Industrial Layer 3 4-Port 2.5GBASE-T + 2-Port 10GBASE-X SFP+ Managed Ethernet Switch

2.5Gbps Copper Ports and 10Gbps Fiber Ports Deliver Cost Effective High - Speed Networking

The IGS-6325-4T2X is among PLANET's first Industrial-grade, Multi-Gigabit Managed Ethernet Switch that features **four 2.5GBASE-T ports**, **two 10GBASE-X SFP+ ports** and **Layer 3 IP routing** in a rugged IP30 metal case for operating in remote areas stably within the temperature range from **-40** to **75 degrees C.**

With Multi-Gigabit Ethernet support, the IGS-6325-4T2X allows the use of the existing Cat5e and Cat6 cabling for higher speed connection but does not incur expenses and complexity brought by additional infrastructure. Once needed, the 10GBASE-X SFP+ ports can also offer even higher transmission speed and greater distance networking capability.

2.5GBASE-T and 10GBASE-X SFP Dual Media Interfaces for Bandwidth Applications

The IGS-6325-4T2X can be operated at the speed of 2.5Gbps over copper or fiber-optic cabling which helps to accelerate the performance of large data transmission. The 2.5GBASE-T copper interfaces support 4-speed (2.5G/1G/100/10) auto-negotiation, and 2.5Gbps data transmission with the existing Cat5e and Cat6 UTP cabling, meaning the speed can be increased without extra costs. It can definitely give you the speed you demand and its Plug and Play makes installation effortless.

The fiber-optic 10GBASE-X SFP+ interfaces support triple speeds, 10GBASE-SR/LR, 2500BASE-X and 1000BASE-SX/LX, meaning the administrator now can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission

Physical Port

- 4 10/100/1G/2.5GBASE-T RJ45 copper ports
- 2 10GBASE-SR/LR SFP+ slots, compatible with 1G/2.5GBASE-X SFP
- One RJ45-to-RS232 console interface for basic management and setup

Industrial Hardened Design

- Dual power input, redundant power with reverse polarity protection
  - DC 9 to 48V input or AC 24V input
  - Active-active redundant power failure protection
  - Backup of catastrophic power failure on one supply
  - Fault tolerance and resilience
- DIN-rail and wall-mountable designs
- IP30 aluminum case
- Supports 6KV DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

Digital Input and Digital Output

- 2 digital input (DI)
- 2 digital output (DO)
- Integrates sensors into auto alarm system
- Transfers alarm to IP network via email and SNMP trap

Layer 3 IP Routing Features

- IPv4 dynamic routing protocol supports RIPv2 and OSPFv2
- IPv6 dynamic routing protocol supports OSPFv3
- IPv4/IPv6 hardware static routing
- Routing interface provides per VLAN routing mode

Layer 2 Features

- High performance of Store-and-Forward architecture, and runt/CRC filtering eliminates erroneous packets to o the network bandwidth
- Storm control support
  - Broadcast/Multicast/Unknown unicast
- Supports **VLAN**

distance or the transmission speed required to extend the network efficiently. The IGS-6325-4T2X provides broad bandwidth and powerful processing capacity.
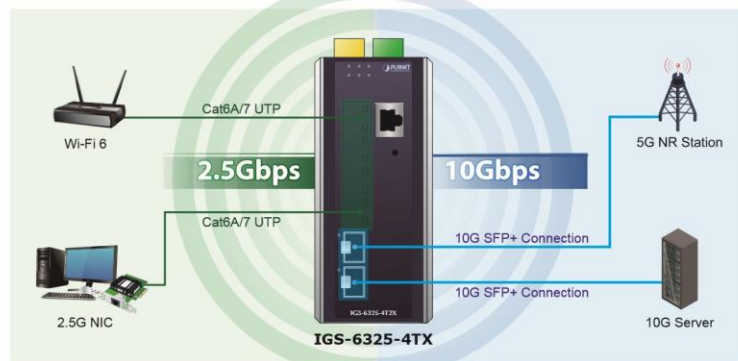
Redundant Ring, Fast Recovery for Critical Network Applications

The IGS-6325-4T2X 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 simple ring network, the recovery time of data link can be as fast as 10ms.

