



## ICS-G24S4X

24x 100/1000Base-X SFP with 4x GbE Combo plus  
4x 10GbE SFP+ Core Switch

## ICS-G24S2X

24x 100/1000Base-X SFP with 4x GbE Combo plus  
2x 10GbE SFP+ Core Switch



ICS-G24S4X & ICS-G24S2X are industrial grade Ethernet Core Switches that are equipped with 20 gigabit SFP ports plus 4 combo gigabit ports and 2 or 4 10G SFP+ 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. This series offers various layer 2 Ethernet functions (IGMP, VLAN, QoS, ACL, Security, IPv6, bandwidth control, and port mirroring) and also support u-Ring redundancy protocol that can establish 14 independent rings for flexible applications, especially when employed in backbone infrastructure. ICS switches can also be managed centrally and conveniently by CTC Union's SmartView™ Element Management System and mass configured by SmartConfig™.

Housed in rugged rack mountable enclosures, ICS Series complies 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 Gigabit or 10 Gigabit high-speed uplink, ICS-G24S4X & ICS-G24S2X are a reliable and scalable solution for core layer or backbone applications (See figure 1 & 2).

### Features

- 24x 100/1000Base-X SFP with 4x Combo (SFP+RJ-45) and 4x 10G Base-X SFP+ (ICS-G24S4X)
- 24x 100/1000Base-X SFP with 4x Combo (SFP+RJ-45) and 2x 10G Base-X SFP+ (ICS-G24S2X)
- Redundancy isolated low voltage 24/48VDC, or/and isolated High voltage AC/DC (110/220 VAC/VDC) power inputs
- Supports negative voltage power input with isolated RS-232 console port (for example in telecom system)**
- Rugged metal, IP30 protection & Fanless design
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Heavy industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 14 instances that each can support u-Ring, u-Chain or Sub-Ring type for flexible uses. Supports up to 14 rings in one device (Please see CTC Union u-Ring white paper for more details and more topology application)
- u-Ring for Redundant Cabling, recovery time<50ms in 250 devices
- DHCP Server/Client/Relay/Snooping/Snooping option 82/Relay option 82
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1q VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, GVRP, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP snooping V1/V2/V3, IGMP Filtering/ Throttling, IGMP query, IGMP proxy reporting, MLD snooping V1/V2
- Flexibility security: Port based and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware to avoid in case of upgrade failure
- Supports IEEE1588 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
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP, SNTP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server /ICMP v6
- CLI, Web based management, SNMP v1/v2c/v3, Telnet server for management
- Provides SmartConfig for quick and easy mass configuration (Please see Catalog chapter 1- Software Management for more details)
- Supports SmartView for Centralized Management (Please see Catalog chapter 1- Software Management for more details)
- Supporting Central EMS for management of up to 50 SmartView Server, and maximum up to 25,000 device (Please see Catalog 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
	IEEE802.3ae	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)
	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 802.1ab	Link Layer Discovery Protocol (LLDP)
VLAN ID	4094	IEEE802.1Q VLAN VID

<b>Switch Architecture</b>	Back-plane (Switching Fabric): 128Gbps (ICS-G24S4X)    88Gbps (ICS-G24S2X) (Full wire-speed)
<b>Data Processing</b>	Store and Forward
<b>Network Connector</b>	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)
<b>Network Connector</b>	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
<b>Console</b>	RS-232 (RJ-45) Isolated RS-232 port grounding for negative voltage power system, or telecom application
<b>Network Cable</b>	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
<b>Protocols</b>	CSMA/CD
<b>Reverse Polarity Protection</b>	Supported

