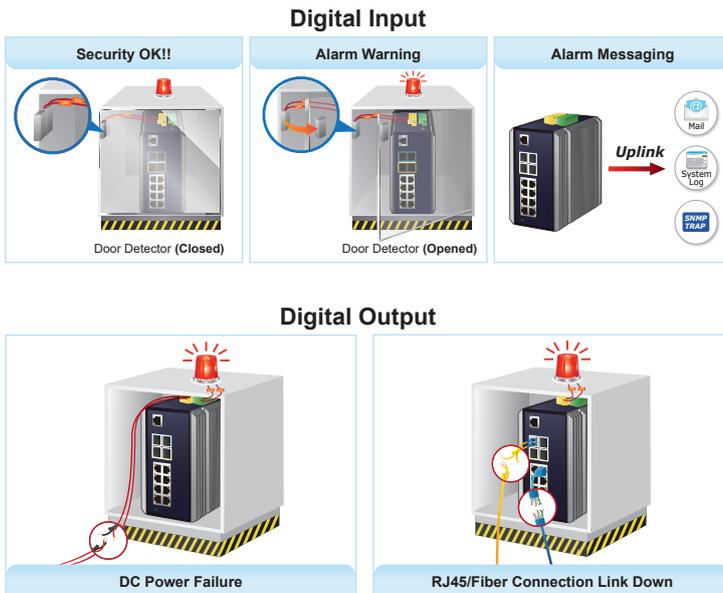
- Authentication
 - IEEE 802.1x Port-based and MAC-based network access authentication
 - IEEE 802.1x authentication with guest VLAN
 - Guest VLAN assigns clients to a restricted VLAN with limited services.
 - Built-in RADIUS client to co-operate with the RADIUS servers
 - TACACS+ login users access 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
- 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

Digital Input and Digital Output for External Alarm

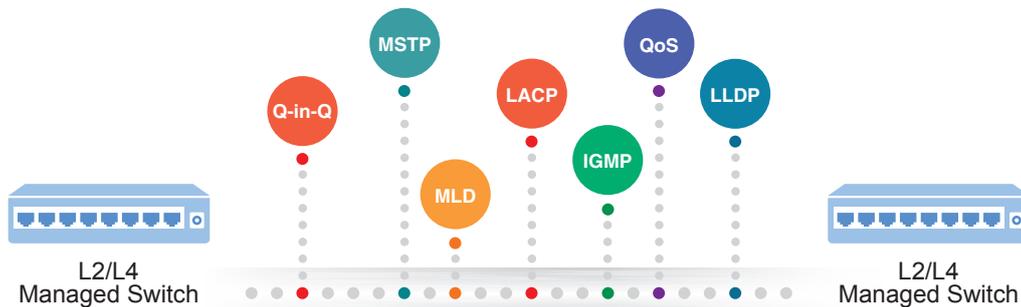
The IGS-5225-8T2S2X supports Digital Input and Digital Output on its front panel. This external alarm enables users to use Digital Input to detect and log external device status (such as door intrusion detector), and send event alarm to the administrators. The Digital Output could be used to alarm the administrators if the IGS-5225-8T2S2X port shows link down, link up or power failure.



- BOOTP and DHCP for IP address assignment
- System Maintenance
 - Firmware upload/download via HTTP
 - Configuration upload/download through HTTP
 - Reset button for system reboot or reset to factory default
 - Dual Images
- DHCP Functions
 - DHCP Relay
 - DHCP Option82
 - DHCP Server Mode support
- User Privilege levels control
- NTP (Network Time Protocol)
- Network Diagnostic
 - ICMPv6/ICMPv4 Remote Ping
 - Cable Diagnostic technology provides the mechanism to detect and report potential cabling issues
- SMTP/Syslog remote alarm
- System Log
- SFP-**DDM** (Digital Diagnostic Monitor)
- PLANET Smart Discovery Utility for deployment management
- PLANET NMS system and NMSViewerPro/CloudViewerPro for deployment management

Robust Layer 2 to Layer 4 Features

The IGS-5225-8T2S2X 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-5225-8T2S2X provides 802.1Q tagged VLAN, and the VLAN groups allowed will be maximally up to 4K. Via aggregation of supporting ports, the IGS-5225-8T2S2X allows the operation of a high-speed trunk combining multiple ports. It enables a maximum of up to 3 trunk groups with 6 ports per trunk group, and supports fail-over as well.



