ICS5400TSN-12GT12GS4XS Series

19-inch 1U Rack Mounting
28-Port Gigabit/10Gigabit Layer 3 TSN Industrial Ethernet Switch

- Support 12 Gigabit copper ports + 12 Gigabit SFP slots + 4 10Gigabit SFP+ slots
- Support Precision Time Protocol (PTP), provide sub-microsecond synchronization accuracy to meet requirements for high-precision time synchronization
- Support TSN (time sensitive networking) protocol standards such as IEEE802.1AS, IEEE802.1Qbv, IEEE802.1Qbu, IEEE802.1CB, IEEE802.1Qci and IEEE802.1Qcc, which can provide deterministic transmission with low delay and high reliability for data
- Support MRP ring network, reconfiguration time<200ms
- Adopt Ring patented technology, support single ring, coupling ring, chain, Dual-homing ring network function, automatic recovery time of network failure < 20ms
- Optional DC (12~48VDC) or AC (90~264VAC) dual power supply input, support dual power supply redundancy
- Support -40~60℃ operating temperature range

Industrial Grade RPS Fanless Desig IP40

ROBUST INDUSTRIAL CONNECTION

Introduction

ICS5400TSN-12GT12GS4XS series are 28-port Gigabit/10Gigabit TSN (time sensitive network) switches, and layer 3 industrial Ethernet switches that integrates the characteristics of TSN. Provide Gigabit copper port, Gigabit SFP slot, 10Gigabit SFP+ slot, which can negotiate the port rate and duplex mode with the device at the opposite end through self-negotiation. Support 12~48VDC or 90~264VAC power supply scheme, and adopt rack installation mode, which can meet the requirements of different application sites.

TSN (Time Sensitive Networking) is a set of protocol standards developed by IEEE802.1 TSN task group. This standard defines the time sensitive mechanism of Ethernet data transmission, and ensures the transmission performance of business traffic in Ethernet by allowing some traffic packets to be forwarded first, clearing routes by using gating scheduling mechanism and bandwidth reservation. It adds certainty and reliability to the standard Ethernet to ensure that the Ethernet can provide stable and consistent service levels for the transmission of critical data. Currently, the supported basic TSN protocols include: IEEE 802.1AS, IEEE 802.1Qbv, IEEE 802.1Qbu, IEEE 802.1CB, IEEE 802.1Qci, IEEE 802.1Qcc (Netconf / Yang), etc.

The network management system supports a variety of network protocols and industry standards, such as IPv6, PTP, TSN, RIP, OSPF, PIM, VRRP, ISIS, NAT, Ring, STP/RSTP/MSTP, ERPS, VLAN, IGMP/MLD, IGMP/MLD Snooping, DHCP Server/Relay, LLDP, LACP, port mirroring. It possesses complete management functions and supports SNMP centralized management, port statistics, storm suppression, network diagnosis, online upgrade, etc. CLI, HTTP, HTTPS, TELNET, SSH, Netconf and other access methods can be supported. Network management system could bring you great user experience through its friendly interface design and easy and convenient operation.

The input power supply is two independent power supply circuits which can ensure the normal operation of the device when one power supply fails. When power supply or port has link failure, ALM indicator will be bright and send out alarm, meanwhile, alarm device connected to the relay will send out alarm for rapid scene troubleshooting. The hardware adopts fanless, low power consumption and wide temperature design, which has passed rigorous industrial standard tests, and suits for the industrial scene environment with harsh requirements for EMC. It can be widely used in AP coverage, railway transportation, smart city, safe city, new energy, smart grid, intelligent manufacturing and other industrial fields.