Overload Current Protection	Supported																	
CPU Watch Dog	Supported																	
Power Supply	Redundant 2x isolated High Voltage AC/DC 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/DC input power (-AD model) Low Voltage DC (D): Isolated 24/48V (18~60VDC), Removable Terminal Block High voltage AC/DC (A): Isolated 110/220VAC (88VAC~264VAC), isolated 110/220DC (88~300VDC) <b>Supports negative voltage power input with isolated RS-232 console port (for example in telecom system)</b>																	
Power Consumption	<table><tr><th>Input Voltage</th><th>ICS-G24S4X</th><th>ICS-G24S2X</th></tr><tr><td>24VDC</td><td>33.1W</td><td>29.8W</td></tr><tr><td>48VDC</td><td>33.4</td><td>30.1W</td></tr><tr><td>110VAC/VDC</td><td>34.4W</td><td>31.1W</td></tr><tr><td>220VAC/VDC</td><td>34.4W</td><td>31.1W</td></tr></table>	Input Voltage	ICS-G24S4X	ICS-G24S2X	24VDC	33.1W	29.8W	48VDC	33.4	30.1W	110VAC/VDC	34.4W	31.1W	220VAC/VDC	34.4W	31.1W		
Input Voltage	ICS-G24S4X	ICS-G24S2X																
24VDC	33.1W	29.8W																
48VDC	33.4	30.1W																
110VAC/VDC	34.4W	31.1W																
220VAC/VDC	34.4W	31.1W																
LED	Per unit: Power 1 (Green), Power 2 (Green), Act /Alarm (Green/Red), Ring Master (Green) Per RJ-45 port: 10/100 Link/Active (Green) 1000 Link/Active (Yellow) SFP (P1~24) 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																	
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	-10 ~ 60℃																	
Operating Humidity	5% to 95% (Non-condensing)																	

## Software Specifications

<b>Topology</b>	
<b>VLAN</b>	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 VRRP (GARP VLAN Registration Protocol) MVR ( Multicast VLAN Registration)
<b>Link Aggregation (Port Trunk)</b>	Static (Hash with SA, DA, IP, TCP/UDP port), up to 14 trunk group Dynamic (IEEE 802.3ad LACP), up to 14 trunk group Per group up to 8 port
<b>Spanning Tree</b>	IEEE802.1d STP, IEEE802.1w RSTP, IEEE802.1s MSTP
<b>Multiple u-Ring</b>	up to 14 instances that each supports u-Ring, u-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 u-Ring white paper for more details and more topology application)
<b>Loop Protection</b>	Supported
<b>ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)</b>	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
<b>QoS Features</b>	
<b>Class of Service</b>	IEEE802.1p 8 active priorities queues for per port
<b>Traffic Classification QoS</b>	IEEE802.1p 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

<b>Storage Temperature</b>	-40 ~ 85°C
<b>Housing</b>	Rugged Metal, IP30 Protection, Fanless
<b>Dimensions</b>	315 x 440 x 44 mm (D x W x H)
<b>Weight</b>	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)
<b>Installation Mounting</b>	19" rack mount
<b>MTBF</b>	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)
<b>Warranty</b>	5 years
<b>Certification</b>	
<b>EMC</b>	CE
<b>EMI (Electromagnetic Interference)</b>	FCC Part 15 Subpart B Class A, CE
<b>Railway Traffic</b>	EN50121-4
<b>Immunity for Heavy Industrial Environment</b>	EN61000-6-2
<b>Emission for Heavy Industrial Environment</b>	EN61000-6-4
<b>EMS (Electromagnetic Susceptibility)</b>	EN61000-4-2 (ESD) Level 3, Criteria B EN61000-4-3 (RS) Level 3, Criteria A
<b>Protection Level</b>	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
<b>Safety</b>	UL60950-1
<b>Shock</b>	IEC 60068-2-27
<b>Freefall</b>	IEC 60068-2-32
<b>Vibration</b>	IEC 60068-2-6