Efficient Secure Management

For efficient management, the IGS-5225-8T2S2X is equipped with Command line, Web and SNMP management interfaces.

- With the built-in **Web-based** management interface, the IGS-5225-8T2S2X offers an easy-to-use, platform-independent management and configuration facility.
- For **text-based** management, it can be accessed via Telnet and the RJ45 console port.
- By supporting the standard SNMP protocol, the switch can be managed via any SNMP-based management software.



Powerful Security

The IGS-5225-8T2S2X 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. The network administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

Remote Management Solution

PLANET's **Universal Network Management System (UNI-NMS)** and NMSViewerPro/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 NMSViewerPro/CloudViewerPro app, all kinds of businesses can now be speedily and efficiently managed from one platform.

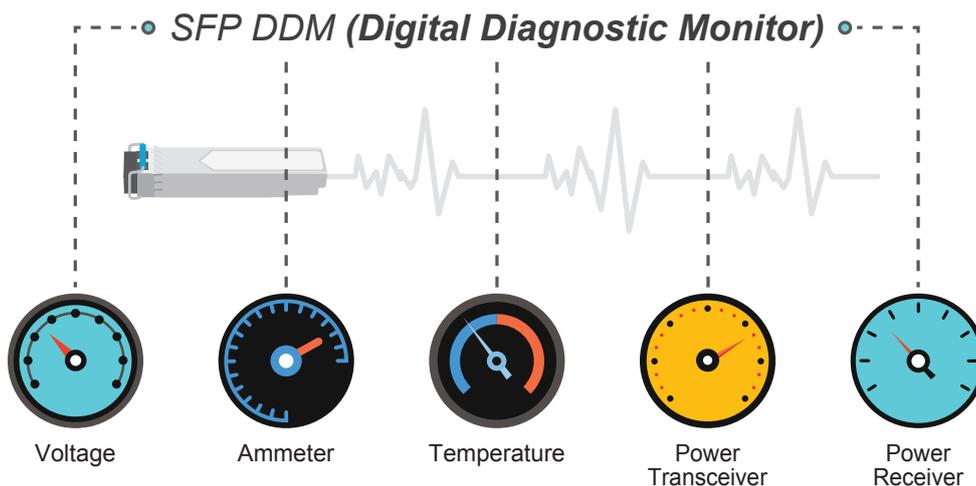


Flexibility and Extension Solution

The additional total four mini-GBIC slots built in the IGS-5225-8T2S2X, two SFP slots support triple-speed 100/1000/2500BASE-X SFP (small form-factor pluggable) and other two SFP slots supports 1G/2.5G/10GBASE-SR/LR 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 300 meters to 2km (multi-mode fiber) and to 10/20/30/40/60/70/80/120 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-5225-8T2S2X 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.



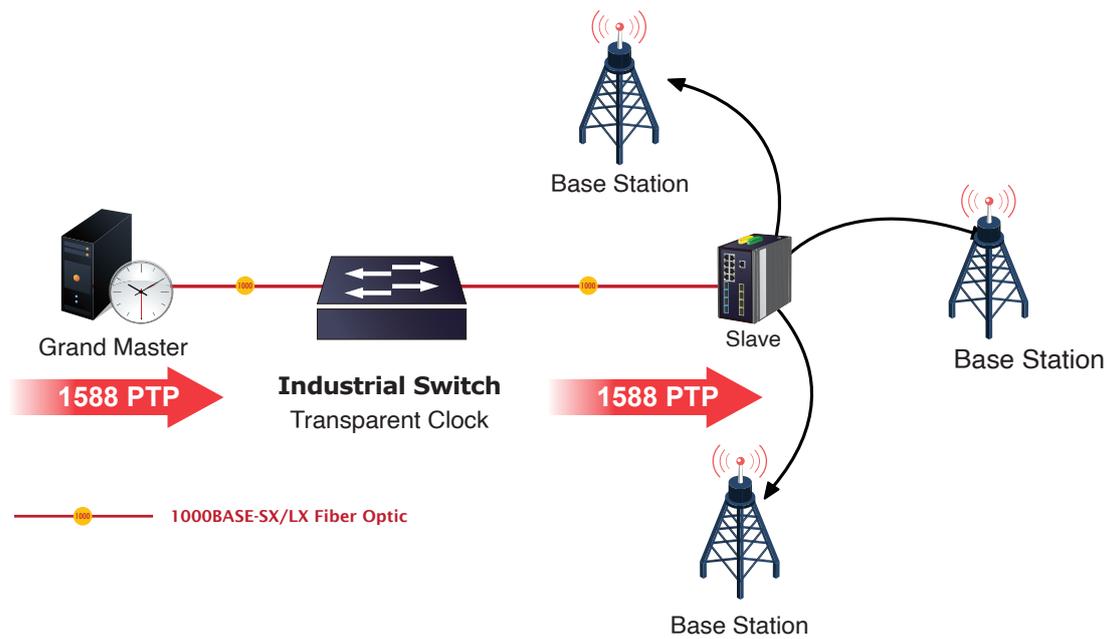
Modbus TCP Provides Flexible Network Connectivity for Factory Automation

