

ICS-G24S4X & ICS-G24S2X

◀ 24x 100/1000Base SFP with 4x Combo (RJ45/SFP) + 4x 1G/10G SFP+

▶ 24x 100/1000Base SFP with 4x Combo (RJ45/SFP) + 2x 1G/10G SFP+



- Supports IEEE1588 PTP v2
- Supports u-Ring, ERPS, EPS, MSTP, RSTP, STP for redundant cabling
- Supports maximum up to 14 u-rings in one device
- CE, FCC, EN62368-1 certified
- Supports negative voltage power input



ICS-G24S4X & ICS-G24S2X are industrial grade, hardened design, managed L2+ switches, equipped with 20 GbE SFP ports plus 4 combo GbE ports and 2 or 4 10GbE SFP+ uplink ports. ICS series models are all fan-less designs with redundant, isolated power supplies (2 AC, 2 DC, AC + DC) and can be mounted in 19-inch EIA standard rack. ICS Series are certified with many industrial-grade standards and are ideal for deployments in harsh environments to deliver mission-critical network services. Additionally, with high port density and GbE or 10 GbE high-speed uplink, ICS-G24S4X & ICS-G24S2X are a reliable and scalable solution for core layer or backbone applications (See figure 1 & 2).

Features

- Redundancy isolated low voltage 24/48/-48VDC, or/and isolated High voltage (110/220VAC) power inputs
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 14 instances that each can support μ -Ring, μ -Chain or Sub-Ring type for flexible uses. Supports up to 14 rings in one device (Please see CTC Union μ -Ring white paper for more details and more topology application)
- μ -Ring for Redundant Cabling, recovery time<50ms in 250 devices
- Supports IEEE 1588 PTP V2 for precise time synchronization to operate in Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave mode by each port
- Supports SmartView™ for Centralized Management*

*Please see Chapter 1- **Software Management** for more details

Specifications

Standard	IEEE 802.3	10Base-T 10Mbit/s Ethernet
	IEEE 802.3u	100Base-TX, 100Base-FX, Fast Ethernet
	IEEE 802.3ab	1000Base-T Gbit/s Ethernet over twisted pair
	IEEE 802.3z	1000Base-X Gbit/s Ethernet over Fiber-Optic
	IEEE 802.3ae	10 Gbit/s Ethernet over fiber
	IEEE 802.1d	STP (Spanning Tree Protocol)
	IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)
	IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	ITU-T G.8031 / Y.1342	EPS (Ethernet Protection Switching)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	IEEE 802.3ad	Link aggregation for parallel links with LACP(Link Aggregation Control Protocol)
	IEEE 802.1ad	Stacked VLANs, Q-in-Q
IEEE 802.1p	LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization	
IEEE 802.ab	Link Layer Discovery Protocol (LLDP)	
VLAN ID	4094 IEEE 802.1Q VLAN VID	
Switch Architecture	Back-plane (Switching Fabric): 128Gbps (ICS-G24S4X) 88Gbps (ICS-G24S2X) (Full wire-speed)	
Data Processing	Store and Forward	
Network Connector	24x 100/1000Base-X SFP with 4x GbE Combo (UTP/SFP)+ 4x 10GBase-X SFP+ (ICS-G24S4X) 24x 100/1000Base-X SFP with 4x GbE Combo (UTP/SFP)+ 2x 10GBase-X SFP+ (ICS-G24S2X)	
Network Connector	RJ-45 UTP port support 10/100/1000Base-T(X) , Auto negotiation speed,Auto MDI/MDI-X function GbE port SFP support dual speed (100M/1000M) with DDMI 10GbE port SFP+ support dual speed (1000M/10G) with DDMI	
Console	RS-232 (RJ-45)	

Network Cable	UTP/STP Cat. 5e cable or above EIA/TIA-568 100-ohm (100meter)		
Protocols	CSMA/CD		
Reverse Polarity Protection	Supported		
Overload Current Protection	Supported		
CPU Watch Dog	Supported		
Power Supply	Redundant 2x isolated High Voltage AC input power (-AA model) Redundant 2x Isolated Low Voltage DC Input power (-DD model) Redundant 1x isolated Low Voltage DC and 1x High Voltage AC input power (-AD model) Low Voltage DC (D): Isolated 24/48/-48VDC (18~60VDC), Removable Terminal Block High voltage AC (A): Isolated 110/220VAC (85VAC~264VAC) Supports negative voltage power input (for example in telecom system)		
Power Consumption	Input Voltage	ICS-G24S4X	ICS-G24S2X
	24VDC	33.1W	29.8W
	48VDC	33.4	30.1W
	110VAC	34.4W	31.1W
	220VAC	34.4W	31.1W
LED	Per unit: Power 1 (Green), Power 2 (Green), Act/Alarm (Green/ Amber), Ring Master (Green) Per RJ-45 port: 10/100 Link/Active (Green) 1000 Link/Active (Yellow) SFP (P1~P24) Fiber Per port: 100Base-X Link/Active (Green) 1000Base-X Link/Active (Yellow) SFP+ (P25~P28) Fiber Per port: 1000Base-X Link/Active (Amber) 10GBase-X Link/Active (Blue)		
Jumbo Frame	10K		
MAC Address Table	32K		
Memory Buffer	4M Bytes for packet buffer		
Device Memory	16M Bytes Flash ROM, 1G Bytes RAM		

Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC, 2-Pin removable terminal block
Operating Temperature	-40 ~ 60°C
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection, Fanless
Dimensions	315 x 440 x 44 mm (D x W x H)
Weight	4.755kg (ICS-G24S4X-AA) 4.26kg (ICS-G24S4X-DD) 4.51kg (ICS-G24S4X-AD) 4.695kg (ICS-G24S2X-AA) 4.2kg (ICS-G24S2X-DD) 4.45kg (ICS-G24S2X-AD)
Installation Mounting	19" rack mount
MTBF	176,414 Hours (ICS-G24S4X-AA) 190,965 Hours (ICS-G24S4X-AD) 214,649 Hours (ICS-G24S4X-DD) 176,663 Hours (ICS-G24S2X-AA) 191,257 Hours (ICS-G24S2X-AD) 215,018 Hours (ICS-G24S2X-DD) (MIL-HDBK-217)

Warranty	5 years
Certification	
EMC	CE (EN55024, EN55032)
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE
EMS (Electromagnetic Susceptibility) Protection Level	EN61000-4-2 (ESD) Level 3, Criteria B EN61000-4-3 (RS) Level 3, Criteria A EN61000-4-4 (Burst) Level 3, Criteria A EN61000-4-5 (Surge) Level 3, Criteria B EN61000-4-6 (CS) Level 3, Criteria A EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
Safety	EN62368-1
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN, up to 4094 802.1Q VLAN VID IEEE 802.1q VLAN, up to 4094 Groups IEEE 802.1ad Q-in-Q MAC-based VLAN, up to 256 entries IP Subnet-based VLAN, up to 128 entries Protocol-based VLAN(Ethernet, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries Private VLAN for port isolation GVRP (GARP VLAN Registration Protocol) MVR (Multicast VLAN Registration) Voice VLAN
Link Aggregation (Port Trunk)	Static (Hash with SA, DA, IP, TCP/UDP port), Maximum trunk group : 14group (ICS-G24S4X), 23group (ICS-G24S2X) Dynamic (IEEE 802.3ad LACP), Maximum trunk group : 14group (ICS-G24S4X), 23group (ICS-G24S2X) Per group up-to 8 port
Spanning Tree	IEEE 802.1d STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP
Multiple μ-Ring	up to 14 instances that each supports μ-Ring, μ-Chain or Sub-Ring type for flexible uses, and maximum up to 14 Rings. Recovery time <50ms The maximum number of devices allowed in a Ring supported ring is 250. (Please see CTC Union μ-Ring white paper for more details and more topology application)
Loop Protection	Supported
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)	Supported
QoS Features	
Class of Service	IEEE 802.1p 8 active priorities queues per port
Traffic Classification QoS	IEEE 802.1p based CoS IP Precedence based CoS IP DSCP based CoS QCL(QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI QCE(QoS Control Entry): Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
Bandwidth Control for Ingress	Per port based
Bandwidth Control for Egress	Per port based Per queue / Per port shaper
DiffServ (RF 2474) Remarking	

Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Features	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile Throttling, Fast Leave Maximum Multicast Group : up to 1022 entries Query / Static Router Port
Security Features	
IEEE 802.1X	Port-Based MAC-Based
ACL	Number of rules : up to 256 entries for L2 / L3 / L4 L2 : Mac address SA/DA/VLAN L3: IP address SA/DA, Subnet L4: TCP/UDP
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	Supported
SSL / SSH v2	Supported
User Name Password Authentication	Local Authentication Remote Authentication (via RADIUS / TACACS+)
Management Interface Access Filtering	Web, Telnet / SSH , CLI RS-232 console
Management Features	
CLI	Cisco® like CLI
Web Based Management	
Telnet	Server
SNMP	V1, V2c, V3
sFlow	Supported
Modbus/TCP	Supports for management and monitoring
SW & Configuration Upgrade	TFTP, HTTP Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB	RFC1213 MIB II, Private MIB
UPnP	Supported
DHCP	Server/Client/Relay/Relay option 82/Snooping
IP Source Guard	Supported
Port Mirroring	Supported
Event Syslog	Syslog server (RFC3164)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
IEEE 1588 PTP V2	Supports 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave
NTP, SNTP	Client
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED

IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	Supported
HTTP over IPv6	Supported
SSH over IPv6	Supported
IPv6 Telnet	Supported
IPv6 NTP, SNTP	Client

IPv6 TFTP	Supported
IPv6 QoS	Supported
IPv6 ACL	Number of rules: up to 256 entries for L2 / L3 / L4 L2: Mac address SA/DA/VLAN L3: IP address SIP, Subnet (32bit) L4: TCP/UDP

Application

Figure 1 : 10G Backbone application

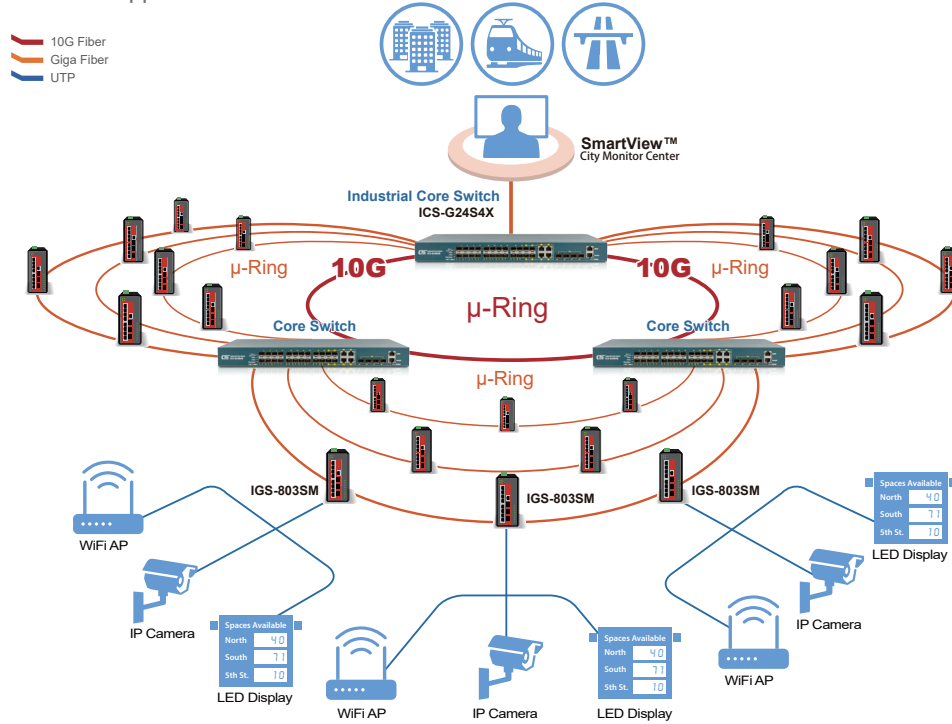
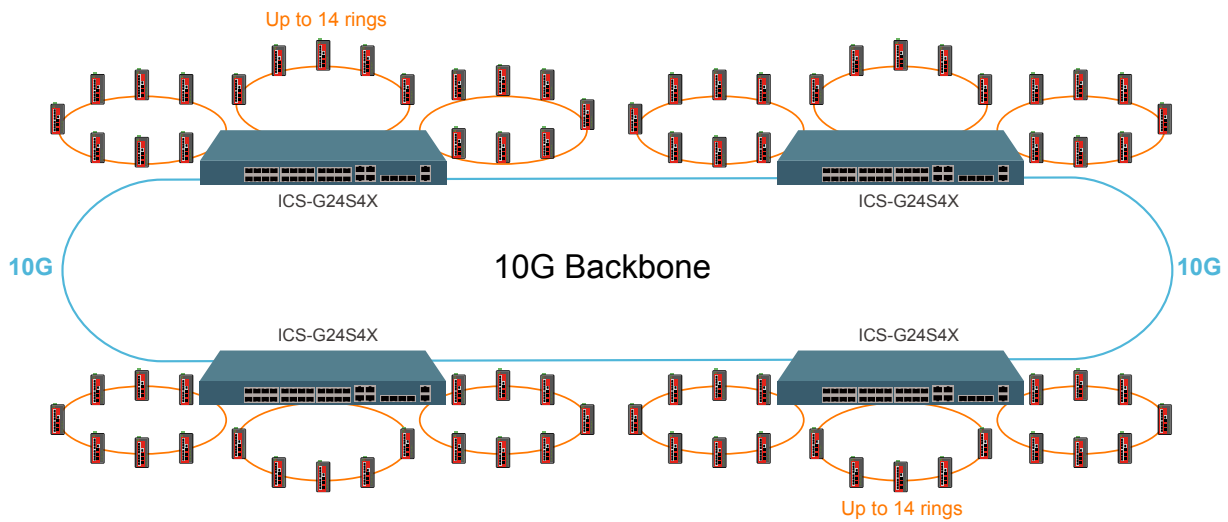
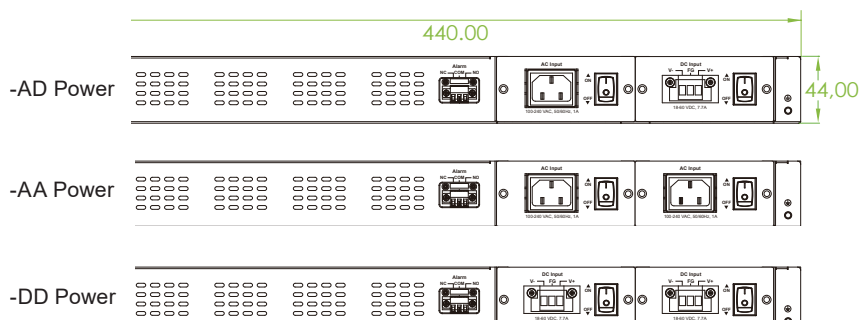