<b>Bandwidth Control for Ingress</b>	Per port based
<b>Bandwidth Control for Egress</b>	Per port based Per queue / Per port shaper
<b>DiffServ (RF 2474) Remarking</b>	
<b>Storm Control</b>	for Unicast, Broadcast, Multicast
<b>IP Multicasting Features</b>	
<b>IGMP / MLD Snooping</b>	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
<b>Security Features</b>	
<b>IEEE 802.1X</b>	Port-Based MAC-Based
<b>ACL</b>	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
<b>RADIUS authentication &amp; accounting</b>	
<b>TACACS+ authentication &amp; accounting, TACACS+ 3.0</b>	
<b>HTTPS, HTTP</b>	Supported
<b>SSL / SSH v2</b>	Supported
<b>User Name Password</b>	Local Authentication
<b>Authentication</b>	Remote Authentication (via RADIUS / TACACS+)
<b>Management Interface Access</b>	Web, Telnet / SSH , CLI RS-232 console
<b>Filtering</b>	
<b>Management Features</b>	
<b>CLI</b>	Cisco® like CLI
<b>Web Based Management</b>	
<b>Telnet</b>	Server
<b>SNMP</b>	V1, V2c, V3

<b>SW &amp; Configuration Upgrade</b>	TFTP, HTTP Redundant firmware in case of upgrade failure
<b>RMON</b>	RMON I (1, 2, 3, 9 group), RMON II
<b>MIB</b>	RFC1213 MIB II, Private MIB
<b>UPnP</b>	Supported
<b>DHCP</b>	TFTP, HTTP Redundant firmware in case of upgrade failure
<b>IP Source Guard</b>	Supported
<b>Port Mirroring</b>	Supported
<b>Event Syslog</b>	Syslog server (RFC3164) (Support 1 server)
<b>Warning Message</b>	System syslog, e-mail, alarm relay
<b>DNS</b>	Client, Proxy
<b>IEEE1588 PTP V2</b>	Supports 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave
<b>NTP, SNTP</b>	Client

<b>LLDP (IEEE 802.1ab)</b>	Link Layer Discovery Protocol LLDP-MED
<b>IPv6 Features</b>	
<b>IPv6 Management</b>	Telnet Server/ICMP v6
<b>SNMP over IPv6</b>	Supported
<b>HTTP over IPv6</b>	Supported
<b>SSH over IPv6</b>	Supported
<b>IPv6 Telnet</b>	Supported
<b>IPv6 NTP, SNTP</b>	Client
<b>IPv6 TFTP</b>	Supported
<b>IPv6 QoS</b>	Supported
<b>IPv6 ACL</b>	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