With the supported **Modbus TCP/IP** protocol, the IGS-5225-8T2S2X 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.

1588 Time Protocol for Industrial Computing Networks

The IGS-5225-8T2S2X 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

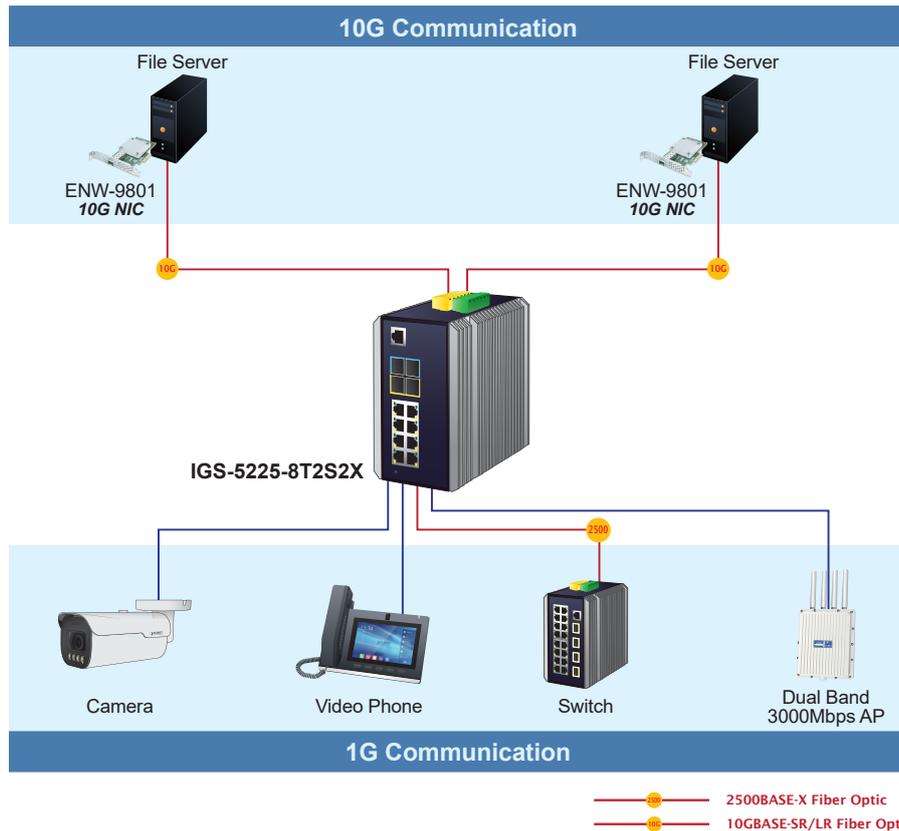


Applications

Excellent 10Gbps High Bandwidth Solution to Core Network

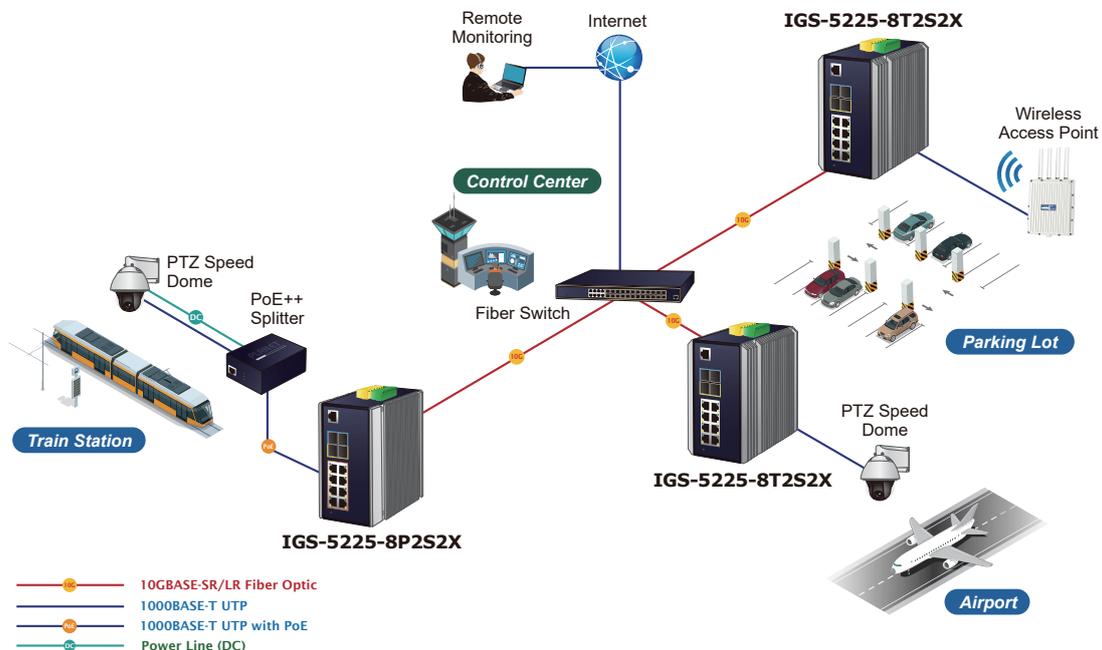
The IGS-5225-8T2S2X performs 66Gbps non-blocking switch fabric, so it can easily provide a local 10Gbps high bandwidth Ethernet network for the backbone of your department. With the two built-in SFP+ ports, the IGS-5225-8T2S2X provides the uplink to the backbone network through the 10G Ethernet LR/SR SFP+ modules. It further improves the network efficiency and protects the network clients by offering the security and QoS features.

High Performance Server Service



FTTx/MAN Edge Switch

By means of improving the technology of Optical Fiber Ethernet with highly-flexible, highly-extendable and easy-to-install features, the IGS-5225-8T2S2X offers up to 10Gbps data exchange speed via Optical Fiber interface and the transmission distance can be extended to 120km. The IGS-5225-8T2S2X is the ideal solution for service providers such as ISPs and telecoms to build Metropolitan Area Network (MAN) based on the fiber technology.