ERPS Ring for Data Transmission Redundancy
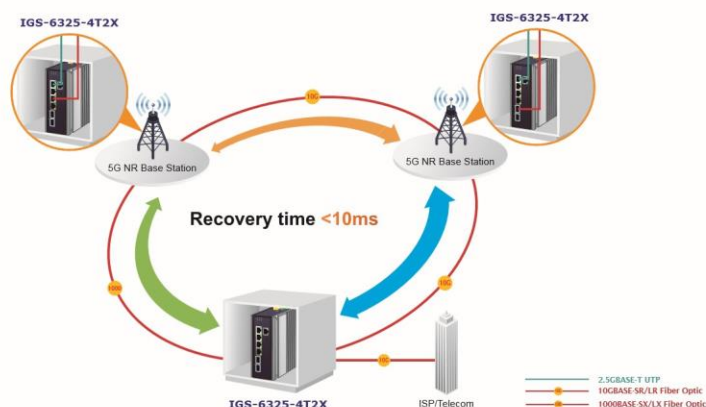
Layer 3 Routing Support

The IGS-6325-4T2X enables the administrator to conveniently boost network efficiency by configuring Layer 3 IPv4/IPv6 VLAN static routing manually, the RIP (Routing Information Protocol) or OSPF (Open Shortest Path First) settings automatically.

The RIP can employ the hop count as a routing metric and prevent routing loops by implementing a limit on the number of hops allowed in a path from the source to a destination.

The OSPF is an interior dynamic routing protocol for autonomous system based on link state. The protocol creates a database for link state 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.

- – IEEE 802.1Q tagged VLAN
- – Supports provider bridging (VLAN Q-in-Q 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: 6 ports/3 groups max.)
  - – Cisco ether-channel (static trunk: 6 ports/3 groups max.)
- 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
- Link Layer Discovery Protocol (LLDP)
- 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
- Supports G.8032 ERPS (Ethernet Ring Protection Switching)
- IEEE 1588v2 PTP (Precision Time Protocol) transparent clock mode

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
- Supports QoS and In/Out bandwidth control on each port
- Traffic-policing on the switch port
- DSCP remarking
- Voice VLAN

Robust Layer 2 Features

The IGS-6325-4T2X 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 IGS-6325-4T2X allows the operation of a high-speed trunk group that comes with multiple ports and supports fail-over as well.

Cybersecurity Network Solution to Minimize Security Risks

The IGS-6325-4T2X 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 over a long-distance fiber optic cable to customer's critical equipment in a business network, the cybersecurity feature of the IGS-6325-4T2X protects the switch management and enhances the security of the mission-critical network without any extra deployment cost and effort.
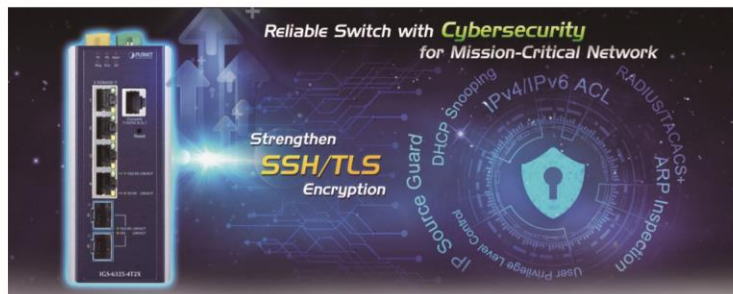
Modbus TCP Provides Flexible Network Connectivity for Factory Automation

With the supported **Modbus TCP/IP** protocol, the IGS-6325-4T2X 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**, communication status, and DI and DO status, thus easily achieving enhanced monitoring and maintenance of the entire factory.

1588 Time Protocol for Industrial Computing Networks

The IGS-6325-4T2X is ideal for telecom and carrier Ethernet applications, supporting MEF service delivery and timing over packet solutions for IEEE 1588 and synchronous Ethernet.

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
  - IEEE 802.1x authentication with guest VLAN
  - Built-in RADIUS client to cooperate with the RADIUS servers
  - 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 (ACL)
- Source MAC/IP address binding
- DHCP Snooping to filter distrusted DHCP messages
- Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- IP Source Guard prevents IP spoofing attacks
- IP address access management to prevent unauthorized intruder

Management

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Console and Telnet Command Line Interface
  - HTTP web switch management
  - SNMP v1 and v2c switch management
  - SSHv2, TLSv1.2 and SNMPv3 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
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System Maintenance