## Application

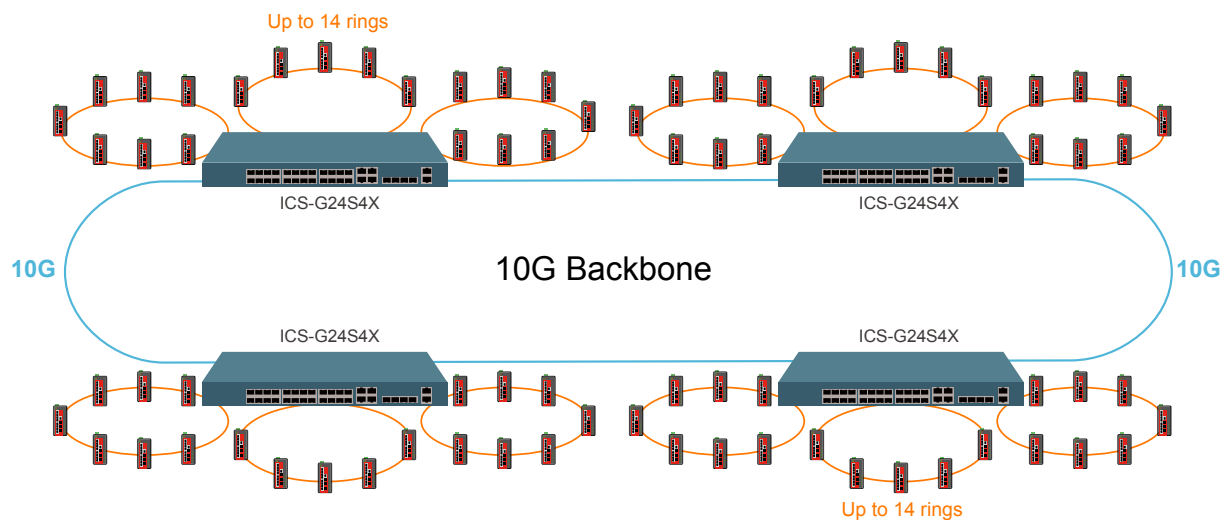


Figure 1 : 10G Backbone with u-Ring topology

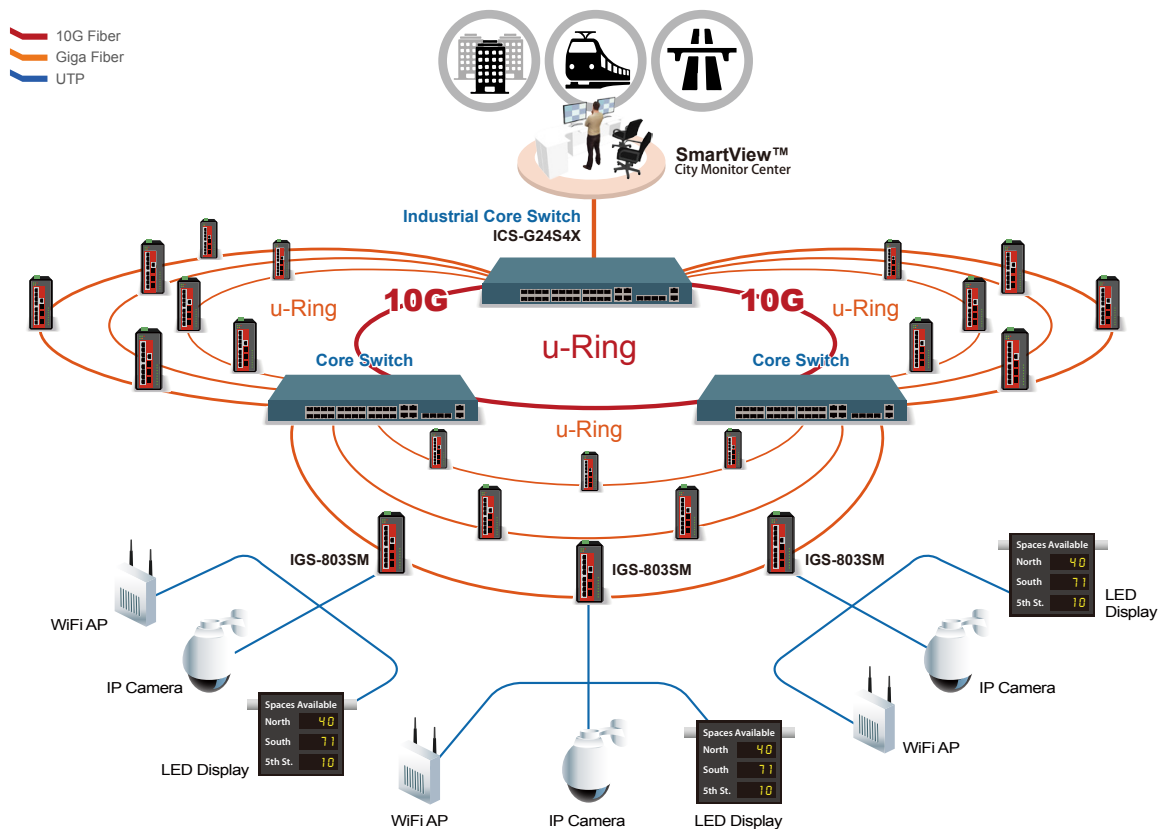
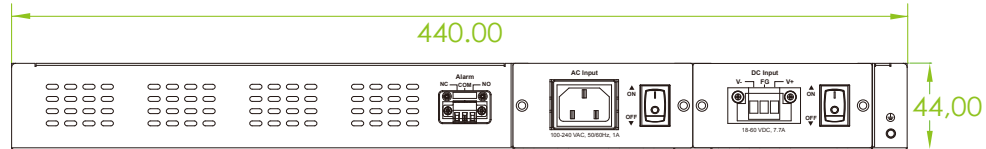