Specifications

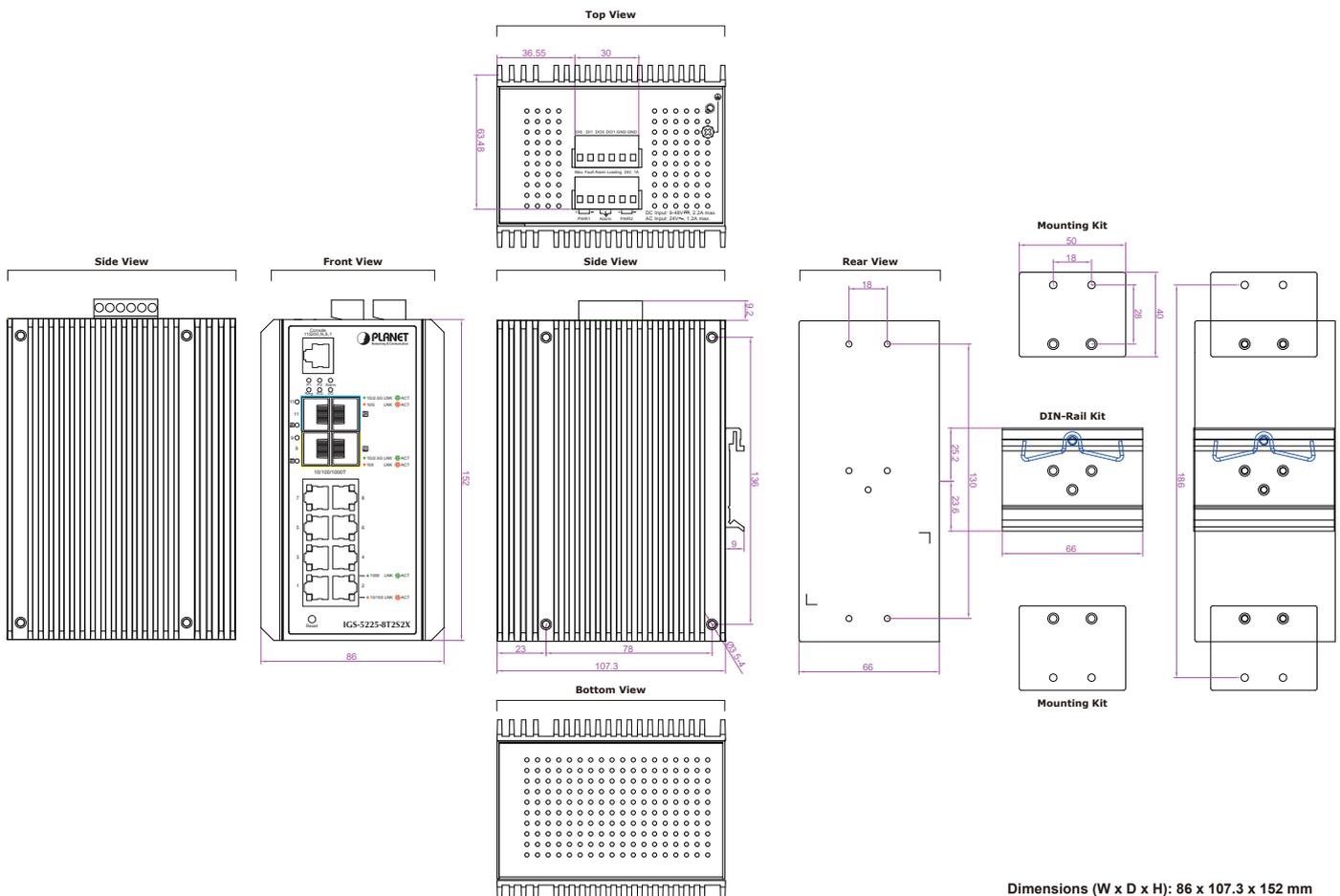
Product	IGS-5225-8T2S2X
Hardware Specifications	
Version	4
Copper Ports	8 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP Slots	2 100/1000/2500BASE-X mini-GBIC SFP ports (Port 9 and Port 10)
SFP+ Slots	2 10GbBASE-SR/LR SFP+ interfaces (Port 11 and Port 12) Compatible with 1G/2.5GBASE-X SFP transceiver
Console	1 x RJ45-to-RS232 serial port (115200, 8, N, 1)
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
Connector	6-contact barrier terminal block for power input Contact 1/2 for Power 1, Contact 3/4 for fault alarm, Contact 5/6 for Power 2 Removable 6-pin terminal block for DI/DO interface Pin 1/2 for DI 0 & 1, Pin 3/4 for DO 0 & 1, Pin 5/6 for GND
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC
Digital Input (DI)	2 digital input (DI): Level 0: -24V~2.1V (±0.1V) Level 1: 2.1V~24V (±0.1V) Input load to 24VDC, 10mA max.
Digital Output (DO)	2 digital output (DO): Open collector to 24V DC, 100mA max.
SDRAM	512Mbytes
Flash Memory	64Mbytes
Enclosure	IP30 aluminum case
Installation	DIN-rail kit and wall-mount kit
Dimensions (W x D x H)	76.8 x 107 x 152 mm
Weight	1377g
Power Requirements	Dual 9~48V DC 24V AC