Features and Benefits

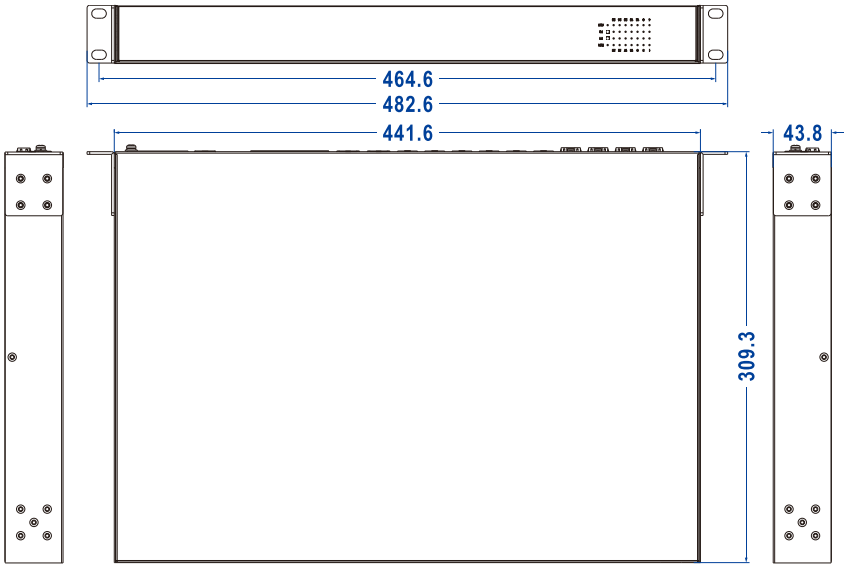
- TSN supports 802.1 TSN series standards and timely delivery of time-sensitive streams.
  - IEEE 802.1 AS Timing and Synchronization
  - IEEE 802.1 Qbv Time Aware Shaper
  - IEEE 802.1 Qbu Frame Preemption

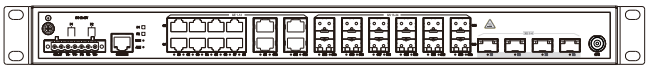
- IEEE 802.1 CB Frame Replication and Elimination for Reliability
- IEEE 802.1 Qci Per-Stream Filtering and Policing
- IEEE 802.1 Qcc centralized management of network resources

- SNMPv1/v2c/v3 is used for network management of various levels
- RMON can be used for efficient and flexible network monitoring
- LLDP can achieve automatic topology discovery, which is convenient for visual management
- DHCP server and DHCP client could be used for allocating IP address of different strategies
- DHCP relay function can realize IP address, gateway, DNS configuration cross network segment
- File management is convenient for the device rapid configuration and online upgrading
- Log information and log server can record user operation, system failure, system security and other information locally and remotely
- User privilege classification configuration can set user privilege level
- SSH configuration and HTTPS configuration can improve device's management security and guarantee data access security
- Ring and STP/RSTP/MSTP can achieve network redundancy, preventing network storm
- EPRS function can realize link backup and improve the reliability of network
- Relay alarm is convenient for troubleshooting of construction site
- Storm suppression can restrain broadcast, unknown multicast and unicast
- VLAN is used for simplifying network planning
- Port Trunking and LACP can increase network bandwidth and enhance the reliability of network connection to achieve optimum bandwidth utilization
- IGMP/MLD Snooping can be used for filtering multicast traffic to save the network bandwidth
- IGMP/MLD can be used to manage and maintain multicast members
- ARP could be used for MAC address resolution
- VRRP, RIP/RIPng, ISIS, OSPF/OSPFv3 and BGP can realize dynamic routing configuration
- PIM-DM and PIM-SM can be used to create and maintain multicast routing table entries and realize multicast routing forwarding
- NAT maps private IP address to the legal IP address of external network, which can slow the consumption of IP address space
- Loop detection could efficiently eliminate the influence caused by port loopback by detecting the existence of loopback
- IPDT can track IP device status and realize interaction with other applications
- Smart Link link backup, providing reliable and efficient backup and fast switching mechanism
- Network diagnosis and troubleshooting could be conducted via Ping, Traceroute, network cable diagnosis, SFP DDMI
- Port mirroring can conduct data analysis and monitoring, which is convenient for online debugging

Dimension

Unit: mm





ICS5400TSN-12GT12GS4XS-2LV

ICS5400TSN-12GT12GS4XS-2HV

Specification

Standard & Protocol	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3ae for 10GBase-X IEEE 802.1AS, IEEE 802.1Qbv, IEEE 802.1Qbu, IEEE 802.1CB, IEEE 802.1Qci, IEEE 802.1Qcc for TSN IEEE 802.3x for Flow Control IEEE 802.1D for Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1s for Multiple Spanning Tree Protocol ITU-T G.8032 for ERPS IEEE 802.1Q for VLAN IEEE 802.1AB for LLDP IEEE 802.3ad for LACP
TSN	PTP, QBU, QBV, Stream, CB, QCI, Netconf + YANG configuration