Figure 2 : 10G Backbone with μ-Ring topology



Dimensions

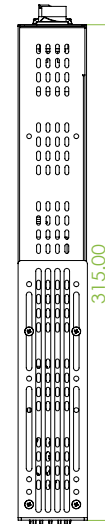
Rear View



Top View

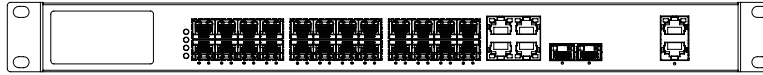


Side View

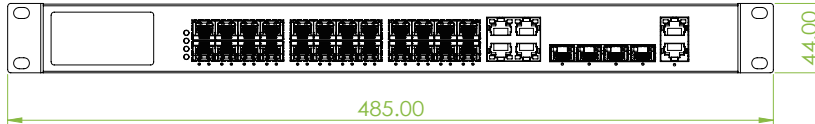


Front View

ICS-G24S2X



ICS-G24S4X



Ordering Information

Model Name	Managed	Total Port	GbE Port		10GbE	Input Power		Certification	
			100/1000 Base-X SFP	10/100/1000 Base-T UTP or 100/1000Base-X SFP		IEEE 802.3ae SFP+	DC (Low Volt) 24/48/-48VDC	High Volt 110/220VAC	Safety EN62368-1
ICS-G24S4X-AA	V	28	20	4 Combo	4		2	V	V
ICS-G24S4X-DD	V	28	20	4 Combo	4	2		V	V
ICS-G24S4X-AD	V	28	20	4 Combo	4	1	1	V	V
ICS-G24S2X-AA	V	26	20	4 Combo	2		2	V	V
ICS-G24S2X-DD	V	26	20	4 Combo	2	2		V	V
ICS-G24S2X-AD	V	26	20	4 Combo	2	1	1	V	V

Package List

- ICS-G24S4X or ICS-G24S2X device
- Console cable (RJ-45 to DB9)
- Rack mount ear with screws
- AC Power cord (for AC power -A model)

Optional Accessories

Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with all CTC Union industrial grade Ethernet switches for guaranteed compatibility and performance. Best performance can be guaranteed, even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheets for more items and detailed information.)

ISFP-M9000-85-D(E)	Industrial SFP 10GbE 10GBase-SR, M/M, 300 meter (OM3 fiber) ,wave length 850nm, DDMI , -10~70°C (-40~85°C)
ISFP-S9010-31-D(E)	Industrial SFP 10GbE 10GBase-LR, S/M, 10km, wave length 1310nm, DDMI, -10~70°C (-40~85°C)
ISFP-M7000-85-D(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter,wave length 850nm, DDMI, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-SX, S/M, 20km, wave length 1310nm, DDMI, -10~70°C (-40~85°C)
ISFP-T7100-00-(E)	Industrial SFP 10/100/1000Base-T, UTP 100meter, -10~70°C (-40~85°C)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDMI, -10~70°C (-40~85°C)

Industrial Power Supply

NDR-120-48	Industrial Power, Input 90 ~ 264VAC/127 ~ 370VDC, Output 48VDC, 120W, -20 ~ +70°C (For DC type)
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