Power Consumption	Max. 17.1 watts/58.3BTU (Power on without any connection) Max. 24.8 watts/84.6BTU (Full loading)
ESD Protection	6KV DC
EFT Protection	6KV DC
LED Indicator	<p>System:</p> <ul style="list-style-type: none"> Power 1 (Green) Power 2 (Green) Fault Alarm (Red) Ring (Green) R.O. (Ring Owner) (Green) I/O (Red) <p>Per 10/100/1000T RJ45 Ports (Port 1 to port 8):</p> <ul style="list-style-type: none"> 1000 LNK/ACT x 1 (Green) 10/100 LNK/ACT x 1 (Amber) <p>Per 100/1000/2500BASE-X SFP Interfaces (Port 9 to port 10):</p> <ul style="list-style-type: none"> 1G/2.5G LNK/ACT (Green) 100 LNK/ACT (Amber) <p>Per 10GBASE-X SFP+ Interfaces (Port 11 to port 12):</p> <ul style="list-style-type: none"> 10G LNK/ACT (Amber) 1G/2.5G LNK/ACT (Green)
Switching Specifications	
Switch Architecture	Store-and-Forward
Switch Fabric	66Gbps/non-blocking
Throughput (packet per second)	49.1Mpps@ 64Bytes packet
Address Table	32K entries, automatic source address learning and aging
Shared Data Buffer	32Mbits
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex
Jumbo Frame	10Kbytes
Layer 3 Function	
IP Interfaces	Max. 128 VLAN interfaces
Routing Table	Max. 128 routing entries Max. 4K H/W routing table entries