Management	SNMP v1/v2c/v3 centralized managed equipment, LLDP, DHCP Server, DHCP Relay, port speed limit, port isolation, port statistics, file management, online upgrade, log information, Syslog server
Security	User privilege classification, SSH/HTTPS protocol authorization, access control, SNMP, RMON, link flap protection, port loop detection, IPDT, IPv6DT, Smart-Link, NAT, port alarm and power alarm.
Switch Function	802.1Q VLAN, MAC, static aggregation, LACP, ARP, storm suppression
Unicast / Multicast	IGMP-Snooping, MLD-Snooping, IGMP, MLD, PIM-SM, PIM-DM, IPv6-PIM-SM, IPv6-PIM-DM
Redundancy Technology	MRP, Ring, STP/RSTP/MSTP, ERPS
Routing Technique	RIP, RIPng, OSPF, OSPFv3, ISIS, VRRP, IPv6 VRRP, BGP
Troubleshooting	Ping, Traceroute, DDMI, Port mirror
Time Management	NTP Client, Time Zone Configuration
Interface	Gigabit copper port: 10/100/1000Base-T(X) self-adaption or forced mode, RJ45, Automatic Flow Control, Full/Half Duplex Mode self-adaption, MDI/MDI-X Autotunning Gigabit SFP Slot: 100/1000Base-X self-adaption or forced mode, SFP slot 10Gigabit SFP+ slot: 1G/2.5G/10G Base-X self-adaption or forced mode, SFP+ slot Console port: CLI command line management port (RS-232), RJ45 Alarm port: support 1 relay alarm output, using 7-pin 5.08mm pitch terminal blocks (the relay occupies 2 pins), and the current load capacity is 1A@30VDC or 0.3A@125VAC PPS port: support one PPS input/output, adopt BNC Female, and can be connected to clock source
Indicator	Power indicator, running indicator, alarm indicator, interface indicator
Switch Property	Transmission mode: store and forward MAC address: 32K Cache: 32Mbit Backplane bandwidth: 128G Switch delay: <10μs

Power Supply	ICS5400TSN-12GT12GS4XS-LV: ● Input voltage: 24VDC (12~48VDC) ● Power supply quantity: dual power supply redundancy ● Connection method: adopt 7-pin 5.08mm pitch terminal blocks (includes 5-pin power supply) ● Connection protection: anti-reverse connection ICS5400TSN-12GT12GS4XS-HV: ● Input voltage: 220VAC (90~264VAC) ● Power supply quantity: dual power supply redundancy ● Connection method: adopt 7-pin 5.08mm pitch terminal blocks (includes 5-pin power supply)
Power Consumption	ICS5400TSN-12GT12GS4XS-HV: ● No-load: 18.24W@220VAC ● Full-load: 33.1W@220VAC
Working Environment	Operating temperature: -40~60℃ Storage temperature: -40~85℃ Relative humidity: 5%~95% (no condensation)
Mechanical Structure	Housing: IP40 protection, metal Installation: 1U rack mounting Dimension (W x H x D): 441.6mm×43.8mm×309.3mm (lugs are not included) Weight: about 4kg
Industrial Standard	IEC 61000-4-2 (ESD, electrostatic discharge), Level 3 ● Contact discharge: ±6kV ● Air discharge: ±8kV IEC 61000-4-4 (EFT, electrical fast transient pulses), Level 3 ● Power supply: ±2kV ● Copper port: ±2kV IEC 61000-4-5 (Surge), Level 3 ● Power supply: differential mode±1kV, common mode±2kV ● Copper port: ±2kV Shock: IEC 60068-2-27 Free fall: IEC 60068-2-32 Vibration: IEC 60068-2-6
MTBF	382, 614 hours

Authentication	CE, FCC, RoHS
Warranty	5 years

Ordering Information

Model	Gigabit Copper Port	Gigabit SFP	10Gigabit SFP+	Power Supply
ICS5400TSN-12GT12GS4XS-2LV-N	12	12	4	12~48VDC dual power supply
ICS5400TSN-12GT12GS4XS-2HV-N	12	12	4	90~264VAC dual power supply