Figure 2 : 10G Backbone application

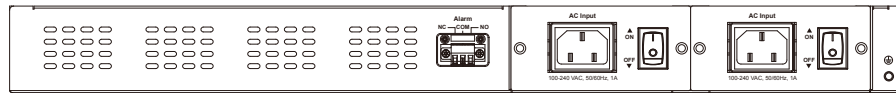
## Dimensions

Rear View

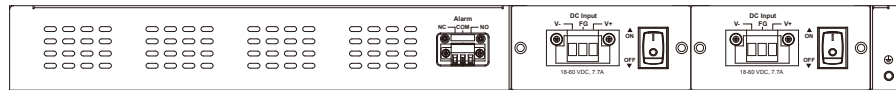
-AD Power



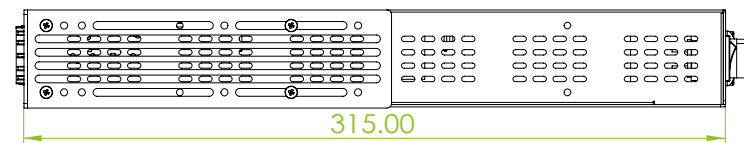
-AA Power



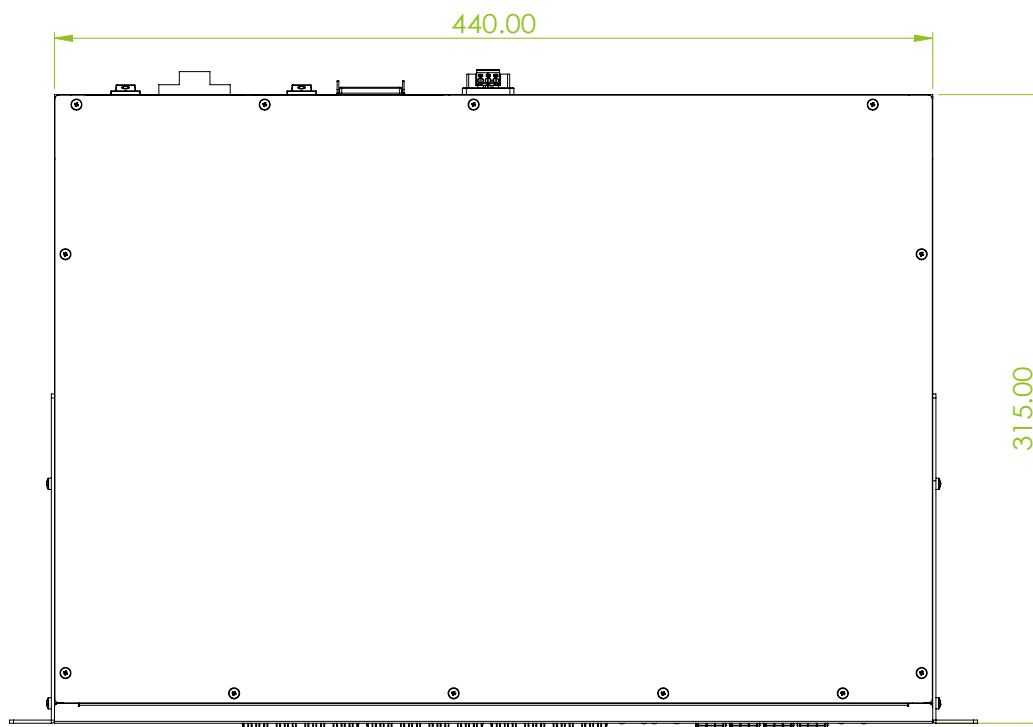
-DD Power



Side View

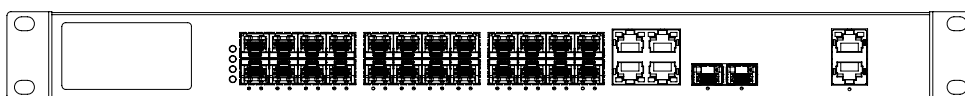


Top View

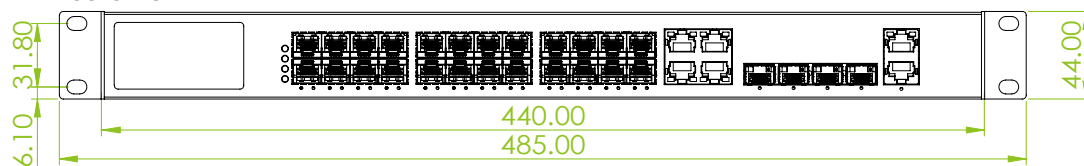


Front View

ICS-G24S2X



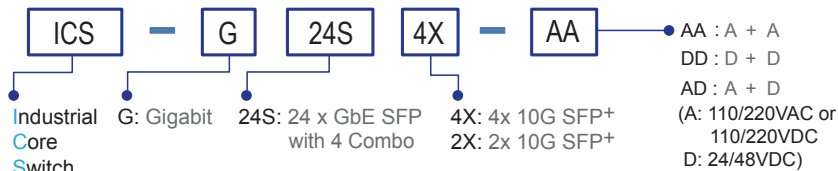
ICS-G24S4X



## 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		DC (Low Volt) isolated 24/48VDC	(High Volt) 110/220V AC/DC	Safety UL60950-1	EN50121-4	EN61000-6-2 EN61000-6-4	CE FCC
ICS-G24S4X-AA	V	28	20	4 Combo	4		2	V	V	V	V
ICS-G24S4X-DD	V	28	20	4 Combo	4	2		V	V	V	V
ICS-G24S4X-AD	V	28	20	4 Combo	4	1	1	V	V	V	V
ICS-G24S2X-AA	V	26	20	4 Combo	2		2	V	V	V	V
ICS-G24S2X-DD	V	26	20	4 Combo	2	2		V	V	V	V
ICS-G24S2X-AD	V	26	20	4 Combo	2	1	1	V	V	V	V

### Model Naming Rule



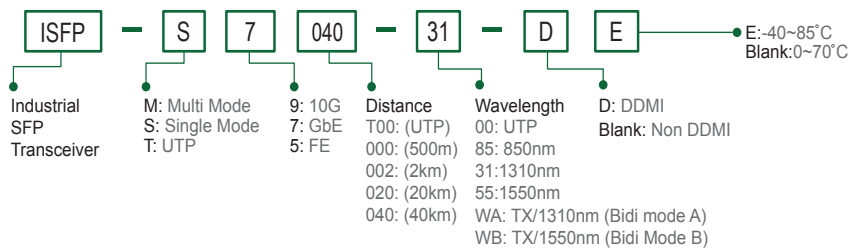
## Optional Accessories

### Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with the series product for guaranteed compatibility and performance. The best performance can be guaranteed even in mission-critical applications.  
(Please see CTC Union's Industrial SFP datasheet for more details and more items.)

ISFP-M9000-85-D(E)	Industrial SFP 10GbE 10GBase-SR, M/M, 300 meter (OM3 fiber), wave length 850nm, DDML, -10~70°C (-40~85°C)
ISFP-S9010-31-D(E)	Industrial SFP 10GbE 10GBase-LR, S/M, 10km, wave length 1310nm, DDML, -10~70°C (-40~85°C)
ISFP-M7000-85-D(E)	Industrial SFP 10GbE 1000Base-SX, M/M, 500 meter, wave length 850nm, DDML, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 10GbE 1000Base-SX, S/M, 20km, wave length 1310nm, DDML, -10~70°C (-40~85°C)
ISFP-T7T00-00-(E)	Industrial SFP 10GbE 1000Base-SX, 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, DDML, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDML, -10~70°C (-40~85°C)

### SFP Naming Rule



### Package List

- ICS-G24S4X or ICS-G24S2X device
- Console cable (RJ-45 to DB9)
- CD (SmartConfig, MIB file, Manual)
- Quickly installation guide
- Rack mount ear with screws
- Power cord (for-A model)