Routing Protocols	IPv4 RIPv1/v2 IPv4 OSPFv2 IPv4 hardware static routing IPv6 OSPFv3 IPv6 hardware static routing
Layer 2 Function	
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable Port link capability 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 RMirror – Remote Switched Port Analyzer (Cisco RSPAN) Supports up to 5 sessions
VLAN	IEEE 802.1Q tag-based VLAN IEEE 802.1ad Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN MVR (Multicast VLAN Registration) GVRP (GARP VLAN Registration Protocol) Up to 4K VLAN groups, out of 4095 VLAN IDs
Spanning Tree Protocol	IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol BPDU Guard
Link Aggregation	IEEE 802.3ad LACP/static trunk Supports 6 trunk groups with 12 ports per trunk group
IGMP Snooping	IPv4 IGMP (v1/v2/v3) snooping IPv4 IGMP querier mode support IPv4 IGMP Snooping port filtering Up to 255 multicast groups
MLD Snooping	IPv6 MLD (v1/v2) snooping 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
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
Bandwidth Control	Per port bandwidth control Ingress: 100Kb~3276Mbps Egress: 100Kb~3281Mbps
Storm Control	Unicast/Multicast/Broadcast

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 512 entries
Security	Port security IP source guard, up to 512 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	Console; 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 Remote syslog System log LLDP protocol NTP PLANET Smart Discovery Utility PLANET NMS system PLANET NMSViewerPro/CloudViewerPro
Event Management	Remote syslog System log SMTP
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	IEC60068-2-32 (free fall) IEC60068-2-27 (shock) IEC60068-2-6 (vibration)

Standards Compliance	IEEE 802.3 10BASE-T	IEEE 1588 PTPv2
	IEEE 802.3u 100BASE-TX/100BASE-FX	RFC 768 UDP
	IEEE 802.3ab Gigabit 1000T	RFC 783 TFTP
	IEEE 802.3z Gigabit SX/LX	RFC 791 IP
	IEEE 802.3bz 2.5GBASE-X	RFC 792 ICMP
	IEEE 802.3ae 10Gb/s Ethernet	RFC 793 TCP
	IEEE 802.3x flow control and back pressure	RFC 2068 HTTP
	IEEE 802.3az Energy-Efficient Ethernet	RFC 1058 RIP v1
	IEEE 802.3ad port trunk with LACP	RFC 2453 RIP v2
	IEEE 802.1D Spanning Tree Protocol	RFC 1112 IGMP v1
	IEEE 802.1w Rapid Spanning Tree Protocol	RFC 2236 IGMP v2
	IEEE 802.1s Multiple Spanning Tree Protocol	RFC 3376 IGMP version 3
	IEEE 802.1p Class of Service	RFC 2710 MLD version 1
	IEEE 802.1Q VLAN tagging	RFC 3810 MLD version 2
	IEEE 802.1ad Q-in-Q VLAN stacking	RFC 2328 OSPF v2
	IEEE 802.1x Port Authentication Network Control	RFC 2740 OSPF v3
	IEEE 802.1ab LLDP	ITU G.8032 ERPS Ring
	IEEE 802.3ah OAM	ITU-T G.8032 ERPS Ring
	IEEE 802.1ag Connectivity Fault Management(CFM)	ITU-T Y.1731 Performance Monitoring
Environment		
Operating Temperature	-40 ~ 75 degrees C	
Storage Temperature	-40 ~ 85 degrees C	
Humidity	5 ~ 95% (non-condensing)	

Dimensions



Dimensions (W x D x H): 86 x 107.3 x 152 mm

Ordering Information

IGS-5225-8T2S2X	Industrial L3 8-Port 10/100/1000T + 2-Port 1G/2.5G SFP + 2-Port 10G SFP+ Managed Ethernet Switch (-40~75 degrees C)
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Related Products

IGS-5225-8P2S2X	Industrial L3 8-Port 10/100/1000T 802.3at PoE + 2-Port 1G/2.5G SFP + 2-Port 10G SFP+ Managed Ethernet Switch
TSN-6325-8T4S4X	Industrial L3 8-Port 10/100/1000T + 4-Port 1G/2.5G SFP + 4-Port 10GBASE-X SFP+ Managed TSN Ethernet Switch
IGS-6325-16T4X	Industrial L3 16-Port 10/100/1000BASE-T + 4-Port 10GBASE-X SFP+ Managed Switch
IGS-6325-16T4S	Industrial L3 16-Port 10/100/1000T + 4-Port 1G/2.5G SFP Managed Ethernet Switch
IGS-6325-8T8S4X	Industrial L3 8-Port 10/100/1000T + 8-Port 1G/2.5G SFP + 4-Port 10G SFP+ Managed Ethernet Switch
IGS-6325-8T4X	Industrial L3 8-Port 10/100/1000T + 4-Port 10G SFP+ Managed Ethernet Switch

Available 100Mbps Modules

Fast Ethernet Transceiver (100BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MFB-TFX	100	LC	Multi-Mode	2km	1310nm	-40~85 degrees C
MFB-TF20	100	LC	Single Mode	20km	1310nm	-40~85 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-TFA20	100	WDM (LC)	Single Mode	20km	1310nm	1550nm	-40~85 degrees C
MFB-TFB20	100	WDM (LC)	Single Mode	20km	1550nm	1310nm	-40~85 degrees C
MFB-TFA40	100	WDM (LC)	Single Mode	40km	1310nm	1550nm	-40~85 degrees C
MFB-TFB40	100	WDM (LC)	Single Mode	40km	1550nm	1310nm	-40~85 degrees C
MFB-TSA	100	WDM (LC)	Multi- Mode	2km	1310nm	1550nm	-40~85 degrees C
MFB-TSB	100	WDM (LC)	Multi- Mode	2km	1550nm	1310nm	-40~85 degrees C

Available 1000Mbps Modules

Gigabit Ethernet Transceiver (1000BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MGB-TGT	1000	Copper	--	100m	--	-40~85 degrees C
MGB-TSX	1000	LC	Multi Mode	550m	850nm	-40~85 degrees C
MGB-TSX2	1000	LC	Multi Mode	2km	1310nm	-40~85 degrees C
MGB-TLX(V2)	1000	LC	Single Mode	20km	1310nm	-40~85 degrees C
MGB-TL30	1000	LC	Single Mode	30km	1310nm	-40~85 degrees C
MGB-TL40	1000	LC	Single Mode	40km	1310nm	-40~85 degrees C
MGB-TL70	1000	LC	Single Mode	70km	1550nm	-40~85 degrees C
MGB-TL80	1000	LC	Single Mode	80km	1550nm	-40~85 degrees C

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

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-TSA	1000	WDM(LC)	Single Mode	2km	1310nm	1550nm	-40~85 degrees C
MGB-TSB	1000	WDM(LC)	Single Mode	2km	1550nm	1490nm	-40~85 degrees C
MGB-TLA10(V2)	1000	WDM(LC)	Single Mode	10km	1310nm	1550nm	-40~85 degrees C
MGB-TLB10(V2)	1000	WDM(LC)	Single Mode	10km	1550nm	1310nm	-40~85 degrees C
MGB-TLA20	1000	WDM(LC)	Single Mode	20km	1310nm	1550nm	-40~85 degrees C
MGB-TLB20	1000	WDM(LC)	Single Mode	20km	1550nm	1310nm	-40~85 degrees C
MGB-TLA40	1000	WDM(LC)	Single Mode	40km	1310nm	1550nm	-40~85 degrees C
MGB-TLB40	1000	WDM(LC)	Single Mode	40km	1550nm	1310nm	-40~85 degrees C
MGB-TLA60	1000	WDM(LC)	Single Mode	60km	1310nm	1550nm	-40~85 degrees C
MGB-TLB60	1000	WDM(LC)	Single Mode	60km	1550nm	1310nm	-40~85 degrees C
MGB-TLA80	1000	WDM(LC)	Single Mode	80km	1490nm	1550nm	-40~85 degrees C
MGB-TLB80	1000	WDM(LC)	Single Mode	80km	1550nm	1490nm	-40~85 degrees C
MGB-TLA120	1000	WDM(LC)	Single Mode	120km	1490nm	1550nm	-40~85 degrees C
MGB-TLB120	1000	WDM(LC)	Single Mode	120km	1550nm	1490nm	-40~85 degrees C

Available 2500Mbps Modules

Gigabit Ethernet Transceiver (2500BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MGB-2GTSR	2500	LC	Multi Mode	300m	850nm	-40~85 degrees C
MGB-2GTLR2	2500	LC	Single Mode	2km	1310nm	-40~85 degrees C
MGB-2GTLR20	2500	LC	Single Mode	20km	1310nm	-40~85 degrees C

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

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-2GTLA20	2500	WDM (LC)	Single Mode	20km	1310nm	1550nm	-40 ~ 85 degrees C
MGB-2GTLB20	2500	WDM (LC)	Single Mode	20km	1550nm	1310nm	-40 ~ 85 degrees C

Available 10G SFP+ Modules for IGS-5225-8T2S2X

10Gigabit Ethernet Transceiver (10GBASE-X SFP+)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MTB-TRJ	10G	Copper	--	30m	--	-40 ~ 85 degrees C
MTB-TSR	10G	LC	Multi-Mode	Up to 300m	850nm	-40 ~ 85 degrees C
MTB-TSR2	10G	LC	Multi-Mode	2km	1310nm	-40 ~ 85 degrees C
MTB-TLR	10G	LC	Single Mode	10km	1310nm	-40 ~ 85 degrees C
MTB-TLR20	10G	LC	Single Mode	20km	1310nm	-40 ~ 85 degrees C
MTB-TLR40	10G	LC	Single Mode	40km	1310nm	-40 ~ 85 degrees C
MTB-TLR60	10G	LC	Single Mode	60km	1550nm	-40 ~ 85 degrees C
MTB-TLR80	10G	LC	Single Mode	80km	1550nm	-40 ~ 85 degrees C

10Gigabit Ethernet Transceiver (10GBASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MTB-TLA20	10G	WDM(LC)	Single Mode	20km	1270nm	1330nm	-40 ~ 85 degrees C
MTB-TLB20	10G	WDM(LC)	Single Mode	20km	1330nm	1270nm	-40 ~ 85 degrees C
MTB-TLA40	10G	WDM(LC)	Single Mode	40km	1270nm	1330nm	-40 ~ 85 degrees C
MTB-TLB40	10G	WDM(LC)	Single Mode	40km	1330nm	1270nm	-40 ~ 85 degrees C
MTB-TLA60	10G	WDM(LC)	Single Mode	60km	1270nm	1330nm	-40 ~ 85 degrees C
MTB-TLB60	10G	WDM(LC)	Single Mode	60km	1330nm	1270nm	-40 ~ 85 degrees C